Universal Registration Document 2019

Including the annual financial report

CGG

CONTENT

This Universal Registration Document can be consulted and downloaded from the **www.cgg.com** website

Universal Registration Document 2019

New version of the Registration Document

INCLUDING THE ANNUAL FINANCIAL REPORT

A unique range of geoscience technologies and solutions

This Universal Registration Document was filed on April 14, 2020 with the *Autorité des Marchés Financiers* (AMF), as competent authority under Regulation (EU) 2017/1129, without prior approval pursuant to article 9 of said regulation. The Universal Registration Document may be used for the purposes of an offer to the public of securities or admission of securities to trading on a regulated market if completed by a securities note and, if applicable, a summary and any amendments to the Universal Registration Document. The complete package of documents is approved by the AMF in accordance with Regulation (EU) 2017/1129.

This Universal Registration Document is available at no charge upon request to the Company's registered address and on CGG's website (www.cgg.com) and on the website of the AMF (www.amf-france.org).

Pursuant to article 19 of Regulation (UE) 2017/1129, the following information:

– for fiscal year 2018: Group consolidated financial statements and Statutory Auditors' Report on the consolidated financial statements for the year ended December 31, 2018, Company statutory financial statements and Statutory Auditors' Report on the Company statutory financial statements for the year ended December 31, 2018, as well as the financial information included in Management Report, as presented in the Reference document filed with the AMF (French financial markets authority) on April 5, 2019, under number D.19-0279;

– for fiscal year 2017: Group consolidated financial statements and Statutory Auditors' Report on the consolidated financial statements for the year ended December 31, 2017, Company statutory financial statements and Statutory Auditors' Report on the Company statutory financial statements for the year ended December 31, 2017, as well as the financial information included in Management Report, as presented in the Reference document filed with the AMF (French financial markets authority) on March 29, 2018, under number D.18-0228;

is incorporated by reference into this Universal Registration Document.

This Document has been prepared in both French and English. However, in all matters of interpretation of information, views or opinions expressed therein, the original language version in French takes precedence over this English one.

FORWARD-LOOKING STATEMENTS

This Universal Registration Document includes "forward-looking statements", which involve risks and uncertainties, including, without limitation, certain statements made in the sections entitled 1.1 "Objectives and strategy", 1.2 "Business description", and 5 "Operating and Financial Review". You can identify forward-looking statements because they contain words such as "believes", "expects", "may", "should", "seeks", "approximately", "intends", "plans", "estimates", or "anticipates" or similar expressions that relate to our strategy, plans or intentions. These forward-looking statements are subject to risks and uncertainties that may change at any time, and, therefore, our actual results may differ materially from those that we expected. We have based these forward-looking statements on our current views and assumptions about future events. While we believe that our assumptions are reasonable, we caution that it is very difficult to predict the impact of known factors, and, of course, it is impossible for us to anticipate all factors that could affect our actual results. All forward-looking statements are based upon information available to us on the date of this Universal Registration Document.

Important factors that could cause actual results to differ materially from our expectations ("cautionary statements") are disclosed under 2.1 "Risk factors and control measures" and elsewhere in this Universal Registration Document, including, without limitation, in conjunction with the forward-looking statements included in this Universal Registration Document.

We undertake no obligation to update or revise any forward-looking statements, whether as a result of new information, future events or otherwise. In addition, in light of these risks, uncertainties and assumptions, the forward-looking events discussed in this Universal Registration Document might not occur. When considering forward-looking statements, you should keep in mind the risk factors and other cautionary statements included in this Universal Registration Document, including those described in 2.1 "Risk Factors and control measures" of this Universal Registration Document.

CGG

INTERVIEW
with the CEO

« 2019 was a very successful year »

Dear Fellow Shareholders,

2019 was a very successful year for our company. CGG, in its new profile, achieved most of its 2021 strategic objectives ahead of schedule. This performance indicates that our cash generation capability and our profitability confirm that our new strategy focused on highly differentiated businesses helps us to deliver excellent financial results.

Looking at the objectives towards transforming CGG into an asset-light company that we announced at the Capital Market Day (CMD) in November of 2018, I am glad to report to you that we have accomplished most of them, setting the stage for completion of the rest of this program during 2020.

We have:

- exited the Seabed Geosolutions JV with Fugro on December 30, 2019;
- exited the Marine Acquisition business with the closing of the marine strategic partnership deal with Shearwater on January 8, 2020; and
- completed the wind-down of the Land Acquisition business in February 2020.

We are finalizing the sale of the Multi-physics Acquisition business and expect it to close in 2020.

Exit from the Acquisition business leaves us with highly differentiated asset-light businesses of Geoscience, Multi-client, and Equipment, where our people, our data and our technology allow us to compete successfully in the profitable high-end part of their markets.

Most of our clients are now focused on developing their positions in highly prolific basins, increasing production from their mature fields, and limiting exploration efforts to near-field step outs and bypassed reservoirs. Our Geoscience seismic data processing and imaging offering is indispensable in this arena, where very high-resolution images of the reservoir are required. Ocean bottom node (OBN) data has become quite prevalent for this purpose and due to our unmatched technology and service delivery leadership, our clients entrust us with processing the majority of their OBN surveys. Our Multi-client library covers many of the core and mature basins of the world with surveys that were processed in house with the latest technologies. Our clients often find this data very valuable for their field development, production optimization and enhanced oil and gas recovery efforts.

« CGG is now the resilient high technology company »

Since the beginning of the year, where I believed that we would see a year of relative stability, the compounding crises of COVID-19 and the oil price war have dramatically affected the market and severely degraded our business environment. While it is too early to fully understand the implications for CGG, recent announcements from our clients indicate upstream capex cuts in the range of 20% in 2020 with much more significant E&P capex reductions in the US land market to which we have limited exposure. The Middle East National Oil Companies are expected to take a longer-term view and their spending could be more resilient. Overall, these early trends are a strong indication that our businesses will be affected.

Fortunately, CGG is in a much better shape to weather this storm: we have completed our transition to an asset-light model, we have a solid backlog, which will help us to navigate through the first half of this year and enable us to take necessary response measures focused on preserving our liquidity, and, most importantly, we have strong balance sheet with 610M$ of cash on hand and no debt repayments before April 2023.

CGG is now a much more resilient, high technology company that we envisioned it to be through this latest transformation. CGG has clearly demonstrated that we can deliver to the highest standards during downturns, and I have tremendous confidence that the strength of our people and teams and technology will be up to the challenge.

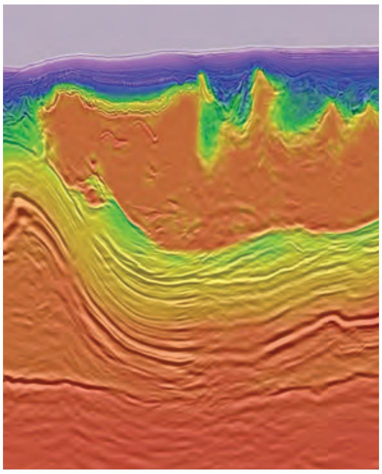
Sophie Zurquiyah
CEO

CGG
at a glance

KEY 2019 OPERATIONAL EVENTS

APRIL 8

Sercel Brings its Technical Expertise to Structural Health and Earth Monitoring Markets



MAY 14

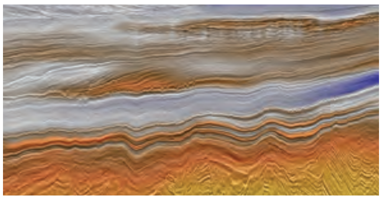
CGG Begins First Multi-Client Ocean Bottom Node Survey in Mississippi Canyon, Gulf of Mexico

JUNE 4

CGG Signs Binding Term-Sheet with Shearwater for High-end Seismic Vessels and Creation of Global Leader in Streamer Technology

JUNE 5

CGG Announces Collaboration with Microsoft to Deliver Cloud Based Geoscience Data and Technologies



JUNE 18

CGG Awarded Multi-Year Processing Contract by ADNOC for World's Largest OBN Seismic Project

AUGUST 27

CGG Begins New 3D Broadband Survey in Deepwater Brazil

SEPTEMBER 16

Sercel Launches GPR – A Game-Changing New Ocean Bottom Node

DECEMBER 31

CGG Announces Positive Net Cash Flow, First Time since 2012

KEY DATES IN THE HISTORY OF CGG

1931
Creation of CGG by Conrad Schlumberger

1956
Creation of Sercel

1981
Listing of CGG on Euronext Paris

2007
Merger with Veritas, worldwide leader in processing

2013
Acquisition of the Geoscience division of Fugro

2017
CGG enter into the French Financial Safeguard Procedure

2018
February 21, Financial restructuring plan November 7, CGG announces CGG 2021, the new strategic plan « People, Data, Technology »

2019
Exit of legacy data acquisition businesses

Businesses

CGG (www.cgg.com) is a global geoscience technology leader. Employing around 4,600 people worldwide, CGG provides a comprehensive range of data, products, services and equipment that supports the discovery and responsible management of the Earth's natural resources.

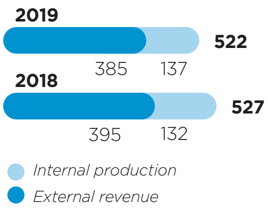
GEOSCIENCE

As recognized leaders in advanced subsurface imaging, our experts bring a collaborative approach to problem-solving. Our global network of 28 data imaging centers provides region-specific expertise, outstanding service and remarkable technology in every image.

We provide integrated reservoir characterization services and innovative solutions for complex E&P challenges. Our comprehensive portfolio of geoscience services brings valuable insight to all aspects of natural resource exploration and development, reducing drilling risk and enabling the creation of better reservoir models.

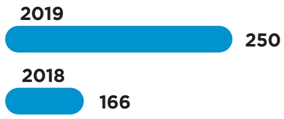
We develop sophisticated algorithms and intuitive interfaces to deliver powerful reservoir answers from geoscience data at every stage from exploration to production. We typically invest 10% in R&D. We have a high market share and are highly differentiated.

TOTAL PRODUCTION *($m)*

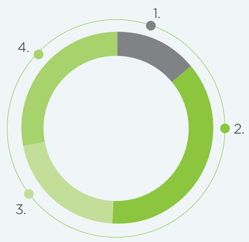


TOTAL PRODUCTION/ HEADCOUNT *($k)*

COMPUTING POWER *(Pflops)*

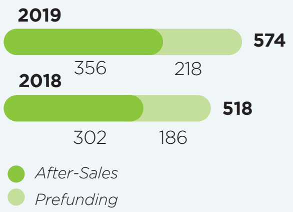


DATA LIBRARY NBV REGIONAL SPLIT AS OF 31/12/2019

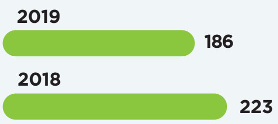


1. US Land **14%**
2. Europe-Africa **37%**
3. Others **21%**
4. North & South America **28%**

MULTI-CLIENT REVENUE *($m)*



MULTI-CLIENT CAPEX *($m)*



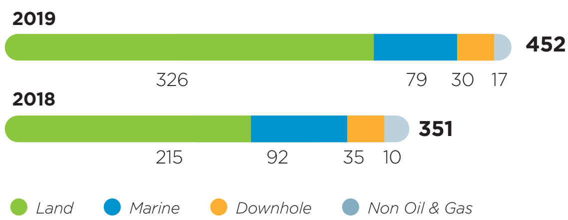
MULTI-CLIENT

We invest in a portfolio of geographical opportunities to build a geoscience data base and thrive to achieve high prefunding for our new projects. We typically invest in the range of M$200-$300/year in our surveys. At the end of 2019, we had over 1.1 billion square kilometers of high-end offshore and over 100,000 square kilometers of high-end onshore unconventional seismic data in the most prolific basins around the world. We own marketing rights to the data for a period of time and sell licenses to use the data to named clients who generally use it for reservoir exploration and development.

EQUIPMENT

Through its subsidiary Sercel, CGG offers a full spectrum of systems, sensors and sources for seismic acquisition and downhole monitoring. Sercel sells its equipment and offers customer support services including training on a worldwide basis. Sercel manufactures in six seismic equipment manufacturing facilities a wide range of geophysical equipment for land or marine seismic data acquisition, including seismic recording equipment, software and seismic sources. Sercel is the market leader in seismic equipment.

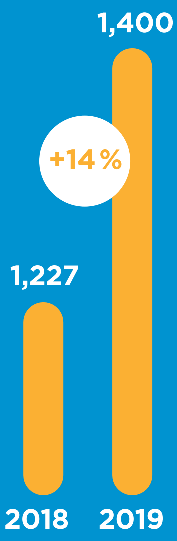
SEGMENT REVENUE *($m)*



Key Financial and Non-Financial Indicators

KEY FINANCIAL INDICATORS

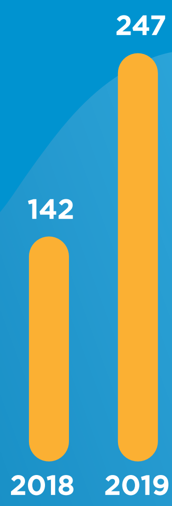
REVENUE
(million dollars)



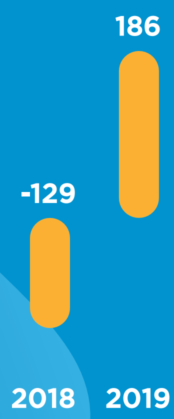
NET DEBT / EBITDA

EBIDTDA
(million dollars)

OPERATING INCOME
(million dollars)



NET CASH FLOW
(million dollars)



KEY NON-FINANCIAL INDICATORS

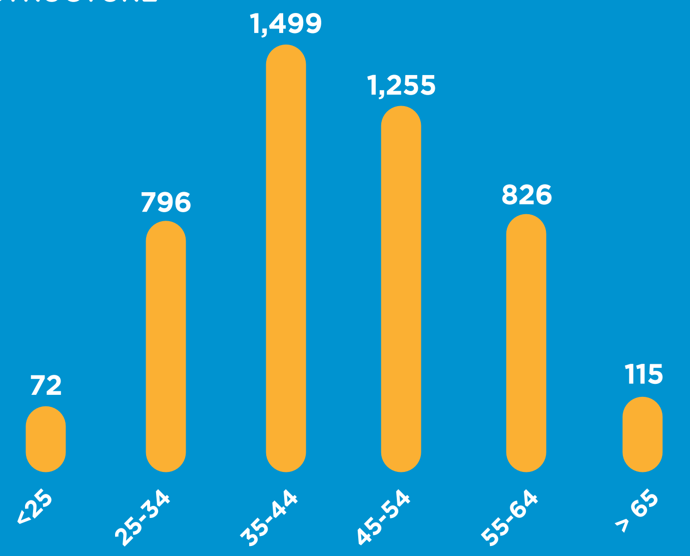
HEADCOUNT

2018	2019
5,099	4,564

BREAKDOWN PER REGION

Europe	North America	South America	Africa, Asia, Middle-East
53%	15%	4%	28%

AGE AND SENIORITY STRUCTURE



COMPUTING POWER

2018	2019
166 petaflops	250 petaflops

ENERGY EFFICIENCY

2018	2019
1.33	1.33

DIRECT AND INDIRECT GREENHOUSE GAS EMISSIONS *($ktCO_2eq$)*

2018	2019
424	57

ESG RATING

AA
MSCI

Our STRATEGY

3 CLEAR OBJECTIVES

Our strategy is to deliver the leading technology, data, equipment and services that enhance our clients' ability to discover and responsibly manage the Earth's natural resources. We provide the best understanding of the subsurface – always increasing the precision and the value that we bring to the Exploration and Production value chain.

We are a People, Data and Technology company with established strong leadership positions in our three core businesses of Geoscience, Multi-Client and Equipment. We remain focused on preserving and expanding our leadership by continuously meeting and exceeding the expectations of our clients and all stakeholders. This requires focus on our clients and the constant willingness and aspiration to exceed their expectations.

1. First and foremost, **we focus on ensuring that our Group generates positive cash-flow** throughout industry cycles. The most significant decision we have taken in our new strategy was to transition to an "asset-light" business model, which is why CGG has exited the land and marine acquisition business and is exiting the multi-physics acquisition business.

2. Secondly, **we are reinforcing our activities** where we already have leadership positions, and will capitalize on our capabilities and expertise so that CGG can grow organically in strengthening markets. CGG will continue to invest in human capital and R&D, particularly in the innovation and development of new technology, High Performance Compute, algorithms, software and IT, to further enhance our highly differentiated Geoscience products and services that are recognized and valued by our client.

We also continue to pursue our investment strategy in Multi-Client, which continues to focus on the development of our core mature producing basins, which are important for our clients' portfolios.

In Equipment, we continue to lead the market by developing and commercializing new product families as a result of our R&D investments.

3. Thirdly, **we will expand on these core businesses**, either building our existing capabilities such as digital technologies including high performance computing, the application of analytics, machine learning and artificial intelligence, or from new adjacent markets to those in which we operate today, such as structural health monitoring. To conclude, our objective is to ensure that CGG has a sustainable and promising future for all its stakeholders.

OUR ENVIRONMENT AND CLIMATE STRATEGY

The health of the environment and climate is critical to the well-being of people and communities globally.

To best protect the environment, climate and the communities where we operate:

- We always **act responsibly** and abide by all applicable environmental laws;
- We continue to **advance our technology and services** to enable our clients to responsibly discover, develop and manage the Earth's natural resources;
- We continue to advance our **data collection capabilities to best measure**, monitor and continuously reduce our impact;
- We commit to improving **our power usage efficiency**, increasing the low-carbon content of our energy supply, and reducing our GHG emissions;
- We **encourage and support our businesses**, all employees and locations globally to find and take specific actions that support the health of the environment, climate and the communities where we operate.

BUSINESS Model

CGG: People, data and technology – delivering geoscience leadership

Providing a comprehensive range of data, technology, products and equipment that supports the discovery and responsible management of the Earth's natural ressources

CAPITAL

FINANCIAL
- Equity: **$1.61 bn**
- Net Debt: **$584 m**
- Liquidity: **$610m**
- Capital employed: **$2.3 bn**

INDUSTRIAL
- Manufacturing sites: **6**
- Imaging centers: **28**
- Datacenters: **3**

HUMAN
- Permanent employees: **4,195**
- Diversity:
  - Nationalities: **78**
  - Gender equality index W-M: **92/100**

INTELLECTUAL
- R&D Investment: **$76 m**
- Employees in R&D: **523**

SOCIAL
- Code of Business Conduct: **Yes**
- Independent Board members: **89%**

NATURAL
- Energy consumption
  - kWh at Sercel : **29.5 GW**
  - kWh in datacenters: **355.2 GW**

INPUTS

OUR VALUES

HSE

PEOPLE

INNOVATION

GEOSCIENCE

Developing high-end geoscience expertise and technology for advancing understandings of the earth's subsurface

Imaging & Services

Excellence in technology, HPC IT, quality and service

EQUIPMENT

Creating hi-tech equipment for collecting information about the earth's subsurface

Products & Services

Excellence in technology, reliability, manufacturing and service

MARKET

Increase success rates

QUALITY

SOCIAL RESPONSABILITY

IMPACTS

DATA LIBRARY

Building and offering a global high quality library of geologic and geophysical data through levering our advanced technology

Data & Studies

Excellence in global coverage, technology and quality

VALUE CREATION

FINANCIAL
- % of Revenue growth: 14%
- % of Ebitda margin: 51%
- Net cash flow: $186 m

INDUSTRIAL
- Production/head: $249 K
- Numbers of k. channels delivered: 406
- Number of sections delivered: 558

HUMAN
- Employees with more than 5 years of seniority: 80%

INTELLECTUAL
- Patents: 970
- Kimberlite ranking: CGG #1

SOCIAL
- Partnership with universities: 123
- ESG Rating by MSCI: AA

NATURAL
- Carbon emissions
  - Scope 1: 2 kt eq. CO_2
  - Scope 2: 55 kt eq. CO_2
- Power efficiency (PUE): 1.33

EXPECTATIONS

Optimize field development

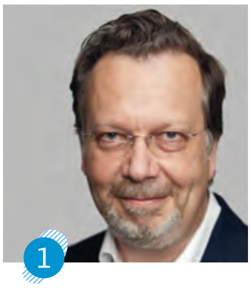
Enhance reservoir production

GOVERNANCE

The Board of Directors relies on the work of specialized Committees to oversee the company's business conduct. The Committees oversee Group activities in their area of competency, guarantee that high-level risks are identified and managed, and work closely with General Management.

The Board of Directors' Internal Rules and Regulations define the composition, duties and operating procedures of the Committees with the exception of the Audit Committee and the Appointment & Remuneration Committee that have each had their own operating charter since March 8th, 2005 and July 30th, 2008 respectively.

THE BOARD OF DIRECTORS



1. **Philippe SALLE***
   Chairman of the Board
   French
2. **Sophie ZURQUIYAH**
   CEO and Director
   French and American
3. **Michael DALY**
   Director
   English
4. **Patrice GUILLAUME**
   Director representing the employees
   French
5. **Anne-France LACLIDE-DROUIN**
   Director
   French
6. **Helen LEE BOUYGUES***
   Director
   American
7. **Colette LEWINER***
   Director
   French
8. **Heidi PETERSEN***
   Director
   Norwegian
9. **Mario RUSCEV***
   Director
   French

** Appointed by cooptation, ratified by the General Meeting.*

● *Independant Director.*

BOARD OF DIRECTORS MEETINGS

2019
7 meetings
97% Average attendance rate

2018
11 meetings
94% Average attendance rate

NAME OF THE DIRECTOR	INITIALLY APPOINTED	TERM EXPIRES	QUALIFICATION OF INDEPENDENCE ESTABLISHED BY THE BOARD OF DIRECTORS
Philippe SALLE	2018 *	2021	✔
Sophie ZURQUIYAH	2018	2022	-
Michael DALY	2015	2021	✔
Patrice GUILLAUME	2017	2021	-
Anne-France LACLIDE-DROUIN	2017	2021	✔
Helen LEE BOUYGUES	2018 *	2020	✔
Colette LEWINER	2018 *	2023	✔
Heidi PETERSEN	2018 *	2020	✔
Mario RUSCEV	2018 *	2023	✔

* *Appointed by cooptation, ratified by the General Meeting.*

4 COMMITTEES

APPOINTMENT AND REMUNERATION COMMITTEE

Colette LEWINER (Independent Director), Chairwoman
Patrice GUILLAUME (Director representing the employees)
Heidi PETERSEN (Independent Director)

HSE/SUSTAINABLE DEVELOPMENT COMMITTEE

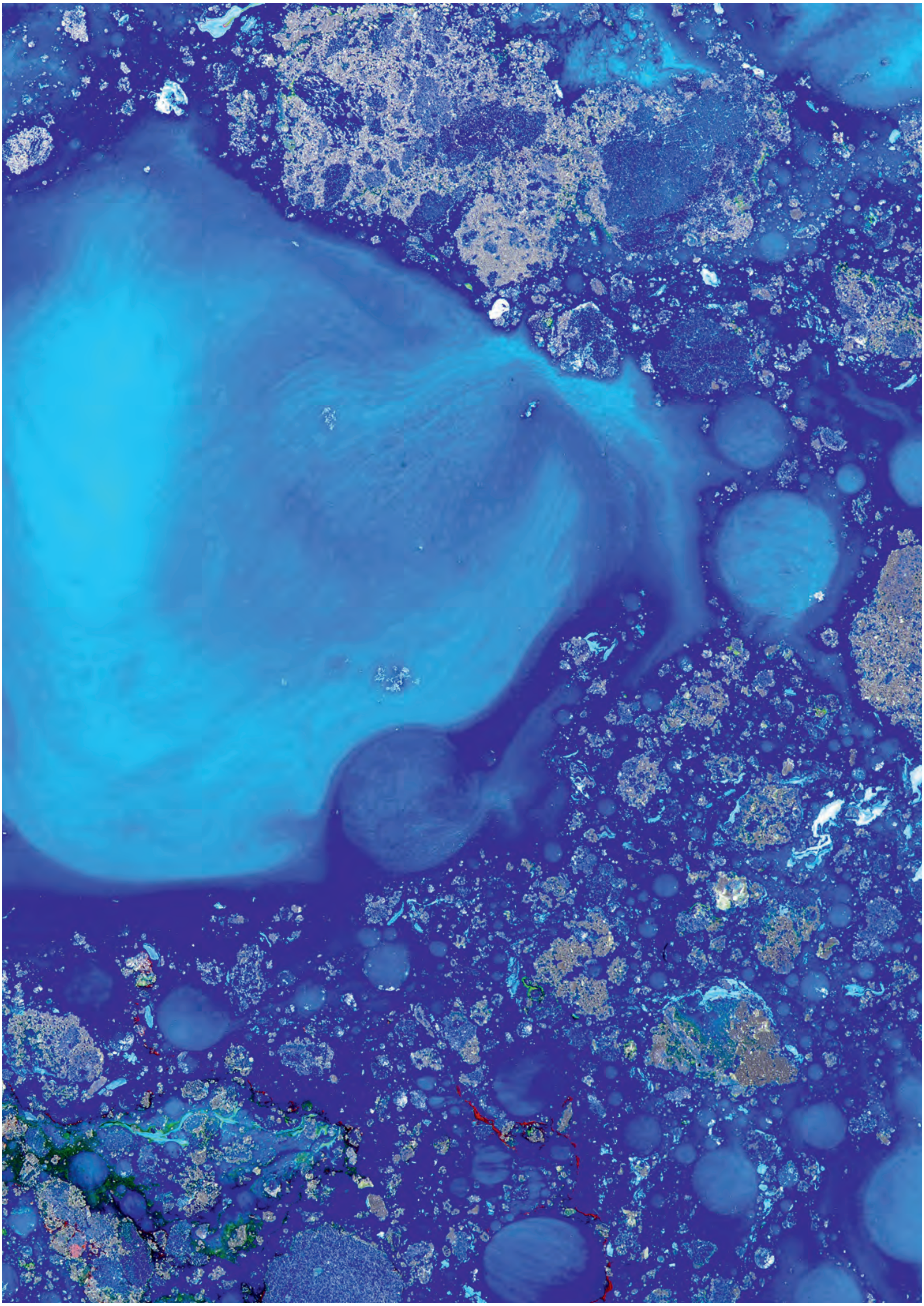
Michael DALY (Independent Director), Chairman
Patrice GUILLAUME (Director representing the employees)
Heidi PETERSEN (Independent Director)
Mario RUSCEV (Independent Director)

INVESTMENT COMMITTEE

Helen LEE BOUYGUES (Independent Director), Chairwoman
Anne-France LACLIDE-DROUIN (Independent Director)
Michael DALY (Independent Director)
Mario RUSCEV (Independent Director)

AUDIT COMMITTEE

Anne-France LACLIDE-DROUIN (Independent Director), Chairwoman
Colette LEWINER (Independent Director)
Helen LEE BOUYGUES (Independent Director)



1

Presentation of the CGG group and its activities

1.1 Objectives and strategy

CGG Overview

CGG (www.cgg.com) is a global geoscience technology leader. Employing around 4,600 people worldwide, CGG provides a comprehensive range of data, products, services and equipment that support the discovery and responsible management of the Earth's natural resources.

CGG SA (referred to hereafter as the "Company"), the parent company of the CGG group (the "Group", which collectively refers to the Company and its subsidiaries), was founded in 1931 to market geophysical techniques that could be deployed to detect the presence of natural resources in the Earth's subsurface. Since then, the Company gradually specialized, becoming a provider of seismic techniques applied to the exploration and production of oil and gas, while continuing to remain active in other geophysical disciplines.

Its Sercel subsidiary was founded in 1960 to meet the Group's requirements for seismic recording equipment. Most notably, Sercel launched the SN 348 digital recording system which became the industry's system of choice in the 1980's.

The Company has been listed on Euronext Paris since 1981. The Company's American Depositary Shares were listed on the New York Stock Exchange from 1997 until 2018 and now trade over the counter[1].

In the 1980's and 1990's, marine seismic activity expanded significantly, particularly in the Gulf of Mexico, the North Sea and West Africa. This growth in the marine seismic market, combined with the rapid arrival of new competitors offering geophysical services and equipment had a significant impact on the Group, which only had a small fleet of seismic vessels at that time. In 2007, when CGG acquired the Veritas group, it joined the ranks of the world's leading seismic companies. At that point, it took the name CGGVeritas before reverting to "CGG" when it acquired Fugro's Geoscience division in 2013.

Since early 2014, the CGG group has experienced the deepest and longest downturn in its history. In the space of five years, the Group's headcount has fallen sharply from 9,700 people at the end of 2013 to around 4,600 at the end of 2019. Against the backdrop of a major and unprecedented crisis, CGG experienced serious financial difficulties, entering into French safeguard proceedings on June 14, 2017, which was followed by the completion of its financial restructuring on February 21, 2018. Following its emergence from the safeguard proceedings, CGG changed its governance team in the first half of 2018 when the CGG group embarked on a new strategy announced at its Capital Markets Day on November 7, 2018. This new strategy involves the Company exiting the historical Contractual Data Acquisition segment and growing and improving its Geology, Geophysics and Reservoir ("GGR") and Equipment segments (see 1.1.4.1 "Exit of Contractual Data Acquisition business" for more details).

As of December 31, 2019, CGG was organized in two segments, as follows:

- Geology, Geophysics & Reservoir ("GGR"), including Geoscience (Subsurface Imaging, Geology, Reservoir, GeoSoftware and Smart Data Solutions, as well as Technology Function), and Multi-Client ("MC", including our seismic and geologic data library); and
- Equipment, which includes the following business equipment activities: land, marine, ocean bottom, borehole and non-oil & gas equipment, and trademarks, such as Sercel, Metrolog, GRC and De Regt.

As a result of the announcement of our strategic plan to exit the Contractual Data Acquisition segment, including the marine, land and Multi-physics business lines, this activity has been presented as discontinued operations and assets held for sale in accordance with IFRS 5 as of and for the years ended December 31, 2018 and 2019. For additional information regarding our exit from the Contractual Data Acquisition segment, see 1.1.4.1 "Exit of Contractual Data Acquisition business".

Five Corporate functions, at the Group level, ensure a globally coordinated approach and provide support across all activities: (i) the Finance, Information Systems and Risk Management Function, (ii) the Human Resources and Facilities Function, (iii) the Legal, Compliance and Trade Compliance Function, (iv) the Health, Safety and Environment & Sustainable Development Function, and (v) the Marketing, Sales and Communication Function.

CGG SA is the parent holding company of the CGG group, which is composed of 67 consolidated subsidiaries as of December 31, 2019 (62 abroad and 5 in France).

(1) *For any additional information relating to the delisting of our American Depositary Receipts from the New York Stock Exchange, and on the American Depositary Receipt program maintained at level one, please refer to section 7.2.1 of this Document.*

REVENUES BY ACTIVITY

In millions of US$	**2019**	2018
Multi-client data	575	517
Geoscience	385	396
Geology, Geophysics & Reservoir ("GGR") segment revenues	**960**	**913**
Equipment segment revenues	**452**	**351**
Eliminated revenues and others	**(11)**	**(36)**
IFRS 15 impact on Multi-client pre-commitments	**(45)**	**(34)**
CONSOLIDATED REVENUES	**1,356**	**1,194**

REVENUES BY REGION – BY LOCATION OF CUSTOMERS

	2019		2018	
In millions of US$, except percentages	**MUS$**	**%**	MUS$	%
North America	376	28%	244	21%
Latin America	180	13%	268	22%
Europe, Africa and Middle East	489	36%	447	37%
Asia Pacific	311	23%	235	20%
TOTAL	**1,356**	**100%**	**1,194**	**100%**

1.1.1 Market environment and client needs

Since 2014, the seismic and geoscience industry has been affected by oil price instability. Following a relatively stable three-year period in which crude oil prices remained around US$100 per barrel, there was a drastic drop in oil prices in the middle of 2014 that reached a low near US$30 per barrel in early 2016, and then, experienced relatively steady increases back up to the US$60-US$70 per barrel price range. While the actual oil price ultimately drives our client's spending and prospects, the planning price used internally by our clients is even more important.

Between 2014 and 2017, oil prices fluctuated below the US$50 per barrel price threshold, resulting in a 50% cut in exploration and production capital expenditures by the oil and gas companies and corresponding massive workforce reductions by the service companies. At CGG, overall headcount was reduced by more than half over the period, from approximately 9,700 permanent employees at the end of 2013 to approximately 4,600 permanent employees at the end of 2019.

In order to secure work, in addition to cost cutting, service companies responded with heavy price discounting, particularly in products and services perceived as commodities. In data acquisition services, pricing fell to well below cash break-even levels. The Geoscience and Equipment business lines managed to defend their pricing power due to their high differentiation added-value.

In the current industry context, our clients remain focused on capital discipline, free cash flow maximization and better efficiency and productivity, including the new acquisition technologies through nodes and digital technologies. In addition, one of the main priorities of oil and gas companies is increased reservoir production and near field exploration.

Seasonality

We have historically experienced higher levels of activity in our Equipment segment in the fourth quarter as our clients seek to fully deploy annual budgeted capital. The same happens in our Multi-Client business line with oil and gas companies that seek to fully deploy their exploration budget in the last quarter of the year.

1.1.2 Financial difficulties relating to the unprecedented crisis affecting the oil-services industries

We have been severely hit by the unprecedented crisis impacting the oil and oil-services industries since late 2014. Our previous business profile was very dependent on the level of investments made by our customers in the field of exploration and production (oil and gas), which is directly impacted by the fluctuations in the price of a barrel of crude oil. Oil prices began to drop from their highs starting in the second half of 2013 below levels anticipated by analysts; and market conditions have remained difficult until now. Our annual consolidated revenues in 2016 fell to a third of what we recorded in 2012.

In response to this crisis, we began implementing our Transformation Plan starting in 2014. The implementation of this operational restructuring plan, resulted, in particular in (i) the reduction of the fleet of vessels operated by the CGG group, (ii) the repositioning of our business in high value-added market segments, such as our GGR and Equipment, (iii) a reduction of our workforce by 50%, (iv) enhanced cost control through rigorous cash management, which led to a reduction of approximately 80% of our monthly marine costs and 60% of overhead costs, and (v) the reduction of our annual investments by close to 60%. This operational restructuring plan was financed in part by our approximately €350 million capital increase completed in February 2016.

Despite these operational efforts, in a stagnant market that continued to weigh on business volume and prices, our debt level was no longer in line with our financial capabilities. Consequently, we announced at the beginning of 2017 that our financial performance would not enable us to generate sufficient cash flows to service our then-current level of debt. In this context, we began discussions with the various stakeholder groups in order to establish a financial restructuring plan and requested the appointment of a *mandataire ad hoc* to assist us in our negotiations. By a court order dated February 27, 2017, SELARL FHB, acting through Mrs. Hélène Bourbouloux, was appointed as *mandataire ad hoc* for a period of five months.

We continued our discussions with representatives of certain of our creditors and our largest shareholders, under the aegis of the *mandataire ad hoc*. On June 1, 2017, we reached an agreement in principle, which was followed on June 13, 2017 by the signature of a lock-up agreement and a restructuring support agreement.

The comprehensive restructuring of our debt was implemented principally by way of safeguard proceedings in France and Chapter 11 and Chapter 15 proceedings in the United States.

A draft safeguard plan was approved on July 28, 2017 by the lenders' committee and by the General Meeting of bondholders. The works council of the Company, which was consulted with respect to the draft safeguard plan, rendered a favorable opinion in response to the approved Safeguard Plan during its meeting held on October 2, 2017. In parallel, the different classes of affected creditors in the context of the Chapter 11 proceedings voted in favor of the Chapter 11 Plan, which was confirmed by the US Bankruptcy Court for the Southern District of New York by an order dated October 16, 2017.

In order to implement the restructuring plan, the necessary resolutions were approved by the Company's General Meeting of Shareholders on November 13, 2017. The Safeguard Plan was then approved by a judgment of the Commercial Court of Paris on December 1, 2017. Lastly, the judgment of the Commercial Court of Paris relating to the Safeguard Plan was recognized and made enforceable in the United States under the Chapter 15 proceeding on December 21, 2017. The implementation of the financial restructuring plan was finalized on February 21, 2018.

The Safeguard Plan met our objectives of strengthening our balance sheet and providing financial flexibility to continue investing in the future. The plan included (i) the equitization of nearly all of our unsecured debt, (ii) the extension of the maturities of our secured debt and (iii) the provision of additional liquidity to meet various business scenarios. We made certain undertakings as part of the Safeguard Plan, including to do what is necessary for our parent company and our French subsidiaries to maintain their decision centers in France until December 31, 2022.

Certain minority holders of convertible bonds lodged an appeal against the approval judgement of the Safeguard Plan, which was rejected by the Appeals Court of Paris in a ruling dated May 18, 2018. This ruling was upheld by the French Supreme Court in a decision dated February 26, 2020, putting a definitive end to this litigation.

For further information regarding discussions with the stakeholders resulting in the draft safeguard plan, a description of the Safeguard Plan, and details about the undertakings of CGG and certain of our creditors in the context of the safeguard proceedings, plese see 1.2 "History and Significant Events in the Development of the Company's Activities – Financial Restructuring Process" in our 2018 Reference Document and note 2 to our consolidated financial statements as of and for the year ended December 31, 2018.

1.1.3 A strategy based on cash generating businesses and technology differentiation

On November 7, 2018, CGG announced an evolved set of strategic objectives to ensure the future growth and sustainability of the Group ("CGG 2021").

The CGG 2021 new strategic roadmap is focused on ensuring that CGG can:

- produce sustainable profitability through business cycles and deliver profitable organic growth;
- best meet the exploration, development and production needs of our clients;
- position the Company to bring significant value to our shareholders; and
- create a sustainable workplace for employees.

This roadmap will be accomplished by transforming CGG into an asset-light People, Data and Technology Company, and furthering the leadership of our three core differentiated businesses: Geoscience, Multi-Client and Equipment, along with developing new areas for capital-efficient profitable growth.

This strategy is based on three clear main steps:

1. ensure profitability through the business cycles. To do this, CGG intends to move to an asset light business model, limiting its exposure to the contractual data acquisition segment. The following strategic adjustments were announced and have started to be implemented:

   - for Marine data acquisition: reducing CGG's fleet to three vessels during 2019, and searching for a strategic partnership to take over and operate the remaining vessels by 2021;
   - for Land data acquisition: winding down the business during 2019 and exiting the business in the first quarter of 2020; and
   - for Multi-physics data acquisition: marketing this business for sale and divesting when suitable.

More details about the exit from the Contractual Data Acquisition segment can be found in section 1.1.4.1 "Exit of Contractual Data Acquisition business" below in this Universal Registration Document.

2. further strengthen the remaining CGG businesses as the market recovers.

The Geoscience business maintained both its leading market share and margins through the industry downturn, based on clear differentiation that clients recognize and value. The CGG strategy going forward is to strengthen its leadership position and profitability as the market recovers.

The Multi-Client ("MC") business also performed well through the down cycle and since 2017 has profited from the gradually strengthening of the offshore exploration market. Combined with the strength of CGG's Geoscience capabilities, we expect the MC business to continue delivering a full suite of products, including 2D and 3D seismic data as well as petrophysical information from its wells log library and geologic data and studies of various types.

The Equipment business has shown its industrial flexibility to react strongly to industry downturns, while maintaining investments and resources necessary to introduce new and differentiated technologies. Looking forward, we believe that our Equipment business should benefit from its very large installed base in the land market, where demand has strengthened during 2018 and 2019. Gauges and downhole tools sales are strong, driven by the US land unconventional market.

3. the third part of CGG's strategy is to grow the business profitably and organically. CGG will seek to develop new areas of profitable growth in a capital-efficient way. Areas of focus include expansion into adjacent markets, leveraging increased reservoir development activity, equipment diversification and the rapid advancement of geoscience and digital technologies. In our Equipment business, CGG will expand diversification through structural health monitoring solutions.

CGG will also continue to recruit and develop the best people in the industry, and constantly challenge ourselves to excel within a positive work environment.

1.1.4 Significant events in the course of 2019

1.1.4.1 Exit of Contractual Data Acquisition business

During 2019, we delivered several key milestones on our strategic path. Aiming at ensuring growth and sustainable returns through the cycles, the CGG 2021 strategic roadmap announced in November 2018 included a planned transition to an asset-light business model by reducing our exposure to the Contractual Data Acquisition business. The Contractual Data Acquisition business has been adversely affected over the years by structural industry overcapacity, lack of differentiation, commodity pricing and a heavy fixed cost base. The CGG 2021 strategy thus foresaw the following changes:

- Marine:
  - Reduction of seismic vessels in operation in 2019;
  - Search for a strategic partnership to cost efficiently operate and control the vessels;
- Land: wind down and exit the market;
- Multi-Physics: market for sale and monetize when suitable;
- Divest equity stakes in Argas and Seabed Geosolutions BV joint ventures;
- General and administrative expenses and support costs: adjust in line with new size and footprint.

As a result of these strategic announcements and actions undertaken subsequently, we have presented our data acquisition operations and the costs of implementation of the related measures, referred to as the "CGG 2021 Plan", in accordance with IFRS 5, as discontinued operations and assets held for sale in our Consolidated Financial Statements as of and for the years ended December 31, 2018 (and applied retroactively as of and for the years ended December 31, 2017 and December 31, 2016).

Marine Exit and Streamer NewCo

In June 2019, together with Shearwater GeoServices Holding AS ("Shearwater"), we announced the signature of a binding term sheet that included the following elements:

(I) Shearwater's acquisition of all the shares in Global Seismic Shipping AS ("GSS"), the 50/50 joint venture between Eidesvik Offshore ASA and CGG. GSS, through its subsidiaries, owns five high-end seismic vessels and two legacy vessels with associated bank debt. Shearwater also agreed to acquire the streamers owned by CGG, which were associated with GSS's five high-end seismic vessels;

(II) A five-year services contract (the "Capacity Agreement") between Shearwater and CGG. Under this agreement, CGG commits to using Shearwater acquisition services for 730 vessel days annually on average over five years with flexibility in terms of actual annual utilization. The Capacity Agreement ensures our access to strategic capacity for our future multi-client projects through Shearwater's global fleet of high-end 3D and source vessels; and

(III) The establishment of a technology partnership through the creation of a company under the Sercel brand name and with CGG's majority ownership to which the parties will contribute their respective towed marine streamer equipment businesses. The company will be focused on the development, manufacturing, commercialization and support of streamers, navigation software and steering systems (the "Streamer Newco Transaction").

The closing of Shearwater's acquisition of the shares in GSS and the streamers and the entry into force of the Capacity Agreement, took place on January 8, 2020 (the "Marine Closing"). The agreements for the Streamer Newco Transaction remain under negotiation.

All impacts of the Marine Closing have been taken into consideration in the financial statement of position as at December 31, 2019 through the remeasurement of the fair value less cost to sell of the Marine disposal group for a net amount of US$(108.3) million.

On January 8, 2020, the following transactions occurred:

- CGG acquired the 50% interest held by Eidesvik in GSS and indemnified Eidesvik for the end of the relationship in exchange for Shearwater shares. CGG also granted Eidesvik a put option on the Shearwater shares (the "Eidesvik Put Option");
- Shearwater acquired 100% of GSS and the streamers from CGG against Shearwater vendor notes exchangeable into Shearwater shares (the "Shearwater Vendor Notes");
- The existing umbrella agreement and the existing bareboat charter agreements between CGG and GSS subsidiaries were terminated along with the guarantee granted by CGG;
- Shearwater CharterCo AS entered into five-year bareboat charter agreements with GSS subsidiaries, guaranteed by Shearwater, for the use of five high end vessels equipped with streamers (the "Shearwater Charter Agreements") and CGG Services SAS entered into the Capacity Agreement;
- Under the payment instructions agreement (the "Payment Instructions Agreement"), Shearwater and Shearwater CharterCo AS direct CGG Services SAS to pay amounts due under the Capacity Agreement directly to the GSS subsidiaries to cover Shearwater CharterCo's obligations under its bareboat charter agreements;
- CGG also entered into step-in agreements with Shearwater and GSS (the "Step-In Agreements"), which could come into force if certain conditions are met and would require CGG to substitute itself for Shearwater CharterCo AS as charterer of GSS subsidiaries' five high end seismic vessels (equipped with streamers).

After those transactions, CGG's statement of financial position will include the following items:

- US$53.3 million of Shearwater Vendor Notes;
- US$(148.0) million of liabilities related to the Capacity Agreement;
- US$(4.6) million of liability related to fair value of the Eidesvik Put Option.

Shearwater Vendor Notes

The Shearwater Vendor Notes are exchangeable into Shearwater shares. They can also be used to set off payment obligations or buy assets but only as agreed with Shearwater. Shearwater is in no case required to settle the notes with cash. If the Shearater Vendor Notes are not settled by December 31, 2020, Shearwater may require CGG to use such notes as consideration in kind for the purchase of shares in Shearwater at the price of US$25.2262 per share.

Capacity Agreement

The main terms of the Capacity Agreement require CGG to:

- work exclusively with Shearwater, for seismic streamer acquisition and source vessels for nodes projects, up to 730 vessel days per year on average for the next five years;
- pay a pre-agreed day rate for the first 2.5 years and the higher of market rate or the pre-agreed day rate for the remaining 2.5 years;
- reimburse Shearwater for project-related operational costs and fuel; and
- compensate Shearwater for days during which more than one of its high-end seismic vessels are idle, for a maximum of three vessels (the "Idle Vessels Compensation").

The pre-agreed day rate as negotiated in summer 2019 is higher than the current estimated average market day rate. Thus, an operational liability of US$(69) million was recognized at the Marine Closing representing the net present value of the positive difference between the pre-agreed rate and the estimated market rate over the five-year contractual term.

The Idle Vessels Compensation gave rise to a US$(79) million financial liability at the Marine Closing representing the net present value of expected payments under this clause. The expected payments are estimated based on Shearwater fleet utilization assumptions over the five-year commitment period.

Eidesvik Put Option

Eidesvik has the right to sell all its Shearwater shares received in the Marine closing to CGG at a strike price of US$30 million. The exercise period starts at the earlier of: i) the date of Shearwater IPO, and ii) 1 year after the Marine Closing. It ends at the earlier of: i) 6 months after the date of Shearwater IPO, and ii) 3 years after the Marine Closing. The fair value of this put option has been assessed to be US$(4.6) million as of the Marine Closing.

Step-In Agreements

As described above, following the Marine Closing, Shearwater CharterCo AS has entered into five-year bareboat charter agreements with GSS subsidiaries, guaranteed by Shearwater, for the five high end vessels equipped with streamers. CGG has agreed to substitute itself for Shearwater CharterCo AS as charterer of GSS subsidiaries' five high end seismic vessels (equipped with streamers) in the event of a payment default under the charter party agreement between the GSS subsidiaries and Shearwater CharterCo AS. Given that CGG is required under the Payment Instructions Agreement to pay amounts due under the Capacity Agreement directly to GSS subsidiaries to cover Shearwater CharterCo's obligations under its bareboat charter agreements, a payment default that can be triggered by CGG only or a Shearwater insolvency.

Were the Step-in Agreements to be triggered:

- CGG would be entitled to terminate the Capacity Agreement;
- CGG would have the right to use the five high end seismic vessels equipped with streamers under bareboat charter agreements;
- CGG would be entitled, through a pledge in its favor, to acquire all the share capital of GSS, knowing that GSS and its subsidiaries' principal assets would be the vessels and streamers and its principal liabilities would be the debt associated with the vessels.

The Step-In Agreements will not impact the financial statement of position unless a trigger event, as described above, occurs. In such circumstance, the obligations under the Capacity Agreement would be terminated and replaced by the obligations under the Step-In Agreements, for a lower amount compared to the Capacity Agreement.

Divestment from Seabed Geosolutions BV

In line with our strategy to exit the data acquisition business, on December 30, 2019 CGG SA agreed, in a Share Purchase and Exit Agreement ("Exit Agreement"), to transfer on that date 15% (out of its total 40% stake) of the shares of the Seabed Geosolutions BV joint venture ("Seabed") to its partner Fugro NV ("Fugro"), with its remaining 25% shareholding to be transferred before April 1, 2020.

In addition, CGG SA paid US$35 million to Fugro to settle any disputes and claims between them relating to Seabed, such as those related to the partners' respective obligations to jointly finance Seabed and the differing interpretations of non-competition provisions in the Seabed joint venture agreement.

Land exit

CGG progressively reduced the land data acquisition business over 2019 and fully shut down activity in the first quarter of 2020. Some of the assets used in this business were sold for US$3 million during 2019, and the rest are currently for sale. Most of the corresponding staff have departed under the social plan described below.

Multi-Physics exit

We started negotiations with potential acquirers our Multi-Physics business in 2019. These discussions are progressing and we signed a memorandum of understanding in February 2020 with a potential buyer.

CGG continues to carry out these strategic changes in compliance with all legal requirements.

For more information on the impact of these items, please refer to note 2 and note 5 to our consolidated financial statements.

1.1.4.2 Social Plan

CGG Group has observed the administrative and legal procedures required to effect employment reductions in the contractual data acquisition business and the related support functions. In France, CGG Group implemented a social plan after reaching an agreement with union representatives that was approved by the relevant regulatory body, DIRECCTE (*Direction regionale des enterprises, de la concurrence et de la consommation, du travail et de l'emploi*). CGG SA remains subject to certain undertakings in connection with the Safeguard Plan, and therefore sought and received the approval from the Commercial Court of Paris in June 2019 to carry out the strategic changes in our contractual data acquisition business.

1.1.5 Strategic positioning and orientations

Developing an integrated Geoscience activity and capitalizing on our multi-client library

Many of our customers are focusing their exploration and production budgets on increasing production from current installations. GGR benefits from this trend with increased demand for its services and imaging projects, given our leading ocean bottom nodes processing capability, as well as large multi-client projects over mature areas. In addition, wanting to obtain the best possible images to maximize their exploration efforts, oil companies, are asking for more reprocessing of previous data in order to benefit, at a lower cost, from the development of new imaging algorithms.

The Geoscience market is following the global trend of reduced exploration and production spending by clients, despite processing and imaging being a small part of their budget. Overall, the Geoscience activity saw its external revenue slightly decrease by 3% in 2019.

Multi-client revenues increased by 11% in 2019 despite lower multi-client capex of US$186 million. The 2019 multi-client sales increase was driven by a very high after-sales rebound in mature basins including one-off transfer fees related to the merger between Anadarko and Occidental. We expect that our multi-client program will be focused in zones that clients know well (including Brazil and the North Sea) enabling them to capitalize on their existing infrastructures and reduce the marginal investment cost.

Developing integrated solutions for reservoir simulation and digital technology

To anticipate the exponential increase in the volume of acquired data (Big Data), considerable research and development efforts will be necessary in respect of seismic data processing, data storage and management, and new parallel computer architectures that enable such data to be processed in a reasonable time frame and in an energy efficient manner. The Group believes that, by continually improving its seismic data processing algorithms and software, it will remain among the leading suppliers of high-end land and marine geoscience services. Its research and development work will therefore continue to focus on improving imaging in complex zones in order to help exploration and production and provide technology for characterizing and monitoring reservoirs. The Group will also continue to develop lithological prediction (identification of rocky layers surrounding the accumulation of hydrocarbons) and reservoir characterization and content applications, in particular 3D prestack depth imaging, subsalt depth imaging, broadband depth imaging, multi-component acquisition imaging and differential imaging unique to 4D surveys.

CGG also believes that geoscience data are increasingly considered an asset by oil and gas companies. In this context CGG is concentrating its efforts to apply its unique geoscience expertise to exploration and production digitalization by providing expert digital transformation and data upcycling services, delivering cloud-ready data and software, pioneering data-driven algorithms and workflows as well as, harnessing artificial intelligence, machine learning and analytics to augment geoscience workflows and delivering machine learning ecosystem with geoscience software.

Developing innovative solutions within the Equipment segment

In terms of our Equipment segment, Sercel is maintaining a high level of research and development driven by the high technological content of seismic equipment, which includes numerous cutting-edge technologies, such as wireless transmission, high- and low-frequency transmission or miniaturized electronic technologies, and also optical or acoustic technologies. Recently, Sercel launched the following new key products:

- QuietSea, a passive acoustic monitoring system for detecting the presence of marine mammals during marine seismic surveys;
- WiNG, a fully integrated nodal land data acquisition system designed with a single data collection platform to manage operations more easily and efficiently; and
- GPR, a new ocean bottom node (OBN) based on Sercel's proven QuietSeis high-performance digital sensor technologyn that offers significant advantages for OBN acquisition. The digital fidelity and ultra-quiet performance of Sercel's QuietSeis MEMS represent a major breakthrough for reservoir exploration

Capitalizing on a strong equipment client base

Overall, the geophysics market is characterized by ever increasing demand for new technologies, both in land and marine, to achieve high-resolution imaging. The Group predicts that this trend will continue in the coming years.

Because of its strong reputation and past success, we expect Sercel should be able to maintain its leading position in the seismic equipment market, capitalizing on its installed base, and the implementation of new technologies in its full product range, especially in the node business.

In 2019, Sercel's external revenue increased by 40% as compared to 2018, mainly driven by a strong rebound of land activity especially in the Middle East, resulting in demand for new equipment from geophysical contractors.

The streamer marine market is expected to remain weak Marine contractors continue to face a difficult market, restricting their ability to invest in new equipment. However, their current fleets are aging and their excess of equipment is shrinking and will eventually require updating and replacement.

In the medium-term, we believe that the land equipment market should be spurred by the need for better imaging of conventional onshore reservoirs that are currently being operated intensively in order to better control their depletion. Geographical pockets of new opportunities in India and Algeria should remain solid beyond our traditional markets (Russia, China and Middle East).

1.1.6 Financial and non-financial 2020 outlook and objectives

Commercial and Industrial

The Group's seismic activity is strongly correlated to the exploration and production budgets of our clients. Oil and gas companies will likely remain cautious and focused on quick returns on investment, producing more out of existing fields, developing unconventional and conventional resources on land and leveraging existing infrastructure. All this is expected to result in stable activity volumes and less willingness to take risks in the areas of frontier exploration (including arctic and deep water offshore). As a result, CGG will continue to develop and promote high-end data and solutions to better understand the subsurface, better develop its existing reservoir portfolio and optimize existing fields.

Financial targets and projections

We have included above and elsewhere in this Document certain targets and projections regarding our financial outlook. We cannot guarantee that they can or will be met and investors are advised not to place undue reliance on these targets and projections. These targets and projections are based on assumptions and are subject to known and unknown risks, uncertainties and other factors that could cause our actual results to materially differ from those expressed in, or suggested by, these targets and projections.

We built our financial objectives in accordance with our accounting principles, on a comparable basis to past forecasts and, in particular, on the basis of the following elements and assumptions:

- Yearly budgets of oil companies;
- Various analysis of exploration and production expenses relating, provided by sell side analysts of brokerage companies;
- The expected average oil price over the period;
- Internal assumptions of commercial penetration of new equipment, products, technologies developed by CGG;
- Internal assumptions of changes in competition.

The recent and significant economic uncertainty created by the COVID-19 pandemic and the resulting volatility in global financial markets, combined with the large increase in oil supply by Saudi Arabia and the expected decline in oil demand resulting from an economic contraction, leave CGG and the oil sector as a whole, unable to reasonably estimate the future at present. We believe that our strategy based on high-end technology, services and data that support our clients' reservoir development and production optimization efforts is the right one to take us through a lengthy period of depressed activity, should that situation occur. Current uncertainties are too great to assess how long the period might last, and what actions CGG might take during that timeframe, and therefore the financial objectives that were communicated on March 6, 2020 which were based on a US$55-65/bbl Brent oil price, are no longer effective.

The Company is currently monitoring the situation and its clients' activity closely to evaluate the impact on its 2020 revenue and profitability, and is revisiting its 2020 and 2021 financial objectives, which are no longer valid.

The Company intends to release updated 2020 financial guidance on May 12, 2020 during its Q1 2020 financial presentation.

Environment and climate

The health of the environment and climate is critical to the well-being of people and communities globally. To best protect the environment, climate and the communities where we operate, CGG seeks to always act responsibly and abide by all applicable environmental laws. CGG continues to advance its technology and services to enable its clients to sustainably and responsibly discover, develop and manage the earth's natural resources. CGG continues to advance its data collection capabilities to best measure, monitor and continuously reduce its impact. CGG is committed to improving its power usage efficiency, increasing the low-carbon content of its energy supply, and reducing its greenhouse gas emissions. CGG encourages and supports its businesses, all employees and locations globally to find and take specific actions that support the health of the environment, climate and the communities where we operate.

1.2 Business description

1.2.1 Geology, Geophysics & Reservoir ("GGR")

Overview

The GGR segment engages in many activities assisting our clients in identifying their exploration targets and characterizing their reservoirs. These include, among others:

- developing and licensing multi-client seismic surveys;
- processing seismic data;
- selling seismic data processing and reservoir characterization software;
- providing geoscience and petroleum engineering consulting services;
- collecting, developing and licensing geological data; and
- providing data management services and software to our clients.

With its extensive scope of competencies and worldwide footprint, our GGR segment is a critical component of the integrated geoscience services that we offer to our clients.

General description of activities

a) Geoscience

Through our Geoscience activity, we transform marine and land seismic data acquired in the field into high quality images of the subsurface that can then be used by our clients in their efforts to find and produce oil and gas. These images provide a means to understand the structure of the subsurface as well as deduce various qualities of the rocks and fluids in those structures. We process seismic data for the needs of our external clients and out Multi-Client business line. We also reprocess previously processed data using new techniques to improve the quality of seismic images.

We conduct our seismic imaging operations out of:

- 5 large open centers: Houston (USA), Crawley (UK), Rio de Janeiro (Brazil), Massy (France) and Singapore, with Houston, Crawley and Singapore serving as regional centers hosting internal cloud computing for each of the regions through their large high performance computing centers;
- 11 local small to medium centers, affiliated with the three regional centers; and
- 10 dedicated centers, each one providing services to its single specific client.

This geographic spread of our centers allows for a great amount of personal collaboration with our clients as we jointly seek to produce the best subsurface images.

In addition to subsurface imaging, we offer geophysical and reservoir services. Using seismic data in conjunction with other information such as well logs, we are able to determine various rock and fluid properties and thereby assist our clients in characterizing their oil and gas reservoirs.

We sell seismic data processing software, under the Geovation brand and sell software for reservoir characterization, interpretation, and modeling under the Hampson-Russell, Jason, Insight Earth and Velpro brands, allowing clients to produce their own reservoir studies.

We sell various types of geologic services under our Robertson brand, working from a global scale on tectonic studies down to a microscopic scale on micro-fossil studies. Clients use these services to enable or enhance their frontier exploration, basin and reservoir evaluations, and drilling work.

Finally, we are engaged in the business of providing data storage and retrieval solutions, data transformation and digitalization services to oil companies and oil and gas government agencies under the Smart Data Solutions brand.

We operate in those geographic and technical areas where our specific offerings can deliver significant value to customers. Based on customer feedback and industry surveys, we believe that through our Geoscience activity we are regarded as the technical leader in most markets, especially in the high-end seismic imaging arena.

b) Multi-Client ("MC")

The Multi-Client ("MC") business line utilizes the resources of our other business lines as well as those of sub-contractors to acquire and process seismic data for itself and license that data to our clients. This data may be used in exploration, appraisal and production phases of customer operations. In addition to geophysical data, MC develops and maintains large libraries of various types of geological data covering most geographic areas of interest to petroleum and mining companies. We license this data to clients, who generally use it in the early stages of their exploration efforts, often as a precursor to seismic exploration. This relatively small activity has historically been reported under the Geoscience business line but is reported as MC for the year ended December 31, 2019 and onward.

The seismic multi-client licenses have lengthy terms, the maximum allowable under local law, typically ranging from 5 to 25 years. The licenses are non-transferable, and the data may not be shared with partners who do not own a license. Oil company partnerships of various forms are a common arrangement, especially in difficult and expensive exploration plays. The business model works well in venues where there is one or more of the following: significant levels of competition between oil companies exploring for assets; frequent lease turnover due to government lease rounds or lease trading activity between oil companies, frequent partnering between oil companies and relatively high costs for seismic data.

MC operates in marine environments on a worldwide basis and on land in the United States. It has significant investments in the Gulf of Mexico, offshore Brazil, the North Sea, Norway and onshore United States. Maps and details of all surveys in our data library are available on our website. At the end of 2019, the library of 3D seismic surveys consisted of approximately 1,111,000 square kilometers of marine surveys across numerous basins and 55,000 square kilometers of land data, mostly in the United States.

The costs of the multi-client surveys are capitalized on our MC balance sheet and then amortized. Details of our multi-client accounting methods are fully described in note 1 to our consolidated financial statements included in this Document.

In 2019, MC capitalized US$204 million of total costs, of which US$186 million represented cash expenditures, and amortized US$308 million to cost of sales, including US$33 million of impairment charges.

Competition and market

The geoscience sector is led by CGG and Schlumberger (WesternGeco), but includes companies such as TGS, PGS and a host of other small local players. Competition in the high end of seismic imaging, where Geoscience focuses its business, tends to be based on technology and service level, areas where we believe we have an outstanding reputation.

Processing capacity has multiplied in recent years as a result of improvements in computing technology. This increase in computing power has allowed improved processing quality through the use of more complex and more accurate algorithms. We believe our Geoscience activity is the market leader in application of the most advanced processing techniques.

CGG's Geoscience business line occupies a strong position in the relatively narrow market of seismic reservoir characterization software (Hampson-Russell, Jason and Insight Earth). The overall seismic and geological interpretation software market is led by Schlumberger and Halliburton, with numerous small players competing with niche applications. Many of these, including those of the Group, are designed to be compatible with the Schlumberger and Halliburton systems.

The main competition to our MC business line comes from Schlumberger (WesternGeco), PGS and TGS. Competition in the multi-client business is focused on location and availability of surveys, technology used in acquisition and processing, and price. The four main companies generally compete in all areas of the world where the multi-client business model is practical.

2019 segment figures

GGR revenues in 2019 amounted to US$960 million, an increase of 5% compared to 2018. GGR revenues represented 69% of the consolidated revenues in 2019. MC generated US$575 million of this revenue (a 11% increase compared to 2018) and Geoscience generated US$385 million (a 3% decrease compared to 2018).

MC invested US$186 million in cash in seismic data libraries in 2019, with a cash prefunding rate of 118%. After sales revenue, revenue from completed surveys, was US$356 million in 2019. The IFRS net book value of the seismic multi-client library was US$531 million at the end of 2019.

1.2.2 Equipment

Overview

We conduct our equipment development and production operations through Sercel and its subsidiaries. We believe Sercel is the market leader in the development and production of seismic equipment in the land and marine seismic markets. Sercel makes most of its sales to purchasers other than CGG. As of December 31, 2019, Sercel operated six seismic equipment manufacturing facilities, located in Nantes and Saint Gaudens in France, Houston and Tulsa in the US, Krimpen aan de Lek in The Netherlands and Singapore. In China, Sercel operates through Hebei Sercel-JunFeng Geophysical Prospecting Equipment Co. Ltd. ("Sercel-JunFeng"), based in Hebei, in which Sercel has a 51% equity stake. In addition, Sercel has three sites in Massy, Toulouse and Brest (France) which are dedicated to specific applications.

General description of activities

Sercel sells its equipment and offers customer support services including training on a worldwide basis. Sercel offers a complete range of geophysical equipment for land or marine seismic data acquisition, including seismic recording equipment, software and seismic sources either for land (vibrators) or marine (marine sources). Sercel also supplies its clients with integrated solutions.

With respect to land seismic equipment, Sercel launched, in the fall of 2013, the latest generation of its recording system, the 508^{XT} system, which introduces a new paradigm in land seismic acquisition by offering high count channel crews the ability to record up to one million channels in real time, resulting in a new level of image resolution. First deliveries for this new system occurred during 2014, and in January 2016 the system achieved one million VPs (Vibrated Points) on a high-density survey with a high channel count. Since then, over 50 systems have been put into operation worldwide in all environments. The 508^{XT} has an adaptive architecture and the option of mixing different communication media (cable, radio, and fiber-optic) to form a true network allowing the user to define data routing. It is designed to drive crew productivity, operating flexibility and data quality to a new level.

Sercel also introduced, along with its new acquisition system, QuietSeis, a new, high-performance digital sensor based on next-generation MicroElectroMechanicalSystems (MEMS), allowing seismic signals to be recorded with three times less instrument noise than before.

In 2019, Sercel increased its offering of wireless products. Sercel has commercialized the WTU-508 since June 2017, which is fully integrated into the existing 508^{XT} platform. This product offers even greater flexibility for all types of survey operations, such as complex small-scale urban surveys or high-productivity mega-crews. In addition to the WTU-508, Sercel launched the WiNG in September 2019, a fully integrated wireless nodal acquisition system seeking to achieve the most efficient and productive seismic surveys. This new product is based on the QuietSeis technology and on the field proven XT-Pathfinder transmission management technology which provides quality control information to the land seismic recorder wirelessly and without the need for any additional infrastructure.

Sercel is also a market leader for vibroseismic vehicles used as a seismic source on land and for vibrator electronic systems VE 464. Sercel's latest vibrator family, called Nomad, offers high reliability and unique ergonomic features. Nomad is available with either normal tires or a tracked drive system. The track drive system allows Nomad vibrators to operate in terrain not accessible to vehicles with tires. In sand dunes or arctic conditions, this can improve crew productivity. The Nomad was designed to optimize reliability and maintenance in order to allow an intensive use on the field. As of December 31, 2019, more than 1,250 Nomad 65s had been delivered since its market introduction. Sercel also offers the Nomad 90, which is capable of exerting a peak force of 90,000 pounds-force and is believed to represent the heaviest vibrator on the market. The Neo version of the Nomad 65 and 90 allows the generation of a wider range of seismic wave frequencies and is therefore a facilitator for broadband seismic land surveys and adds new functionalities that improve productivity and reliability. In June 2014, Sercel also launched the Nomad 15, a small and highly maneuverable version of a vibrator. In March 2019, our vibrator portfolio expanded with the introduction of the world's first Vibrator Auto-Guidance solution, deployable on all Sercel Nomad seismic vibrator trucks which optimizes a vibrator's travel time to the next vibrating point (VP) and reduces baseplate dead time. We estimate that this solution could increase vibroseis productivity by up to 10%. In addition to recording systems and vibrators, Sercel develops and produces a complete range of geophysical equipment for seismic data acquisition and other ancillary geophysical products such as geophones, cables and connectors. The acquisition of a 51% stake in Sercel-JunFeng, based in China, in 2004, reinforced our manufacturing capabilities for geophones, cables and connectors, as well as our presence in the Chinese seismic market. Sercel also offers the SG5 geophone featuring a low natural frequency.

In the down-hole domain, Sercel offers its latest generation VSP tool, MaxiWave, which has received positive reviews from clients. The Geowave II, launched in 2015, is the first digital multilevel borehole tool specifically designed for high temperature, high pressure wells. Sercel built on its diversification into the well environment and more specifically the artificial lift in acquiring Geophysical Research Corporation in January 2012. In March 2019, Sercel launched SigmaWave, its first seismic solution including DAS technology on a fiber optic cable (Distributed Acousting Sensing technology), developed in partnership with Fotech Solutions. This product allows continuous, real-time seismic measurements along the entire length of the fiber optic cable. With respect to marine equipment, the Seal system is currently the sole system with integrated electronics. In 2005, Sercel launched the Sentinel solid streamer that is the outcome of the technological synergies realized in acquisitions performed in recent years. The Sentinel cables have become a standard in the accessible market. The Sentinel RD is another generation of the Sentinel solid streamer which offers a reduced diameter and lower weight.

In April 2017, Sercel further enhanced its cables offer with the Sentinel HR, the new high-resolution solid streamer designed to meet the specific imaging needs of shallow-target applications, such as oceanology, civil engineering and reservoir characterization, as well as high-resolution 3D (HR3D) seismic surveys for detailed mapping of geological features. The latest member of the Sentinel streamer family has been developed with a close channel separation of 3.125 meters to achieve reliable and cost-effective high-resolution surveys.

In September 2019, we announced the GPR, a new ocean bottom node (OBN) developed in partnership with BGP. It has been designed to leverage the proven high performance of Sercel's unique QuietSeis broadband digital sensor technology to collect higher quality data than data collected by conventional sensors for accurate depth imaging and reservoir characterization.

The marine range of products has been further improved with the SeaProNav, a navigation software allowing the real-time positioning of streamers, the Nautilus, a totally integrated system for positioning seismic streamers and QuietSea, a passive acoustic monitoring system for detecting the presence of marine mammals during marine seismic surveys.

Sercel is a market leader in the development and production of both marine and land geophysical equipment. It is a global provider for the seismic acquisition industry with a balanced industrial position in terms of both product range and geographical presence on the shores of the Atlantic and in Asia Pacific. Sercel also relies on strategic partnerships to move beyond the oil exploration markets. To that end, an alliance was formed at the end of June 2017 with EFI Automotive, a French company that has created Axandus (a startup accelerator), in order to set-up a similar entity within Sercel's premises in the western part of France. Its aim is to assist startups in their industrialization process in the fields of mechatronics and connected devices. Axandus' clients benefit from access to the panel of skills and resources of Sercel in business development, design, prototyping, design to cost, industrialization, manufacturing and international supply chain.

In early 2019, Sercel announced the execution of a strategic partnership agreement with Apave for the delivery of a structural health monitoring (SHM) solution combining Sercel's high-end sensor technology and Apave's expertise as a specialist in structural health monitoring. Sercel and Apave aim to begin commercial deployment in France in mid-2020.

Moreover, in April 2019, Sercel created two new brands, Sercel Structural Monitoring and Sercel Earth Monitoring to bring the benefits of its advanced sensor technology to the high-potential Structural Health Monitoring (SHM) and Earth Monitoring markets. QuietSeis is currently the most sensitive MEMS seismic sensor available and provides the most accurate data for all types of monitoring due to instrument noise below 15ng/√Hz. QuietSeis, together with Sercel's existing wide range of high-sensitivity seismometers designed to record data from onshore to water as deep as 6,000m, will also be offered to the seismology market, providing detailed and real-time observation of earthquakes, volcanoes and other natural hazards, such as subsidence and landslides.

Competition and market

We estimate that the worldwide demand for geophysical equipment increased by 30% in terms of revenues in 2019 after an increase of 50% in 2018. The growth, driven by the demand in land seismic equipment, resulted from new high-channel count mega-crews operating in the Middle East. The marine streamer market remains weak, with the demand for seabed equipment driving the growth in demand, which remains limited. We estimate that Sercel's global market share remains around 50%. Our main competitors for the manufacture of marine seismic equipment are Ion Geophysical Inc. and Teledyne. For land products, the main competitors are Inova (a joint venture between BGP and Ion Geophysical Inc.), Geospace Technologies Corporation and DTCC. The market for seismic survey equipment is highly competitive and is characterized by continuous and rapid technological change. We believe that technology is the principal basis for competition in this market, as oil and gas companies have increasingly demanded new equipment for activities such as reservoir management and data acquisition in difficult terrain. Oil and gas companies have also become more demanding with regard to the quality of data acquired. Other competitive factors include price and customer support services.

2019 segment figures

In 2019, the total production of the Equipment segment (Sercel), including internal and external revenues, amounted to US$452 million, a 29% increase compared to 2018. Sercel external revenue amounted to US$441 million, an increase of 40% compared to 2018, and representing 31% of our consolidated revenue in 2019.

1.2.3 Contractual Data Acquisition

Our Contractual Data Acquisition segment includes land, marine, airborne and seabed operations, operated either directly or through joint ventures. Our worldwide crews operate in all environments. In land and marine environments, they use the latest geophysical equipment manufactured by Sercel. These activities were partially phased out, discontinued or sold in accordance with our strategic roadmap during 2019 and the beginning of 2020 (with the exception of the multi-physics activity). See 1.1.4.1 "Exit of Contractual Data Acquisition business" for additional details.

Total revenues of the "Contractual Data Acquisition" segment amounted to US$191 million in 2019. In accordance with IFRS, these revenues were classified as discontinued operations and assets held for sale in our consolidated financial statements as of and for the years ended December 3, 2018 and 2019 (and applied retroactively as of and for the year ended December 31, 2017), following CGG's announced intention to exit the Contractual Data Acquisition segment during its Capital Markets Day on November 7, 2018. During the transition year in 2019, CGG continued to provide a complete range of marine seismic services, operating on a global basis.

I) Marine Data Acquisition business Line

Overview

Consistent with our transition to an asset-light mode of operation, our operated fleet comprised three 3D high-capacity seismic vessels (14 or more streamers) as of December 31, 2019. Four vessels were operated for the majority of 2019, with the fleet reduced to three vessels upon the completion of the MC Topseis project, which was completed on October 20, 2019, at which point the *Oceanic Sirius* was demobilized in Bergen, Norway.

Activity description

CGG's marine seismic surveys are conducted by deploying hydrophone streamers and acoustic air gun sources from specialized vessels. The commercial model entails working on an exclusive contract basis with the client where the client is the owner of the acquired data and pays for the acquisition service. The basis of the compensation may be in the form of a daily fee or fixed fee per square kilometer acquired and may compensate us for time lost to operational events beyond our control, such as bad weather or interference from other activities carried out in the oil field.

Maritime management and ownership

For the majority of 2019, the maritime management of the fleet was provided by our joint venture ship managers, CGG Eidesvik Ship Management AS. However in December, in anticipation of the transactions with Shearwater, the maritime management of the *Geo Caribbean* and *Geo Coral* was transferred to Reflection Marine UK Limited, Shearwaters' ship manager.

At December 31, 2019, CGG held 50% of Global Seismic Shipping AS ("GSS") which directly holds 100% of the shares of the companies that own the *Oceanic Sirius*, *Oceanic Vega*, *Geo Coral*, *Geo Caribbean*, *Geo Celtic*, *CGG Alizé* and the *Oceanic Challenger,* the last two of which have been coldstacked and are not under charter agreements.

Further to CGG's announced intention to exit the marine data acquisition market by no later than 2021, a binding Heads of Terms Agreement to sell the stake in GSS and equipment to Shearwater was announced in June of 2019. The closing of the transaction took place on January 8, 2020. See 1.1.4.1 "Exit of Contractual Data Acquisition business" for additional details.

The following table provides certain information concerning the seismic vessels operated by CGG and those that are either being prepared to return to owners or cold stacked as of December 31, 2019.

Vessel name	Year built	Year upgraded	Year entered fleet	Time charter/ Bareboat expiry	Extension options [a]	2D/3D	Maximum no. of streamers [b]	Vessel length *(m)*
Operated vessels								
Oceanic Vega	2010	n.a.	2010	March 2027	4 × 5 years	3D	20	106
Oceanic Sirius	2011	n.a.	2011	March 2027	4 × 5 years	3D	20	106
Geo Coral	2010	n.a.	2013	March 2027	n.a. [c]	3D	16	108
Geo Caribbean	2008	n.a.	2013	March 2027	n.a. [c]	3D	14	101
Redelivered to owners in 2019								
Oceanic Champion	1994	2012	2009	January 2019	n.a.	3D	14	107
Oceanic Phoenix	2000	2011	2009	March 2019	10 × 1 year	3D	14	101
Stacked vessels								
Viking Vanquish	1998	2007	2007	November 2020	n.a.	3D	12	93

(a) *In years.*
(b) *Equal to number of tow points.*
(c) *Within the framework agreement in the joint venture with Eidesvik, we committed to charter a certain number of vessel months per year until March 2027.*

As of December 31, 2019, the following vessels were hired under bareboat charter:

- The Oceanic Sirius, the Oceanic *Vega* the Geo Cora*l* and the Geo Caribbean were bareboat chartered from Global Seismic Shipping AS or one of its subsidiaries; and
- The Viking Vanquish was bareboat chartered from Eidesvik MPSV AS.

2019 segment figures

Total revenue of the Marine Contractual Data Acquisition business line amounted to US$125 million in 2019. 48% of our 3D fleet's utilization was dedicated to exclusive marine data acquisition contracts and 52% was dedicated to acquiring multi-client surveys. In the fourth quarter of 2019, CGG withdrew from the marine data acquisition market in anticipation of the transactions with Shearwater.

II) Land Data Acquisition and Multi-physics Business Lines

Overview

On November 7, 2018, CGG announced a new strategic roadmap which includes a transition to an asset-light model, including by reducing exposure to the land data acquisition business, which has been impacted in recent years by structural industry overcapacity, lack of differentiation, commodity pricing and a heavy fixed cost base. CGG has been winding down its land data acquisition activity in 2019 to fully exit this segment of activity in early 2020, while the Group's Multi-physics business continues to be held for sale.

In 2019, our land data acquisition crews operated for 30 recording months. In line with the strategy announced in November 2018, plans were initiated to phase-out the activity, progressively ending all active contracts and closing our international offices.

The Multi-physics acquisition business operates globally and is principally focused on the acquisition, processing and interpretation of airborne geophysical data on land or offshore, and on providing marine gravity and magnetic acquisition services onboard seismic vessels or independently, as well as the processing of such data. We are one of the largest airborne acquisition contractors, operating worldwide and offering a diverse portfolio of airborne geophysical technologies, with particular emphasis and expertise in electromagnetics and gravity. In 2019, our activities were conducted out of operational centers located in Canada, the United States, Brazil and Australia. We reduced our fleet to six airplanes over the course of the year.

A) Land Data Acquisition

Land operations employ surveying, drilling and recording crews. When required, surveying crews lay out the lines to be recorded and mark the sites for shot-hole placement or recording equipment location. Recording crews produce acoustic impulses and record the seismic signals via geophones or hydrophones. The acoustic sources used are vibrators or explosives onshore, and air guns in transition zones. On a land survey where explosives are used as the acoustic source, the recording crew is supported by several drill crews. Drill crews operate ahead of the recording crew and bore shallow holes for explosive charges which, when detonated by the recording crew, produce the necessary acoustic impulse.

Operations in the Middle East were conducted in partnership with the Saudi company TAQA through the Argas joint venture.

Seabed acquisitions were operated through the Seabed Geosolutions joint-venture which was owned 60% by Fugro and 40% by us until December 30, 2019 when the joint-venture agreement with Fugro was terminated by mutual agreement.

B) Multi-physics

Multi-physics encompasses various segments of activity and provides services worldwide:

- airborne activity encompasses the collection, processing and interpretation of data related to the earth's surface and the soils and rocks beneath, and provides advice based on the results to clients in the mineral, oil and gas, geothermal, governmental, engineering and environmental management sectors. We acquire electromagnetic, magnetic, radiometric and gravity data using fixed-wing airplanes and helicopter platforms. The airplanes we operate have been modified with integrated geophysical measurement systems incorporating elements of internal design and manufacture. Helicopter projects are supported using subcontracted or chartered helicopters, as the geophysical instrument systems designed for use on helicopters can be installed without significant modifications to the aircraft;
- marine activity encompasses the acquisition and data processing of marine gravity and magnetic data in conjunction with seismic surveys or on a stand-alone basis.

In Multi-physics, we operate under two business models:

- the first business model consists of working on an exclusive contractual basis with the client. The contract usually stipulates that we will receive a fixed remuneration per acquired linear kilometer, on client specifications. The client owns the acquired data and pays us on the agreed basis;
- the second business model consists of operating under a multi-client model, with multiple clients prefunding the acquisition. We remain the owner of the data thus acquired and gain the benefit of subsequent data licensing aftersales.

2019 segment figures

Activity levels for airborne acquisition and data processing of marine gravity and magnetics in 2019 continued to be affected by the global seismic fleet consolidation, including the exit of CGG from the seismic acquisition activity. 2019 activity levels were reduced from 2018.

Land Data Acquisition accounted for US$37 million in 2019 and Multi-physics production (both contract and multi-client surveys) accounted for US$30 million in 2019, representing globally 35% of the "Contractual Data Acquisition" operating revenues.

1.3 Research and development

1.3.1 Technology strategy

CGG's ability to remain an industry leader in the GGR and Equipment segments is dependent on the success of our research and development ("R&D") efforts.

Over the past years, CGG has committed over 5% of revenues to R&D. The trend in gross R&D expenditure over the past three years, including capitalized development costs, is shown below:

	2019		2018	
	in MUSD	**As % of net revenue**	in MUSD (restated)	As % of net revenue (restated)
Gross research and development expenditure	75.9	5.6%	71.3	6%

We believe that this amount of expenditure, used by our highly skilled research and development teams, has been sufficient to keep CGG at the forefront of seismic imaging technology, making it a market leader in geophysical acquisition equipment, and the leader in seismic reservoir characterization software.

1.3.2 2019 innovation highlights and prospects

Some key examples of CGG's R&D innovation delivered to operations during 2019 are described below:

- increased FWI (full wave form inversion) efficiency to allow its use at higher frequency in large, high density data sets. This has been particularly successful when applied to OBN (ocean bottom node) surveys;
- developed multi-wave inversion algorithms initially for use in processing large land surveys in the Middle East. This allows us to better characterize the near surface for hazard identification and enables better imaging of deeper layers;
- delivered the Sercel GPR ocean bottom node, employing QuietSeis MEMS (micro-electromechanical system), for superior broadband signal recording, including collection of the very low frequencies needed for the best application of FWI;
- delivered the WiNG land nodal acquisition system, a comprehensive land data acquisition system also incorporating the QuietSeis MEMS;
- expanded further Geoverse, a database housing and organizing a digitalized version of the worldwide Robertson brand geologic database, allowing clients easy access to diverse types of geological information;
- incorporated machine learning into our Powerlog software for automatic identification and correction of well log errors before use of that information in seismic inversion, improving reservoir characterization.

The concepts of "Digital Transformation, "Cloud", "Big Data", "Machine-Learning" and "Analytics" are being explored and integrated to our workflow whenever applicable. We continue to build our big data platform to support both internal and external data management businesses. In addition, the digital transformation of our entire geological library continues to progress well.

1.4 Investing activities

In 2018, our total capital expenditures – industrial, capitalized development costs and multi-client cash capital expenditures amounted to US$301 million (US$302 million excluding asset suppliers' variance). In 2019, our total capital expenditures decreased to US$261 million (US$260 million excluding asset suppliers' variance).

In 2018 and 2019, our industrial capital expenditures amounted to US$45 million (US$46 million excluding asset suppliers' variance) and US$43 million (US$42 million excluding asset suppliers' variance), respectively.

Our capitalized development costs amounted to US$33 million in 2018 and US$32 million in 2019.

In 2018 and 2019, our multi-client cash capital expenditures amounted to US$223 million and US$186 million, respectively.

In 2019, our industrial capital expenditures and capitalized development costs (excluding asset suppliers' variance) amounted to US$49 million and US$25 million respectively for GGR and Equipment segments.

From a general standpoint, industrial capital expenditures and capitalized development costs are financed through permanent funding (equity and financial debt) whereas multi-client cash capital expenditures are financed mainly with funds from original participants.

The cash prefunding rate was of 118% in 2019 to be compared to 97% in 2018.

1.5 Selected financial data

The tables below describe the main consolidated financial information in accordance with IFRS for each of the years in the two-year period ended December 31, 2019. These tables should be read in conjunction with, and are qualified in their entirety by reference to, our consolidated financial statements included elsewhere in our 2018 annual report.

In millions of US$, except per share data	**2019**	2018
Statement of operations data:		
Operating revenues	1,355.9	1,193.5
Other revenues from ordinary activities	0.7	1.4
Cost of operations	(967.0)	(931.0)
Gross profit	389.6	263.9
Research and development expenses, net	(23.6)	(30.5)
Marketing and selling expenses	(47.0)	(45.9)
General and administrative expenses	(66.2)	(81.1)
Other revenues (expenses)	(9.3)	(286.1)
Operating income	243.5	(179.7)
Cost of financial debt, net	(131.7)	(127.4)
Other financial income (loss)	5.6	819.9
Income taxes	8.9	(7.4)
Equity in income of affiliates	(0.1)	(1.2)
Net income (loss) from continuing operations	126.2	504.2
Net income (loss) from discontinued operations	(187.7)	(600.0)
Net income (loss)	(61.5)	(95.8)
Attributable to owners of CGG SA	(69.1)	(101.6)
Attributable to non-controlling interests	7.6	5.8
Net income (loss) per share - attributable to shareholders:		
Basic[(a)]	(0.10)	(0.17)
Diluted[(a)]	(0.10)	(0.17)
Net income (loss) from continuing operations per share - attributable to shareholders:	118.4	498.4
Basic[(a)]	0.17	0.82
Diluted[(a)]	0.17	0.81

(a) Basic and diluted per share amounts have been calculated on the basis of 709,950,455 and 608,437,867 weighted average outstanding shares in 2019 and 2018, respectively.

In millions of US$	**2019**	2018
Balance sheet data:		
Cash and cash equivalents	610.5	434.1
Working capital [(a)]	147.6	189.3
Property. plant & equipment, net	300.0	189.2
Multi-client surveys	531.0	633.3
Goodwill	1,206.9	1,229.0
Total assets	4,012.6	3,896.7
Gross financial debt [(b)]	1,326.0	1,166.7
Equity attributable to owners of CGG SA	1,561.7	1,631.5

(a) "Working capital" is defined as net trade accounts and notes receivable, net inventories and work-in-progress, tax assets, other current assets and assets held for sale less trade accounts and notes payable, accrued payroll costs, income tax payable, advance billings to customers, current provisions, other current liabilities and liabilities directly associated with the assets classified as held for sale.

(b) "Gross financial debt" is defined as financial debt (leases included), including current maturities and bank overdrafts.

In millions of US$ except per ratios	**2019**	2018
Other financial data and other ratios:		
Segment [(g)] EBIT [(b)]	247.2	141.1
IFRS [(a)] EBIT [(b)]	243.4	(180.9)
Segment [(g)] EBITDAs [(c)]	720.8	556.0
IFRS [(a)] EBITDAs [(c)]	676.2	474.2
Segment [(g)] Operating income	247.3	142.3
IFRS [(a)] Operating income	243.5	(179.7)
Segment Free-cash flow	433.7	(4.3)
Capital expenditures [(d)]	75.3	78.0
Investments in multi-client surveys, net cash	185.7	222.8
Net financial debt [(e)]	715.5	732.6
Gross financial debt [(f)]/EBITDAs [(c)]	1.9x	2.5x
Net financial debt [(e)]/EBITDAs [(c)]	1.1x	1.5x
EBITDAs [(c)]/Cost of financial debt, net	5.1x	3.7x

(a) IFRS: In accordance with IFRS, as indicated in our consolidated financial statements.

(b) Earnings before interest and tax ("EBIT") is defined as operating income plus our share of income in companies accounted for under the equity method. EBIT is used by management as a performance indicator because it captures the contribution to our results of the significant businesses that we manage through our joint ventures. However, other companies may present EBIT and related measures differently than we do. EBIT is not a measure of financial performance under IFRS and should not be considered as an alternative to cash flow from operating activities or as a measure of liquidity or an alternative to net income as indicators of our operating performance or any other measures of performance derived in accordance with IFRS.

(c) "EBITDAs" is defined as earnings before interest, tax, income from equity affiliates, depreciation, amortization net of amortization costs capitalized to multi-client surveys and share-based compensation cost. Share-based compensation includes both stock options and shares issued under our share allocation plans. EBITDAs is presented as additional information because we understand that it is one measure used by certain investors to determine our operating cash flow and historical ability to meet debt service and capital expenditure requirements. However, other companies may present EBITDAs and similar measures differently than we do. EBITDAs is not a measure of financial performance under IFRS and should not be considered as an alternative to cash flow from operating activities or as a measure of liquidity or an alternative to net income as indicators of our operating performance or any other measures of performance derived in accordance with IFRS.

(d) "Capital expenditures" is defined as "total capital expenditures (including variation of fixed assets suppliers, excluding multi-client surveys)" from our statement of cash flows.

(e) "Net financial debt" is defined as gross financial debt less cash and cash equivalents. Net financial debt is presented as additional information because we understand that certain investors believe that netting cash against debt provides a clearer picture of the financial liability exposure. However, other companies may present net financial debt differently than we do. Net financial debt is not a measure of financial performance under IFRS and should not be considered as an alternative to any other measures of performance derived in accordance with IFRS.

(f) "Gross financial debt" is defined as financial debt, including current maturities and bank overdrafts.

(g) "Segment" figures are presented before IFRS 15, multi-client data library impairment, Sercel inventories provision and impairment and Restructuring costs related to the Transformation Plan. The restructuring costs correspond to the costs related to the industrial transformation of the Group and the Financial Restructuring, including personnel costs, site closure costs and fees and expenses related to the Financial Restructuring.

1.6 CGG main locations

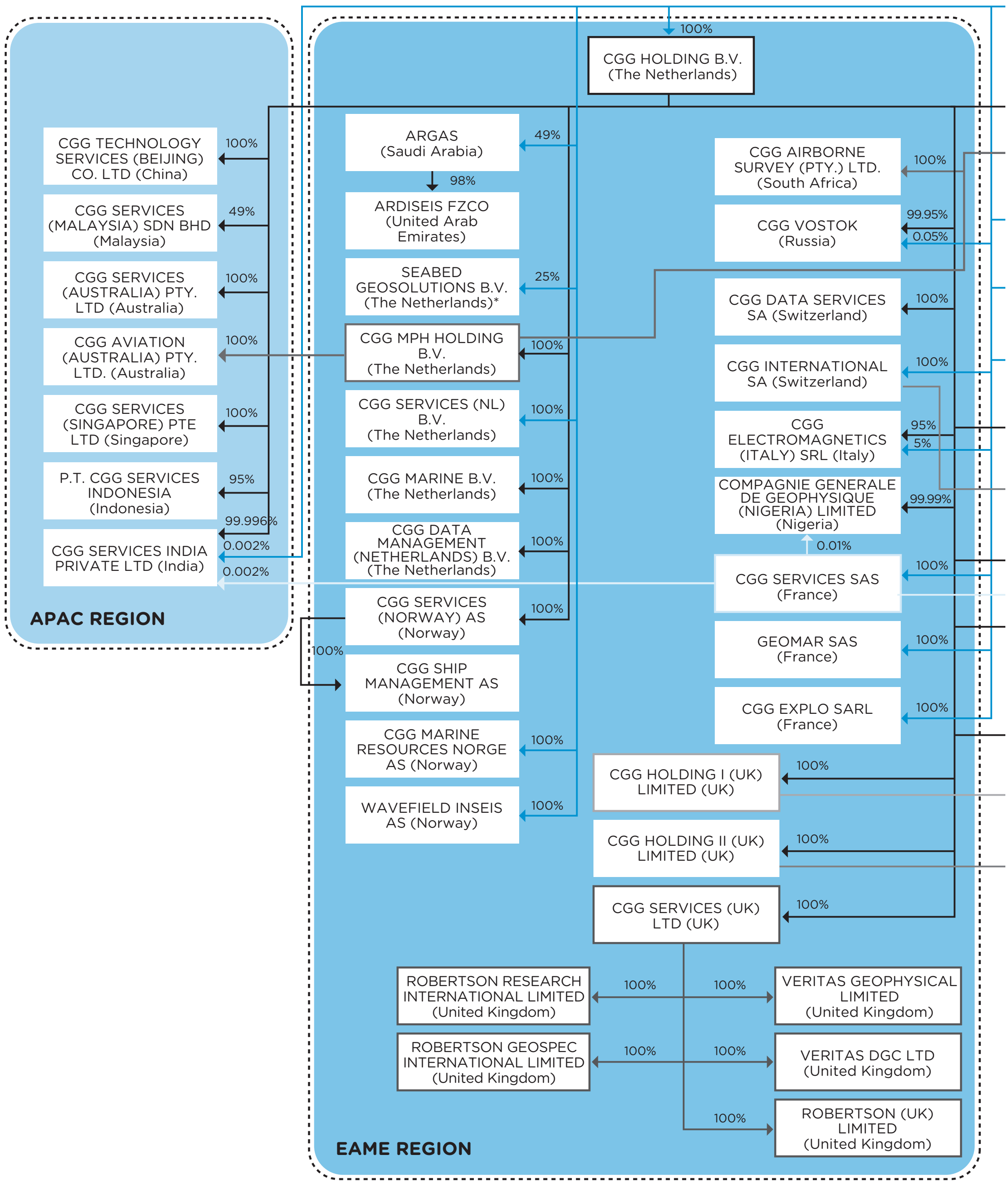
The following table sets forth certain information relating to the principal properties of the Group as of December 31, 2019:

Location	Type of facilities	Headcount	Owned/ Leased	Lease expiration date
Australia, Perth	Registered office of CGG Services (Australia) Pty Ltd and Data processing center	39	Leased	2024
Australia, Jandokot Airport, Perth	Warehouse	63	Leased	2021
Brazil, Rio de Janeiro	Registered office of CGG do Brasil Participaçoes LTDA and Data processing center	131	Leased	2021
Canada, Calgary	Registered office of Hampson Russell Ltd Partnership and Data processing center	109	Leased	2024
China, Beijing	Registered office of CGG Services Technology (Beijing) Co, Ltd and Research and development center	59	Leased	2021
China, Xu Shui	Sercel manufacturing and research and development facilities	400	Owned	n.a.
England, Crawley	Registered office of CGG Services (UK) Ltd. and Data processing center	333	Leased	2028
England, Redhill	Data processing center	57	Leased	2029
France, Carquefou	Sercel manufacturing and research and development facilities recording equipment (land and marine)	444	Owned	n.a.
France, Massy	Registered office of CGG SA, CGG Services SAS and Data processing center	385	Leased	2022
France, Saint-Gaudens	Sercel manufacturing and research and development facilities	204	Owned	n.a.
India, Mumbai	Registered office of CGG Services India Pvt Ltd and Data processing center	33	Leased	2023
Indonesia, Jakarta	Registered office of PT Veritas Mega Pratama and Data processing center	36	Leased	2020
Malaysia, Kuala Lumpur, Kuching	Registered office of CGG Services (Malaysia) Sdn Bhd and Data processing center	50	Leased	2020
Mexico, Villahermosa	Data processing center and offices	24	Leased	2020
Mexico, Mexico City	Registered office of CGG de Mexico SA de CV	7	Leased	2020
Netherlands, La Haye	Registered office of CGG Holding BV, CGG Marine BV, CGG Services (NL) BV and CGG Data Management (Netherlands) BV	31	Leased	2022
Norway, Oslo	Registered office of CGG Services (Norway) AS, Wavefield Inseis AS and CGG Marine Resources Norge AS	62	Leased	2024
Norway, Stavanger	Data Management Solutions offices	19	Leased	2021
North Wales, Llanrhos	Offices and laboratories	205	Leased	2024
North Wales, Conwy	Offices/storage facility	60	Owned	n.a.
Russia, Moscow	Registered office of CGG Vostok and Data processing center	78	Leased	2021
Singapore	Registered office of CGG Services (Singapore) Pte. Ltd. and Data Processing Center	119	Leased	2022
Switzerland, Geneva	Registered office of CGG International	16	Leased	2022
USA, Houston, Texas	Principal executive offices of CGG Services (US) Inc. and data processing center	586	Leased	2024
USA, Houston, Texas	Offices and manufacturing premises of Sercel	206	Owned	n.a.
USA, Schulenburg, Texas	Offices and Warehouse	13	Owned	n.a.

1.7 CGG organization

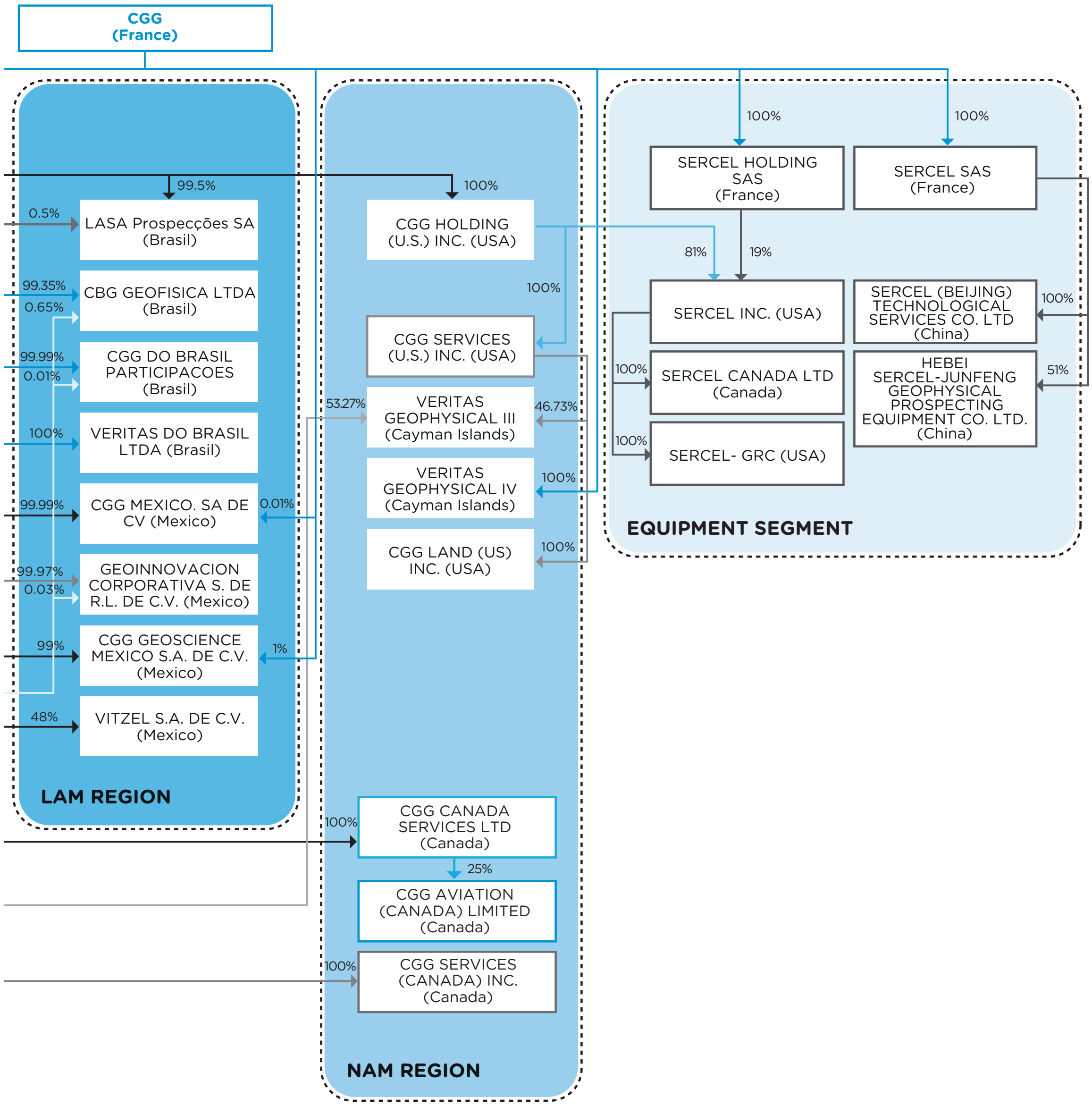
1.7.1 Organization chart

CGG SA is the parent holding company of the CGG group. The Group's subsidiaries are directly or indirectly owned by CGG SA. The simplified organization chart (showing the percentage of share capital owned) as of March 31, 2020 is presented below.



* *Effective April 1st, 2020, CGG sold all its shareholding interest in Seabed Geosolutions B.V.*

CGG SA also has registered branches in Yemen, Pakistan, Bolivia, Peru and Ecuador, most of which are in the process of liquidation.



1.7.2 Intra-group transactions

The Group carries out intra-group transactions in various fields (*e.g.* different kinds of services, sales of geophysical equipment and software licenses). The corresponding remuneration or royalties vary depending on the nature of the transaction and are determined in accordance with the arm's length principle and the Group's transfer pricing policy.

The assistance and advice provided by the parent company to the Group's main subsidiaries regarding financial, administrative, commercial and technical matters are generally paid at cost plus and allocated subsequently to the related subsidiaries or by a fixed remuneration defined in accordance with the importance and nature of the service provided.

In most situations, the payment of the services provided by the subsidiaries for the benefit of the parent company corresponds to the cost incurred plus a margin defined in accordance with the arm's length principle.

During the years 2019 and 2018, financial flows between the parent company and its subsidiaries were as follows:

In millions of US$	**2019**	2018
Services provided	29.6	32.6
Expense rebilling	14.9	10.3

1.8 Recent events

Exit of Contractual Data Acquisition business

For any information, please refer to section 1.1.4.1 "Exit of Contractual Data Acquisition business" of this Document. It is noted that the transfer of the Group shareholding interest in Seabed Geosolutions BV has been completed as planned.

Decision from the French Supreme Court relating to the challenge of the Safeguard Plan by certain holders of convertible bonds

On August 4, 2017, certain holders of convertible bonds (Keren Finance, Delta Alternative Management, Schelcher Prince Gestion, La Financière de l'Europe, Ellipsis Asset Management and HMG Finance) filed a claim against the Safeguard Plan approved by the committee of banks and assimilated creditors, and the bondholders' general meeting on July 28, 2017.

Without disputing the results of the general meeting of bondholders' vote, these holders of convertible bonds challenged the treatment of their claims under the Safeguard Plan, arguing that the differences in treatment between the holders of convertible bonds and the holders of Senior Notes were not justified by the differences in their situations and would be, in any event, disproportionate.

On December 1, 2017, the Commercial Court of Paris declared that the claims filed by the holders of convertible bonds were inadmissible and approved the Safeguard Plan. Four of these holders of convertible bonds (Delta Alternative Management, Schelcher Prince Gestion, La Financière de l'Europe and HMG Finance) have appealed against the judgment that rejected the admissibility of their claims.

As this appeal did not stay implementation, the restructuring transactions provided for under the Safeguard Plan was implemented on February 21, 2018.

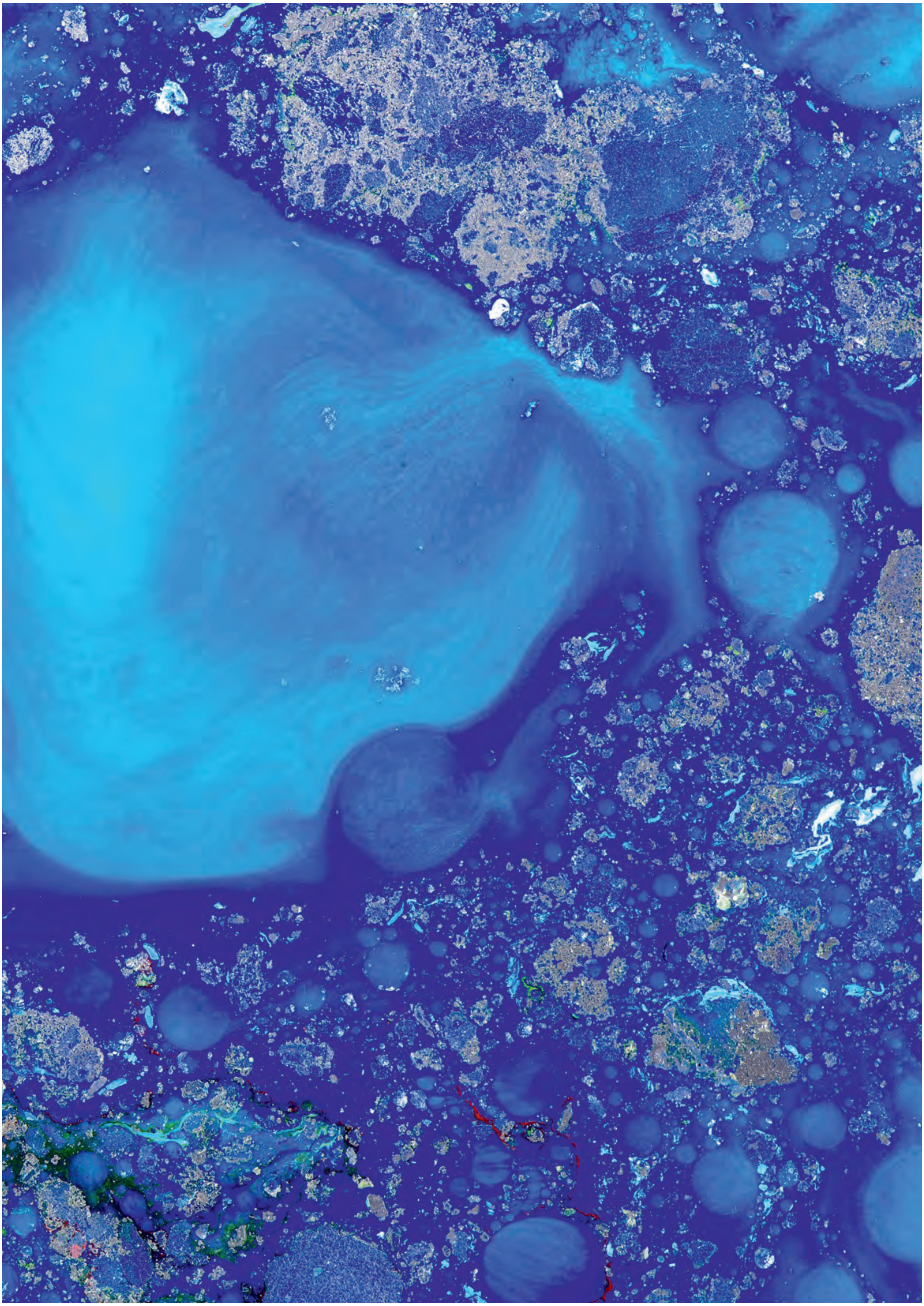
On May 17, 2018, the Court of Appeal of Paris affirmed the December 1, 2017 judgment by the Commercial Court of Paris.

On July 17, 2018, Delta Alternative Management, Schelcher Prince Gestion, and La Financière de l'Europe (later joined by HMG Finance through a voluntary intervention) appealed the Court of Appeal's decision to the French Supreme Court (*Cour de cassation*).

This ruling was upheld by the French Supreme Court in a decision dated February 26, 2020, putting a definitive end to this litigation.

Covid-19 / Brent oil price

In the first quarter of 2020, the Covid-19 crisis which impacted the overall raw material demand, combined with the inability to date of oil suppliers to reach consensus to reduce production, caused significant drop in Brent oil price. This evolutive situation which may negatively affect the activity is scrutinized. It had no impact on the 2019 accounts.



2

Risk factors and internal control

2.1 Risk factors and control measures

This Chapter includes the main risks to which CGG is exposed, at the date of this Universal Registration Document, and whose occurrence could negatively impact our business activities, financial results, outlook, reputation and market share.

The risks identified by CGG as specific and material, are grouped into a limited number of categories considering their nature. The categories themselves are not ranked by importance. However, the risks within each category are ranked by their degree of criticality in terms of likelihood of occurrence and potential impact, starting with those management believes to be the most material.

As detailed in the Chapter 2.2 "Internal control and Risk Management" of this Universal Registration Document, the main risks described below – as per the Risk Map revised annually - are residual risks, after implementation of mitigation measures to prevent and control them.

The Risk factors also include the non-financial risks reported as critical in Chapter 3 "Statement on non-financial performance" of this Universal Registration Document.

As CGG operates in a constantly changing economic and regulatory context with highly volatile cycles, our assessments and forward-looking statements are subject to uncertainties and risks that the Group is not aware or does not considered significant as of the date of this Universal Registration Document, but could affect our business activities and performance.

For more details about the Risk Management system, please refer to Chapter 2.2 "Internal control and Risk Management" of this Universal Registration Document.

PRIORITIZATION OF OUR MAIN RISK FACTORS

Risks relating to our Business
Customer satisfaction is important to our continued visibility*
Our proprietary technology could be rendered obsolete or be misappropriated by third parties*
We are subject to risks related to our information technology, including cyber security risks and risks of hardware and software failures*
We rely on third party supplies and are subject to disruptions outside our control
We are subject to risks related to our International operations and geopolitical volatility*
We must sometimes provide performance bonds or guarantees to third parties
Our reputation is important to our business
Our backlog includes contracts that can be unilaterally delayed or terminated at the client's option
We are subject to risks related to our Marine acquisition exit
Risks relating to our Industry
We are subject to economic uncertainty, volatility of oil and natural gas prices and conditions in financial markets
The volume of our business depends on the level and location of capital expenditures by the oil and gas industry
We need to attract and retain talented employees*
Financial Risks
We will face negative impact of Covid-19 outbreak
We are exposed to exchange rate fluctuations
We must comply with the restrictions and covenants in our current and future debt agreements
Our debt may adversely affect our financial health and pose risks to our liquidity
We face the risk of payment, supplier and other types of fraud
We are exposed to commercial, political and counterparty risk
We invest significant amounts of money in our multi-client library, which we may not recover
We may need to impair goodwill on our balance sheet
We are subject to inherent rate risk on our floating rate debt
We are restricted in our ability to pay dividends
Legal and Regulatory Risks
We remain subject to the terms of the Safeguard Plan
Our business and that of our customers are subject to complex laws and governmental regulations, and we may be subject to legal proceedings
We may not be successful in maintaining the necessary regulatory authorization or licenses needed to operate our business and such authorizations and licenses may be invalid or may be subject to termination, revocation or material alterations in the event of a breach
Environmental and Social Risks
Health and Safety*
We are exposed to financial risks related to compliance with environmental laws

* *Non-financial performance.*

2.1.1 Risks relating to our Business

2.1.1.1 Customer satisfaction is important to our continued viability

We seek to provide our customers with reliable products and data as well as an overall positive experience in their interactions with the Group. Our revenues depend on our ability to offer them effective products and services, cutting edge technology and high-quality data, and our inability to deliver in line with their expectations could materially affect our ability to retain existing business and obtain new business from our customers. In particular, our customers use our products, services and data to reduce the uncertainty associated with their exploration activities. If we do not deliver high quality data, our customers may face increased difficulties in identifying appropriate areas for drilling. Furthermore, if our surveys lack precision, this may increase the risk of geohazards, increase the number of dry holes and generally increase our customers' costs and reduce the efficiency of their operations. Our product development, manufacturing controls and testing may not be adequate to detect all defects, errors, failures, and quality issues that could affect our customers, which could result in claims against us, order cancellations or delays in market acceptance. If our customers are not satisfied with our products or services or if they experience difficulties that they attribute to the quality of our output, they may stop doing business with us, which could materially and adversely affect our business, financial condition or results of operations.

For more details, please refer to Chapter 3, paragraph 3.4.2 of this Document.

2.1.1.2 Our proprietary technology could be rendered obsolete or be misappropriated by third parties

Technology changes rapidly in the oil and gas industry, and our success depends to a significant extent upon our ability to develop and produce new and enhanced products and services on a cost-effective and timely basis in accordance with industry demands. In the markets where we operate, technological innovation is frequent, and industry and regulatory standards are constantly evolving. Both of these factors could contribute to the obsolescence of our existing technology, products and services. In our industry, new and innovative technologies are rarely available for us to purchase from third parties, so we must develop them internally. If we are not able to develop and produce new and enhanced products and services on a cost-effective and timely basis to replace technologies that have become obsolete, our business, financial condition and results of operations could suffer. Although we commit substantial resources to research and development and retention of innovative talent, we may encounter resource constraints or technical or other difficulties that could delay the introduction of new and enhanced products and services. Furthermore, even if we were to introduce new products and services, their success will depend on a number of factors, including timely and successful completion of development efforts, our ability to manage the risks associated with such new products and services, for example potential ramp-up issues, the availability of supplies in the right quantities and at appropriate costs to meet anticipated demand, the risk that new products and services may have quality issues or other defects in the early stages of introduction, overall market acceptance, compliance with continuously evolving industry standards, technological changes and the introduction of other new products or services by our competitors. Finally, while our research and development strategy is focused on developing the highest quality solutions, such solutions may not be the most cost-efficient for our customers and as a result may not achieve market acceptance. This risk is amplified by global pressure on prices in the oil and gas industry that has only intensified customers' focus on cost-effective solutions.

For more details, please refer to Chapter 3, paragraph 3.4.1 of this Document.

We depend on proprietary technology and are exposed to risks associated with the misappropriation or infringement of that technology. Our ability to maintain or increase prices for our products and services depends in part on our ability to differentiate the value delivered by our products and services from those delivered by our competitors. Our proprietary technology plays an important role in this differentiation. We rely on a combination of patents, trademarks and trade secret laws to establish and protect our proprietary technology. Patents last up to 20 years, depending on the date of filing and the protection accorded by each country. In addition, we enter into confidentiality and license agreements with our employees, customers and potential customers which limit access to and distribution of our technology. However, considering that much of our know-how is tied to our employees, such agreements may not be sufficient to continue to exploit our current proprietary technology or develop new technology if we are unable to retain our employees. Our customer data license and acquisition agreements also identify our proprietary, confidential information and require that such proprietary information be kept confidential. Although we take these steps to strictly maintain the confidentiality of our proprietary and trade secret information, unauthorized use, misappropriation or disclosure may nevertheless occur. Our actions to protect our proprietary rights may not be adequate to deter the misappropriation or independent third-party development of our technology. The use of our intellectual property and other proprietary information and know-how by an unauthorized third party could reduce or eliminate any competitive advantage that has been developed and consequently cause us to lose market share or otherwise adversely affect our business, operating results or financial condition.

In addition, we have a patent portfolio, which as a whole is material to our operations and business. We actively protect and promote our intellectual property portfolio and take appropriate actions to enforce and defend our intellectual property rights. However, we cannot assure you that our technology and services will not be challenged by third parties as infringing on their intellectual property rights. We may be subject to lawsuits claiming that certain of our products, services, and technologies infringe the intellectual property rights of others. Although we do not have any current litigation involving our intellectual property rights or the intellectual rights of others, that could have a material impact on us, such litigation may take place in the future. In addition, the laws of certain foreign countries do not protect proprietary rights to the same extent as, in particular, the laws of France or the United States, which may limit our ability to pursue third parties that misappropriate our proprietary technology.

For more details, please refer to Chapter 3, paragraph 3.4.3 of this Document.

2.1.1.3 We are subject to risks related to our information technology, including cyber security risks and risks of hardware and software failures

The oil and gas and geothermal industries are increasingly using new digital technologies to improve the quality and effectiveness of their operations. Machine learning and cloud computing are now part of the standard solutions that the industry is implementing. Although these new technologies and solutions bring a significant value to the industry, they also increase its exposure to cyber related incidents. We depend on these digital technologies and related infrastructure (including the servers that host our data libraries) to perform many of our services and to process and record financial and operating data. At the same time, cyber incidents, including deliberate attacks, have increased. The US government has issued public warnings that indicate that energy assets might be specific targets of cyber security threats. Our technologies, systems and networks, and those of our vendors, suppliers and other business partners, may become the target of cyberattacks or information security breaches that could result in the unauthorized release, gathering, monitoring, misuse, loss or destruction of proprietary and other information, or other disruption of business operations. In addition, certain cyber incidents, such as surveillance, may remain undetected for an extended period. As cyber security incidents continue to evolve, despite the controls implemented to strengthen our cyber security defenses, our systems, networks and services potentially remain vulnerable to an information security incident. As such, we may be required to expend additional resources to continue to modify or enhance our protective measures or to investigate or remediate any vulnerabilities to cyber incidents. As a resultat of a risk analysis of cyber events, we recently subscribed an insurance to provide coverage for cyberattacks. However, disruptions or failures in the physical infrastructure or operating systems that support our businesses and clients, or cyberattacks or security breaches of our networks or systems, could result in the loss of clients and business opportunities, legal liability, regulatory fines, penalties or intervention, reputational damage, reimbursement or other compensatory costs and additional compliance costs, any of which could materially adversely affect our business, financial condition and operating results.

In addition, our success depends on the efficient and uninterrupted operation of our computer and communications systems. A failure of our network or data gathering procedures could impede the processing of data, delivery of databases and services, customer orders and day-to-day management of our business and could result in the corruption or loss of data. Despite any precautions we may take, damage from fire, floods, hurricanes, power loss, telecommunications failures and similar events at our computer facilities could result in interruptions in the flow of data to our servers and from our servers to our customers. A transfer of our data collection operations to an alternative provider of server hosting services due to a failure of our existing devices could result in significant delays in our ability to deliver our products and services to our customers and could be costly to implement. Any of these risks related to IT systems could damage our reputation and harm our business, financial condition and results of operations.

For more details, please refer to Chapter 3, paragraph 3.4.4 of this Document.

2.1.1.4 We rely on third party suppliers and are subject to disruptions outside our control

Disruptions to our supply chain and other outsourcing risks may adversely affect our ability to deliver our products and services to our customers. The high technology content of our products and services renders us dependent on the supply of electronic components, some of which could be temporarily or permanently unavailable to us, including if production is fully captured by larger users. In those circumstances, our production could be delayed, or we could be forced to develop and manufacture alternative solutions and products. Our supply chain is a complex network of internal and external organizations responsible for the supply, manufacture and logistics supporting our products and services around the world. We are vulnerable to disruptions in this supply chain from changes in government regulations, tax and currency changes, strikes, boycotts, public health crises and other disruptive events as well as from unavailability of critical resources. These disruptions may have an adverse impact on our ability to deliver products and services to our customers. In particular, we may face disruptions resulting from the recent outbreak of Coronavirus (2019-nCOV), which first emerged in Wuhan city, Hebei province, China in late 2019 and that has continued to expand in China and globally. Within our Group, Sercel makes particular use of subcontracting and relies on a number of suppliers that are based in China. Sercel operates in China through Sercel-JunFeng, which is based in Hebei province. If one of our main suppliers or Sercel-JunFeng were forced to slow or stop operations, it would materially affect our ability to deliver certain products and services to our customers. Our French manufacturing sites outsource part of their production to local third-party companies selected according to certain criteria, including quality, financial soundness and corporate social responsibility factors. Outsourced operations are distributed among several entities, each having a small proportion of aggregate outsourced activity in order to limit risk related to the failure of any one of our subcontractors. If our suppliers, vendors, subcontractors or other counterparties are unable to perform their obligations to us or our customers, we may be required to provide additional services or make alternate arrangements on less favorable terms with other parties to ensure adequate performance and delivery of service to our customers.

In addition, shortcomings in suppliers' corporate social responsibility or actual or perceived issues related to their information security, trade, legal and regulatory compliance programs could negatively impact our reputation. These or other circumstances could lead to disputes and litigation with our partners or customers, which could have a material adverse impact on our reputation, business, financial condition and results of operations.

For more details on how we assess the sustainability of our Suppliers, please refer to Chapter 3, paragraph 3.3.2. of this Document.

2.1.1.5 We are subject to risks related to our international operations and geopolitical volatility

With operations worldwide, including in emerging markets, our business and results of operations are subject to various risks inherent in international operations. These risks include:

- instability of foreign economies and governments, which can cause investment in capital projects by our potential customers to be withdrawn or delayed, reducing or eliminating the viability of some markets for our services;
- war, terrorism, riots and uprisings, which can make it unsafe to continue operations, adversely affect budgets and schedules and expose us to losses;
- challenges in protection and enforcement of intellectual property rights;
- fraud and political corruption;
- changes in legal and regulatory requirements;
- seizure, expropriation, nationalization or detention of assets, or renegotiation or nullification of existing contracts; and
- foreign exchange restrictions, import/export quotas, sanctions, boycotts and embargoes and other laws and policies affecting taxation, trade and investment.

We are exposed to these risks in all of our international operations to some degree, particularly in emerging markets where the political, economic and legal environment may be less stable. Operations in developing countries are subject to decrees, laws, regulations and court decisions that may change frequently or be retroactively applied and could cause us to incur unanticipated or unrecoverable costs or delays. The legal systems in developing countries may not always be fully developed, and courts or other governmental agencies in these countries may interpret laws, regulations or court decisions in a manner that might be considered inconsistent or inequitable, and may be influenced by factors other than legal merits, which could have adverse effect on our business, financial condition and results of operations.

Certain of our business activities may require prior government approval in the form of export licenses and may otherwise be subject to tariffs and import/export restrictions, including sanctions regimes. These laws can change over time and may result in adjustments to our business practices and commercial strategies, as well as limitations on our ability to undertake work in affected areas. In the case of US legislation, non-US persons employed by our separately incorporated non-US entities may conduct business legally in some foreign jurisdictions that are subject to US trade embargoes and sanctions by the US Office of Foreign Assets Control ("OFAC"). We may generate revenue in some of these countries through multi-client surveys and licensing, the provision of data processing and reservoir consulting services, the sale of software licenses and software maintenance and the sale of Sercel equipment. We may have current and ongoing relationships with customers in some of these countries.

Our internal controls, operational support procedures and employee training are focused on ensuring that we understand and comply with applicable restrictions and obligations that may be imposed by the United States, the European Union or other countries. Failure to comply with these restrictions and obligations could result in material fines and penalties, damage our reputation, and negatively affect the market price or demand for our securities.

We and certain of our subsidiaries and affiliated entities also conduct business in countries where there is government corruption. We are committed to doing business in accordance with all applicable laws and codes of ethics and have implemented a Code of Business Conduct and related training, but there is a risk that we, our subsidiaries or affiliates or our or their respective officers, directors, employees or agents may act in violation of such codes and applicable laws, including the Foreign Corrupt Practices Act of 1977. We require compliance with such codes and applicable laws but cannot always prevent or detect corrupt or unethical practices by third parties, such as subcontractors, agents, partners or customers, which may result in substantial civil and criminal fines and penalties, reputational damage to us and might materially adversely affect our business, results of operations, financial condition or reputation.

2.1.1.6 We must sometimes provide performance bonds or guarantees to third parties

Certain of our customers and suppliers, and certain tax, social security or customs authorities may request that we or certain of our subsidiaries or affiliates post performance or bid bonds or guarantees issued by financial institutions, including in the form of standby letters of credit, in order to guarantee our or their legal or contractual obligations. As of December 31, 2019, the amount of the guarantees granted by financial institutions in favor of our customers amounted to approximately US$59 million. As of the same date, the amount of the cash collateral (or its equivalent) we had implemented amounted to approximately US$29 million (reported in the financial statements as fixed assets and financial investments) and the amount of bank guarantees or guarantees granted by us amounted to approximately US$424 million (excluding the guarantees granted to financial institutions, the guarantees related to the bareboat charters undertakings and the guarantees related to capital leases). As result of our financial position leading up to our debt restructuring in 2018, certain financial institutions phased out our existing guarantees and required the establishment of cash collateral (or its equivalent in the relevant jurisdiction) for any new guarantee or renewal of existing guarantees. Failure to provide these performance bonds or guarantees in the amounts or durations required or for the benefit of the necessary parties on favorable terms could reduce our capacity to conduct business or perform our contracts.

2.1.1.7 Our reputation is important to our business

Our reputation is important to our business for numerous reasons, such as developing and retaining customer relationships, finding commercial partners for business ventures, securing licenses or permits with governments, procuring offtake contracts, attracting contractors and employees and negotiating favorable terms with suppliers.

Our reputation could be harmed by events caused by or attributable to us, flaws in our control measures, non-compliance with our commitments or regulatory requirements applicable to our operations (notably environmental or social) or poor strategic decisions, as well as by events and actions of others which are outside our control. Negative comments regarding our business, whether legitimate or not, could have adverse effects on our performance, our competitive position, the value of our securities or our access to financing.

Any damage to our reputation or any negative publicity, whether arising from litigation, regulatory, supervisory or enforcement actions, environmental incidents or advocacy, failures of business ethics, injury and loss of life, matters affecting our financial reporting or compliance with corporate governance best practice, in the jurisdictions in which we do business, could materially and adversely affect our business, prospects, financial condition and results of operations.

For more details on how CGG prides itself on conducting its Business, please refer to Chapter 3, paragraph 3.3.1. of this Document.

Notwithstanding the completion of the Financial Restructuring, the French and US procedures of safeguard and Chapter 11 may have affected our reputation and relationships with vendors, suppliers, employees, creditors and other business partners. This in turn may have damaged our ability to negotiate favorable terms with such parties, as well as our ability to maintain normal credit conditions with our suppliers. Moreover, public perception of our continued viability may lead to new and existing customers choosing not to enter into or continue their agreements or arrangements with us. The failure to maintain any of these important relationships could adversely affect our business, financial condition and results of operations.

2.1.1.8 Our backlog includes contracts that can be unilaterally delayed or terminated at the client's option

In accordance with industry practice, contracts for the provision of seismic services typically can be delayed or terminated at the sole discretion of the client without payment of significant cancellation costs to the service provider. As a result, even if contracts are recorded in backlog, there can be no assurance that such contracts will be wholly executed by us and generate actual revenue, or even that the total costs already borne by us in connection with the contract would be covered in full pursuant to any cancellation clause. Furthermore, there can be no assurance that contracts in backlog will be performed in line with their original timetable and any possible delay could result in operating losses as most of our costs are fixed.

2.1.1.9 We are subject to risks related to our Marine Acquisition exit

As part of our CGG 2021 Plan, the Group is transitioning to an asset-light business model by reducing its exposure to the data acquisition business. As part of this project, the Group has sold its interest in Global Seismic Shipping AS, an entity owning several seismic vessels and streamers, to Shearwater and contracted with Shearwater for guaranteed access to a portion of this fleet (the "Capacity Agreement"). However, if Shearwater is unable to deliver access to its fleet in accordance with the terms of our contractual arrangements or if they provide lower quality data than expected or if their acquisition techniques are not sufficiently advanced, the value of the multi-client library's could deteriorate in the future.

Following the Marine Exit, Shearwater CharterCo AS has entered into five-year bareboat charter agreements for the five high end vessels equipped with streamers formerly owned by CGG or by GSS and its subsidiaries, guaranteed by Shearwater. CGG has agreed to substitute itself for Shearwater CharterCo AS as charterer of GSS subsidiaries' five high end seismic vessels (equipped with streamers) in the event of a payment default under the charter party agreement between the GSS subsidiaries and Shearwater CharterCo AS (the "Step-In Agreements"). Given that CGG is required to pay a portion of the amounts due under the Capacity Agreement with Shearwater directly to the GSS subsidiaries to cover Shearwater CharterCo's obligations under its bareboat charter agreements, a payment default can be triggered by CGG only or a Shearwater insolvency.

The Step-In Agreements will not impact the statement of financial position unless a trigger event, as described above occurs. In such circumstance, the obligations under the Capacity Agreement would be terminated and replaced by the obligations under the Step-In Agreements, for a lower amount compared to the Capacity Agreement.

See "1.1.4.1. Exit from Contractual Data Acquisition business" and note 2 to our 2019 consolidated financial statements included in this Document.

2.1.2 Risks relating to our Industry

2.1.2.1 We are subject to economic uncertainty, volatility of oil and natural gas prices and conditions in financial markets

Global market and economic conditions are uncertain and volatile. In recent periods, economic contractions and uncertainty have weakened demand for oil and natural gas while the introduction of new production capacities has increased supply. This dynamic has resulted in lower prices and a reduction in the levels of exploration for hydrocarbons and therefore demand for our products and services. In addition to affecting both activity levels, these developments also impact the prices we can charge our customers. The price of Brent decreased from US$110.80/bbl as of December 31, 2013 to US$67.10/bbl as of December 31, 2019. Following the outbreak of COVID-19, the price of Brent had further declined and bottomed at US$24.52/bbl. As of March 23, 2020, the price of Brent was US$27.52/bbl. It is difficult to predict how long the pandemic and current economic conditions and imbalance between supply and demand will persist, whether oil prices will remain at a low level, whether the current market conditions will deteriorate further, and which of our products and services may be adversely affected. The reduction in the demand for our products and services and the resulting pressure on pricing in our industry could continue to negatively affect our business, results of operations, financial condition and cash flows.

Uncertainty about the general economic situation and the medium-term level of hydrocarbons prices has had and is likely to continue to have a significant adverse impact on the commercial performance and financial condition of many companies in our industry, which may affect some of our customers and suppliers. The current economic and oil industry climate may lead customers to cancel, delay or choose not to renew orders and may leave suppliers unable to provide goods and services as agreed. Our governmental customers may face budget deficits that prohibit them from funding proposed and existing projects or that cause them to exercise their right to terminate our contracts with little or no prior notice. If our suppliers, vendors, subcontractors or other counterparties are unable to perform their obligations to us or our customers, we may be required to provide additional services or make alternate arrangements on less favorable terms with other parties to ensure adequate performance and delivery of service to our customers. These circumstances could also lead to disputes and litigation with our partners or customers, which could have a material adverse impact on our reputation, business, financial condition and results of operations.

Turmoil in the credit markets could also adversely affect us and our customers. Limited access to external funding has in the past caused some companies to reduce their capital spending to levels supported by their internal cash flow. Some companies have found their access to liquidity constrained or subject to more onerous terms. In this context, our customers may not be able to borrow money on reasonable terms or at all, which could have a negative impact on their demand for our products and impair their ability to pay us for our products and services on a timely basis, or at all.

In addition, the potential impact on the liquidity of major financial institutions may limit our ability to fund our business strategy through borrowings under either existing or new debt facilities in the public or private markets and on terms we believe to be reasonable. Persistent volatility in the financial markets could have a material adverse effect on our ability to refinance all or a portion of our indebtedness and to otherwise fund our operational requirements. We cannot be certain that additional funds will be available if needed to make future investments in certain projects, take advantage of acquisitions or other opportunities or respond to competitive pressures. If additional funds are not available, or are not available on terms satisfactory to us, there could be a material adverse impact on our business, financial condition and results of operations.

2.1.2.2 The volume of our business depends on the level and location of capital expenditures by the oil and gas industry

Demand for our products and services is linked to the level of expenditures by oil and gas companies in their effort to find, develop and produce hydrocarbons. These expenditures are discretionary in nature and can vary significantly based on oil and gas prices and expectations regarding future hydrocarbon prices, which may fluctuate based on relatively minor changes in the supply of and demand for oil and gas, expectations regarding future changes and other factors beyond our control. Lower or volatile hydrocarbon prices tend to limit the demand for seismic services and products. It is difficult to predict commodity prices and forecasted trends in oil and gas exploration. Expected production activities may not materialize as they are subject to a number of factors, including:

- global geopolitical and economic conditions, including political developments in the Middle East and North Africa, the Ukraine crisis, economic sanctions, health events (such as Coronavirus) and economic growth levels;
- changes in supply and demand for hydrocarbons;
- actions by the members of the Organization of the Petroleum Exporting Countries (OPEC) with respect to oil production levels and announcements of potential changes in such levels, including the failure of such countries to comply with production cuts;
- the ability of non-OPEC countries to increase their oil and gas production;
- laws or regulations restricting the use of fossil fuels or taxing such fuels and governmental policies regarding atmospheric emissions, use of alternative energy, and other policies regarding the exploration and production and development of oil and gas reserves, including policies that may affect North American producers' ability to produce using unconventional extraction methods; and
- energy transition and the price and availability of alternative fuels.

At the same time, increases in oil and natural gas prices may not necessarily increase demand for our products and services or otherwise have a positive effect on our financial condition or results of operations. Forecasted trends in oil and gas exploration and development activities may not materialize, and demand for our products and services may not reflect the level of activity in the industry.

In addition, the locations where oil and gas companies choose to invest in exploration and production can have a material effect on our business. Demand for our products and services may not reflect the level of activity in the industry, as our data libraries are located in specific basins globally (including, in particular, the Gulf of Mexico, the North Sea and the Permian Basin) and approaches in the selection of products and services used for finding and producing oil and gas vary between customers and basins. Our offerings are preferred where high-end geoscience technology is perceived to lower the risks and costs associated with exploration and production but may not be the most cost-effective choice for producers exploring and producing in lower-risk areas. It is difficult to predict how and where oil and gas companies will choose to invest, as this is subject to a large number of considerations including, but not limited to:

- policies of governments regarding the development of oil and gas reserves in their territories;
- shareholder activism, activities by non-governmental organizations, or by the general public to restrict exploration and production of oil and natural gas;
- the overall costs and risks of exploring for and producing oil and gas in different locations;
- the oil and gas companies' perceived prospects of different global basins;
- oil and gas commodity pricing trends;
- short and medium term investment decisions changes following outbreak of Covid-19 and its impact on oil and gas prices;
- global and local economic and geopolitical conditions;
- the strategies selected by oil and gas companies to manage their portfolios;
- the ability of oil and gas companies to invest; and
- the development of technologies that can significantly affect the costs and risks associated with exploration and production.

If oil and gas companies decide to invest in regions where we are not active, where our data portfolio is less robust or where customers prefer lower-cost solutions, our business, results of operation and financial condition could be materially affected.

2.1.2.3 We need to attract and retain talented employees.

Our future results of operations will depend in part upon the continued service of our executive officers and other key management personnel, as well as our ability to retain highly skilled employees and to attract new ones. A number of our employees are highly skilled scientists and technicians. A limited supply of such skilled personnel is available, and demand from other companies may limit our ability to fill our human resources needs. In addition, given that we operate in multiple jurisdictions throughout the world, we face competition for highly skilled and qualified employees in various markets and as a result we are required to adapt our benefits packages to meet the expectations in local markets. If we are unable to hire and retain a sufficient number of qualified employees, this could impair our ability to compete in the geophysical services industry and to develop and protect our know-how. Following our transition out of the data acquisition business, we aim to attract skilled applicants for digital-focused careers, such as data scientists, and, as a result, need to refocus our recruitment strategies. If our new strategies are not successful, we may not be able to attract the most qualified talent. Our success also depends to a significant extent upon the abilities and efforts of our executive officers and members of our senior management, the loss of whom could materially adversely affect our business, financial condition and results of operations.

For more details, please refer to Chapter 3, paragraph 3.2.1. of this Document.

2.1.3 Financial Risks

2.1.3.1 We face risks related to Covid-19 outbreak

Economic uncertainty created by the Covid 19 pandemic, combined with the inability to date of oil suppliers to reach consensus to reduce production and the expected decline in oil demand resulting from an economic contraction, open a new period of uncertainty for the oil sector in general and for CGG in particular. It is difficult to predict how long the pandemic and current economic conditions and imbalance between supply and demand will persist, whether oil prices will remain at a low level, whether the current market conditions will deteriorate further, and which of our products and services may be adversely affected. We believe our current strategy is the right one to take us through a lengthy period of depressed activity should that occur, but current uncertainties are too great to assess how long the period might be and what actions CGG might take during that timeframe. We have substantial liquidity, with cash of US$610 million as of December 31, 2019 and no debt maturities before May 2023. However, we expect our results of operations, financial condition and cash flows to be materially adversely affected and substantially less than the 2020 objectives and 2021 targets that we have communicated previously.

2.1.3.2 We are exposed to exchange rate fluctuations

We derive a substantial portion of our revenues from international sales, subjecting us to risks relating to fluctuations in currency exchange rates. Our revenues and expenses are mainly denominated in US dollars and to a significantly lesser extent in euro, Canadian dollars, Mexican pesos, Brazilian reais, Australian dollars, Norwegian kroner, British pounds and Chinese yuan. A portion of our debt is denominated in euro and converted in US dollars at the closing exchange rate, which exposes us to fluctuations in the euro/US dollar rate.

Our net foreign exchange exposure is principally linked to the euro (with a net liability position of US$22 million as of December 31, 2019), the British pound (with a net liability position of US$9 million) and to a lesser extent the Brazilian real (with a net liability position of US$3 million). Fluctuations in the exchange rate of the US dollar against each of the euro, the British pound and the Brazilian real have had in the past and will have in the future a significant effect upon our results of operations.

As of December 31, 2019, the Group estimated that the annual recurring net expenses in euros were approximately €250 million and, as a result, an unfavorable variation of US$0.10 in the average yearly exchange rate of the euro against the US dollar would reduce our profit before tax and our shareholders' equity by approximately US$25 million.

We manage our balance sheet exposures (including debt exposure) by maintaining our monetary assets and liabilities in the same currency to the extent practicable and rebalancing through spot and forward currency sales or equity purchases or transactions. However, fluctuations in the values of the currencies in which we operate may still materially adversely affect our future results of operations.

2.1.3.3 We must comply with the restrictions and covenants in our current and future debt agreements

The indentures governing our outstanding debt securities contain, and other current and future debt agreements will contain, restrictive covenants that limit our ability to, among other things:

- incur or guarantee additional indebtedness or issue preferred shares;
- pay dividends or make other distributions;
- purchase equity interests or reimburse subordinated debt prior to its maturity;
- create or incur certain liens;
- enter into transactions with affiliates;
- issue or sell capital stock of subsidiaries;
- engage in sale-and-leaseback transactions;
- sell assets or merge or consolidate with another company; and
- enter into joint venture transactions.

The requirement to comply with these provisions may adversely affect our ability to react to changes in market conditions, take advantage of business opportunities we believe to be desirable, obtain future financing, sell assets, fund capital expenditures, or withstand a continuing or future downturn in our business.

Moreover, if we are unable to comply with the restrictions and covenants in the indentures governing our debt securities or in other current or future debt agreements, there could be a default under the terms of these indentures and agreements.

Our ability to comply with these restrictions and covenants may be affected by events beyond our control. As a result, we cannot assure you that we will be able to comply with these restrictions and covenants. In certain events of default under these agreements, lenders could terminate their commitments to lend or accelerate the loans or bonds and declare all amounts outstanding due and payable. Borrowings under other current or future debt instruments that contain cross-acceleration or cross-default provisions may also be accelerated and become due and payable. If any of these events occur, our assets might not be sufficient to repay in full all of our outstanding indebtedness, and we may be unable to find alternative financing. Even if we could obtain alternative financing, it might not be on terms that are favorable or acceptable to us.

2.1.3.4 Our debt may adversely affect our financial health and pose risks to our liquidity

As of December 31, 2019, our net financial debt (defined as gross financial debt less cash and cash equivalents) was US$540 million before giving effect to IFRS 16 and US$716 million after giving effect to IFRS 16. Our gross financial debt, as of December 31, 2019, was US$1,151 million (including US$12 million of accrued interest and bank overdrafts) before giving effect to IFRS 16 and US$1,326 million after giving effect to IFRS 16. As of December 31, 2019, our available financial resources amounted to US$534 million (including cash, cash equivalents and marketable securities and excluding trapped cash). See note 29 to our 2019 Consolidated Financial Statements for additional information.

Our ability to repay or refinance our indebtedness and fund our working capital needs and planned capital expenditures depends, among other things, on our future operating results, which will be partly the result of economic, financial, competitive and other factors beyond our control. In response to difficult market conditions, we finalized on February 21, 2018 the implementation of our Financial Restructuring Plan, which met our objectives of strengthening our balance sheet and providing financial flexibility to continue investing in the future. See "Our Business – History and development of the Parent – Financial Restructuring process" of our 2018 Reference Document and note 2 to our 2019 Consolidated Financial Statements.

It is difficult for us to predict with certainty our working capital needs. This difficulty is due primarily to working capital requirements related to the multi-client projects and the development and introduction of new lines of geophysical equipment products. For example, under specific circumstances, we may have to extend the length of payment terms we grant to customers or may increase our inventories substantially. We may therefore be subject to significant and rapid increases in our working capital needs that we may have difficulty financing on satisfactory terms, or at all, due notably to limitations in our debt agreements or market conditions.

Continued difficult conditions in the markets where we operate or volatility in the financial markets could have a material adverse effect on our ability to service or refinance all or a portion of our indebtedness or otherwise fund our operational requirements. We cannot be certain that additional funds will be available if needed to make future investments in certain projects, take advantage of acquisitions or other opportunities or respond to competitive pressures. If additional funds are not available, or are not available on terms satisfactory to us, there could be a material adverse impact on our business, financial condition and results of operation.

If we are unable to satisfy our debt obligations, we may have to seek alternative financing plans, such as refinancing or restructuring our indebtedness, selling assets, reducing or delaying capital investments or seeking to raise additional capital. Our ability and the conditions under which we may borrow funds to refinance existing debt or finance our operations depend on many factors, including conditions in credit markets, perceptions of our business and the corporate ratings attributed to us by rating agencies.

2.1.3.5 We face the risk of payment, supplier and other types of fraud

We have been and expect to continue to be subject to different types of attempted fraud such as payment fraud, supplier fraud, email fraud, imposter fraud, account takeover, fake invoices or purchase orders. Increasingly, such attempts take the form of advanced phishing campaigns and scams. We have adopted policies and procedures to detect fraud attempts, including phishing and impersonation scams, and have trained our employees in fraud prevention, but there can be no assurance that our ongoing policies and procedures will be followed at all times or will effectively detect and prevent every instance of fraud in every jurisdiction. As a result, we could be subject to penalties and reputational damage, with material adverse consequences on our business, financial condition or results of operations.

2.1.3.6 We are exposed to commercial, political and counterparty risk

We are subject to certain risks due to the nature and concentration of our customer base. We seek to reduce commercial risk by monitoring our customer credit profiles. In 2019, our two most significant customers accounted for 6.7% and 6.5% of our consolidated revenues, compared with 7.1% and 6.3% in 2018 and 11.0% and 8.3% in 2017. The loss of any of our significant customers or deterioration in our relations with any of them could affect our business, results of operations and financial condition. Some of our customers are national oil companies, which can result in longer payment terms for us and expose us to political risk. These customers represented around 26% of our revenue for the year ended December 31, 2019. In addition, in our international operations we work with a wide network of approximately 50 banks and are therefore subject to counterparty risk. As of December 31, 2019, 12% of our cash balances were located in banks rated below A3 by Moody's.

2.1.3.7 We invest significant amounts of money in our multi-client library, which we may not recover

We invest significant amounts of money in acquiring and processing the seismic data that we own and constitute our multi-client library. By making such investments, we are exposed to the following risks:

- we may not fully recover the costs we incurred through future sales. The amounts of sales are uncertain and depend on a variety of factors, many of which are beyond our control, including the market prices of oil and gas, customer demand for seismic data in our library and the availability of similar data from competitors. In addition, the timing of these sales is unpredictable, and sales can vary greatly from period to period;
- technological or regulatory changes or other developments could also adversely impact the value of the library. For example, regulatory changes such as limitations on drilling could affect the ability of our customers to develop exploration programs, either generally or in a specific location where we have acquired seismic data, and technological changes could make existing data obsolete;
- the value of our multi-client library could be adversely affected if any change occurs in the general prospects for oil and gas exploration, development and production activities in the areas where we acquire multi-client data or more generally.

In addition, there are a number of geoscience companies that create, market and license seismic data and maintain multi-client libraries. Competition for the acquisition of new seismic data among geoscience service providers has been historically intense and we expect this competition will continue to be intense. The above risks could have a material adverse effect on our business, financial condition or results of operations.

2.1.3.8 We may need to impair goodwill on our balance sheet

We have been involved in a number of business combinations leading to the recognition of goodwill on our balance sheet. In accordance with IFRS, goodwill is subject to impairment that could have material adverse effects on our results of operations.

As indicated in note 1 to our 2019 Consolidated Financial Statements, we review the recoverable amount of the cash generating units to which the goodwill is allocated at least at each statement of financial position closing date. To do so, we determine the value in use by estimating future cash flows expected from the cash generating units, discounted to their present value using the sector WACC estimated on a yearly basis. We recognize an impairment loss in income statement whenever the carrying amount exceeds the recoverable value. In addition to the yearly periodic test, we also perform impairment reviews whenever any indication exists that the cash generating unit may be impaired. Factors that could trigger such an *ad hoc* impairment review include, among others, the following:

- significant underperformance relative to expected operating results based upon historical and/or projected data;
- significant changes in the strategy for our overall business; and
- significant negative industry or economic trends.

In 2017, 2018 and 2019, we did not impair any goodwill. However, in the cyclical markets where we operate, we may in the future need to take potentially material goodwill write-downs.

2.1.3.9 We are subject to interest rate risk on our floating rate debt

We are subject to interest rate risks on our floating rate debt and when we refinance any of our debt. As of December 31, 2019, we had US$521 million of debt, under our second lien notes, bearing a floating rate of interest, such that an increase of one percentage point in the applicable three-month interest rate would have had a negative impact on our net results before taxes of US$5.2 million. Our second lien notes are subjects to paid-in-kind (PIK) interest at a fixed rate of 8.5%. As a result, the principal amount increases each period and as such, the variable component of interest is paid on an increasing amount each period. Although we may enter into and maintain certain hedging arrangements designed to fix a portion of these rates, we are not required to do so and there can be no assurance that hedging will continue to be available on commercially reasonable terms. Hedging itself carries certain risks, including that we may need to pay a significant amount (including costs) to terminate any hedging arrangements.

Changes in the monetary policies of the US Federal Reserve and the European Central Bank, developments in financial markets and changes in our perceived credit quality may increase our financing costs and consequently adversely impact our ability to refinance our indebtedness, which could have a negative impact on our business, liquidity, results of operations and financial condition.

2.1.3.10 We are restricted in our ability to pay dividends

We intend to introduce a meaningful dividends policy. Our ability to distribute dividends will depend on our capacity to generate positive retained earnings at the parent company level by charging corporate costs (including financial costs) to our subsidiaries in order to cover parent company expenses and receive dividends from subsidiaries. We cannot guarantee, due to our past losses, that our subsidiaries will have the capacity to distribute dividends to CGG SA or that this distribution will not trigger negative tax or foreign exchange consequences. In addition, we are also subject to restrictions on our ability to pay dividends under the indentures governing our debt securities and under any future agreements governing our debt.

2.1.4 Legal and Regulatory Risks

2.1.4.1 We remain subject to the terms of the Safeguard Plan

We must continue to comply with the terms of the Safeguard Plan until its maturity on November 30, 2027. In particular, we made certain undertakings pursuant to the letters exchanged with the judicial administrator and the supervising judge, as well as the *Direction Générale des Entreprises* that were acknowledged in the judgment approving the Safeguard Plan and described in 1.2 “History and significant events in the development of the Company’s activities – Financial restructuring process” of our 2018 Reference Document. If we do not comply with the terms of the Safeguard Plan, the Commercial Court of Paris may decide to cancel the Safeguard Plan after having obtained the opinion of the public prosecutor and the trustee (*commissaires à l’exécution*) upon presentation of its report. If we were to be insolvent (*cessation des paiements*) during the implementation of the Safeguard Plan, the Commercial Court of Paris would open a judicial reorganization proceeding (*redressement judiciaire*), or if such reorganization was obviously impossible, a judicial liquidation proceeding (*liquidation judiciaire*) (after having cancelled the Safeguard Plan).

The constraints under the Safeguard Plan and our undertakings acknowledged in the judgement could limit our ability to adapt to market developments and may reduce our flexibility with respect to operational management. For example, in order to effect our transition to an asset-light model in 2019, we successfully sought permission from the Commercial Court of Paris to amend the Safeguard Plan. We may in the future conclude that other amendments to the Safeguard Plan are necessary to protect and enhance our business, financial condition or results of operations.

To the extent the contemplated amendments to the Safeguard Plan are not considered material for the purposes and means of the plan within the meaning of Article L. 626-26 of the French Commercial Code, we may be able to make such amendments without court approval, although any amendment of our undertakings acknowledged in the judgement would require the prior authorization of the Commercial Court of Paris.

Any amendment that is material within the meaning of Article L. 626-26 of the French Commercial Code would first require the prior authorization of the banks and financial institutions’ committees and the General Meeting of bondholders, and the subsequent approval of the Commercial Court of Paris.

If we are delayed in obtaining, or are unable to obtain, the consents required under our Safeguard Plan to carry out our strategy or operational plans, there could be a material adverse effect on our business, financial condition or results of operations.

2.1.4.2 Our business and that of our customers are subject to complex laws and governmental regulations, and we may be subject to legal proceedings

Operating a business in many jurisdictions requires us, our agents and our partners to comply with international conventions and treaties, national, regional, state and local laws and regulations in force in these various jurisdictions. We invest financial and managerial resources to comply with these laws and related permit requirements. Our failure to comply with such laws could result in civil or criminal fines, enforcement actions, claims for personal injury or property damage, and obligations to investigate and/or remediate environmental contamination as well as an adverse impact on our reputation. Further, changes in such laws and regulations could affect the demand for our products or services or result in the need to modify our products and services, which may involve substantial costs or delays in sales and could have an adverse effect on our results. Moreover, if applicable laws and regulations, or the interpretation or enforcement thereof, become more stringent in the future, we could incur capital or operating costs beyond those currently anticipated.

In addition, our extensive range of seismic products and services also expose us to the risk of litigation and legal proceedings, including those related to product liability, personal injury and contract liability.

2.1.4.3 We may not be successful in maintaining the necessary regulatory authorization or licenses needed to operate our business and such authorizations and licenses may be invalid or may be subject to termination, revocation or material alterations in the event of a breach

We currently hold numerous regulatory authorizations and licenses necessary to operate our business. We cannot assure you that all of our authorizations or licenses are valid, that we will be able to maintain all authorizations and licenses necessary to operate our business or that we will be able to renew our authorizations or licenses when they expire. The loss of any of our authorizations or licenses or a material modification of the terms of any existing or renewed licenses may have a material adverse effect on our business, financial condition and result of operations. For instance, we could be excluded from the ability to tender on certain large projects.

Additionally, we must comply with national laws and regulations, and the terms and conditions of our licenses in order to maintain our licenses. If we are held to be in breach of any applicable law or the terms and conditions of our licenses, our licenses may be revoked. In addition, if our activity under our licenses is carried out in a manner that is deemed to conflict with applicable law or the terms and conditions of our licenses, and we fail to remedy such conflict within the applicable grace period, our licenses may be revoked. A revocation of any of our licenses could adversely affect our business, financial condition and results of operations.

2.1.5 Environmental and Social Risks

2.1.5.1 Health and Safety

We are exposed to various health and safety risks given the geographic range, operational diversity and technical complexity of our operations. Major health or safety incidents could result in injuries, loss of life and disruption to business activities, each of which could result in enforcement proceedings or litigation. Moreover, this could result in material damage to our reputation, since customers place great emphasis on hiring service providers with strong health and safety records.

For more details, please refer to Chapter 3, paragraph 3.2.2. of this Document.

2.1.5.2 We are exposed to financial risks related to compliance with environmental laws

We are subject to various laws and regulations in the countries where we operate, particularly with respect to environmental protection. These laws and regulations may also require Group companies to obtain licenses or permits prior to signing a contract or beginning our operations. Frequent changes in such laws and regulations make it difficult to predict the cost of compliance with environmental laws or their impact on our future operations. We are not involved in any legal proceedings relating to environmental matters and are not aware of any claim or any potential liability in this area that could have a significant effect on our business, financial condition or results of operations.

Laws or regulations intended to limit or reduce emissions of gases, such as carbon dioxide and methane, which may be contributing to climate change, or nitrogen oxides, may affect our operations or, more generally, the production and demand for fossil fuels such as oil and gas. The European Union has already established greenhouse gas regulations, and many other countries, including the United States, may do so in the future. This could impose additional direct or indirect costs on us as our suppliers incur additional costs that get passed on to us.

For more details on our environmental and climate policies, please refer to Chapter 3, paragraph 3.5.1 "Energy efficiency and carbon footprint" of this Document.

In addition, because our business depends on the level of activity in the oil and gas industry, the existing or future laws and regulations related to emissions of gases and climate change, including incentives to conserve energy or use alternative energy sources, could have a negative impact on our business if such laws or regulations reduce demand for oil and gas. Laws and regulations concerning the protection of the environment also significantly affect our customers' operations. The adoption of laws and regulations that directly or indirectly curtail exploration by oil and gas companies could also adversely affect our operations by reducing the demand for our geophysical products and services. To the extent that our customers' operations are disrupted by future laws and regulations, our own business, financial condition and results of operations may be materially and adversely affected. Beyond regulations, we are also witnessing a growing mistrust of populations towards carbon energies and a demand to accelerate the energy transformation. We recognize climate change as a risk on its own and we will continue our diversification efforts to reduce our oil & gas footprint. However long term projections show that the energy demand will continue to grow. The share of renewable energy will grow significantly, as the one for coal should reduce progressively and disappear. As for oil and gaz the needs should stabilize with a shift towards gaz. In this context, CGG should be able to maintain a position of leadership in this market.

2.2 Internal control and Risk management

2.2.1 Control Environment

The Company's internal control and risk management, conducted by the Board of Directors, by the management and by other personnel is designed to provide reasonable assurance regarding the achievement of objectives in the following areas:

- completion and optimization of operations, including the safeguarding of resources,
- reliability and accuracy of financial information, and
- compliance with applicable laws and regulations.

The principal objective of our internal control and risk management systems is to identify and control risks related to the activities of the Company, as well as the risks related to errors in accounting and financial reporting.

The Company is listed in France and is therefore subject to the French *Loi de Sécurité Financière*. The Company decided to apply the 2013 COSO internal control integrated framework, established by the Committee of Sponsoring Organizations of the Treadway Commission ("COSO 2013"). The *Autorité des Marchés Financiers* (AMF) has subsequently integrated the principal elements of COSO in its frame of reference.

Pursuant to the provisions of Article L. 225-100-1 of the French Commercial Code, this section includes a presentation of the main characteristics of internal control and risk management processes implemented by the Company with respect to the development and processing of accounting and financial information.

The control environment is the foundation of all the components that carry out internal control across the Group, providing discipline and structure. The discussion below describes the Group's Charts and Codes setting its expectations in integrity and ethics, it describes how the Group is organized and structured and how authority and responsibilities are delegated in the Group in order to assure efficient internal control environment, in particular with respect to the development and processing of accounting and financial information.

Integrity and Ethics

Integrity and Ethics are essential values for the Group.

The Company's standards and expectations in integrity and ethics are codified in its Chart of Ethics, in its Statement of Values and in its Code of Business Conduct, which apply to all employees of our Group.

These documents are widely distributed globally in the Group and they are available to all staff on the Group's employee internet portal.

To support the Code of Business Conduct, the Group has established an Ethics Committee. See section 3.1.1 of this Document for more details.

In addition, the Board of Directors implemented a Code of ethics which is applicable to the Chairman, the Chief Executive Officer, the members of the Executive Leadership team and the Disclosure Committee. This code defines rules of conduct and integrity which the persons must follow in the performance of their function and obligations relating to disclosure.

Organization of the Group

The Group's organizational structure provides the framework within which its activities for achieving its entity-wide objectives are planned, executed and controlled. Within this framework, key areas of authority and responsibility, as well as appropriate lines of reporting, are established. The organizational structure relative to internal control and risk management is described below.

The organizational structure of the Group has three main objectives:

- align the management structure with the Group's new profile and development strategy, taking into account the current business environment;
- better address the new technological and commercial challenges of our markets;
- be more agile and more efficient, allowing the Group to better face the current market conditions and be prepared for the future.

Segments

As of December 31, 2019, CGG was organized in two segments, as follows:

- Geology, Geophysics & Reservoir ("GGR"), including Geoscience (Subsurface Imaging, Geology, Reservoir, GeoSoftware and Smart Data Solutions, as well as Technology Function), and Multi-Client (including data libraries); and
- Equipment, which includes the following business equipment activities: land, marine, borehole and non-oil & gas equipment, as well as trademarks, such as Sercel, Metrolog, GRC and De Regt.

As a result of the announcement of our strategic plan, the Contractual Data Acquisition segment (including Marine, Land and Multi-physics business lines) is presented as discontinued operations and assets held for sale in accordance with IFRS 5.

Corporate Functions

Five Corporate functions, at the Group level, ensure a globally coordinated approach and provide support across all activities, *i.e.:* (i) the Finance Information Systems and Risk Management Function, (ii) the Human Resources and Facilities Function, (iii) Legal, Compliance and Trade Compliance Function, (iv) the Health, Safety and Environment & Sustainable Development Function, and (v) the Marketing, Sales and Communication Function.

Organization of the Group with respect to finance and internal control

The Chief Executive Officer

The Chief Executive Officer is given wide authority by the Board of Directors of the Company to manage the Company.

The Chief Executive Officer has ultimate ownership and responsibility for the internal control and risk management system. She ensures the existence of an efficient control environment, and she is responsible for seeing that all components of internal control and risk management are in place.

The Chief Executive Officer's responsibilities are sub-delegated to heads of the segments and functions. Thus they have responsibility for internal control and risk management related to their unit's objectives. They are responsible for the development and implementation of internal control rules and procedures that address their unit's objectives and ensure that these are consistent with the Group's objectives.

To achieve the goals set by the Board of Directors, the Chief Executive Officer manages the organization through the Executive Leadership team.

The Executive Leadership team

The Executive Leadership team is directly responsible for internal control and risk management in the Group. It defines the orientations for internal control and it oversees its implementation. These obligations are cascaded through the organization in each segment and each function.

The Executive Leadership team is chaired by the Chief Executive Officer and brings together the Heads of segments and functions (see composition in section 4.1.2.3 of this Document). It is a decision body which meets every month, and more often if necessary, for the review and general conduct of the business of the Group. The Executive Leadership team monitors and controls each business's performance as well as the implementation of the Group strategy and the carrying-out of its projects through the segments and functions. The members are interfacing regularly with the Board and the market and participate in the financial and business roadshows.

The Executive Leadership team shapes the values, principles and major operating policies that form the foundation of the Group's internal control system. It takes actions concerning the Group's organizational structure, content and communications of key policies and the planning and reporting systems the Group will use.

The Finance, Information Systems and Risk Management Function plays a key role in terms of development and processing of accounting and financial information. The role of this function is described hereafter.

Finance and Audit

The **Finance Function** is notably composed of the following departments, each playing critical roles in internal control and risk management:

- Group Financial Control: this department oversees the budgeting process as well as the monthly, quarterly and annual financial reporting. It prepares Group financial synthesis in close coordination with segments' financial controllers and is very closely involved in the preparation of the Board Committee's meetings (Audit Committee, Investment Committee, Appointment and Remuneration Committee). Along with the segments' financial controllers, it ensures, on a regular basis, oversight of the Group's operations and follow-up of the action plans initiated at the Group level. Finally, on a case by case basis, it also provides financial support for any significant investment. It is also in direct contact with the rating agencies. Finally, in connection with the Chief Accounting Officer, it oversees the department in charge of the supervision of the financial information systems.
- Accounting and Consolidation: headed by the Chief Accounting Officer, this department is, from a general standpoint, in charge of producing and supervising financial accounts within the Group, on a statutory basis for each group legal entity and on a consolidated basis and as part of the annual and quarterly reports. In this perspective, it elaborates and ensures that through the organization accounting procedures are in place and makes sure, on a continual basis, that they are in accordance with legal and regulatory reporting requirements applicable to financial information to be publicly released. This Department also has oversight of Internal Control of the Group. It oversees the implementation of processes and good practices to assure the effectiveness of Internal Control across the Group. This oversight is carried out under the Group's internal control manager.
- Treasury: this department ensures management of Group available funds and their investment as well as Group long-term financial resources (bonds…) and the relationships with the banking community. It oversees and manages risks associated with currency fluctuations, credit and counterparty risks. Treasury also prepares and presents to the CFO/CEO the Group financial condition on a monthly basis.
- Tax: from a general standpoint, this department is in charge of managing the Group tax obligations and supervising the associated risks. In this perspective, it oversees that all tax returns are filed in a timely manner all across the organization. On a case by case basis, it is involved by the operation teams ahead of significant projects in order to analyze and determine the most appropriate tax flows.

The **Internal Audit Department** has direct access to the Executive Leadership team and to the Board's Audit Committee; it assists them in carrying out their oversight responsibilities on the effectiveness of the Group's risk management, internal control and enterprise governance.

The Internal Audit Department evaluates internal controls on the basis of the COSO 2013 framework and tools and in compliance with the code of conduct of the Institute of Internal Auditors ("IIA"). Internal Audit has a charter which governs its operating procedures, approved by the Audit Committee. Internal Audit has continuously been certified by IFACI/IIA since June 2013.

The Group's significant entities are reviewed every year. Priorities are established based on current operations, the supposed level of risk and Group risk analysis performed by Risk management. The annual internal audit plan is defined by the Internal Audit Department, approved by the Executive Leadership team and the Audit Committee.

The Internal Audit Department conducts general reviews of entities, operational and compliance audits, and in-house consulting missions. Recommendations are issued as a result of the audits and the associated action plans are carried out by line management and monitored by Internal Audit until all open issues have been resolved.

Over the past three years, the units audited have accounted for approximately 75% of the average staff and 85% of the average revenues of the Group. In 2019, the internal audit activities were mostly dedicated to the major scope of activities of the Group, in particular Geoscience and Equipment legal entities, and processes considered as being a priority based on the assessments of risks exposure especially for the support functions. The annual budget of Internal Audit is slightly less than 0.1% of the Group revenues, which is in compliance with the standards existing for companies in the same industrial sector.

The Internal Audit Department is an independent body reporting to the Chief Executive Officer and to the Audit Committee.

The Group also has an **Internal Control Department** whose role is to support the organization in implementing and maintaining effective processes, and to ensure that controls mitigate effectively the risks identified. It also maintains our internal control framework and coordinates the evaluation system of internal control over financial reporting.

The Group has an Internal Control guide based on the COSO 2013 internal control framework which provides Group staff with a single source of internal control guidance. This guide was rolled-out across all sites, segments and support functions and aims at improving the Group risks management and oversight.

2.2.2 Internal Control procedures

a) Risk Management

The Group has put in place organization, process and procedure as well as working practices to manage risks, across the organization. The management of risks is fully integrated in the decision making process in the Group. The Group identifies and evaluates the principal risks that can impact the Group's operational and financial objectives or compromise compliance with laws and regulations. The Group manages risks through robust management systems, departments focused on specific risk areas and through cross Group processes.

The Group has implemented risk management flows throughout the organization to identify, assess and control risks:

- the identification of events that can have an impact on the Group comprises a combination of techniques and supporting tools including event inventories, internal analyses, risk interviews, process flow analysis, leading event indicators and loss event data methodologies;
- risk assessments are conducted to determine the extent to which potential events may have an impact on the Group. Risks are evaluated in terms of impact and probability. In assessing risks, managers consider impacts on people, health and safety; environment; financial situation; compliance with laws and regulations and the Group's reputation. The Group's risk assessment methodology comprises a combination of qualitative and quantitative techniques;
- risks are controlled through robust processes allowing their avoidance, reduction, sharing or acceptance. The Group employs comprehensive processes to reduce risk probability or risk severity or both. Control activities flow from policies and procedures established to manage risks.

The principles of the comprehensive risk management policy and framework are consistent with the recommendations issued by the professional standards (COSO ERM, ISO 31 000, AMF)

The Group has an integrated approach of risk management in the Group and control activities occur throughout the organization at all levels and in all functions.

The Risk Management department reports to the Finance, Information Systems and Risk Management Function and is responsible for implementing the Group ERM's system.

Risk Mapping

One of the products of the Group's risk management program is the Risk Map. The Risk Map is a management tool which provides a shared view in the Group of the risks that have the potential of material impact on the Group. The risks in the Risk Map are organized by risk family: Industrial and Operational risks, Technology risks, Financial and Strategic risks, Human Resources risks and Communications risks.

The Risk Map is presented to the Audit Committee on an annual basis.

Risk Monitoring and Coordination Committee

The Group has set up a Risk Monitoring and Coordination Committee in charge of following up the efficiency of the internal control and risk management systems. Its members are the Internal Audit Director, the Chief Accounting Officer, the Risk Management and Insurance Director and the Internal Control & Compliance Manager who acts as secretary of the Committee. The Committee meets on a monthly basis. The main assignments of the Committee are the following:

- information sharing on Group Internal Audit observations, events and facts relating to the quality of risk management and internal controls;
- follow-up the reported risks and most particularly internal control incidents which are classified by the Committee;
- recommendation and coordination of the mitigation or improvement actions taken in these fields;
- ensure consistency between our financial risk assessment and the assessment made by the external auditors.

b) Financial Security Management

Specific processes and controls have been put in place by the Group to assure that financial reporting is reliable and pertinent.

Financial information

Key processes such as the preparation of consolidated financial statements, documents for the Board of Directors and the Audit Committee, preparation of budgets, etc., are formally described.

Instructions of the Executive Leadership team with respect to Financial Security principles and objectives are regularly renewed to remind all financial and operational managers of each unit, the importance of internal control and the necessity to constantly see to its implementation, based on annual objectives and training at demand.

The Group has an accounting manual which sets forth its accounting practices, instructions and reporting rules. The accounting manual applies to all Group entities and is designed to ensure that the accounting rules are applied across the Group in a reliable and homogeneous way. It details procedures for closing the books, preparation of the income statement, balance sheet, cash flow statement as well as the consolidation process. Additionally, it outlines the principles for producing the notes to the consolidated financial statements.

To limit risks of fraud, processes of segregation of duties are in place from approval of the orders to payment of the vendors and suppliers.

All Group entities process consolidated accounts in the format chosen by the Group using a standardized package. All reclassifications from the corporate accounts to the consolidated accounts are documented using a specific standard format.

Intercompany transactions are carried out in various areas (different services, geophysical equipment sales, software licenses). The corresponding fees vary according to the nature of the transaction and in compliance with market conditions and transfer pricing policy.

Management software packages implemented within the Company in finance, logistics and procurement departments are critical components of the internal control system as they define in detail the processes to be applied in each of these areas.

Information technology infrastructure and information systems security

Information about technology infrastructure and information systems security is developed in section 3.4.4 of this Document.

Control of the disclosure of information externally

- the Group has a procedure which outlines rules for preparing, validating and approving press releases;
- the Group follows a pre-determined process for the preparation and distribution of its regulatory documents.

Disclosure Committee

A Disclosure Committee was put in place in order to:

- analyze the importance of information and determine the appropriateness of a disclosure, and if so according to what schedule, and to this purpose:
  - review all information to be published and their draft wording,
  - oversee disclosure procedures and coordinate disclosures to external parties (shareholders, market authorities, investors, the press etc.);
- provide guidelines for internal control procedures to ensure the reporting of material information to be disclosed within the framework of quarterly, semi-annual or annual communications to market authorities or destined for financial markets;
- inform the Chief Executive Officer and the Group Chief Financial Officer of any changes, deficiencies or material weaknesses pointed out by the Committee in the process of the reporting of information.

In 2019, the Committee was chaired by the SVP, Group Controller and Chief Accounting Officer and composed as follows:

- SEVP, Equipment and Acquisition;
- EVP, Geoscience;
- EVP, Multi-Client;
- VP Finance Marine and Acquisition;
- VP Finance Equipment;
- SVP Finance and strategy risks Geoscience and Multi-Client;
- Group Internal Audit Director;
- SVP Group Tax Director;
- SVP Group Treasurer;
- EVP Group General Counsel;
- SVP Group Communications and Investor Relations.

The Committee meets three times a year, *i.e.* once after closing of each semester and once a year for reviewing annual report prior to its disclosure.

c) Control activities

Processes implemented by the Group to identify necessary control procedures are based on risk assessments and on the necessary processes required to fulfill the Group's objectives.

Internal control procedures

Control procedures of the Group are implemented according to the hierarchical levels of personnel involved and the principles of materiality and the separation of functions. Control procedures are implemented in light of the identification of risks.

System of evaluation of Internal Control

Internal Control in the Group is evaluated through self-assessment tools and through internal audits.

Financial security annual objectives are set requiring self-assessments of all active Company entities using the *Internal Control Assessment Form (ICAF)*. This questionnaire includes approximately 60 prerequisites defined for operating Segments and support Functions. On an annual basis, the results of these reviews are consolidated, assessed and distributed to relevant managers; through these assessments, Internal Control improvement areas are identified.

Internal Control is continuously evaluated through a program of internal audits.

Financial and accounting controls

Internal control procedures in force in the Group are designed principally to ensure that accounting, financial and management information communicated to corporate bodies of the Group provide a fair presentation of the activity and situation of the Group.

- the financial statements of all the Group's subsidiaries are reviewed by the Finance Function. Physical inventories are carried out on a regular basis at each site, comparing the balance sheet values of inventories with those of the physical inventories. Variances noted are then corrected.
- access to the accounting information systems is formally restricted in accordance with the function and responsibilities of each user.
- current management information systems make it possible to record transactions in a complete and exact manner, to trace them and regularly back them up.
- all Intercompany transactions are documented and reconciled on given dates according to the transactions.
- the Company monitors its off-balance sheet commitments.
- comparisons and reconciliations are performed at various levels, particularly between reporting and consolidation. The consolidated financial statements are reviewed by the Chief Financial Officer at corporate level and the Business Lines controllers.

The Executive Leadership team fully supports this project as a contribution to a proper business control, which is also in line with the implementation of values and the application of the financial security program with our personnel.

d) Information and Disclosure

The Group's ability to meet its objectives depends on effective dissemination of information at all levels of the Group.

Quality standards, security requirements or legal and professional obligations demand that the procedures be documented and accessible. The Group encourages the sharing of knowledge and best practices. An internal site provides all personnel with access to charters, Group policies, annual objectives, general instructions, procedures, standards and other documents on which the Group's Management System is based. Generally, the internal site of the Group allows the achievement of a better communication and cooperation between the Group entities and the operating and support functions.

The Group organizes, generally on an annual basis, seminars for the Executive Leadership team and for certain senior Management and key managers around the globe.

The Group has implemented a weekly, monthly and quarterly reporting system according to the hierarchical levels and relevance, to obtain and exchange information necessary to carry out, manage and control operations. The data distributed concerns operations, finance, or legal and regulatory compliance issues. It includes not only data produced by the Group but also data related to the external environment.

Senior management evaluates the performance of the Group on the basis of both internal and external information.

e) Monitoring and Management Review

The Group's business environment is by nature continuously changing and evolving. As a result, the internal control system is continuously adapted taking into account the environmental conditions and past experience.

Operations are managed and evaluated against performance criteria on a day to day basis and monitored by successive levels of management in the organization, finally being reviewed by the Executive Leadership team. Management carries out periodic evaluations, taking into account the nature and importance of any changes which may have occurred.

Key indicators have been identified to signal risk environment changes and adverse trends. These are reviewed in management meetings at each level. Transverse Functions assist the Segments in monitoring these indicators and when necessary focus attention on specific Group risks.

The Group has implemented a global incident monitoring system for round the clock alerts; actual incidents and High Potential Incidents (HPIs) anywhere in our operations must be reported within 24 hours to the relevant management level.

The Board, through its Committees regularly reviews key risks faced by the Group. The Board receives annually a mapping of the key risks facing the Group and is informed on the organization of the Group's risk management program as well as on the key risk controls put in place. Through the Audit Committee, the HSE and Sustainable Development Committee, the Technology Committee, the Appointment and Remuneration Committee and the Investment Committee, specific risks in the domain of each Committee are reviewed.

f) Reasonable Assurance

Every system of internal control, however well-designed and effective, has inherent limitations. Notably, there is a residual risk that controls may be circumvented or bypassed. This means that the internal control system can offer only a reasonable assurance as to the reliability and sincerity of financial statements. Furthermore, the effectiveness of internal control procedures may vary over time, in response to new circumstances.

In order to evaluate the effectiveness of internal control procedures on a regular and formal basis and beyond the related actions undertaken by the internal audit management, the Group has put in place a tool for internal control self-evaluation for all units of the Group. At the Corporate level, a Compliance Officer has been appointed thus showing the Group commitment to good corporate governance rules.

2.3 Insurance

The Risk Management Department determines whether the assessed residual risks to which the Group entities and businesses are exposed can be transferred through insurance policies

A robust Insurance program has been implemented at the Group level. The key risks are covered by Master insurance policies, negotiated with leading reputable insurance companies.

Local insurance programs are subscribed worldwide either to cover specific risks or in response to local legal or regulatory insurance requirements.

We have put in place insurance coverage against certain operating hazards, including but not limited to product liability claims, personal injury claims, Business interruption, in amounts we consider appropriate in accordance with industry practice. Our risk coverage policy reflects our objective of covering major claims that could affect the Group. We review the adequacy of insurance coverage for risks we face periodically.

Whenever possible, we obtain agreements from clients, contractors that limit our liability.

However, our insurance coverage may not be sufficient to fully indemnify us against liabilities arising from pending and future claims or our insurance coverage may not be adequate in all circumstances or against all hazards.

2.4 Litigation

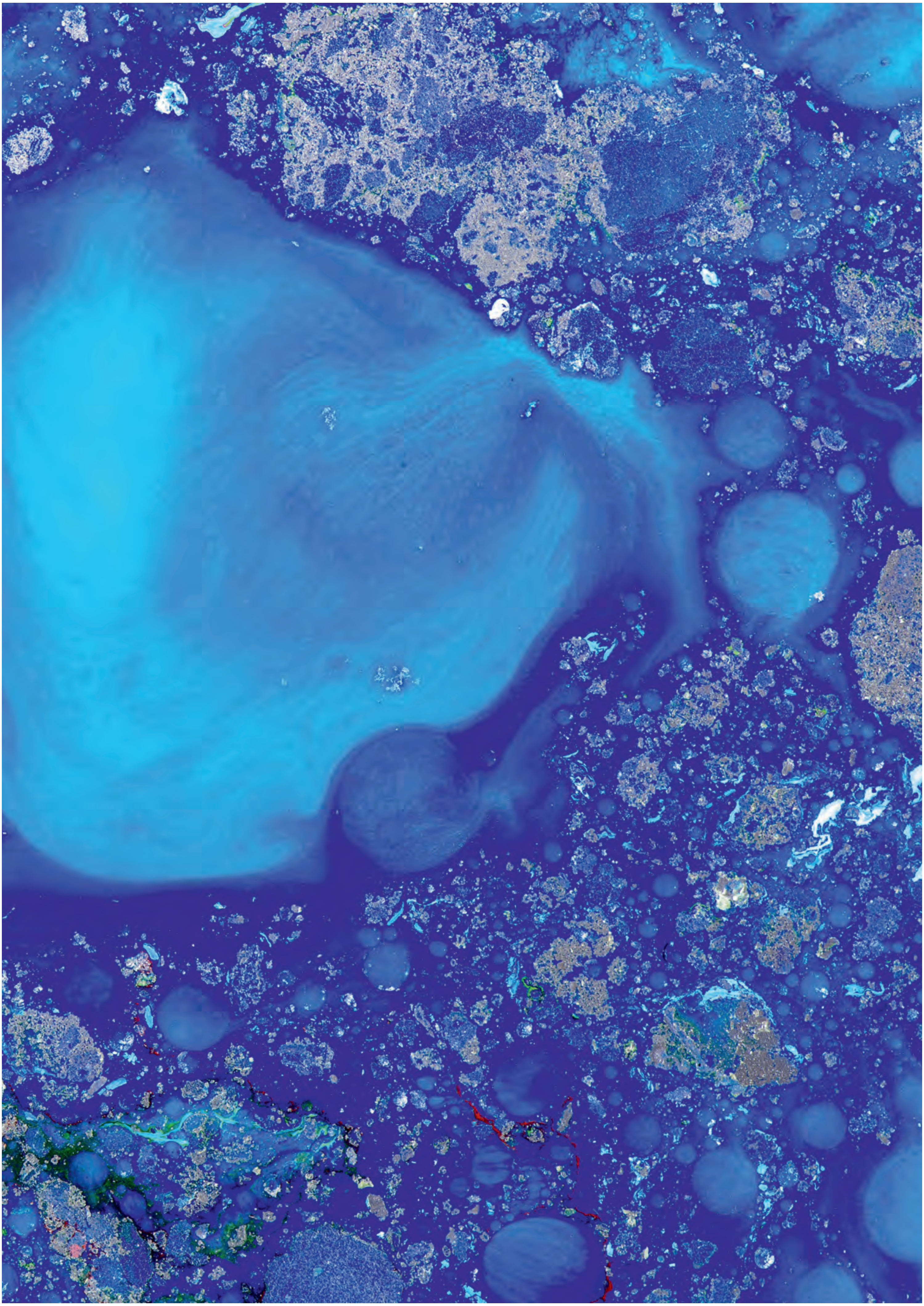
From time to time we are involved in legal proceedings arising in the normal course of our business. We do not expect that any of these proceedings, either individually or in the aggregate, will result in a material adverse effect on our consolidated financial condition or results of operations.

Arbitration proceedings in India

On March 18, 2013, CGG Services SAS, a fully owned subsidiary of CGG SA, initiated arbitration proceedings against ONGC, an Indian company, to recover certain unpaid amounts under three commercial contracts entered into by ONGC and CGG Services SAS on one hand and ONGC and Wavefield Inseis AS on the other hand, between 2008 and 2010. The Arbitration Tribunal issued an award in favor of CGG on July 26, 2017. ONGC submitted an appeal against the Tribunal award on October 27, 2017. On January 6, 2020, ONGC's application to set aside the Tribunal awards was dismissed by the Bombay High Court without costs. ONGC is entitled to submit an appeal against the Bombay High Court's decision within 120 days thereof (with condonation of delay). We believe that the Tribunal's award which is affirmed by the recent Bombay High Court's judgment will allow us to recover at a minimum the amount of the receivables that are recorded on our balance sheet as unpaid receivables as of December 31, 2019.

Decision from the French Supreme Court relating to the challenge of the Safeguard Plan by certain holders of convertible bonds

On February 26, 2020, the French Supreme Court dismissed the appeal filed by certain holders of convertible bonds, challenging the safeguard plan, putting a definitive end to this litigation. For more information, see section 1.8 "Recent events" of this Universal Registration Document.



3

Statement on non-financial performance

3.1 CGG's non-financial risks and opportunities

CGG is a global geoscience technology company which provides a comprehensive range of data, products and equipment that supports the discovery and responsible management of the Earth's natural resources. Our Business Model is described in the introductory book of this Document, on page 12.

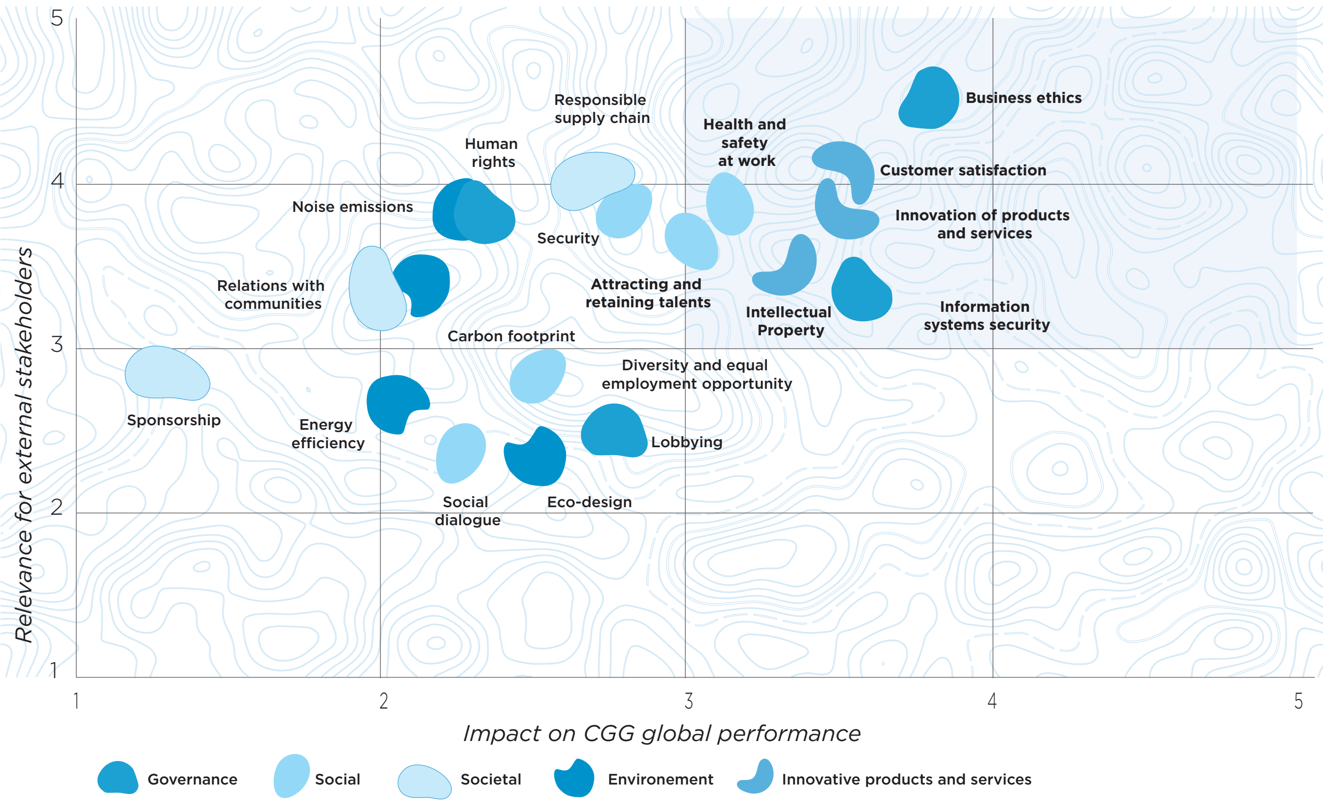
Consistent with CGG's transition in 2019 to an asset light mode of operation, the Company conducted a materiality analysis covering its risks and opportunities at the year. We mandated an external CSR consultant, Tennaxia, to conduct this materiality analysis. The analysis covers all non-financial aspects liable to affect our strategy, business model and performance or which could significantly influence our stakeholders as well as their view of the company. It covers social, societal, environmental, governance and innovation aspects.

Materiality methodology

We conducted a benchmark of sectoral documents, peers and internal documentation to identify the main concerns of our sector. We then performed interviews of CGG employees as well as external stakeholders (including customers, sectoral and non-governmental organisations) during which participants rated each issue according to the financial, license to operate, reputation and compliance risks posed on a scale of 1 to 5. All evaluations, weighted by type of risk, were consolidated into a matrix.

CGG responses are plotted on the X axis, our external stakeholders are on the Y axis. Ratings are as follow: 1) very low 2) low 3) medium 4) high 5) major. Our seven most material issues are identified in bold in the top-right area.

CGG materiality matrix results



Our key issues according to our materiality analysis are:

- **Governance**: Business ethics, Information systems security;
- **Innovative products and services**: Customer satisfaction, Innovation of products and services, Intellectual property;
- **Social issues**: Health and safety at work, Attracting and retaining talents.

3.2 Human resources

3.2.1 Talent attraction and retention

Key Performance Indicators

KPIs (excluding acquisition)	2019
Voluntary turnover	5.9%
Seniority of employees	13.4 years
Share of employees with a seniority over 5 years	80%
Equality Index (for men & women)	92/100
Gender split at CGG (M/F)	69%/31%
Gender split in the recruitments (M/F)	73%/27%

CGG operates on a competitive market in terms of talent acquisition and retention. By exiting the data acquisition business, the company has made a shift in terms of main expected key competencies for our employees. To attract key talents in this new context, we have to demonstrate we are an attractive place to work on all our existing and prospective markets and offer exciting career paths to all talents.

Retention of our talents is also a top priority. Satisfying our customers with high quality products and services is obviously linked to developing the skills of our employees, offering them a clear career path and making sure that they have the best work environment. It is an essential factor to exceed our customers' expectations.

Attracting talents

We have developed a global recruitment process to manage all available job postings and applications. Our applicant tracking system (ATS) is a standard tool but it is supported by a sourcing policy which aims to publish the job postings where they can have the most impact, such as message boards, professional groups and social media. This proactive approach means that those who are not actively seeking a job at CGG will be made aware of the jobs and careers that we offer. This approach was launched in 2018 and continued in 2019.

With our transition out of the contractual data acquisition business, we also wish to rebrand our external stakeholders' perception of the Group to improve our applicants' knowledge of our activities and career opportunities and ultimately improve our attractiveness. This rebranding started in 2019. As CGG shifts towards increasingly digital careers for data scientists, our talent attraction policies must support this shift in communication.

Developing partnerships with universities

CGG has a long and very proud history of working with universities around the world to help nurture students and develop the field of geoscience. As a software provider, we believe that donating our software suits to education facilities will help develop the potential of tomorrow's top geophysicists and consolidate our position as a leader in geoscience data analysis, helping us recruit the best talents in the field.

We proved that in 2019 by gifting twenty advanced geoscience software suites, to the University of Malaya. This effort was recently rewarded by the University of Malaya's excellence awards as "Best Corporate Partner – Human Capital Development" for 2019.

Retaining talents

CGG is a multicultural group with multiple locations throughout the world. Our talent management system is structured so that it can be adapted to each country need in order to maximize their relevance to the local job market.

Benchmarks are used to help position ourselves in comparison to our peers for each market and offer an attractive package for all our employees. For example, CGG USA employees' benefits range from pensions to medical coverage. Trainings and career development is also adapted locally in order to maximize the relevance of our actions to the local context and needs.

Individual career management

CGG is strongly attached to the development of its employees throughout their careers. We perform annual performance reviews, people review and prepare succession plans. However, we believe that career management is not something that can be addressed just once a year. We have developed a performance management procedure that focuses on the development of each person's performance throughout the year and on their development as an individual. This encompasses continuous improvement and feedback.

We have developed an Employee Assistance Program (EAP), which helps the employees in case they are facing difficulties on a variety of topics such as legal assistance, financial planning and health issues.

Equal opportunities at CGG

CGG absolutely believes that offering equal opportunities to all candidates and employees is an important part of attracting and retaining talents. We are committed to both equal opportunity and equal pay to all our employees regardless of gender, race or any other potentially discriminating factor.

Although the Oil & Gas sector is a traditionally male-dominated sector, we energetically encourage all candidates to join our industry and wish to actively embrace the current change and efforts to increase the diversity of our industry. Our CEO Sophie ZURQUIYAH has reaffirmed CGG's commitment to be an equal opportunity employer.

The equality index published by CGG SA and CGG Services SAS for 2019 is an excellent example of that commitment: we reached a score of 92/100. The index, calculated on the French scope and mandatory in France, analyses the gap between women and men in terms of pay; pay raises; promotions; pay raises after maternity leaves; parity between the top ten highest salaries.

3.2.2 Health, safety and security of our employees and subcontractors

Key Performance Indicators

KPIs (excluding acquisition)	2019
Total Recordable Cases Frequency rate (TRCF)	1.62
Lost Time Injury Frequency rate (LTIF)	0.99
Severity rate	0.020
Recordable occupational illness cases frequency rate	0.00
Exposure hours *(in million)*	11.1

HSE at CGG

CGG has developed a mature HSE (Health & Safety and the Environment – with Security as an added element) policy whose priority is to prevent all workplace accidents or occupational diseases of employees and contractors. Our underlying leitmotiv is that each of our employees and contractors should be able to return home unharmed.

We recognize the international ILO conventions and laws and comply with all applicable national and industry HSE regulations. We also contribute actively to advancing industry standards and best practices. CGG continues to play an active role in the HSE Committee of the International Association of Geophysical Contractors (IAGC) and participates in workgroups organized by the International Oil and Gas Producers (IOGP).

Our HSE Policy

A new HSE policy was launched in April 2018 with the change of Governance. Our HSE principles are as follow:

- CGG provides a healthy, safe and environmentally friendly workplace and promotes the awareness of workplace hazards;
- we protect our employees, contractors and assets against criminal, hostile or malicious acts;
- we regularly monitor our employees' health program and promote wellness;
- we are committed to promoting a working environment that is free from illicit substances and tobacco use;
- we apply eco-design principles and mitigation to prevent and remediate harmful effects on the environment;
- we respect and promote human rights, maintain mutually beneficial relationships with local communities and develop local content where practicable.

Its principles are integrated in our risk management, business planning and processes.

We integrate our contractors in our HSE reports and hold them to the same high expectations as our own employees. Good HSE management requires transparent reporting and fast and efficient communication. Strict reporting of all events, near-misses and hazards is critical for obtaining the best results.

CGG has developed an internal tool called PRISM for this purpose. PRISM is an application that allows for information reporting and sharing on HSE, Quality and Social Responsibility and InfoSec. The application is deployed on all CGG sites and operational units. It also allows us to produce analyses and monitor performance – including risk assessment and management – and to manage action points. All CGG employees have access to it. Incidents are assessed based on their real and potential risk. A subscription system allows for immediate notification to the appropriate level of management, including to the highest level for high potential incidents.

Our transition away from data acquisition has not changed our commitment to HSE and we wish to protect all our employees and contractors. The frequency of exposition of our employees to the risks associated with our activity may have decreased but the impact in case of an accident remains equally as high. We therefore wish to keep in line with our previous HSE policies and requirement levels.

We have developed our own HSE Operating Management System (HSE-OMS) that focuses specifically on deploying the policy.

Risk management is at the core of our HSE-OMS Operating Management System. The Group has a structured approach aimed at identifying, evaluating and controlling risks, based on a common group-wide international methodology and model for risk management. Risk assessments are performed on each project or permanent installation. They incorporate the history of incidents recorded in the Group database as well as those in the database shared with the International Association of Geophysical Contractors (IAGC), which now covers several decades of incidents.

It is supported by a network of HSE coordinators in each Business Line and on each of our sites. The Senior Vice President in charge of HSE and Sustainable Development (SVP HSE SD) reports directly to the CEO and is an active member of the Executive Leadership team.

A Board Committee made of four administrators, the CEO and SVP HSE-SD meets three times per year with a systematic review of the global HSE-SD performance, including near incidents, and a focus on specific risks to present the measures which were implemented to mitigate the exposure of the employees and contractors.

Deployment of Care & Protect

Following the new HSE policy launched in 2018, we deployed the 2019-2021 goals of our "Care & Protect" brand. Set by our CEO, they present our Corporate HSE goals for the next three years and highlight both the fact that all accidents can be prevented and the importance of proactivity in HSE. The global objectives set are then specified by each Business Line every year, in line with the Group's three years plan. To further their implementation, executive staff and line managers have personal objectives on the matter.

We also rewarded projects at our "Care & Protect" awards, a yearly event that looks at the best practices among the Group for HSE and sustainable development. Early 2019 four projects received a price in the following categories:

- Health, Safety and Security Excellence Category;
  - Sercel Houston: Cable Bend Over Sheave (CBOS) Equipment Improvement Initiative,
  - a Special Jury Award for long term achievement went also to a CGG Marine team for Maritime Contract Management,
- Sustainable Development Excellence Category;
  - Australia: Promoting Mental Health and Well-being,
  - a Special Jury Award for long-term achievement went also to Mexico for the *Reciclatón* recycling project.

Security of employees and contractors

In addition to the health and safety of our employees and contractors, their security has become increasingly important in certain regions. CGG has implemented a security intelligence and monitoring system to identify and assess threats in areas prone to maritime piracy and potentially unstable areas onshore. The projects in the areas at risk are reviewed at the highest level. Their assessment is supported by security experts. Local security plans, tied to the project, are put in place before operations start. In addition, all personnel receive regular security information on their country of operations. All travel request to high-risk security areas goes to a review and validation process at the Group level.

3.3 Social matters

3.3.1 Business Ethics

Key Performance Indicators

KPIs	2019
Percentage of employees that followed the Ethics e-learning course	85%
Number of alerts received by the Ethics Committee	8

CGG and its stakeholders expect our employees to hold an irreproachable attitude in both our processes and our business conduct. Business Ethics at CGG focuses on creating value by complying with existing laws and rules and acting in an ethical manner. Compliance relates to the procedures which CGG will use to operate while ethics covers the individual actions of CGG employees.

A Compliance Department and an Ethics Committee

We have traditionally managed Ethics through the dedicated Ethics Committee. Since 2015, it is also managed by the Compliance Department. The Ethics Committee is constituted of five members (with representatives of the Human Resources, the Multi-Client, and Geoscience and Equipment Business Lines, as well as the Group Compliance Officer), based in different locations, to ensure both a diverse geographical and professional background and diversity. It meets every 5 to 6 weeks and presents yearly reports to both the leadership Executive team and the Audit Committees. Annually, it also defines the priorities in terms of ethics and compliance, which are discussed and presented to the Audit Committee and validated by the CEO.

We have identified our key corruption risks and developed corresponding procedures to mitigate them and continued to reinforce our anti-corruption approach at Group level to compliance with *Sapin II* Law. The Compliance Department, with the BLs and Finance Teams, Enterprise Risk Management (ERM) have worked very closely to review, update and release our anti-corruption risk matrix validated by the Leadership Executive Committee. One goal for 2020 is to make sure this matrix is communicated to all relevant employees. We have also reviewed and initiated the review of our procedures to adapt them to the new size and organization of the Group.

The Group developed an internal e-learning on anti-corruption for its employees that was launched at the end of 2018. As of 2019, 85% of CGG employees had followed it. Several discussions and workshops were also organized with the employees most exposed to the risk of corruption.

Fight against tax evasion

For this fiscal year, no consequences in relation to the Group's activities were identified regarding this issue during the implementation of the appropriate internal control measures.

Communicating on Business Ethics

There was much communication in 2019 to improve the visibility of the Ethics Committee and awareness of employees of what the Committee's does and what its goals/objectives are. For example, regular discussions were held on Ethics & Compliance with the Country Managers; this new initiative was well received.

Code of conduct

CGG finalized a new Code of Business Conduct (CBC) in 2019 which covers the Group's fundamental principles, measures to respect in order to protect the business and the brand, the persons and the environment and the assets and the information. The CBC was released early 2020 and is voluntarily concise to maximize its impact.

The 2019 version includes seven new topics:

- fraud;
- data privacy;
- trade compliance;
- fiscal evasion;
- money laundering;
- social media;
- information systems security.

In terms of data privacy, CGG also worked on the EU-US Privacy Shield in 2019 to comply with EU and US regulation in terms of personal data protection.

E-learnings

Several e-learnings are mandatory at Group level for all employees regarding different topics falling under the CBC (trade compliance, harassment, anti-corruption, information security, etc.). The intention is to update the existing e-learnings and develop new ones in addition to other communications tools on every topic covered by the CBC (such as one page of "DOs and DON'Ts" for each topic). The specific ethics e-learning course will be updated in 2020.

While each department manages the e-learnings that are under its scope, the goal is to coordinate those e-learnings with the objectives of the Ethics Committee to ensure a harmonized communication between channels.

Identifying and reporting on business ethics

CGG updated and released its alert system on a web base solution in 2019 to enable employees to report any suspected violations of the CBC. Several other channels exist to complement this web alert. Any person can address their concern to their manager, HR correspondent or country manager, or contact any members of the Ethics Committee directly. If needed, they can also send an email directly to the Ethics Committee. In 2019, 8 cases were reported to the Ethics Committee. 7 were investigated with an official report and recommendations.

2020 goals

In 2020, CGG wishes to:

- keep deploying the new CBC and communicating on Ethics;
- review and adapt the Compliance program and anti-corruption due diligence processes, instructions and controls of third parties to adapt them to the Group's new size and organization;
- make sure that action plan identified in the Anti-Corruption risks matrices are implemented.

3.3.2 Responsible Supply Chain

The Responsible Supply Chain is more of an opportunity for the future given its positioning in the materiality matrix. However it remains material in 2019 considering the phasing out of data acquisition activities in 2019.

Key Performance Indicators

KPIs	2019
Percentage of sourcing and supply chain employees that followed the anti-corruption e-learning course	92%
Percentage of suppliers having signed the Supplier Code of Conduct *or* with a purchasing order mentioning the Supplier Code of Conduct*	100%**

* *Equipment Division not included*
** *The Supplier Code of Conduct is in CGG Terms and Conditions automatically attached to all PO's. The traceability of the signature of the Code of conduct by the supplier for transactions without purchasing order is still under implementation in 2019.*

The global performance of CGG depends partly on our suppliers' own performance in terms of delivering products and services. The Sourcing & Supply chain function in the organization is responsible for ensuring that the performance of CGG' suppliers is properly assessed. To this effect, CGG has written a Supplier Assessment Procedure which governs the assessment of our suppliers. Sustainability is one of its components as any fault in our suppliers' corporate responsibility could negatively impact the reputation of CGG.

Supplier Assessment Procedure

Main suppliers

For our main suppliers, we assess their financial situation and market position, their dependency on CGG as well as the risks related to their HSE & Sustainable Development, information security, trade compliance, legal & regulation performances.

Selecting new suppliers

All new suppliers which may pose an HSE risk are subject to a compliance audit with an audit report. They may also be assessed on the same metrics as for our main suppliers and at a minimum, must receive our Suppliers Code of Conduct.

When our supplier provides critical products or services, an onsite audit is conducted which covers quality, HSE and Sustainable Development metrics. Conclusions are also traced in an audit report.

Code of Business Conduct (CBC)

Our Group Code of Business Conduct ("CBC"), which covers protection of people and the environment, protection of activities and the brand, protection of assets and information, explicitly mentions that each subcontractor working for the Group must comply with the Code of Business Conduct.

Suppliers Code of Conduct (SCC)

We are committed to doing business with suppliers who conduct business in a safe, legal and ethical manner with respect for employees, local communities and the environment. Consequently, we ask of our suppliers to ensure their operations are undertaken in accordance with the commitments listed and that they sign our Supplier Code of Conduct.

It covers Business Ethics, Compliance, Local Communities, Human and Labor Rights as well as Health, Safety, Security & the Environment. This Code of Conduct is dated and signed (if applicable) by our suppliers.

If this is not possible (our suppliers may follow their own internal code and/or be so large that it would be impossible to follow all of their customers' codes), we may add terms in our purchasing orders mentioning that they should conform themselves to our Supplier Code of Conduct.

2019 events

In 2019, 92% of our sourcing and supply chain employees (IT sourcing managers, supply chain global managers and purchasers) followed an e-learning course on anti-corruption.

3.3.3 Relations with local communities

Key Performance Indicators

KPIs	2019
Total Number of Social Development initiatives	**89**
Community service	*27*
Education	*18*
Environment	*27*
Health & Safety	*17*
Number of employees involved in volunteering	**2,903**
Number of volunteering hours	**872**
Cash granted by CGG & employees (excluding Babyloan)	**US$ 74,458**

Before the divestment of our data acquisition activities, local communities were a very important stakeholder as they were directly impacted by our acquisition activities. We would communicate regularly and develop programs to minimize our negative impacts on the ground and maximize the positive outcomes. The Group's new scope will be much more office-based, with a reduced impact on local communities. However, we wish to be an actor of each of our offices' local communities, with each office acting at their individual scale on the local environment.

The larger CGG sites (usually above 50 people) have Sustainable Development Committees. Those are local initiatives that are not managed at Group level, so each committee decides of its actions.

In the Geoscience activities, nearly a hundred local actions took place during the year. Those were related to community services, environmental preservation, education and health and safety.

Micro-loans with Babyloan

Since 2012 CGG has developed a partnership program with Babyloan a micro finance organization. Through several initiatives in 2012, 2013 and 2014 employees were able to choose a project from a catalogue and invest a certain amount in that project. These small-scale loans enable our employees to choose projects which speak to them and help entrepreneurs on the ground who would not normally have access to financial services. The sum was matched by CGG and over the years CGG has invested €41.474 that were re-invested 15.3 times supporting 1009 projects to date. For the year 2019 alone €67.600 were lent from the CGG kitty supporting 79 micro entrepreneurs projects. CGG intend to revitalise the partnership with Babyloan in 2020 by introducing a more participative approach to the allocations of funds to projects.

Sponsoring startups

In collaboration with EFI Automotive, an independent international company (premium automotive supplier), which develops innovative sensors, actuators and technological products for the automobile industry, a team of our Equipment Division engineers participates actively in AXANDUS, a group of seasoned experts in the field of product design, industrialization and international business development. Axandus accelerates the growth of innovative companies in the field of mechatronics and connected objects, helping them scale up quickly for mass production and international markets.

3.4 Innovation and customer satisfaction

3.4.1 Innovation of products and services

Key Performance Indicators

KPIs	2019
Total capital expenditure (mUS$)	76
Share of Group revenues invested in research and development	6%
Share of Equipment revenues invested in research and development	9%
Share of CGG (excluding Equipment) revenues invested in research and development	4%

CGG wants to be recognized as the sector leader that provides the best products and services to its customers. In order to achieve this ambitious target, we have set up a strong investment policy for our Research & Development ("R&D") in order to meet the clients' expectations of acquiring reliable data of the highest quality.

Geoscience strategy

CGG's innovation strategy for its Geosciences services is to aim for:

- the clearest image definition;
- the highest possible seismic resolution; and
- with minimal uncertainty.

Providing our clients with higher quality data helps them to identify more clearly where the reservoirs with the best output are located, as well as the places to drill, and minimize risks and maximize efficiency. Drilling holes with a better precision can help avoid geohazards and reduce the number of dry holes, reducing costs and clients' overall environmental impact and maximizing their efficiency.

The main goal of the R&D department is to develop data of the highest quality. Our investments are therefore oriented towards that purpose as we believe cheap services with low-quality data would incur further costs for its clients in the long-term. When we innovate to develop a new, better technology, we however analyze where costs can be reduced without compromising the data quality.

How the strategy is implemented

A strategic team is set up to monitor and evaluate any potential disruptive technology that could be applicable for CGG (such as machine learning). If no disruptive technology is identified, we will aim to develop our own in-house innovations.

In order to innovate, we wish to recruit the best talents in the industry. The Group is part of the Geophysics consortium and has partnered with 123 universities throughout the world to identify, train and recruit talents which help CGG develop today's and tomorrow's innovations.

The Group's R&D teams are spread out across the world. Each team works on either separate or collective projects, in a proactive way that ensures that we will keep developing the most useful and efficient technologies for its customers. They are constituted of several people at any moment, both to boost the exchange of ideas and to prevent single points of failure if a person were to leave the team.

Because the best technologies in our field are rarely available on the market, and because the lifetime of a single innovation is very short (usually under 2 years), developing our own in-house innovations ensures that we remain a leader of the market in that matter and can propose constant innovative solutions instead of relying on external companies' technologies.

CGG also has a competitive edge in the matter as all its new algorithms are tested using CGG's powerful computing facilities, which means the new algorithms are applied to massive data sets. As a result, CGG has extensive knowledge on where and how its new algorithms work in different environments. This contrasts with external innovations which are potentially not robust enough or have not been tested on data sets as large as CGG's.

Algorithm patents are not an inherent part of CGG's Geoscience strategy. Because they can be bypassed too easily, CGG prefers not to apply for patents and instead to qualify its innovations as trade secrets.

2019 Events

The year 2019 saw no radical changes in CGG's strategy related to its innovation strategy.

Ocean Bottom Nodes (OBN)

We pursued our R&D on OBN in 2019. OBN Data is acquired directly at the bottom of the ocean rather than through towed streamer and therefore is of higher quality for processing. Our OBN processing tools improved throughout the year.

Full Waveform Inversion

Time-lag FWI (TLFWI) is a robust approach which minimizes classic FWI cycle-skipping issues related to inaccurate starting models, amplitude mismatches and poor signal-to-noise ratio. TLFWI is proving highly successful for salt and near-salt velocity updates in challenging geological environments such as deep-water Gulf of Mexico, on both towed streamer and OBN data sets.

We worked successfully on making TLFWI more efficient in 2019, by combining new data with new algorithms in order to help customers reach a much better image in complex environments. Improving TLFWI technology increases positive outcomes by opening new opportunities and mitigating negative outcomes by reducing risks. As a result, CGG is the undisputable leader in OBN data processing with the highest market share of the segment.

Innovation at our Equipment Division

The seismic industry constantly seeks more efficient, reliable products which provide better data. As a supplier of such products, innovating is crucial for our brand Sercel if we wish to remain a leader in the sector. Innovation must come from our products, services and the way in which we conduct business. We must also innovate to offer new solutions in a context of global pressure on prices.

Developing new products

Sercel teams conduct regular technological watches to stay aware of the market's evolution and identify new opportunities. An innovation cell was created in 2019 to focus on technologies, business and markets. We also dialogue with our customers regularly which creates innovation opportunities by identifying their requirements for products functionalities.

The decision to develop and launch a product that meets those needs is taken by the Product Strategy Committee, which includes the executive team. Before taking a decision, we will estimate the market potential, R&D and product costs and anticipated return on investment. We are supported in those decisions by our Product Champions, a team of experts which focus on a product or range of products and which intervene to train and support our customers when the needs arise. They may also be proactive to propose new product developments.

Where applicable, we try to mutualize innovation for both Land & Marine activities. This increases the chances of developing innovative products or solutions which apply to both activities and avoids parallel research of the same concepts.

2019 innovation highlights

Sercel announced WiNG in 2019 (Wireless Next-Generation). It is a fully integrated wireless nodal acquisition system that combines optimum field operational efficiency with the highest level of data quality available to support the most precise imaging needs of the land seismic industry. Its first commercial use is expected in 2020.

We also announced the OBN (short for Ocean Bottom Nodes) in 2019. The nodes are deployed directly at the bottom of oceans and allow for a more precise imaging in comparison to streamers. This product will be launched in 2020.

Innovation also implies developing new products for other fields of expertise, using our technology. Our Structural Health Monitoring (SHM) node, developed through a partnership with the Apave Group, is an example of such an innovation. Developed in 2019 and announced for 2020, the node houses sensors initially developed for seismic data acquisition, which have all the required specifications for structural monitoring: low energy consumption, efficient radio communications and ability to transfer data to a central station.

Updating our existing range of products

In addition to our new products, we regularly update our range of existing products with new functionalities which, once deployed, will enable new operations methods and reduce operational costs for our customers in comparison to the older models.

Associated services

We believe that we can also innovate in our business conduct by offering technical products and associating them with our experts' services. This can help our clients understand the new products that have been launched and their potential on the field. In turn, this could enable them to fully exploit the capabilities of our products and maximize their return on investment.

3.4.2 Customer satisfaction

Key Performance Indicators

KPIs	2019
CGG position in the Kimberlite review	#1 on all counts
Sercel position in the *Voix du Client* review	#1 on all counts
Completion rate of Equipment division internal quality objectives	85%

As a high-end player in the market, CGG competes for high quality to offer the best products, data and services possible. Our customers' satisfaction is only achieved by providing them with reliable products and data as well as an overall positive experience of their interaction with CGG. Satisfaction in the quality of the products and services marketed by CGG is therefore key to the Group's position in the market.

As such, customer satisfaction is at the core of CGG's raison d'être and the Group has developed a strong quality policy to this effect.

CGG quality & customer satisfaction policy

CGG's quality policy, signed by the Chief Executive Officer ("CEO") in 2018, aims to:

- create value by optimizing the discovery and development of natural resources; and
- achieve our vision of being the geoscience partner of choice.

For this, we commit to:

- listen to our customers and exceed their expectations; and
- continually improve our products and services leveraging our talents and technological developments.

It is supported in its application by quality and performance objective set at Group level and which are also signed by our CEO. Those are implemented in two-year cycles, in this case 2018-2019.

Two of those objectives were specifically set to address customer satisfaction, namely:

- monitor customer satisfaction: record customer feedback and follow-up on any concern raised and take corrective actions;
- align talent, organization and personnel engagement so that each business line is recognized as a leader in its area.

Our Business Lines then adopt those objectives and tailor them if need be to their context. For example, our Geoscience Business Line's KPIs analyze technical and service feedback, project turnaround results and net promoter scores.

Monitoring customer satisfaction

Customer satisfaction is monitored through CGG customer surveys and external third-party reviews.

CGG Customer Surveys

CGG key accounts managers follow their projects' development and are the client's first contact in case of issues or opportunities. They are responsible for their customers globally.

Our projects usually include informal satisfaction reviews while they are active, used to proactively improve our service and overall results and satisfaction for our customers as the projects develop. Some best practices in the Group have formalized the customer satisfaction surveys during the project.

At the end of each project, two types of evaluations are launched:

- the first is sent to our clients' teams working directly with us to measure the successes and improvement areas of our experts and project management. This helps us identify any lessons that need to be learned;
- the second is end user evaluations. Sent several months after the project completion, they target the assets or interpretation teams of our clients and aim to better our understanding of the real-world application and technical success of our products and services.

Business Lines review the customers' satisfaction periodically, including monthly management reports which review the actions currently being undertaken. Quarterly feedback reports then update staff on the current customer satisfaction results, and an annual customer satisfaction report is sent each year to all staff to present a global view of the year's performance.

External third-party reviews

Kimberlite is a third-party market research company which provides CGG with an external point of view of both the market's view of CGG and of its recent customers' satisfaction for our products and services (it surveys only customers which worked with CGG within the last two years).

We use this third-party survey and report to position ourselves on the market and identify our strengths and potential improvement areas. A summary of the report is sent and reviewed by the CEO.

2019 actions and events

Measures for customer satisfaction have been implemented at CGG for years; exiting data acquisition did not alter our commitment to our customers. As a result, no new policies were developed in 2019. However, our yearly goals were updated and include for 2020:

- listening to and understanding our customers better;
- better integrating teamwork with sales and key account, managers to provide a better client relationship analytics; and
- integrated project case studies, to share lessons learned.

Those goals will help us achieve our goal of being the geoscience partner of choice and getting a net-promoter score of 100 for each customer.

For our Equipment Division, customer satisfaction is also synonym with quality. We are committed to meeting our customers' expectations in terms of the reliability, quality and delivery of the products we provide. Our customers expect an equally high quality of service: expert support teams, up-to-date trainings and fast reactions. We must do our utmost to be the most dependable supplier to all our customers to maintain our leadership position.

To pilot and monitor quality levels at Equipment level, we have set annual objectives. These objectives are set and are then adapted with each of the Sercel site directors.

The Equipment division has set three key objectives in terms of quality:

1. Cost of non-quality;
2. Customer Satisfaction;
3. Operational and system continuous improvement.

Those objectives are monitored to analyze processes, product quality, financial efficiency and customer satisfaction. Monthly reviews are conducted to evaluate the progress on each of the objectives set. Some of our employees also have individual incentives linked to quality.

To monitor our customer satisfaction externally, the Equipment Marketing and Sales Department conducts a survey every three years which identifies our strong points and improvement areas. This study was commissioned in 2018 and is separate from the Kimberlite review, also published in 2018.

The Voice of the Client (*La Voix du Client*) review, commissioned by the Equipment division, asked 98 of our customers to review us and others on a wide range of criteria (including on-time delivery, reparability, quality of products, ease of use, customer support…). The Sercel brand ranked highest, including on quality and reliability of its products.

We are recognized internationally as a leader in our field. The Equipment division also prides itself in the fact that all our sites have been certified ISO 9001 (v2015) and that during the last two years, there has been no major operational disturbance caused by its products on the field while recording data.

We firmly believe that the quality of our Sercel products is matched by the quality of our services and that both together contribute to our customers' satisfaction. Our experts train our customers onsite, get out on the field for the launch of our machines, and will only leave once the customer is satisfied. In addition to our field experts, we have a 24/7 hotline which will assist our customers. If the hotline cannot find a solution to our customers' solution, an expert will be sent to assist in person.

In 2019, out of the 180 objectives identified for our Equipment sites in terms of quality, more than 85% of those goals had been reached.

This high level of quality is also confirmed by the excellent results at the Kimberlite review, which places CGG as the number one company in our field. This extremely positive result confirms our leadership and our recognized capability to respond to our customers' needs.

3.4.3 Intellectual Property

Key Performance Indicators

	2019	
KPIs	Titles	Patents
Number of CGG Geoscience patents for 2019	505	**295**
Number of Equipment patents for 2019	950	**675**

CGG invests heavily in R&D and relies on innovation to offer new, more efficient products and services to its customers. Managing Intellectual Property is an essential component of that will. The Group's first goal is to ensure that CGG activities do not infringe in any way a third party's intellectual property. The Group must also protect its investments and prevent its own innovations from being accessed by external sources, especially unlawfully. Intellectual property therefore constitutes one of our major CSR issues.

Intellectual Property is managed through a dedicated department working with the innovation departments of CGG for most aspects. The Group has a common general policy which foresees and accepts adaptations for each Business Line, with the goal of considering specificities related to their products and services. Intellectual Property department provides internal counselling and advices, and contracts external specialized cabinets to assist the Group with specific matters if they were to arise.

We hold regular IP reviews at business level for covering internal developments and issues. We also hold monthly at our Equipment Division, quarterly at Group level to follow competitors' IP activity.

Our Human Resources (HR) department, supported on request by the IP department, manages IP (mainly confidentiality) issues at employee level, clauses on IP rights are included in all contracts (from interns to long-term employees) to prevent leaking of innovation and knowledge developed at CGG.

In the Geoscience Divisions, Intellectual Property revolves primarily around ownership and protection of the Group's innovative algorithms and data processing. As a result, the Group works closely with its customers to define the ownership of each element and of their use (for example, who owns the first and final data or the processes deriving from the work done) and prevent any potential confusion or litigation.

Protection of algorithm by patents might not be the most adapted solution in view of the necessary disclosure of hidden elements giving CGG a competitive edge, so CGG may take all measures to keep algorithms as trade secrets.

Prior to 2019, CGG had several policies documents addressing individual sections of IP. They were reviewed in 2019 and are now grouped under one unique document which complements the previous policies where necessary. The document describes the procedures for all IP matters, such as who can take a decision, global governance and go-to contacts for any questions. This unique document is still under finalization in 2019 and will be deployed in 2020.

Our Equipment Division has developed an internal policy called *Confidential information and intellectual property protection* since 2016. The document defines the processes and procedures implemented to protect our IP rights.

At Sercel, product development teams follow a methodology called "Maestro" which covers, among many other topics, IP rights. Full deployment was completed in 2019 wherein development of products or services follows a proper workflow with validation milestones. At certain key stages, we must confirm that IP issues have been verified before advancing any further.

2019

During the transition out of the data acquisition activities in 2019, some IP issues traditionally covered by our data acquisition R&D teams were transferred to other business lines. To accompany this change training sessions were organized for the employees who became now exposed with IP issues.

We also addressed other related issues, such as database protection, to ensure that our knowledge remains inside the Company considering much of CGG's know-how is tied to our employees. Retention of our key employees is therefore an important matter (see the relevant chapter).

As result of the actions implemented by the Group to ensure its freedom to operate, no IP right infringements litigation was recorded in 2019, in line with last year trend.

3.4.4 Information Security

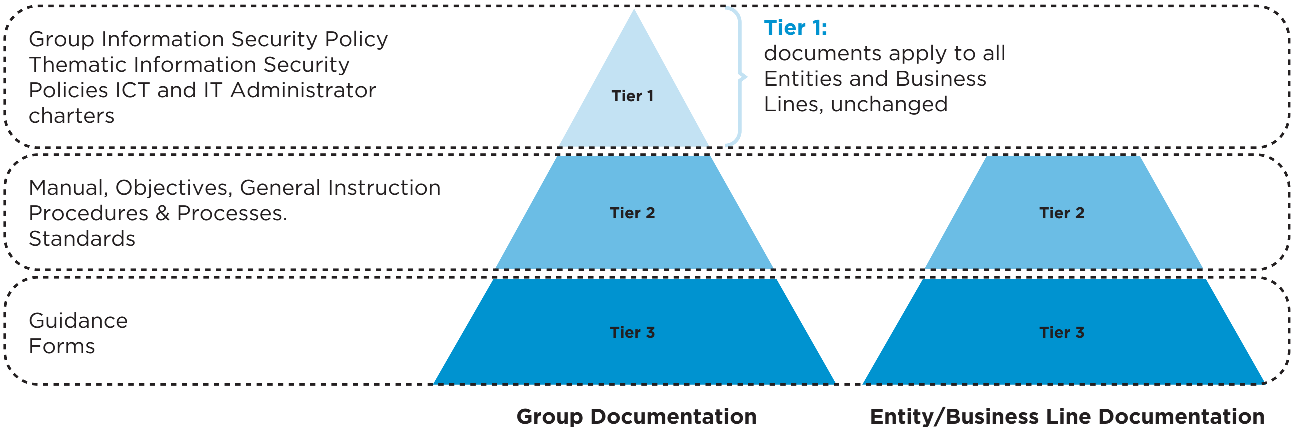
Key Performance Indicators

KPIs	2019
Number of InfoSec incidents with a significant impact	0
Participation rate of the InfoSec e-learning	81%
Number of people trained directly onsite by the InfoSec team	228

Because the Group processes data for its value creation, data management and protection are a crucial component of its business conduct. CGG makes every effort to protect the information of its clients, staff and partners.

CGG's Information Security Management System (ISMS) is separated in three tiers. Its goal is to prevent breaches which could impact the confidentiality, availability and/or the integrity of CGG information assets.

Policies are defined at Group level (Tier 1) and apply to all Entities and Business Lines. Those policies remain unchanged for all but can be adapted at Business Line level through manuals and procedures, processes and standards with more specific objectives (Tier 2). The Tier 3 covers guidelines and forms. The three tiers cover topics such as Human Resources Security, Operational Security, Incident Management and Supplier Relations.



The Group Information Security Policy (GISP) is signed by the Chief Executive Officer for the entire Group. A Chief Information Security Officer (CISO) and a Chief Information Security Architect oversee its application, supported by Regional and Business Lines coordinators (Regional Security Officers and Business Information Security Officers) The GISP concerns all entities including our Equipment Division.

The CISO reports to the Group Steering Committee (which includes the Chief Executive Officer) and to the Group Internal Audit Committee of the Board.

We have implemented measures to ensure the security of our information systems. These controls include, but are not limited, to network firewalls, intrusion detection systems and network segmentation. Security updates are systematically deployed.

In 2019, to evaluate its exposure and identify areas for improvement, CGG conducted cyber-security exposure threat assessments, vulnerabilities scanning, phishing tests on all employees, as well as external penetration testing on critical systems.

CGG considers its employees as the strongest line of defense. To this effect, Information Security e-learning is mandatory. In addition, the Group deploys an in-class Information Security Awareness training to reinforce the message.

A global review of the Group Information Security system was performed by CGG in 2019 in order to revamp the system in 2020, to align it more closely to the National Institute of Standards and Technology (NIST) Cyber Security Framework.

THE FRAMEWORK WILL BE BASED ON FIVE KEY ITEMS: IDENTIFY – PROTECT – DETECT – RESPOND – RECOVER

Identify	Protect	Detect	Respond	Recover
• Asset Management • Business Environment • Governance • Risk Assessment • Risk Management Strategy • Supply Chain Risk Management	• Identity Management and Access Control • Awareness and Training • Data Security • Information Protection Processes and Procedures • Maintenance • Protective Technology	• Anomalies and Events • Security Continuous Monitoring • Detection Processes	• Response Planning • Communications • Analysis • Mitigation • Improvements	• Recovery Planning • Improvements • Communications

3.5 Environmental performance

3.5.1 Energy efficiency and carbon footprint

Key Performance Indicators

KPIs	2019
CGG Power Usage Effectiveness (PUE)	1.33
Carbon Footprint Scope 1 (ktCO2eq)	3
Carbon Footprint Scope 2 (ktCO2eq)	55
Carbon Footprint Scope 3 (ktCO2eq)	165

Seismic acquisition represented 83% of CGG's direct and indirect CO_2 emissions in 2018. Our change of business model in 2019 (with the divestment of that activity) will have a very large impact on our carbon emissions in the future. Nonetheless, in the context of climate change and increasing expectations from stakeholders, CGG identifies carbon emissions and energy efficiency as a real opportunity in its business.

Environmental and Climate Policy

We are committed to mitigating our impact on the environment. To this effect, we developed our internal policy in 2019 – signed by our Chief Executive Officer at the start of January 2020 – to best protect the environment, the climate and the communities where we operate.

The policy identifies the five key elements on which we wish to act in our activities:

1. to always act responsibly and abide by all applicable environmental laws;
2. to continue to advance our data collection capabilities to best measure, monitor and continuously reduce our impact;
3. to commit to improving our power-usage efficiency, increasing the low-carbon content of our energy supply, and reducing our greenhouse gas (GHG) emissions;
4. to continue to advance our technology and services to enable our clients to best reduce the impact of their activity;
5. to encourage and support our businesses, all employees and locations globally to find and take specific actions that support the health of the environment, climate and the communities where we operate.

Datacentres

As a high-performance computing (HPC) company, we require a very large data processing capacity and own our own internal servers and facilities. Our data processing capacity is split into three major sites at three different locations: Houston (USA), Redhill (UK) and Singapore. Each site acts as a regional hub, and while we have several other computer rooms throughout the world, they represent a small share in computing power and energy consumption.

To monitor our three hubs' energy consumption and efficiency, CGG analyses its energy bills and follows their power usage effectiveness (PUE). Where applicable and economically sound, we also implement measures to reduce our energy consumption.

For example, in Houston (USA) some of our computers are cooled by immersing them in mineral oil. As the oil is effective at higher temperatures than air, it is more efficient and uses less energy.

Redhill (UK) uses free cooling to cool its servers. The site's electricity comes from wind-powered sources.

3

3.5.2 Sound emissions

Key Performance Indicators

KPIs	2019
Number of species identified by QuietSea™	8
Number of vessels equipped with QuietSea™	4

Seismic Data acquisition relies on signal emissions technologies being emitted by seismic sources. Those can, in certain operating conditions, disturb fauna, particularly marine mammals whose hearing is the most developed sense. Terrestrial sound emissions are not as high a risk for Sercel products – and answer to the required certifications imposed by each country.

During 2019, CGG continued to apply prevention measures on board vessels it was still operating to mitigate the risk of impact from sound emissions in its surroundings. The enforced safety area around the seismic source and the monitoring methods used vary according to the risk assessment and depends on the ecological sensitivity of the area of acquisition. Seismic sources are systematically activated in a gradual manner while ensuring that no sea mammal is within a radius of at least 500 meters around these sources.

The implementation of these verification measures reduces the risk of inflicting hearing damage to mammals. For this, CGG monitored the presence of animals through visual monitoring (with one person on board looking out for signs of mammal presence) or through acoustic monitoring.

Visual monitoring requires one person on board the ships to be on the constant lookout for mammals, which can be difficult by night or in cases of low visibility. To mitigate the risk of animals not being spotted, we have developed a Sercel QuietSea Passive Acoustic Monitoring (PAM).

QuietSea is a fully integrated PAM system that overcomes many of the limitations of its present-day competitors. The sensors are designed to fully integrate with seismic acquisition or navigation systems and are incorporated in the Sentinel streamer. By eliminating the need for deployment of separate PAM antennas at sea, QuietSea reduces the risk of accidents during deployment, retrieval and operation, thus significantly reducing operational downtime and possible equipment replacement costs. It also reduces the number of people on each ship and increases reliability in identifying marine animals.

As of the end of 2019, the QuietSea system can identify whales (blue, fin and humpback) and toothed whales (including but not limited to dolphins, sperm whales and porpoises – all except beaked and pygmy sperm whale). We will strive to continue adding new species to increase the range of species that can be identified and better protected as a result.

QuietSea has been validated for use in the USA (BSEE/BOEM), the UK (BEIS/JNCC), in Mexico (ASEA) and is currently under review to be certified in Australia (NOPSEMA) and is also used by Total, Chevron, Pemex, Shell, Statoil, Repsol.

3.6 Reporting scope and method

The indicators were selected following a risk analysis (see chapter presenting our materiality matrix). They represent the performance of CGG and of the commitments and policies in place.

The indicators in the text exclude data acquisition. We present the consolidated indicators including data acquisition below.

The indicators were collected between January and February 2020 and cover the year 2019. They were reported and consolidated through various CGG' data bases, such as PRISM (for HSE-SD data), HRMS (HR), EPIC (Supplies), etc..

The report aims to conform to the French regulatory obligations (Statement on Non-Financial Performance, outcome of the transposal of the European directive on non-financial reporting).

The following issues were not deemed as material according to our materiality analysis and will not be discussed in this report:

- food waste;
- animal well-being (except in terms of noise emissions, which is addressed in this report);
- responsible, equitable and sustainable eating;
- eco-design;
- circular economy;
- effects of climate change on our activities.

The topics mentioned by the decree have been treated in the most transparent manner possible. The analysis of materiality did not consider eco-design and the circular economy as a material topic. Information regarding the eco-design of Sercel equipment is nevertheless available on our internet site.

3.7 Indicators

In this section the indicators are consolidated at Group level, which includes Data Acquisition.

TALENT ATTRACTION AND RETENTION

	2017	2018	**2019**
Voluntary turnover	6.4%	5.5%	5.5%
Seniority of employees	13.3 years	14.2 years	13.5 years
Share of employees with a seniority over 5 years	82%	83%	81%
Equality Index (for men & women) – France	n.a.	n.a.	92
Gender split at CGG (M/F)	72/28	72/28	71/29
Gender split in the recruitments (M/F)	66/34	74/26	73/27

HEALTH, SAFETY AND SECURITY OF OUR EMPLOYEES AND SUBCONTRACTORS

	2017	2018	**2019**
Total Recordable Cases Frequency rate (TRCF)	1.90	1.77	1.60
Lost Time Injury Frequency rate (LTIF)	0.50	0.65	0.51
Severity rate	0.018	0.01	0.009
Recordable Occupational illness cases frequency rate	0.23	0.38	0.17
Exposure hours *(in million)*	24	27.6	29.2

BUSINESS ETHICS

	2017	2018	**2019**
Percentage of employees that followed the Ethics e-learning course	95%	96%	85%
Number of alerts received by the Ethics Committee	n.a.	n.a.	8

RESPONSIBLE SUPPLY CHAIN

	2017	2018	2019
Percentage of sourcing and supply chain employees that followed the anti-corruption e-learning course	n.a.	100%	92%
Percentage of suppliers having signed the Supplier Code of Conduct *or* with a purchasing order mentioning the Supplier Code of Conduct	n.a.	n.a.	100%*

* *The Supplier Code of Conduct is in CGG Terms and Conditions automatically attached to all PO's. The traceability of the signature of the Code of conduct by the supplier for transactions without purchasing order is still under implementation in 2019.*

RELATIONS WITH LOCAL COMMUNITIES

	2017	2018	2019
Total Number of Social Development initiatives	85	79	89
Community service	*34*	*29*	*27*
Education	*18*	*16*	*18*
Environment	*19*	*16*	*27*
Health & Safety	*14*	*18*	*17*
Number of employees involved in volunteering	n.a.	n.a.	2,903
Number of volunteering hours	n.a.	n.a.	872
Cash granted by CGG & employees (excluding Babyloan)	n.a.	n.a.	$74,458

INNOVATION OF PRODUCTS AND SERVICES

	2017	2018	2019
Total capital expenditure *(in million of US$)*	84	84	81
Share of Group revenues invested in R&D	6%	6%	5%
Share of Equipment revenues invested in R&D	15%	11%	9%
Share of CGG (excl. Equipment) revenues invested in R&D	5%	4%	4%

CUSTOMER SATISFACTION

	2017	2018	2019
CGG position in the Kimberlite review	#1 on all counts	#1 on all counts	#1 on all counts
Sercel position in the Voix du Client review	n.a.	n.a.	#1 on all counts
Completion rate of Equipment division internal quality objectives	78%	84%	85%

INTELLECTUAL PROPERTY

			2019	
	2017	2018	Titles	Patents
Number of CGG Geoscience patents for 2019	430/165	440/190	425	**250**
Number of Equipment patents for 2019	1,350/720	1,330/830	1,030	**720**

INFORMATION SECURITY

	2017	2018	2019
Number of incidents with an important INFOSEC impact	n.a.	n.a.	0
Participation rate of the INFOSEC e-learning	n.a.	n.a.	81%
Number of people trained directly onsite by the INFOSEC team	n.a.	n.a.	251

ENERGY EFFICIENCY AND CARBON FOOTPRINT

	2017	2018	2019
CGG Power Usage Effectiveness	1.32	1.33	1.33
Carbon Footprint Scope 1 (ktCO2eq)	420	354	337
Carbon Footprint Scope 2 (ktCO2eq)	62	70	55
Carbon Footprint Scope 3 (ktCO2eq)	n.a.	386	278

SOUND EMISSIONS

	2017	2018	2019
Number of species identified by QuietSea™	3	4	8
Number of vessels equipped with QuietSea™	6	8	4

3.8 Independent third party's report on consolidated non-financial statement presented in the management report

This is a free translation into English of the original report issued in the French language and it is provided solely for the convenience of English speaking users. This report should be read in conjunction with, and construed in accordance with, French law and professional standards applicable in France.

To the General Assembly,

In our quality as an independent verifier, accredited by the COFRAC under the number n° 3-1681 (scope of accreditation available on the website www.cofrac.fr), and as a member of the network of one of the statutory auditors of your entity (hereafter "entity"), we present our report on the consolidated non-financial statement established for the year ended on the 31 December 2019 (hereafter referred to as the "Statement"), included in the management report pursuant to the requirements of articles L. 225 102-1, R. 225-105 and R. 225-105-1 of the French Commercial Code (*Code de commerce*).

The entity's responsibility

The Board of Directors is responsible for preparing the Statement, including a presentation of the business model, a description of the principal non-financial risks, a presentation of the policies implemented considering those risks and the outcomes of said policies, including key performance indicators.

The Statement has been prepared in accordance with the entity's procedures (hereinafter the "Guidelines"), the main elements of which are presented in the Statement (or which are available online).

Independence and quality control

Our independence is defined by the requirements of article L. 822-11-3 of the French Commercial Code and the French Code of Ethics (*Code de déontologie*) of our profession. In addition, we have implemented a system of quality control including documented policies and procedures regarding compliance with applicable legal and regulatory requirements, the ethical requirements and French professional guidance.

Responsibility of the independent third party

On the basis of our work, our responsibility is to provide a report expressing a limited assurance conclusion on:

- the compliance of the Statement with the requirements of article R. 225-105 of the French Commercial Code;
- the fairness of the information provided in accordance with article R. 225 105 I, 3° and II of the French Commercial Code, *i.e.* the outcomes, including key performance indicators, and the measures implemented considering the principal risks (hereinafter the "Information").

However, it is not our responsibility to comment on the entity's compliance with other applicable legal and regulatory requirements, in particular the French duty of care law and anti-corruption and tax avoidance legislation nor on the compliance of products and services with the applicable regulations.

Nature and scope of the work

The work described below was performed in accordance with the provisions of articles A. 225-1 et *seq.* of the French Commercial Code, as well as with the professional guidance of the French Institute of Statutory Auditors ("CNCC") applicable to such engagements and with ISAE 3000:[(1)]

- we obtained an understanding of all the consolidated entities' activities and the description of the principal risks associated;
- we assessed the suitability of the criteria of the Guidelines with respect to their relevance, completeness, reliability, neutrality and understandability, with due consideration of industry best practices, where appropriate;
- we verified that the Statement includes each category of social and environmental information set out in article L. 225 102 1 III as well as information regarding compliance with human rights and anti corruption and tax avoidance legislation;
- we verified that the Statement provides the information required under article R. 225-105 II of the French Commercial Code, where relevant with respect to the principal risks, and includes, where applicable, an explanation for the absence of the information required under article L. 225-102-1 III, paragraph 2 of the French Commercial Code;
- we verified that the Statement presents the business model and a description of principal risks associated with all the consolidated entities' activities, including where relevant and proportionate, the risks associated with their business relationships, their products or services, as well as its their policies, measures and the outcomes thereof, including key performance indicators associated to the principal risks;
- we referred to documentary sources and conducted interviews to:
  - assess the process used to identify and confirm the principal risks as well as the consistency of the outcomes, including the key performance indicators used, with respect to the principal risks and the policies presented, and
  - corroborate the qualitative information (measures and outcomes) that we considered to be the most important presented in Appendix 1; concerning certain risks (business ethics, tax evasion, information systems security, innovation of products and services, intellectual property, responsible supply chain, customer satisfaction), our work was carried out on the consolidating entity, for the others risks, our work was carried out on the consolidating entity and on a selection of entities: Crawley Crompton Road, Redhill, Massy Galiléo and Singapore;

(1) *ISAE 3000 - Assurance engagements other than audits or reviews of historical financial information.*

- we verified that the Statement covers the scope of consolidation, *i.e.* all the consolidated entities in accordance with article L. 233-16 of the French Commercial Code;
- we obtained an understanding of internal control and risk management procedures the entity has put in place and assessed the data collection process to ensure the completeness and fairness of the Information;
- for the key performance indicators and other quantitative outcomes that we considered to be the most important presented in Appendix 1 , we implemented:
  - analytical procedures to verify the proper consolidation of the data collected and the consistency of any changes in those data,
  - tests of details, using sampling techniques, in order to verify the proper application of the definitions and procedures and reconcile the data with the supporting documents. This work was carried out on a selection of contributing entities and covers 19% of the consolidated data relating to the key performance indicators and outcomes selected for these tests (19% of Headcount);
- we assessed the overall consistency of the Statement based on our knowledge of all the consolidated entities.

We believe that the work carried out, based on our professional judgement, is sufficient to provide a basis for our limited assurance conclusion; a higher level of assurance would have required us to carry out more extensive procedures.

Means and resources

Our verification work mobilized the skills of four people and took place between October 2019 and March 2020 on a total duration of intervention of about nineteen weeks.

We conducted around ten interviews with the persons responsible for the preparation of the Statement including in particular Human Resources, Health and Safety, environment, Human rights and business ethics.

Conclusion

Based on the procedures performed, nothing has come to our attention that causes us to believe that the consolidated non-financial statement is not presented in accordance with the applicable regulatory requirements and that the Information, taken as a whole, is not presented fairly in accordance with the Guidelines, in all material respects.

Paris-La Défense, April 10, 2020

French original signed by:

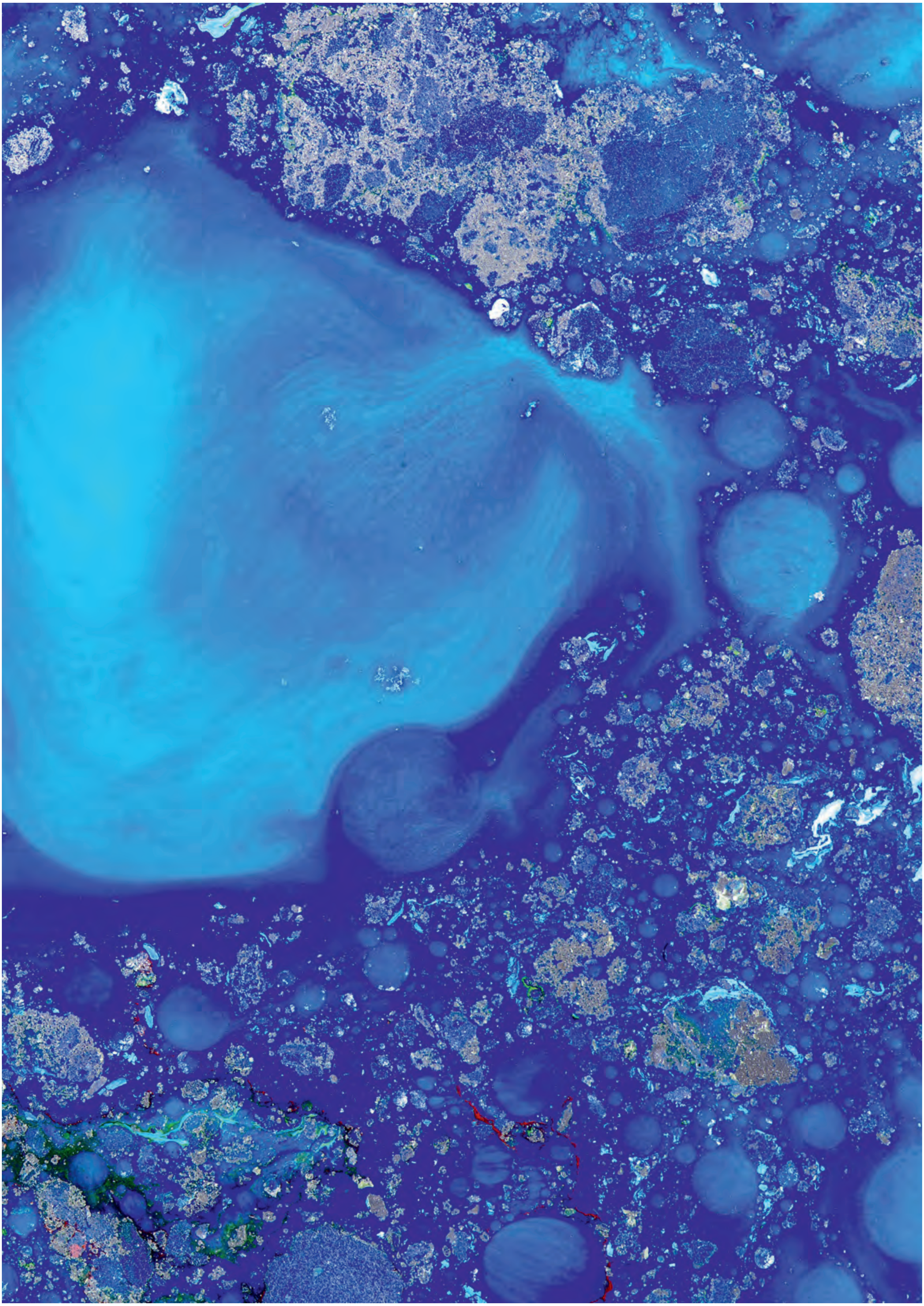
Independent third party

EY & Associés

Christophe Schmeitzky	Jean-François Bélorgey
Partner, Sustainable Development	Partner

Appendix 1: The most important information

Social Information	
Quantitative Information (including key performance indicators)	*Qualitative Information (actions or results)*
Voluntary turnover (%) Gender split at CGG (%) Gender split in the recruitments (%) TRCF: Total Recordable Cases Frequency rateL TIF: Lost Time Injury Frequency rate Severity rate Exposure hours	The results of the Human Resources policy The results of the Health and Safety policy
Environmental Information	
Quantitative Information (including key performance indicators)	*Qualitative Information (actions or results)*
Power Usage Effectiveness (PUE) Carbon Footprint Scope 1 (ktCO2eq) Carbon Footprint Scope 2 (ktCO2eq)	Climate change (material emission posts) The result of the Environmental policy
Societal Information	
Quantitative Information (including key performance indicators)	*Qualitative Information (actions or results)*
Percentage of employees that followed the Ethics e-learning course (%) Percentage of sourcing and supply chain employees that followed the anti-corruption e-learning course (%) Total Number of Social Development initiatives Number of employees involved in volunteering Number of volunteering hours Number of people trained directly onsite by the INFOSEC team Number of vessels equipped with QuietSea™	Engaged actions to prevent bribery and tax evasion Investment in Research and Development Actions in favor of Information Security Actions in favor of subcontractors and suppliers management (on environmental and social matters) Actions in favor of Human rights Taken actions in favor of Intellectual property The result of the Quality policy



4

Corporate Governance

4.1 Governance

4.1.1 Governance Structure

a) Code of Corporate Governance applied by the Company

The Company complies with the AFEP-MEDEF Code of Corporate Governance for listed companies (the “AFEP-MEDEF Code”). This Code is available on the website of the AFEP (www.afep.com) and of the MEDEF (www.medef.com).

However, the Company does not apply the following provisions of the AFEP-MEDEF Code:

AFEP-MEDEF Code	CGG’s practice/Justification
7.1. Gender diversity policy on the governing bodies: *“At the proposal of the executive management, the Board shall determine gender diversity objectives for governing bodies. The executive management shall present measures for implementing the objectives to the Board, with an action plan and the time horizon within which these actions will be carried out. The executive management shall inform the Board each year of the results achieved.”*	The Board of Directors took note of this new recommendation from the AFEP-MEDEF Code dated January 2020 and resolved to review this topic in the course of 2020 in order to be in a position to determine some efficient objectives as well as an action plan in terms of gender diversity at the Company’s Executive Leadership team level by the 1st quarter of 2021.

b) Split of the Chairman and Chief Executive Officer positions

Since June 30, 2010, the positions of Chairman of the Board and Chief Executive Officer have been split. The split of these two positions aims at ensuring a better balance of powers between, on the one hand, the Board of Directors composed for the most important part of members elected by the shareholders, with a Chairman responsible for a control on the day-to-day management of the Company, and, on the other hand, the Chief Executive Officer, acting as a real head of the Company, and handling the day-to-day management of the Company.

c) Role of the Chairman of the Board of Directors

The Chairman represents the Board of Directors and, except in exceptional circumstances, is the only one with the capacity to act and speak on behalf of the Board. He organizes and oversees the activities of the Board of Directors and ensures that the corporate bodies operate in an efficient manner, in compliance with good governance principles. He ensures, in particular, that directors are in a position to fulfill their duties and are provided with sufficient information in this respect. The Chairman is regularly kept informed by the Chief Executive Officer of the significant events relating to the Group business and may request from her any information that may be necessary for the Board and its committees. He may meet with the external auditors of the Company in order to prepare the meetings of the Board. Upon request of the General Management, he may represent the Company vis à vis top level representatives of governmental authorities and major partners of the group, whether in France or abroad. He may communicate directly with shareholders, particularly with regard to corporate governance matters.

d) Role of the Chief Executive Officer

The Chief Executive Officer is in charge of the General Management of the Company. She is granted the broadest powers to act on behalf of the Company in any circumstances in compliance with the corporate governance principles applied by the Company and except for those powers vested in the Company’s General Meeting or Board of Directors by applicable laws. She represents the Company vis-à-vis third parties. She is responsible for the financial information released by the Company and presents, on a regular basis, the Group’s results and prospects to the shareholders and the financial market. She reports on significant events for the Group business to the Board and its Chairman.

e) Limitations of authority of the Chief Executive Officer

In accordance with the law and article 10 of the Company’s articles of association, the Chief Executive Officer is vested with the broadest powers to act in all circumstances in the name of the Company, except in cases specifically provided by the law. In addition, the Board of Directors decided to limit the powers of the Chief Executive Officer for investments projects over US$100 million and all merger and acquisitions projects over US$10 million. Such expenditures shall first be submitted to the Investment Committee.

4.1.2 Board of Directors and Management

4.1.2.1 Board of Directors

a) Overview of the composition of the Board of Directors and its committees as of December 31, 2019 and as of the date of this document

Name	Nationality	Indepen-dent	Gender	Age	Date of First appoint-ment	Date of expiry of term of office	Number of years as Director	Committees: Audit	Committees: Appointment and Remuneration	Committees: Investment	Committees: HSE/ Sustainable Development
Mr. Philippe SALLE [(a)]	French	X	M	54	2018	2021 GM	2				
Mrs. Sophie ZURQUIYAH [(b)]	French/ American		F	53	2018	2022 GM	2				
Mr. Michael DALY	British	X	M	66	2015	2021 GM	5			X	X O
Mr. Patrice GUILLAUME [(c)]	French		M	61	2017	2021 GM	3		X		X
Mrs. Anne-France LACLIDE-DROUIN	French	X	F	51	2017	2021 GM	3	X O		X	
Mrs. Helen LEE BOUYGUES	American	X	F	47	2018	2020 GM	2	X		X O	
Mrs. Colette LEWINER	French	X	F	74	2018	2023 GM	2	X	X O		
Mrs. Heidi PETERSEN	Norwegian	X	F	62	2018	2020 GM	2		X		X
Mr. Mario RUSCEV	French	X	M	63	2018	2023 GM	2			X	X

(a) Mr. Philippe SALLE is Chairman of the Board of Directors.
(b) Mrs. Sophie ZURQUIYAH is Chief Executive Officer of the Company.
(c) Mr. Patrice GUILLAUME was appointed as Director by the Group Committee pursuant to Article 8 of the Company's articles of association.
O Chairman or Chairwoman.

b) Individual information about the Directors

Mr. Philippe SALLE

Age: 54

Nationality: French

First appointment as: 2018 (by cooptation)

Expiry of the current term of office: 2021

Number of CGG shares held on December 31, 2019: 288,711 shares

Chairman – Independent Director

Mr. Philippe SALLE is Chairman of the Foncia group since December 1, 2017. He is a graduate of the École des Mines and holds a MBA from the Kellogg Graduate School of Management, Northwestern University (Chicago, USA). Mr. Philippe SALLE began his career with Total in Indonesia before joining Accenture in 1990. He then joined McKinsey in 1995 and became Senior Manager in 1998. In 1999, he joined the Vedior group (which later became Randstad, a company listed on Euronext Amsterdam). He became Chairman and CEO of Vedior France in 2002; In 2003, he became a member of the managing board of Vedior NV and was then appointed President for South Europe in 2006 (France, Spain, Italy and Switzerland). In 2007, he joined the Geoservices group (sold to Shclumberger in 2010, listed on the New York Stock Exchange), a technological company operating in the petroleum industry with 7,000 associates in 52 countries. He was first appointed Deputy CEO and then Chairman and CEO until March 2011. From 2011 to 2015, he was Chairman and CEO of the Altran group. He then became Chairman and CEO of Elior where he remained until October 2017. He is now Head of the Foncia group (please see below the details of his positions within the Foncia group).

He is a Knight of the French National Order of Merit and of the Legion of Honor and Commander of the Order of Merit of the Italian Republic.

Current positions

Within the Group: None

Outside of the Group:

French companies:

- Chairman of Foncia Management SAS (as permanent representative of Finellas)
- Chairman of Foncia group SAS (as permanent representative of Foncia Holding)
- Chairman of Foncia Holding SAS (as permanent representative of Foncia Management)
- Member of the Supervisory Board of Foncia Saturne SAS
- Chairman of the Supervisory Board of Leemo SAS
- Chairman of the Supervisory Board of Tech-Way SAS
- Director of Banque Transatlantique
- Director of Siaci Saint-Honoré

Foreign companies:

- Permanent representative of Foncia Holding, as Director of Trevi Group SA (Belgium)
- Vice-Chairman of the Board of Directors of Foncia Suisse (Switzerland)

Positions which expired over the last five years

Within the Group: None

Outside of the Group:

- Director of Bourbon (France, a company listed on Euronext Paris)
- CEO of Altran (France, a company listed on Euronext Paris)
- CEO of Elior (France, a company listed on Euronext Paris)
- Director of GTT – Gaztransport and Technigaz (France, a company listed on Euronext Paris)

Mrs. Sophie ZURQUIYAH

Age: 53

Nationality: American and French

First appointment: 2018

Expiry of the current term of office: 2022

Number of CGG shares held on December 31, 2019:
91,000 shares

Director and Chief Executive Officer

Mrs. Sophie ZURQUIYAH is a graduate from the École Centrale de Paris. She holds a Master in Numerical Analysis from the Pierre et Marie Curie University (Paris VI) and a Master In Aerospace engineering from the Colorado University.

Mrs. Sophie ZURQUIYAH spent 28 years in the oilfield services industry, working for Schlumberger in P&L and in positions covering R&D, Operations and Support, in France, the United States and Brazil. Her most recent roles include Chief Information Officer (CIO), President of Data and Consulting Services that provided Processing, Interpretation and Consulting services for most of Schlumberger's business lines, and Vice President of Sustaining Engineering that included all support and improvements to commercial products, services and technologies worldwide. She joined CGG on February 4, 2013 as Senior Executive Vice President, GGR segment. Before that time, Prior to her appointment as Chief Executive Officer of CGG SA on April 26, 2018, Mrs. Sophie ZURQUIYAH was Chief Operating Officer in charge of the GGR business lines, Global Operational Excellence and Technology of CGG.

Current positions

Within the Group: Chief Executive Officer of CGG SA

Outside of the Group:

French companies:

- Director and Member of the Audit Committee of Safran (a company listed on Euronext Paris)

Foreign companies:

- Director of Bazean Corp. (USA)

Positions which expired over the last five years

Within the Group:

- Senior Executive Vice President of CGG Services (US) Inc. (USA)
- Director of Petroleum Edge Ltd (UK), a company 50% held by the Group

Outside of the Group:

- Member of Magnitude Microseismic LLC (USA)

Dr. Michael DALY

Age: 66

Nationality: British

First appointment: 2015 (by cooptation)

Last renewal: 2017

Expiry of the current term of office: 2021

Number of CGG shares held on December 31, 2019:
- 20,000 shares

Role in Board Committees:
- Chairman of the HSE-Sustainable Development Committee
- Member of Investment Committee

Independent Director

Dr. Michael DALY is a graduate of The University College of Wales, Leeds University (PhD) and Harvard Business School (PMD).

Dr. DALY is a British geologist, oil and gas executive and academic. He joined the Geological Survey of Zambia in 1976, mapping the remote Muchinga Mountains of northeast Zambia. He began his business career with BP in 1986 as a research geologist. After a period of strategy work and exploration and production positions in Venezuela, the North Sea and London, he became President of BP's Middle East and S. Asia exploration and production business. In 2006, Dr. DALY became BP's Global Exploration Chief and a Group Vice President. He served on BP's Group Executive Team as Executive Vice President from 2010, and retired in 2014 after 28 years with the company. He has also served as Senior Director at Macro Advisory Partners. He currently serves as Non-Executive Director with Tullow Oil, and as Visiting Professor in Earth Sciences at The University of Oxford. In 2019 he became President (Designate) of the Geological Society of London, a registered Charity.

Current positions

Within the Group: none

Outside of the Group:

Foreign companies:

- Director of Tullow Oil (United Kingdom) (a company listed on the London Stock Exchange)
- Visiting Professor in Earth Sciences at the University of Oxford (United Kingdom)
- Director of Daly Advisory and Research Ltd. (United Kingdom)

Positions which expired over the last five years

Outside of the Group:

- Partner of Macro Advisory Partner (United Kingdom)

Mr. Patrice GUILLAUME

Age: 61

Nationality: French

First appointment: 2017

Expiry of the current term of office: 2021

Number of CGG shares held on December 31, 2019: 10,028 shares

Role in Board Committees:
- Member of the HSE-Sustainable Development Committee
- Member of the Appointment and Remuneration Committee

Director representing employees

Mr. Patrice GUILLAUME graduated from the École Centrale of Lyon (France). He began his professional activity in 1981 as a professor of electronics at the Polytechnic of Kano Nigeria as part of the volunteer service to the national service at the French Ministry of External Relations. After a three-year stint at Air Liquide's research center as a research engineer in combustion, he joined CGG in 1985 as deputy head of mission for land acquisitions in Italy. He then returned to a career in research in geophysics in the field of imaging to become an expert in tomography and managed the team specialized in tomography. He has been a member of the CGG Works Council for about 20 years and secretary of the Group Committee for about 10 years.

Current positions	Positions which expired over the last five years
• None	• None

Mrs. Anne-France LACLIDE-DROUIN

Age: 51

Nationality: French

First appointment: 2017

Expiry of the current term of office: 2021

Number of CGG shares held on December 31, 2019: 20,000 shares

Role in Board Committees:
- Chairwoman of the Audit Committee
- Member of the Investment Committee

Independent Director

Mrs. LACLIDE-DROUIN is a graduate from the Institut Commercial of Nancy (ICN) and Mannheim University. She also holds a *Diplôme d'Études Supérieures Comptables et Financières*.

Mrs. LACLIDE-DROUIN began her career at PricewaterhouseCoopers before occupying various positions in the financial division of international groups in different sectors, such as the distribution sector, where she acquired international experience. In 2001, she became Financial Director of Guilbert, then Staples, AS Watson and GrandVision. Mrs. LACLIDE-DROUIN has been CFO of Oberthur Technologies, comprising the responsibility of the financial and legal functions of the group, from 2013 to 2017. She is now CFO of Consolis Holding SAS and a member of the Executive Committee of Consolis Group SAS.

Current positions

Within the Group: none

Outside of the Group:

French companies:
- Member of the Executive Committee of Consolis Group SAS
- Director of Solocal (a company listed on Euronext Paris)

Foreign companies:
- Director of Consolis Oy AB (Finland)
- Director of Parma Oy (Finland)
- Member of the Supervisory Board and Chairwoman of WPS Ujski (Poland)
- Director of Philbert Tunisie SA (Tunisia)
- Member of the Supervisory Board of ASA Epitoipari Kft (Hungary)
- General Manager of Compact (BC) SARL (Luxembourg)
- Director of Spaencom AS (Denmark)
- General Manager of Compact (BC) Lux II S.C.A. (Luxembourg)
- Director of Spenncom AS (Norway)

Positions which expired over the last five years

Within the Group: none

Outside of the Group:
- Director of Bonna Sabla SA (France)
- Director and Chairperson of the Audit Committee of SFR (France, a company listed on Euronext Paris)
- Director of Oberthur Technologies Group SAS (France)
- Director of Mali Solutions Numériques SA (France)
- Director of OT Pakistan (Private) Ltd (Pakistan)
- Director of Oberthur Technologies of America Corporation (USA)
- General Manager of Oberthur Technologies Hong Kong Limited (Hong Kong)

Mrs. Helen LEE BOUYGUES

Age: 47

Nationality: American

First appointment: 2018 (by cooptation)

Expiry of the current term of office: 2020

Number of CGG shares held on December 31, 2019: 20,000 shares

Role in Board Committees:
- Chairwoman of the Investment Committee
- Member of the Audit Committee

Independent Director

Mrs. Helen LEE BOUYGUES received her Bachelor of Arts, magna cum laude, from Princeton University in Political Science and a Masters of Business Administration from Harvard Business School.

She started her career in 1995 at J.P. Morgan in the M&A group in New York and in Hong Kong. In 1997, she joined Pathnet Inc., a telecommunications provider based in Washington DC, as Director of Development and Finance. From 2000 until 2004, she worked at Cogent Communications Inc. as Chief Operating Officer, Chief Financial Officer and Treasurer. She thereafter became a Partner at Alvarez & Marsal Paris, where she left to launch her own consulting firm specialized in corporate turnaround and transformations in 2010. In 2014, she integrated her team at McKinsey & Company in Paris where she was Partner responsible for the division Recovery and Transformation Services. Since June 2017, she is President of LB Associés, a consulting firm.

Current positions

Within the Group: none

Outside of the Group:

French companies and institutions:
- President of LB Partners
- Director and member of the Audit & Remuneration Committee of Burelle SA (a company listed on Euronext Paris)
- Lead Director and member of the Audit and Remunerations Committees of NEOEN SA (a company listed on Euronext Paris)
- Director and member of Audit Committee of Fives SAS
- Director, Chairwoman of Remuneration Committee and member of Audit Committee of Latecoere SA (a company listed on Euronext Paris)
- Chairwoman of Board of Conforama SA
- Director and member of the Audit Committee and Chairwoman of the Remuneration Committee of Novartex SAS
- Governor and member of Finance and Strategy Committees of the American Hospital of Paris (non-profit)

Positions which expired over the last five years

Within the Group: none

Outside of the Group:
- Founder and General Manager of LEE BOUYGUES Partners (France)
- Partner of McKinsey RTS France (France)

Mrs. Colette LEWINER

Age: 74

Nationality: French

First appointment: 2018 (by cooptation)

Last renewal: 2019

Expiry of the current term of office: 2023

Number of CGG shares held on December 31, 2019: 20,000 shares

Role in Board Committees:
- Chairwoman of the Appointment-Remuneration Committee
- Member of the Audit Committee

Independent Director

Mrs. Colette LEWINER has graduated from École Normale Supérieure (a leading French higher education University) and has a PhD in physics.

Mrs. LEWINER started her career as an academic at University of Paris VII as a physics researcher. In November 1979, she joined Electricité de France (EDF), first in the research department, before being responsible for fuel and uranium purchasing. In 1989, she became EDF's first woman Executive Vice President in charge of the Commercial division that she created. Mrs. LEWINER was appointed Chairwoman of the Board, Chief Executive Officer, of SGN (the engineering affiliate of Cogema) on March 1992. In 1998, Mrs. LEWINER joined Capgemini and headed the Utilities Global Market Unit. She had been Non-Executive Chairwoman of TDF (2010-2015) and member of the European Union Consultative Group on Energy (2008-2012). In 2012, she became Energy advisor to Capgemini Chairwoman. Mrs. Colette LEWINER is member of the French Academy of Technology. She is a Commander of the French National Order of Merit and of the Legion of Honor.

Current positions

Within the Group: none

Outside of the Group:

French companies:
- Director, member of the Strategy & Sustainable Development Committee and member of the Selection and Compensation Committee of Nexans (a company listed on Euronext Paris)
- Director, Chairwoman of the Selection and Compensation Committee of Bouygues (a company listed on Euronext Paris)
- Director, member of the Accounts Committee, member of the Ethics Committee and Chairwoman of the Selection and Compensation Committee of Colas (a company listed on Euronext Paris and at 96.6% controlled by Bouygues)
- Director, Chairwoman of the Audit Committee, member of the Governance Committee of Getlink (formerly Eurotunnel, a company listed on Euronext Paris)
- Director, member of the Audit Committee, Chairwoman of the Governance Appointment and Remuneration Committee, and member of the Nuclear Commitments Monitoring Committee of EDF (a company listed on Euronext Paris)

Positions which expired over the last five years

Within the Group: none

Outside of the Group:
- Director, member of the Strategy Committee, member of the Audit Committee of Ingenico (France, a company listed on Euronext Paris)
- Director, member of the Audit Committee of TGS Nopec Geophysical Company (Norway)
- Non-Executive Chairwoman of TDF (France)
- Director, member of the Strategy Committee of Lafarge-Holcim (France)
- Director, Chairwoman of the Selection and Compensation Committee of Cromton Greaves (India)

Mrs. Heidi PETERSEN

Age: 62

Nationality: Norwegian

First appointment: 2018 (by cooptation)

Expiry of the current term of office: 2020

Number of CGG shares held on December 31, 2019:
20,000 shares

Role in Board Committees:
- Member of the Appointment-Remuneration Committee
- Member of the HSE-Sustainable Development Committee

Independent Director

Mrs. Heidi PETERSEN holds a M.Sc. (cand. scient. degree) from the Norwegian University of Science and Technology in Trondheim, Department of Chemistry and Mathematics.

Mrs. PETERSEN started her career as research assistant at the Norwegian University of Science and Technology in Trondheim in 1983. She was employed in Kvaerner Oil & Gas from 1988 where she worked as an engineer, project manager and departmental manager engaged in offshore and land-based industrial assignments. She served as maintenance supervisor of the Gullfaks C platform for two years from 1995 to 1997. She was appointed head of Kvaerner Oil & Gas AS in Sandefjord in 1997, where she served as Vice President until 2000. In 2000, she headed a management buy-out that led to the startup of Future Engineering AS and served as its Managing Director from 2000 to 2004. In 2004, she sold the company to Rambøll and served after that as Managing Director of Rambøll Oil & Gas from 2004 to 2007. Mrs. PETERSEN is an independent business woman, with 30 years of experience in the oil and offshore industry. She owns Future Technology AS, a leading consultancy and technology company located in Sandefjord and Oslo offering consultant services, engineering services and construction solutions, notably in the oil and gas market.

Current positions

Within the Group: none

Outside of the Group:

Foreign companies:
- Chairwoman of Future Technology AS (Norway)
- Director of Arendal Fossekompani ASA (a company listed on the Oslo Stock Exchange)
- Director of HIP (Herøya Industripark) AS (Norway)

Positions which expired over the last five years

Within the Group: none

Outside of the Group:
- Director of Eitzen Chemical ASA (Norway, a company listed on the Oslo Stock Exchange)
- Director of Glamox ASA (Norway, a company listed on the Oslo Stock Exchange)
- Director of North Energy ASA (Norway, a company listed on the Oslo Stock Exchange)
- Chairwoman of de SIV (Sykehuset i VestFold) (Norway)
- Director of NIVA AS (Norway)

Mr. Mario RUSCEV

Age: 63

Nationality: French

First appointment: 2018 (by cooptation)

Last renewal: 2019

Expiry of the current term of office: 2023

Number of CGG shares held on December 31, 2019:
20,156 ADRs

Role in Board Committees:
- Member of the Investment Committee
- Member of the HSE-Sustainable Development Committee

Independent Director

Mr. RUSCEV is a Nuclear Physicist by training holding a PhD from Pierre and Marie Curie University and from Yale University.

Mr. RUSCEV spent 23 years with Schlumberger in various responsibilities in the R&D and operational areas. He was the head of the Seismic, Testing, Water & Gas services and Wireline Product Lines. He has since been CEO of FormFactor a provider of unique nanotech connectors for the semi-conductor industry, CEO of IGSS (GeoTech) the major Russian Seismic Company, CTO at Baker Hughes and EVP at Weatherford until 2017.

During his career, Mr. RUSCEV had the opportunity to evolve in many environments where Technology was a differentiator and his team's successfully introduced systems as diverse as:

- luggage scanners differentiating between organic and inorganic materials still in use after 30 years;
- the first Container Scanner based on unique gaseous sensors;
- many Wireline and Testing tools including the PlatForm Express Wireline combo still unequalled after 25 years;
- the first single sensor seismic systems called Q;
- the first ever Aquifer Storage and Recovery in Middle East ;
- simulators allowing to understand the formation and propagations of fractures during Frac operations or analytics applications in the Oilfield Operations.

His combined Technology and Operational experiences give him a unique perspective on the evolution of the OilField business.

Current positions

Within the Group: none

Outside of the Group:

Foreign Companies:
- Director of Expro Group Holdings International Ltd., incorporated (Cayman Islands)

Positions which expired over the last five years

Within the Group: none

Outside of the Group:
- Director of Global Carbon Capture and Sequestration Institute (Australia)

4

c) Changes having occurred in the composition of the Board of Directors and its committees in 2019

The changes in the composition of the Board of Directors and its Committees occurred in 2019 are presented in the following table:

	Departure	Appointment	Reappointment
Board of Directors	Gilberte LOMBARD 15/05/2019 Robert F. SEMMENS 15/05/2019		Colette LEWINER 15/05/2019 Mario RUSCEV 15/05/2019
Audit Committee	Gilberte LOMBARD 15/05/2019	Colette LEWINER 15/05/2019	Helen LEE BOUYGUES 15/05/2019 Anne-France LACLIDE-DROUIN 05.15.2019
Appointment-Remuneration Committee	Robert F. SEMMENS 15/05/2019		Colette LEWINER 15/05/2019 Heidi PETERSEN 15/05/2019 Patrice GUILLAUME 15/05/2019
Investment Committee	Gilberte LOMBARD 15/05/2019 Robert F. SEMMENS 15/05/2019	Helen LEE BOUYGUES 15/05/2019 Anne-France LACLIDE-DROUIN 15/05/2019 Michael DALY 15/05/2019	Mario RUSCEV 15/05/2019
HSE / Sustainable Development Committee			Michael DALY 15/05/2019 Heidi PETERSEN 15/05/2019 Mario RUSCEV 15/05/2019 Patrice GUILLAUME 15/05/2019

4.1.2.2 Chief Executive Officer

Mrs. Sophie ZURQUIYAH has been appointed Chief Executive Officer with effective date on April 26, 2018. She is also a Director.

Her credentials are set out in section 4.1.2.1.b) of this Document.

4.1.2.3 Executive Leadership team

The following table sets forth the names of members of our Executive Leadership team and their current positions as of December 31, 2019 and as of the date of this Document:

As of December 31, 2019		As of the date of this Document	
Mrs. Sophie ZURQUIYAH	Chief Executive Officer	Mme Sophie ZURQUIYAH	Chief Executive Officer
Mr. Yuri BAIDOUKOV	Chief Financial Officer	M. Yuri BAIDOUKOV	Chief Financial Officer
Mr. Pascal ROUILLER	SEVP Acquisition and Equipment	Mme Emmanuelle DUBU	EVP Equipment
Mr. Colin MURDOCH	EVP Geoscience	M. Pascal ROUILLER	SEVP Strategy and Advisor to the CEO
Mr. Dechun LIN	EVP Multi-Client	M. Colin MURDOCH	EVP Geoscience
Mr. Eduardo COUTINHO	EVP Group General Counsel	M. Dechun LIN	EVP Multi-clients
Mr. Hovey COX	EVP Group Marketing & Sales and Communications	M. Eduardo COUTINHO	EVP Group General Counsel
Mr. Jérôme DENIGOT	EVP Group Human Resources	M. Hovey COX	EVP Group Marketing & Sales and Communications
Mr. Emmanuel ODIN	SVP HSE/Sustainable Development and Deputy to SEVP Acquisition	M. Jérôme DENIGOT	EVP Group Human Resources
		M. Emmanuel ODIN	SVP HSE/Sustainable Development

The Chief Executive Officer is the only corporate officer *(mandataire social)* of the Company's Executive Leadership team.

4.1.3 General rules, structure and operation of the Board of Directors and its Committees

a) Role of the Board of Directors

Pursuant to Article L. 225-35 of the French Commercial Code, the Board lays down the guidelines governing the Company's activity and sees to their application. Subject to the powers explicitly assigned to the General Meetings and within the limits of the business purpose, it considers any question affecting the proper operation of the Company and it settles the matters concerning it.

b) Composition of the Board of Directors

The appointment and dismissal of members of the Board of Directors are governed by the legal and statutory rules (article 8 of the Company's articles of association). The Board of Directors of the Company comprises no fewer than six and no more than fifteen members, unless otherwise authorized by law. The Directors are appointed by the Ordinary General Meeting, based upon proposal from the Appointment and Remuneration Committee. They can be dismissed at any time by decision of the General Meeting.

Directors appointed by the employees

The extraordinary General Meeting held on November 13, 2017 (28th resolution) decided to amend article 8 of the Company's articles of association to provide for the appointment of Director(s) representing employees, in accordance with the provisions of Article L. 225-27-1 of the French Commercial Code applicable to the Company.

By decision dated December 15, 2017, the Group Committee appointed Mr. Patrice GUILLAUME as Director representing the employees for a term of four years, his mandate expiring, in accordance with article 8 of the articles of association of the Company, following the General Meeting to be convened in order to approve the financial statements for the year ended December 31, 2020.

The credentials of Mr. Patrice GUILLAUME are set out in section 4.1.2.1.b) of this Document.

Since the issuance of the law on business growth and transformation ("PACTE" Law) on May 22, 2019, the number of Directors representing the employees shall be not less than two in case the Board of Directors is composed of more than eight Directors elected by the shareholders. In this framework, a new amendment of article 8 of the Company's articles of association will be submitted to the next General Meeting in order to comply with the applicable regulations.

However, as the Company's Board of Directors has been composed of eight members elected by the shareholders since May 15, 2019, it is not required to appoint a second Director representing the employees until further change in the composition leading to an increase in the number of Directors elected by the shareholders.

In compliance with Article R. 225-34-4 of the French Commercial Code, the Director representing the employees benefits from a training due to this position, corresponding to 40 hours per year.

Representative of the Economic and Social Committee

A representative of the Company's Economic and Social Committee also attends the meetings of the Board of Directors.

Observers (*Censeurs*)

According to article 13 of the Company's articles of association, the Board of Directors may appoint one or several Observers (*Censeurs*) to a maximum number of three, to be appointed for a six-year period.

As of the date of this Document, the Company has not appointed any observer (*Censeur*).

In order to be aligned with the best market practices, a decrease in the duration of the term of office of the observers (from six years to two years) will be proposed to the next General Meeting, for approval.

c) Duration of the office as Director

The term of office of each Director is four years.

d) Independent Directors

The Appointment and Remuneration Committee and the Board review the qualification of the Directors as independent on an annual basis before release of the annual reports.

In accordance with Article 9.2 of the AFEP-MEDEF Code, the Board of Directors considers that a Director is independent when he or she has no relationship of any kind whatsoever with the company, its group or its management that may impair his or her freedom of judgment. The Appointment and Remuneration Committee and the Board of Directors rely on the criteria set out by the AFEP-MEDEF Code to assess the independence of each Director as follows:

Name of the Director	Criterion no. 1	Criterion no. 2	Criterion no. 3	Criterion no. 4	Criterion no. 5	Criterion no. 6	Criterion no. 7	Criterion no. 8	Qualification of independence established by the Board of Directors
Philippe SALLE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sophie ZURQUIYAH	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
Michael DALY	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Anne-France LACLIDE-DROUIN	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Helen LEE BOUYGUES	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Colette LEWINER	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Heidi PETERSEN	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Mario RUSCEV	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Yes = compliance with the AFEP-MEDEF Code in relation to independence criteria.
No = non-compliance with the AFEP-MEDEF Code in relation to independence criteria.

These criteria are the following:

Criterion no. 1	Not to be and not to have been within the previous five years (i) an employee or executive officer of the corporation, (ii) an employee, executive Officer or director of a company consolidated within the corporation, or (iii) an employee, executive Officer or director of the company's parent company, or a company consolidated within this parent company
Criterion no. 2	Not to be an executive officer of a company in which the corporation holds a directorship, directly or indirectly, or in which an employee appointed as such or an executive officer of the corporation (currently in office or having held such office within the last five years) holds a directorship
Criterion no. 3	Not to be a customer, supplier, commercial banker, investment banker or consultant (or be linked directly or indirectly to these persons), that is significant to the corporation or its group, or for which the corporation or its group represents a significant portion of its activities
Criterion no. 4	Not to be related by close family ties to a company officer
Criterion no. 5	Not to have been an auditor of the corporation within the previous five years
Criterion no. 6	Not to have been a director of the corporation for more than twelve years
Criterion no. 7	For non-Executive Directors: not to receive variable compensation in cash or in the form of shares or any compensation linked to the performance of the corporation or its group.
Criterion no. 8	For directors representing major shareholders of the corporation or its parent company: they may be considered independent, provided these shareholders do not take part in the control of the corporation. Nevertheless, beyond a 10% threshold in capital or voting rights, the Board of Directors, upon a report from the Nominations Committee, should systematically review the qualification of a director as independent in the light of the make-up of the corporation's capital and the existence of a potential conflict of interest.

With regard to its annual evaluation of the independence of all the directors, the Board of Directors reviewed specifically the situation of the business relationships of Mr. SALLE and Mrs. LEWINER pursuant to criterion 3 of the AFEP-MEDEF code. In particular, the Board of Directors reviewed the business relationships that may exist between the Company and its group and the companies in which these directors have an office or function, as well as the groups to which they belong, on a quantitative basis (importance of the business relationships that may exist between the Company and these companies and their groups and the business flows identified during the financial year 2019), as well as qualitatively (position of the director in the companies concerned, nature of business relations, etc.). The Board considered that none of the companies in which these directors exercise office or functions, nor the groups to which these companies belong, can be qualified as significant clients, suppliers, business bankers, financing banker or advisor of the CGG group and that CGG cannot be considered as a significant customer or supplier of these companies or their groups.

Therefore, at its meeting of March 31, 2020, the Board concluded that there were no significant business ties with respect to these directors and confirmed the qualification of Mr. SALLE and Mrs. LEWINER as independent directors, the Board having determined that these directors do not have a relationship with the Company, its Group or its management that would compromise the exercise of their freedom of judgment.

As a consequence, at its meeting of March 31, 2020, the Board confirmed that seven out of the eight who were sitting on the Board at that time, qualified as independent (*i.e.* more than half of the Board members, which is compliant with the recommendation of the AFEP-MEDEF Code)[1]: Mrs. Helen LEE BOUYGUES, Mrs. Heidi PETERSEN, Mrs. Anne-France LACLIDE-DROUIN, Mrs. Colette LEWINER, Mr. Philippe SALLE, Mr. Michael DALY and Mr. Mario RUSCEV.

Mr. Patrice GUILLAUME, in his capacity of Director representing the employees, is not taken into account in the calculation of the independence rate of the Board of Directors (according to section 9.3 of the AFEP-MEDEF Code).

(1) *The AFEP-MEDEF Code recommends that independent directors should account for half the members of the Board in widely held corporations without controlling shareholders.*

e) Diversity on the Board of Directors

The Board of Directors considers that diversity of its membership is key to ensure a good performance. Diversity is applied to gender, age, independence, nationalities and skills, as described below.

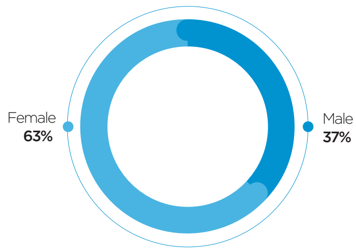
It shall be noted that Mr. Patrice GUILLAUME, as Director representing the employees, has not been taken into account when determining the below figures as this diversity policy should only target Directors elected by the shareholders, based upon the Board's proposal.

GENDER BALANCE

Objective | **2019 Results**

Reach a balanced representation between male and female in the composition of the Board, in compliance with the applicable regulations, *i.e.* either:

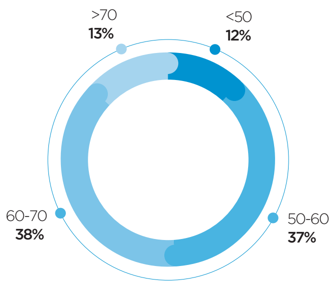
- have at least 40% of each gender for Boards composed of more than 8 members; or
- maintain a maximum gap of two between members of each gender for Boards composed of up to 8 members.



AGE

Objective | **2019 Results**

Reach a variety of ages among the Directors, and comply with the applicable regulations, *i.e.* no more than one third of the Directors shall be older than 70 years old.

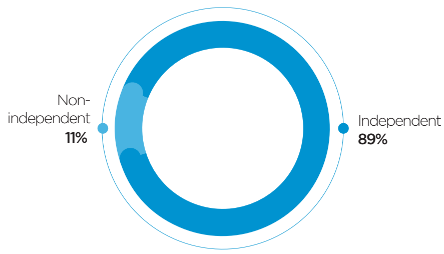


Average age: 58.75 years old

INDEPENDENCE

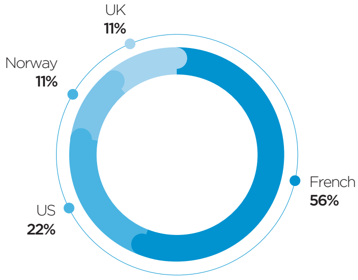
Objective | **2019 Results**

Reach a significant portion of independent Directors on the Board of Directors, and comply with the applicable AFEP-MEDEF recommendations, *i.e.* the independent directors should account for half the members of the Board in widely held corporations without controlling shareholders.



The only Director who is not qualified as independent is the Chief Executive Officer.

NATIONALITIES

Objective	2019 Results
Have a balanced composition in terms of nationalities in order to reflect as much as possible the geographical mix of the Company's activities	 For the purpose of this chart, S. ZURQUIYAH has been accounted for in both "French" and "US" as she has both nationalities.

SKILLS

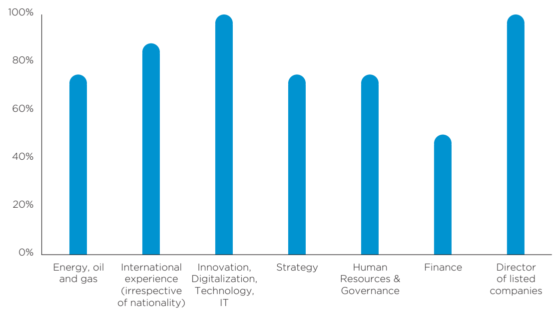
Objective

Have a wide variety of skills and a deep expertise in key areas for the Company's current and future activities, such as:

- energy, oil and gas;
- international experience;
- innovation, digitalization, technology, IT;
- strategy;
- directorship in listed companies;
- finance;
- human resources and governance.

2019 Results

The Board of Directors is of the opinion that with the expertise of its current members, the Company is well equipped to deal with the challenges linked to its new profile, as announced by the Company during the Capital Markets Day on November 7, 2018.



These criteria are reviewed each time a new candidate is proposed to be elected as a Board member.

As of the date of this Document, the composition of the Board is mostly based on the various appointments and cooptations occurred since completion of the Company's financial restructuring in 2018. Therefore, it is not expected to proceed with significant changes in this composition on the short term.

Details on education, directorships, professional experiences, as well as information about age and nationality of each Director are presented in section 4.1.2.1.b) of this Document.

f) Professional address of the Directors

The professional address of the Directors is the registered office of the Company:

CGG SA
27 avenue Carnot
91300 Massy
France

g) Share ownership

In accordance with the Company's articles of association, each Director shall own at least 1 share. However, the Board's Internal Regulations provide that each Director be required to own at least 20,000 shares.

h) Operating rules for Board of Directors meetings

The operating procedure of the Board is governed by internal rules and regulations (hereafter the "Internal rules and regulations of the Board of Directors") which are available on the Company's website (www.cgg.com). Their main provisions are summarized below.

Information to be provided to Directors

In preparation of every Board meeting, the Board's Secretary sends documentation to the Directors containing all useful information on each of the points appearing on the meeting agenda. This documentation is generally uploaded on the secured website of the Board of Directors and its committees to enable the Directors to review it before the meeting.

Furthermore, Directors are kept informed and consulted by the Chief Executive Officer between Board meetings about all events or operations of importance to the Company.

A draft version of press releases related to quarterly, semi-annual and annual financial statements and all events or operations of importance for the Company are sent to Directors sufficiently in advance of their publication so they can transmit their comments to the General Management. Other press releases are systematically sent to them at the same time they are published by the Company.

In general, the Chairman of the Board ensures that Directors are able to fulfill their duties. For this purpose, he assures that each of them receives the documents and information necessary to perform their duties.

Board meetings

At every meeting, the Board is informed of the evolution of the operating and financial performance of the main segments of the Group since the last meeting.

This information per segment is supplemented by a particular review of the consolidated financial situation of the Group in terms of debt, cash flow and financial resources available on a short-term basis and in the light of forecasts.

All transactions with a material impact on the strategy of the Group such as acquisitions, partnerships, disposals or strategic investments are subject to the prior authorization of the Board after the Investment Committee has issued its recommendation. The Board is regularly informed on the progress of the transaction in question.

The Board of Directors meets at least four times per year in the presence of the Statutory Auditors and whenever circumstances so require.

Pursuant to the Internal Rules and Regulations of the Board of Directors, Directors may participate in Board proceedings through videoconferences or telephone conferencing provided such telecommunication means permit the identification of participants and allow them to effectively participate to the meeting in the conditions set forth in Article L. 225-37 of the French Commercial Code.

They are in such cases counted as present for the calculation of the quorum and majority in accordance with the rules of the Board of Directors. However, pursuant to law the said procedure may not be used in connection with the following decisions:

- establishment of the annual financial statements and of the management report; and
- establishment of the consolidated financial statements and of the report on the management of the Group, if that is not included in the annual management report.

Rules applicable to Directors

Duty of expression

Each Director has a duty to clearly express his or her opinions and shall endeavor to convince the Board of the relevance of his or her position.

Diligence

Each Director must devote the necessary time, care and attention to his or her duties. Before accepting any new position or office, he or she must consider whether he or she will still be able to fulfil this obligation. Unless he or she is genuinely unable to do so, he or she must attend all meetings of the Board of Directors and of any committees of which he or she is a member, and all General Meetings of shareholders.

Conflicts of interest

Each Director must inform the Board about any conflict of interest situation, even potential, that may directly or indirectly involve him/her because of the duties he/she may hold in other companies or because of personal interest.

In such a case, the Director shall abstain from attending the debate and taking part in voting on the related resolution.

Principles to be followed in transactions carried by Directors on Company's shares

Directors may hold information relative to the Company that has come to their attention because of their position as director and which, if made public, might have an appreciable effect on the Company's share price. The significant character of a piece of information is normally related to the influence it may have on the financial results of the listed Company. A significant piece of information can relate to operating revenues, financial or budgetary estimates, investments, acquisitions or divestments, main discoveries, stops of important manufacturing units, launching or withdrawal of products, significant changes in shareholding or management, transactions affecting the capital, the dividend, the appearance or the settlement of a dispute, etc..

In such a case, the Internal Regulations provide that Directors must refrain:

- from exploiting such information in their own behalf or in behalf of others, directly or through an intermediary, by purchasing or selling the Company's securities or financial products connected with the said issue;
- from communicating the said information for purposes other than and for an activity other than the one in connection with which it is held.

In addition to the above, Directors must abstain from carrying-out any transaction on the Company's shares, of whatever nature, during the 30-calendar days preceding the publication of semi-annual or annual results and 15-calendar days preceding the quartely results, and until the day after the publication date. Such publications generally occur the last week of February, mid-May, the last week of July and mid-November.

In case of doubt, Directors are invited to contact the Group Chief Financial Officer.

Directors must notify to the *Autorité des Marchés Financiers* the transactions that they may carry out on the Company's shares, pursuant to the provisions of Regulation (EU) no 596/2014 of the European Parliament and of the Council of April 16, 2014. These provisions are described in the internal rules and regulations of the Board of Directors.

i) Appraisal of the operation of the Board of Directors and its committees

The Board of Directors organizes an annual appraisal of its operation and of its Committees. The appraisal is carried-out by the Chairman of the Appointment and Remuneration Committee based on a questionnaire sent to all Directors.

Furthermore the internal rules and regulations of the Board of Directors provide for an appraisal of the Board of Directors performed by an outside consultant every three years.

In 2019, such an external appraisal was performed by an outside consultant, who held individual meetings with each Director using a formalized interview guide. The outside consultant also interviewed the Group Chief Financial Officer, the Executive Vice President Group General Counsel and the Executive Vice President Group Human Resources in that respect. At its meeting held on December 11, 2019, the Board took note of the results of this appraisal and adopted an action plan on the basis of the recommendations issued by the external consultant.

4.1.4 Missions of the Board of Directors and its Committees/Activities in 2019

4.1.4.1 Missions of the Board of Directors and Works over 2019

GENERAL INFORMATION

	As of December 31, 2019
Number of meetings	7
Average attendance rate	97%
Number of Directors	9 [(a)]
Percentage of independent Directors	
Including the Director representing the employees	78%
Excluding the Director representing the employees	89%

(a) Including the Director representing the employees.

MAIN MISSIONS AND WORKS CARRIED OUT OVER 2019 (NON-EXHAUSTIVE LIST)

Main missions (Subject to the powers explicitly assigned to the general meetings of shareholders and within the limits of the business purpose)	• To lay down the guidelines governing the Company's activity and their application; • To consider any question affecting the proper operation of the Company and to settle the matters in regards to it; • To promote long-term value creation by the Company by considering the social and environmental aspects of its activities; to ensure the implementation of a mechanism to prevent and detect corruption and influence peddling as well as the implementation of a policy of non-discrimination and diversity; • To review the opportunities and risks, such as financial, legal, operational, as well as the measures taken accordingly; • To review the Group's consolidated financial situation, particularly in terms of debt, the cash position and financial resources available on a short-term basis and in the light of forecasts; • To authorize any operations that are significant for the Group's strategy, such as in particular the completion of external growth operations, partnerships, disposals or strategic investments and to monitor their implementation; • To review the Company's financial statements as well as all documentation required by law; • To prepare and convene the General Meeting; • To appoint corporate officers in charge of the management of the Company; • To define the compensation policy applicable to the Top Management of the Company based upon the recommendations of the Appointment and Remuneration Committee; • To approve the internal control and risk management procedures implemented by the Company.
Main activities in 2019	**Governance** • The Board convened the General Meeting of May 15, 2019 after having approved the various reports to be presented to the shareholders and the resolutions to be submitted for the shareholders' approval; • The Board reviewed the qualification of Directors as independent; • The Board reviewed the related-party agreements authorized during previous fiscal years and which had remained in force in 2018; • The Board reviewed the Composition of the Board Committees further to the expiration of the term of office of Mrs. Gilberte LOMBARD and Mr. Robert F. SEMMENS; • The Board reviewed the consequences of the negative vote on the 13th and 16th resolutions during the General Meeting held on May 15, 2019; • The Board approved the report on the Group Policy on equal opportunity for an equal treatment of employees; • The Board reviewed the conclusions made further to the appraisal of the Board of Directrs' operations carried out by an outside consultant and adopted an action plan in order to take the recommendations into account for the future; • The Board met once in the absence of the Chief Executive Officer, according to the AFEP-MEDEF Code recommendations.

Compensation

- The Board approved the variable compensation of the Chief Executive Officer for 2018 (payment of which was subject to the General Meeting approval), reviewed the compensation components for the Chairman of the Board and the Chief Executive Officer for fiscal year 2019, and the method of allocation of Directors' fees for 2019 based on the envelop approved by the General Meeting of May 15, 2019;
- The Board reviewed the performance conditions of the stock-option plans allocated in 2015, 2016 and 2018, of the performance unit plan allocated in 2016, and allocated stock-options and performance shares to the Chief Executive Officer, the Members of the Executive Leadership team and certain employees of the Group;
- The Board resolved to align the non-compete undertaking benefiting to with Mrs Sophie ZURQUIYAH with both the provisions of the new applicable regulations and the provisions of the AFEP-MEDEF Code, *i.e.*:
  - The compensation to be paid pursuant to the non-compete undertaking must be paid in instalments throughout the duration of the undertaking, and
  - The non compete undertaking clause can no longer be enforced by the Board if the beneficiary leaves on retirement or after 65 in any case.

Finance and strategy

- The Board approved the 2018 annual financial statements and the 2018 consolidated annual financial statements, reviewed the interim quarterly and half-year results for fiscal year 2019 and the 2019 forecasts;
- In line with the announcements made during CGG Capital Markets Day on November 7, 2018, the Board approved:
  - The exit from Marine data acquisition business thanks to a partnership with Shearwater,
  - The exit from Seabed acquisition business by selling its 40% shareholding interest in Seabed Geosolutions BV to Fugro,

And, more generally, closely monitored the implementation of the 2021 Strategic Plan as well as the process to implement the Social Plan which required the prior authorization of the French Commercial Court due to the Safeguard Procedure.

- The Board approved the 2020-2022 business plan, the 2020 budget and the strategic directions of the Group for 2021.

4.1.4.2 Missions of the Board Committees and Works over 2019

The Internal Rules and Regulations of the Board of Directors also define the composition, duties and operating procedures of the Committees established by the Board, excluding the Audit Committee and the Appointment and Remuneration Committee which have their own charter of functioning since March 8, 2005 and July 30, 2008 respectively. These charters are attached to the Internal Rules and Regulations of the Board of Directors and available on the Company's website (www.cgg.com).

a) Appointment and Remuneration Committee

COMPOSITION

As of December 31, 2019, the members of the Committee were the following:

- Colette LEWINER (Independent Director), Chairwoman;
- Patrice GUILLAUME (Director representing the employees); and
- Heidi PETERSEN (Independent Director).

The Chairman of the Board and the Chief Executive Officer are closely associated with the works of this Committee, notably the work relating to the appointment of Directors.

GENERAL INFORMATION

	As of December 31, 2019
Number of meetings	5
Average attendance rate	100%
Number of Directors	3 (a)
Percentage of independent Directors	
Including the Director representing the employees	*67%*
Excluding the Director representing the employees	*100%*

(a) Including the Director representing the employees.

MAIN MISSIONS AND WORKS CARRIED OUT OVER 2019 (NON-EXHAUSTIVE LIST)

Main missions	• To review the following matters and propose recommendations to the Board of Directors:
	  • compensation to be paid to the Corporate Officers *(mandataires sociaux*), including the procedures for setting the variable part the Long Term Incentives (stock options and performance shares) and the grant of possible benefits in kind,
	  • all provisions relative to the retirement of the Corporate Officers *(mandataires sociaux)*,
	  • for the Corporate Officers *(mandataires sociaux)*, the other deferred elements of the compensation packages (pension, severance payment) to be submitted to the General Meeting,
	  • evaluation of financial consequences on the Company's financial statements of all compensation elements for Corporate Officers *(mandataires sociaux)*,
	  • contracts between the Company and a Corporate Officer *(mandataire social)*,
	  • the possible candidacies for filling Director's positions, positions as Corporate Officer *(mandataire social)* or positions as a member of a Board Committee,
	  • periodical review of the independence of Board members,
	• Directors' fees level and their allocation rules,
	• realization of capital increases reserved for the employees; and
	• To review compensation of the Executive Leadership team members and its evolution;
	• To review the Group's remuneration policy;
	• To review the gender equality and equality of chances policies;
	• To carry out performance evaluation of the Board and its Committees, or, as the case may be, appoint (after an external Request for Proposals), an outside consultant to perform this evaluation To carry out performance evaluation of the Chairman of the Board and the Chief Executive Officer;
	• To review the succession planning process of the Executive Leadership team members; and
	• To review the compensation data and other related information to be publicly disclosed by the Company in its annual reports and any other reports to be issued pursuant to applicable laws and regulations;
	The Committee may also consider any question submitted to it by the Chairman in connection with one of the matters mentioned above.

Main activities in 2019	**Governance** • Review of the independence of the Board members; • Review of the Directors renewal for 2019 and 2020; • Implementation and follow up of the evaluation process for the Board of Directors with an outside consultant; • Propose to the Board of Directors, the Chief Executive Officer's performance evaluation and results on her variable compensation; • Participation and review of feedback of meetings with proxy advisors; • Review of the 2019 leaders' succession plan; • Review of the report on the Group Policy on equal opportunity for and equal treatment of employees.
	Compensation • Review of the amount of Directors' fees and method of allocation; • Review of the compensation of the Chairman of the Board; • Review of the compensation of the Chief Executive Officer (the *ex ante* component of the remuneration and the objectives of the Chief Executive Officer on one hand and determining the annual compensation and reviewing the level of achievement of the Chief Executive Officer's objectives for the purpose of calculating the annual variable compensation on the other hand); • Review of the compensation of the other members of the Executive Leadership team, throughout a benchmark based on international data; • Review of the paragraphs regarding compensation of the Corporate Officers *(mandataires sociaux)* to be included in the annual reports (including the *ex post* and *ex ante* components of the remuneration, to be submitted to the General Meeting for approval); • Review the Group remuneration policy; • Review and present to the board the global 2019 compensation items (including salary plan and variable compensation mechanism); • Review of the stock options and performance shares' plans in force and to be allocated; • Review of the consequences of the negative vote on the 13th and 16th resolutions during the General Meeting held on May 15, 2019; • Review of the Chief Executive Officer non-compete agreement.

The work of the Committee is recorded in its minutes. The Committee reports to the Board on its proceedings after each meeting.

Individual attendance rates are provided for in section 4.1.4.3 of this Document.

b) Investment Committee

COMPOSITION

As of December 31, 2019, the members of the Committee were the following:

- Helen LEE BOUYGUES (Independent Director), Chairwoman;
- Michael DALY (Independent Director);
- Anne-France LACLIDE-DROUIN (Independent Director); and
- Mario RUSCEV (Independent Director).

GENERAL INFORMATION

	As of December 31, 2019
Number of meetings	4
Average attendance rate	92%
Number of Directors	4
Percentage of independent Directors	
Including the Director representing the employees	*n.a.*
Excluding the Director representing the employees	*100%*

MAIN MISSIONS AND WORKS CARRIED OUT OVER 2019 (NON-EXHAUSTIVE LIST)

Main missions	• Review capital expenditures budget as part of the budgeting process: • Individual proposed and committed capital projects over US$10 million, • all other expenditure in aggregate, by business line, • Net cash exposure on capital expenditure, • Prior year capital expenditure results, • Evaluation on internal cost capitalized vs. the market rate for similar services; • Review quarterly updates on capital expenditure budget, sustaining vs. growth, risked IRR/NPV and discuss all capital projects over US$10 million where there has been an unfavorable and material change in the risk/return of the project; • Review all authorizations for expenditures over US$100 million and make recommendations to the Chief Executive Officer; • Review all M&A projects of US$10 million and make recommendations to the Chief Executive Officer; The Committee regularly invites other Directors who are interested in its work, to participate in its assignments.
Main activities in 2019	• Review of all investment transactions falling into its assignments as described above; • Review of the multi-client resources and competition and the investments' budgets for 2020.

The work of the Committee is recorded in its minutes. The Committee reports to the Board on its proceedings after each meeting.

Individual attendance rates are provided for in section 4.1.4.3 of this Document.

c) HSE/Sustainable Development Committee

COMPOSITION

As of December 31, 2019, the members of the Committee were the following:

- Michael DALY (Independent Director), Chairman;
- Patrice GUILLAUME (Director representing the employees);
- Heidi PETERSEN (Independent Director);
- Mario RUSCEV (Independent Director).

GENERAL INFORMATION

	As of December 31, 2019
Number of meetings	3
Average attendance rate	100%
Number of Directors	4 [(a)]
Percentage of independent Directors	
Including the Director representing the employees	*75%*
Excluding the Director representing the employees	*100%*

(a) Including the Director representing the employees.

MAIN MISSIONS AND WORKS CARRIED OUT OVER 2019 (NON-EXHAUSTIVE LIST)

Main missions	• Support the General Management in developing a strategic approach to Health, Safety, Security and Environment ("HSE") & Sustainable Development ("SD"); determine the main axes for the improvement of HSE performance on an ongoing basis; encourage, assist and counsel General Management in maintaining and improving HSE & SD performance; • Monitor the performance of CGG's HSE & SD systems and programs, and at the Committee's discretion, recommend any changes to the Board; • Review CGG HSE & SD performance at each regularly scheduled meeting; benchmark CGG performance against its peers in the industry; • Review the Group's high rated HSE & SD operational risks and the controls put in place to manage these risks; review high impact incidents and near misses such as fatalities and High Potential Incidents ("HPIs"); • Review the Group's SD programs (principally environmental, social and ethical matters) and provide support and direction concerning the mid-term and long-term direction of CGG efforts in this area; and ensure CGG is aware of the changing external social and investor attitudes to sustainability, decarbonisation and the sector; • Monitor the Group's compliance with applicable laws related to HSE & SD; • Review the Group's crisis management preparedness; monitor any major crisis and support the Board and General Management team as necessary in the event of such a crisis; • Recommend to the Board and to General Management desirable policies and actions from its review and monitoring activity.
Main activities in 2019	• Monitorth the HSE performance of the Group; • Review of any operational Lost Time Incidents ("LTIs") and High Potential Incidents ("HPIs"), including discussions of the root causes and requested follow up of enquiries on several incidents; • Focus on specific high rated risks, review of controls and mitigations in place to manage them (*e.g.* in 2019: subcontractor management and travel risks); • Review of sustainability of CGG operations; • Review of the Sustainable Development chapter of the 2018 annual report, including review of the External auditor presentation about their verification of the social, environmental and societal information captured in this document; • Enquiry in to how the United Nations SDG's and Paris Agreement on climate change relate to CGG and its future direction; • Follow up the Company's Care & Protect awards and renewal of the program and its objectives; • Discussion about RSE strategy.

The work of the Committee is recorded in its minutes. The Committee reports to the Board on its proceedings after each meeting.

Individual attendance rates are provided for in section 4.1.4.3 of this Document.

d) Audit Committee

COMPOSITION

As December 31, 2019, the members of the Committee were the following:

- Anne France LACLIDE-DROUIN (Independent Director), Chairwoman;
- Helen LEE BOUYGUES (Independent Director); and
- Colette LEWINER (Independent Director).

Mrs. Anne-France LACLIDE-DROUIN qualifies as independent member of the Committee with specific competences in financial and accounting matters pursuant to Article L. 823-19 of the French Commercial Code.

Mrs. Anne-France LACLIDE-DROUIN developed an extensive financial and accounting expertise through the various financial responsibilities she has held within various international firms and companies. Her credentials are set out in section 4.1.2.1.b) of this Document.

Thanks to her experience, Mrs. Anne-France LACLIDE-DROUIN is therefore very familiar with the financial and accounting specificities of our industrial sector and those linked to our international activities.

The Company complies with the provisions of the AFEP-MEDEF Code requesting that at least two thirds of the Committee be composed of independent Directors.

The following persons attend the Committee meetings: the Chairman of the Board of Directors, the Chief Executive Officer, the Group Chief Financial Officer, the relevant members of the Executive Leadership team, the SVP Group Chief Accounting Officer, the auditors, the Group Internal Audit Director who presents an update on significant missions at least twice a year.

GENERAL INFORMATION

	As of December 31, 2019
Number of meetings	8
Average attendance rate	100%
Number of Directors	3
Percentage of independent Directors	
Including the Director representing the employees	*n.a.*
Excluding the Director representing the employees	*100%*

MAIN MISSIONS AND WORKS CARRIED OUT OVER 2019

Pursuant to its charter, the Audit Committee is responsible for assisting the Board of Directors and, as such for preparing its assignments.

The Audit Committee shall report regularly on its duties and responsibilities to the Board of Directors. The Committee also reports on the audit process of the financial statements, on how such process contributed to the integrity of the financial statements and the role the Committee played in such process. The Committee is required to immediately inform the Board of any difficulty encountered in the process.

Main missions	
Accounts and financial information	In accordance with the provisions of Article L. 823-19 of the French Commercial Code, the Audit Committee shall monitor the effectiveness of the Company's internal control and risk management systems, and, if need be, of internal audit systems, in relation to the preparation and treatment of accounting and financial information, without prejudicing internal audit's independence. In this scope, the Committee is specifically in charge of: • Review and discussing with General Management and the Statutory Auditors the following items: ◦ the consistency and appropriateness of the accounting methods adopted for establishment of the corporate and consolidated financial statements, ◦ the consolidation perimeter, ◦ the draft annual and consolidated accounts, semi-annual and quarterly consolidated financial statements along with their notes, and especially off-balance sheet arrangements, ◦ the quality, comprehensiveness, accuracy and sincerity of the financial statements of the Group; • Hear the Statutory Auditors report on their review, including any comments and suggestions they may have made in the scope of their audit; • Examine the draft press releases related to the Group financial results and proposing any modifications deemed necessary; • Review the "Universal Registration Document" and the annual report; • Raise any financial and accounting question that appears important to it.
Risk management and internal control	• Review with the General Management: ◦ the Company's policy on risk management, ◦ the analysis made by the Company of its major risks (risk mapping), ◦ the programs put in place to monitor them; • Review also with the General Management: ◦ the role and responsibilities with respect to internal control, ◦ the principles and rules of internal control defined by the Company on its general internal control environment (governance, ethics, delegation of authority, information systems…) and on the key processes (treasury, purchase, closing of the accounts, fixed assets…), ◦ the internal control quality as perceived by the Company, ◦ significant deficiencies, if any, identified by the Company or reported by the external auditors (Article L. 823-16 of the French Commercial Code) as well as the corrective actions put into place.

Internal audit	• Review with General Management and the Group Internal Audit Director: ◦ the organization and operation of the internal audit; ◦ the activities and in particular the missions proposed in the scope of the internal audit plan approved by management and presented to the Committee; ◦ results of internal audit reviews.
External audit	• Review with the Statutory Auditors their annual audit plan; • Hear, if necessary, the Statutory Auditors without General Management being present; • Monitor the procedure for selection of the auditors and issue a recommendation to the Board of Directors on the Statutory Auditors whose appointment or renewal is to be submitted to the General Meeting. Such recommendation is to be prepared in accordance with section 16 of Regulation (EU) no. 537/2014 (the "Regulation"); the Audit Committee is also responsible for issuing a recommendation when the renewal of the auditors is contemplated under the conditions set forth in Article L. 823-3-1 of the French Commercial Code; • Monitor the auditors' compliance with the independence conditions defined in Article L. 822-9 to L.822-16 of the French Commercial Code and take any measures necessary to the application of paragraph 3 of section 4 [(a)] of Regulation (EU) no. 537/2014 and make sure that the conditions set forth in section 6 of the Regulation are complied with; • Follow the way the auditors fulfill their mission and take into account the statements and conclusions issued by the *Haut conseil du commissariat aux comptes* as a result of their review pursuant to Article L. 821-9 *et seq.* of the French Commercial Code; • Approve the supply of non-audit services referred to in Article L. 822-11-2 of the French Commercial Code, pursuant to the policy prepared by the Audit Committee and ratified by the Board of Directors; • Discuss, possibly individually the audit work with the Statutory Auditors and General Management and review regularly with management the auditors' fees. Within the framework of a procedure that it determines annually, the Committee has sole authority to authorize performance by the auditors and/or by the members of their network of services not directly relating to their auditing mission.
Others	• Review with management and, when appropriate, the external auditors the transactions binding directly or indirectly the Company and its Executive Officers; • Handle, anonymously, any feedback relating to possible internal control problem or any problems of an accounting or financial nature.

(a) When the total fees received from a public-interest entity in each of the last three consecutive financial years are more than 15% of the total fees received by the statutory auditor or the audit firm or, where applicable, by the group auditor carrying out the statutory audit, in each of those financial years, such a statutory auditor or audit firm or, as the case may be, group auditor, shall disclose that fact to the Audit Committee and discuss with the Audit Committee the threats to their independence and the safeguards applied to mitigate those threats. The Audit Committee shall consider whether the audit engagement should be subject to an engagement quality control review by another statutory auditor or audit firm prior to the issuance of the audit report.

Main activities in 2019	• Review of the annual consolidated financial statements for 2018 (and in particular the impairment tests, the accounting classification of the financial debt of the Group as current liabilities and the memo relating to the going concern), the statutory financial statements for 2018 and the 2019 half-year statutory financial statements and the consolidated financial statements for the first quarter, the first semester and the third quarter of 2019; • Review of the 2019 forecasts; • Review of the 2018 annual reports; • Continue monitoring the way the seismic industry approach IFRS 15 concerning the revenue recognition for multi-client prefunded surveys; • Meeting with external auditors without General Management being present (overview of the audit work performed for the closing of the 2018 financial statements; • Monitoring of the Group's situation with respect to cash and cash flow forecasts, especially refinancing and Group hedging policy; • Review of the Multi-Client activity, the composition of its library and the valuation of the related surveys including accounting treatment (depreciation policy); • Follow up of the financial costs related to the implementation of the financial restructuring to be borne by the Company; • Review of the 2019/2018 risk mapping, before and after mitigation; • Review of the work to be performed by the Statutory Auditors in the scope of their audit on the 2019 financial statements and approved their fee estimates for this work with special focus to cyber security; • Review of the detailed report from external auditors and analysis of the key audit points identified, with a focus on significant risks which may impact the financial statements; • Review of non-audit services provided by the members of our auditors' network performed in 2019 and approval as necessary; • Review of the activities of the internal audit team according to a plan established by the Executive Leadership Team and submitted to the Committee, including a review of the risks identified in the risk mapping presented to the Committee by the Enterprise Risk Management Department; • Follow-up of the evolution of the Group's legal perimeter and, in particular the rationalization program for the Group's legal structures; • Review of the tax situation of the Group; • Review of the off-balance sheet commitments; • Review of the joint-ventures set-up in light with Sercel development.

Finally, the General Management of the Company must report any suspected fraud of a significant amount to the Committee so that the Committee may proceed with any investigation that it deems appropriate.

The Audit Committee usually meets before each meeting of the Board of Directors. For practical reasons, meetings of the Audit Committee are held in general on the eve of the Board of Directors. In order that this constraint does not prevent the proper functioning of the Committee, the Chairman of the Board and the Chief Executive Officer ensure that the members of the Committee receive the necessary documents and information sufficiently in advance in order to have sufficient time to be able to review the accounts.

The work of the Committee is recorded in its minutes. The Committee reports to the Board on its proceedings after each meeting. This report is recorded in the minutes of the Board of Directors' meeting.

Individual attendance rates are provided for in section 4.1.4.3 of this Document.

4.1.4.3 Attendance during Board and Committee meetings in 2019

The table below summarizes, with respect to the meetings of the Board of Directors and those of its Committees:

- the individual attendance rate of the Directors in office in 2019;
- the average attendance rate of the Directors in office in 2019; and
- the average attendance rate of the Directors in office as of December 31, 2019 (*i.e.* excluding Mrs Gilberte LOMBARD and Mr. Robert F. SEMMENS, whose office as Directors expired at the end of the General Meeting held on May 15, 2019).

	Global attendance rate in 2019 (Board and Committees)	Attendance at Board meetings		Attendance at Audit Committee Meetings		Attendance at Appointment and Remuneration Committee Meetings		Attendance at Investment Committee Meetings		Attendance at HSE-Sustainable Development Meetings	
Total number of meetings in 2019			7		8		5		4		3
DIRECTORS IN OFFICE AS OF DECEMBER 31, 2019											
Philippe SALLE	**100%**	7/7	100%								
Sophie ZURQUIYAH	**100%**	7/7	100%								
Michael DALY	**100%**	7/7	100%					2/2	100%	3/3	100%
Patrice GUILLAUME	**100%**	7/7	100%			5/5	100%			3/3	100%
Anne-France LACLIDE-DROUIN	**100%**	7/7	100%	8/8	100%			2/2	100%		
Helen LEE BOUYGUES	**100%**	7/7	100%	8/8	100%			2/2	100%		
Colette LEWINER	**100%**	7/7	100%	3/3	100%	5/5	100%				
Heidi PETERSEN	**90%**	5/7	71%			5/5	100%			3/3	100%
Mario RUSCEV	**100%**	7/7	100%					4/4	100%	3/3	100%
DIRECTORS WITH TERM OF OFFICE HAVING EXPIRED IN THE COURSE OF 2019											
Gilberte LOMBARD (a)	**83%**	2/2	100%	5/5	100%			1/2	50%		
Robert F. SEMMENS (b)	**100%**	2/2	100%			2/2	100%	2/2	100%		
TOTAL ATTENDANCE RATES OVER 2019											
Total attendance rate over 2019 (including Directors whose office expired in the course of 2019)	**98%**		97%		100%		100%		92%		100%
Total attendance rate of Directors in office on December 31, 2019, over 2019	**99%**		97%		100%		100%		100%		100%

(a) *The term of office of Mrs Gilberte LOMBARD as Director expired at the end of the General Meeting held on May 15, 2019.*
(b) *The term of office of Mr. Robert F. SEMMENS as Director expired at the end of the General Meeting held on May 15, 2019.*

4.1.5 Review of the agreements which may be entered into between the Directors or the Corporate Officers (*mandataires sociaux*) and the Company

In accordance with Article L. 225-38 of the French Commercial Code, any agreement between a company and its Chief Executive Officer, one of its deputy Chief Executive Officers, one of its directors, one of its shareholders having a proportion of the voting rights exceeding 10% or, in the case of a shareholder company, the company controlling it within the meaning of Article L. 233-3 of the French Commercial Code, must be subject to the prior approval of the Board of Directors.

However, Article L. 225-39 of the French Commercial Code, provides that the provisions of Article L. 225-38 of the same Code shall not apply to such agreements if they relate to usual operations and if they are entered into under normal conditions, with respect to the activity carried out by the company or its group.

The law no. 2019-486 dated May 22, 2019 (commonly called "Loi Pacte") inserted a new provision in Article L. 225-39 of the French Commercial Cod, requiring, for companies whose share are admitted on a regulated market, the Board of Directors to establish a procedure for regularly assessing whether the agreements relating to usual operations and entered into under normal conditions, still fulfill these conditions and for analyzing their classification.

Therefore, in order to comply with new French legislation on these agreements, the Board of Directors' meeting held on March 5, 2020 approved an Internal Charter for the Group to be used relating to the regular assessment of those agreements entered into in the ordinary course of business.

In addition to describing the regulatory framework applicable to the agreements entered into in the ordinary course of business, the Internal Charter provides for an annual assessment of the conditions under which agreements are entered into in the ordinary course of business to be carried out by the legal department. Any parties that have a direct or indirect interest in an agreement are prohibited from taking part in the corresponding assessment.

This Internal Charter is available on the Company's website (https://www.cgg.com/fr/Investisseurs/Informations-Reglementées-AMF) and included in an appendix to this Document.

4.1.6 Declaration from the Company's Directors and Corporate Officers *(mandataires sociaux)*

In the knowledge of the Company, as of the date of this Document:

- there is no family link between the members of the Board of Directors and the other main corporate officers of the Company;
- none of the members of the Board of Directors or of the corporate officers *(mandataires sociaux)* has been sentenced for fraud during the past five years;
- none of them has been associated, as corporate officer, to bankruptcy, sequestration or liquidation process during the last five years nor had they received any offense and/or official public penalty from statutory or regulatory authorities;
- none of them has been prevented to act as member of a board or Supervisory Board of an issuer or to participate in the management of the conduct of business of an issuer during the last five years at least;
- there are no potential conflicts of interests between the duties of the Directors, the Chairman of the Board and the Chief Executive Officer towards the Company and their respective private interests or their other duties;
- there is no service agreement entered into between the Directors and corporate officers, and the Company or any of its subsidiaries, providing for specific benefits under this agreement.

4.1.7 Transactions entered into between the Company and its Corporate Officers and/or shareholder holding more than 10% of the voting rights in the course of 2019

The list of transactions entered into in the course of 2019 between the Company and companies or subsidiaries having common directors or common corporate officers is reflected in the Statutory Auditors' special report on related party agreements in section 4.1.8 of this Document.

4.1.8 Statutory auditors' special report on regulated agreements

This is a translation into English of the statutory auditors' report on related party agreement and commitments of the Company issued in French and it is provided solely for the convenience of English-speaking users.

This statutory auditors' report includes information required by European regulation and French law. This report should be read in conjunction with, and construed in accordance with, French law and professional auditing standards applicable in France.

To the shareholders of CGG,

In our capacity as statutory auditors of your company, we hereby report on certain regulated agreements.

We are required to inform you, on the basis of the information provided to us, of the terms and conditions and interest for the company of the agreements indicated to us, or that we may have identified in the performance of our engagement. We are not required to comment as to whether they are beneficial or appropriate or to ascertain if any other agreements and commitments exist. It is your responsibility, in accordance with article R225-31 of the French code of commercial law, to evaluate the benefits resulting from those agreements prior to their approval.

In addition we are required, where applicable, to inform you, in accordance with article R225-31 of the French code of commercial law, of any agreements previously approved by shareholders which were executed during the year.

We performed the procedures which we considered necessary to comply with the professional guidance applicable in France to this type of engagement. The procedures consisted of verifying that the information provided to us was consistent with the documentation from which it was extracted.

Agreements subject to the approval of the general meeting of shareholders

Agreements authorized and signed in 2019

In accordance with article L225-40 of the French code of commercial law, we were advised of the following agreements signed during the year which were previously approved by your Board of Directors.

Amendments of the non-competition commitment between the Company and Ms Sophie Zurquiyah, Chief Executive Officer and Board member

Persons concerned: Ms Sophie ZURQUIYAH, Chief Executive Officer and Board member

Terms and conditions

At its meeting of April 26, 2018, and following proposal by the Appointment and Remuneration Committee, the company's Board of Directors authorized the conclusion of a non-competition undertaking between the company and Sophie ZURQUIYAH.

The undertaking covers a period of eighteen months and applies to services involving the acquisition, processing or interpretation of geophysical data, or the supply of equipment or other products designed for the acquisition, processing or interpretation of geophysical data, and implying Sophie ZURQUIYAH's contribution to projects or other activities in the same domain as for Sophie ZURQUIYAH's activity within CGG.

As consideration for her undertaking, Sophie ZURQUIYAH would receive remuneration equating with 100% of her annual compensation of reference as defined by her protection letter.

This commitment has been approved by the general meeting of shareholders on May 15, 2019.

On the proposal of the Appointment and Remuneration Committee, the Board of Directors authorized on December 11, 2019, the modification of the non-competition commitment.

The amendments relate to the following two elements:

- First, the indemnity will not be paid if the person concerned claims his or her pension rights and, in any event, beyond the age of 65; and
- Second, the non-competition indemnity will now be paid in instalments.

Interest of the commitment for the company

The Board of Directors approved the amendment of the non-competition commitment in order to comply with the new applicable regulations and the provisions of the AFEP MEDEF Code to which the company refers.

Amount paid during the period

No payment was made in respect of Sophie ZURQUIYAH's non-competition undertaking during 2019.

Agreements authorized and signed after December 31, 2019 closing

We were advised of the following agreements authorized and signed after December 31, 2019, which were previously approved by your Board of Directors.

Amendment of the contractual termination indemnity (protection letter) benefiting to Ms Sophie ZURQUIYAH, Chief Executive Officer and Board member

Persons concerned: Ms Sophie ZURQUIYAH, Chief Executive Officer and Board member

Terms and conditions

At its meeting of March 5, 2020, and following proposal by the Appointment and Remuneration Committee, the company's Board of Directors authorized the amendment of the signed agreement between the company and Ms Sophie ZURQUIYAH defining the terms of a possible contractual termination indemnity, initially approved by the Board of Directors on April 26, 2018 and ratified during the General Meeting of May 15, 2019.

As originally drafted, this contractual termination indemnity might be paid to Ms Sophie ZURQUIYAH in the following cases:

- In case of revocation, non-renewal or any other instance of forced departure (leading to resignation) linked to a change of control and not reflecting any situation of failure to achieve the performance criteria mentioned below. Any departure within twelve months of a change of control would be deemed to constitute a forced departure;
- In case of revocation in the absence of any gross or serious misconduct and not reflecting any situation of failure to achieve the performance criteria mentioned below.

On March 5, 2020, the Board of Directors authorized the amendment of this agreement in order that no compensation would be paid if Ms Sophie ZURQUIYAH resigned of her position of Chief Executive Officer or is able to exercise her retirement rights at the time of her departure.

The special termination indemnity is equal to the difference between (i) a gross amount of 200% of the applicable annual compensation of reference, including any and all amounts to which Sophie ZURQUIYAH may be entitled as a result of said termination, and (ii) any sums to be paid further to the application of her non-competition undertaking.

The applicable annual compensation of reference is defined as the fixed compensation received during the 12-month period preceding the departure date, to which is added the yearly average of the variable compensation received over the 36 months preceding the departure date. In the event of departure within less than 12 months, the fixed compensation would be reconstituted on an annual basis. The applicable variable compensation would be calculated taking into account the annual levels of achievement determined by the Board of Directors since the start of the appointment.

On March 5, 2020, the Board of Directors also reviewed the scale used to assess performance conditions to which the payment of the special termination indemnity is subject. This payment is namely correlated to the average achievement of the objectives underpinning the variable annual compensation of the last three fiscal years, according to the following rule:

- If the average achievement rate is inferior to 80% (versus 60% before), no special termination indemnity will be paid;
- If the average achievement rate is equal or superior to 80% and inferior to 90% (versus an average rate of 60% before), the contractual termination indemnity will be due at 50% of its amount (versus 60% before);
- If the average achievement rate is equal or superior to 90% (versus 60% before), the contractual termination indemnity will be due on a straight-line basis between 90% and 100% of its amount (versus 60% and 100% before).

Should those provisions require application during the first three years of the Chief Executive Officer's appointment, the assessment of the achievement of the applicable performance conditions would be performed as follows:

- In the event of departure in 2018 or 2019, the Board of Directors would have determined the average achievement rate on the basis of the period since the date of appointment as Chief Executive Officer, which rate would then have applied as provided for above;
- In the event of departure in 2020, the Board of Directors would exceptionally determine the average achievement rate on the basis of the two fiscal years preceding the date of notice of termination.

The Board of Directors must verify, prior to payment of the special termination indemnity, (i) that the applicable performance conditions have been met; and (ii) that the special termination indemnity remains compliant with the company's code of corporate governance in force at the departure date.

Interest of the commitment for the company

The Board of Directors justified the interest of these commitment amendments by:

- compliance with the new applicable regulations and the provisions of the AFEP-MEDEF Code to which the company refers;
- alignment with market practices; and
- consideration of comments made by some voting advisory agencies as part of their recommendations relating to the general meeting of May 15, 2019.

This amendment leads to a greater severity of the terms and conditions of the contractual termination indemnity payable to Ms Sophie ZURQUIYAH in case of departure.

Amount paid during the period

No payment was made in respect of Sophie ZURQUIYAH's non-competition undertaking during 2019.

Agreements already approved by the general meeting of shareholders

Agreements approved during previous fiscal years which continued to be executed during the latest fiscal year

In accordance with Article R225-30 of the French code of commercial law, we were informed that the following agreements, previously approved by general meetings of shareholders of previous fiscal years, continued to be executed during the year.

Extension of the benefit of the Group's obligatory provident and health insurance plan on the benefit of Mr. Philippe SALLE, Chairman of the Board of Directors and Ms. Sophie ZURQUIYAH, Chief Executive Officer

Terms and conditions

At its meeting of April 26, 2018 the company's Board of Directors authorized the application to Mr. Philippe SALLE and Ms. Sophie ZURQUIYAH of the benefit of the Group's obligatory provident and health insurance plan applicable to all Group employees.

Amount paid during the period

The subscriptions paid by the company for 2019 amounted to €3,879 for Mr. Philippe SALLE and €4,421 for Ms. Sophie ZURQUIYAH.

Provision of international medical insurance cover for the benefit of Ms. Sophie ZURQUIYAH, Chief Executive Officer and Board member

Terms and conditions

At its meeting of April 26, 2018 the company's Board of Directors authorized the provision of international medical insurance cover for the Chief Executive Officer with effect from her date of appointment. The applicable contract was entered into by CGG Services (U.S.) Inc., a subsidiary indirectly fully controlled by CGG SA.

Amount paid during the period

The subscription paid by CGG Services (U.S.) Inc. for 2019 amounted to USD 23,435.

Provision of specific unemployment insurance cover for the benefit of Ms. Sophie ZURQUIYAH, Chief Executive Officer and Board member

Terms and conditions

At its meeting of April 26, 2018 the company's Board of Directors authorized the provision by GSC GAN of specific unemployment insurance cover, with effect from May 1, 2018. This guarantee provide a maximum amount payable of 14.15% of 2019 target compensation of Ms. Sophie ZURQUIYAH (€178,306) over a twelve months period.

Amount paid during the period

The subscription paid for 2019 amounted to €11,094.

Authorization of the application of article 83 supplemental pension and retirement plan to Ms. Sophie ZURQUIYAH, Chief Executive Officer and Board member

Terms and conditions

At its meeting of April 26, 2018 the Company's Board of Directors authorized the application to Sophie ZURQUIYAH of the Group's article 83 supplemental pension and retirement plan implemented since January 1, 2005 for the benefit of members of the Group's executive bodies in France.

This supplementary benefit plan supplement the level of pension paid by the mandatory French pension plans. It is subject to the following subscription limits:

- Social security Tranche A: 0.5% of employee contribution and 1.0% of employer's contribution;
- Social security Tranche B: 2.0% of employee contribution and 3.0% of employer's contribution;
- Social security Tranche C: 3.5% of employee contribution and 5.0% of employer's contribution.

The subscription is based on gross annual compensation limited to basic salary, annual variable compensation and company vehicle benefit in kind, to the exclusion therefore of any other element of remuneration.

Amount paid during the period

The subscription paid for 2019 amounted to €12,157.

Paris La Défense, April 14, 2020

The statutory auditors

ERNST & YOUNG et Autres	MAZARS
Nicolas PFEUTY	Jean-Louis SIMON

4.2 Remuneration

4.2.1 Remuneration policy for Corporate Officers

This remuneration policy has been established in accordance with the provisions of Article L. 225-37-2 of the Commercial Code, as amended by Order no. 2019-134 of November 27, 2019 and the decree adopted for its application.

As of the date of this report, the Company's Corporate Officers are Mr. Philippe SALLE, Chairman of the Board of Directors and Mrs. Sophie ZURQUIYAH, Chief Executive Officer of the Company, as well as all the members of the Board of Directors ("the directors").

For the purposes of this report and pursuant to the provisions of the Code of Corporate Governance for Listed Companies (hereinafter "the AFEP-MEDEF Code"), "Executive Corporate Officers" shall mean the Chief Executive Officer and any Deputy Chief Executive Officers. The Executive Corporate Officers, the Chairman of the Board of Directors and the Directors are collectively referred to as "Corporate Officers".

4.2.1.1 Information relating to all Corporate Officers

A. Decision-making process and general principles

a. Determination of the remuneration policy

The remuneration policy for Corporate Officers is determined by the Board of Directors on the recommendation of the Appointment and Remuneration Committee. This policy is regularly reviewed and discussed by the Board of Directors in order to be in accordance with corporate interest of the Company, contribute to its sustainability and be in line with its business strategy.

The Company has defined its corporate social responsibility via four cornerstones which form the heart of the Company's day-to-day focus – its employees, its sustainability as a company, the fight against corruption, and the environment. Through an ongoing and forward-looking approach, every effort has been made to identify, prevent, manage and resolve all risks linked to these four fields, both at a site and/or project level as well as at the level of governance bodies. These key areas of focus are at the foundations of the Company's commercial strategy, which is defined via promotion and development objectives within the industry, building long-term relationships, developing alliances with major clients and partners, and on a global level, sustaining operational performance. These various elements are implemented by ensuring the Company attracts and retains key skills in a stimulating work environment while maintaining the health and safety of all.

As such, the remuneration policy complies with the following general principles, which are established in accordance with the provisions of the AFEP-MEDEF Code to which the Company refers:

- **balancing principle**: Care is taken to ensure that there is a good balance between the different components of the remuneration package and that none of its elements is disproportionate;
- **comparability principle**: The positioning of the remuneration of the Company's Corporate Officers is regularly reviewed in relation to that of companies in the sector and comparable markets, on the basis of studies carried out by specialised external firms. Thus, the Group's practices are consistent and competitive with market practices to ensure the retention of key executives and to support the Company's business strategy;
- **principle interest alignment and link to performance**: In general, the Board of Directors and the Appointment and Remuneration Committee pay particular attention to ensuring that the remuneration policy for Executive Corporate Officers is in line with the Company's performance and oriented towards the creation of long-term value (quantifiable criteria) as well as the achievement of non-financial objectives (qualitative criteria). Consequently, the main purpose of the remuneration policy is to encourage the achievement of ambitious strategic objectives by setting demanding short, medium and long-term performance criteria.

The overall remuneration policy for Executive Corporate Officers focuses on the variable portion of remuneration, which is at risk for the beneficiary. Thus, their remuneration structure includes a significant variable component aimed at aligning executive remuneration more directly with the Group's business strategy and social purpose while encouraging performance. The long-term remuneration tools put in place by the Company also represent a significant part in linking the remuneration of the Corporate Officers to the interests of the shareholders.

This policy therefore makes it possible to remunerate, in an appropriate manner, decision-making that creates long-term value for the Company, ensuring its sustainability.

A suitable remuneration policy is essential, particularly taking into account the cyclical nature of the Group's activity, in order to attract, motivate and retain talent while generally ensuring a good level of competitiveness for remuneration packages. This dual objective of attracting and retaining talent was one of the principal strands of the general sustainable development policy across all employees.

The Group Human Resources policy enables employees to benefit from a working environment and conditions that encourage professional achievement, in order to bring the best out of human capital. The Group guarantees a uniform remuneration system in line with local practices. To that end, all employees benefit from a remuneration policy built on principles of competitiveness, attractiveness and motivation, which at the same time meets market practices and encourages improvement in Company performance in order to serve both the Company's commercial strategy and corporate purpose (please refer to Chapter 3 "Statement on non-financial performance" of the 2019 Universal Registration Document for more details).

The Company has implemented, at Group level, an annual variable remuneration policy named the Global Performance Incentive Plan (GPIP). This policy applies to the majority of employees and to Executive Corporate Officers. The financial criteria underpinning the policy are based on financial objectives linked to activity, which varies according to the entity in question, and takes into account directives provided by the Board of Directors. The individual criteria are based on non-financial objectives related to the strategic and operational development of the Group. This system enables alignment between remuneration conditions applied across the Group and Company and shareholder interests.

b. Review of the remuneration policy

The Group remuneration policy is regularly reviewed, taking into account market practices and how competitors have evolved in order to ensure consistency at both a global and industry level. Concerning Executive Corporate Officers, the Company works with specialized external firms who submit their observations to the Appointment and Remuneration Committee. The latter then shares its recommendations with the Board of Directors for their decision-making process.

c. Implementation of the remuneration policy

The remuneration policy applicable to the Corporate Officers will be implemented by the Board of Directors, in compliance with applicable legal, regulatory and statutory frameworks and in respect of the general principles outlined in section 4.2.1 of the present Document.

The Appointment and Remuneration Committee meets regularly to verify that the remuneration policy adopted by the General Meeting is correctly applied.

d. Role of the Appointment and Remuneration Committee

The tasks of the Appointment and Remuneration Committee in determining, reviewing and implementing the remuneration policy are defined in section 4.1.2.1.a) of the present Document.

The Appointment and Remuneration Committee was created on March 15, 2000 on the initiative of the Board of Directors.

It is composed of 50% independent directors. In accordance with the provisions of the AFEP-MEDEF Code, an independent director is a Non-Executive Corporate Officer of the Company or its group with no special interest in the Company or its group.

The Committee shall meet at least three times a year to consider:

- the remuneration allocated to each Corporate Officer;
- the allocation of long-term remuneration elements; and
- the procedures for evaluating the Board of Directors, the Chairman of the Board of Directors and the Chief Executive Officer.

The Committee assists the Board of Directors in determining the remuneration of the Corporate Officers, taking into account all of the general principles set forth above.

It makes proposals and recommendations concerning, in particular:

- the remuneration of Corporate Officers, including the procedures for determining the related variable portion and the possible allocation of benefits in kind;
- all provisions relating to the retirement of Corporate Officers;
- the elements of deferred remuneration for Corporate Officers to be submitted to the annual General Meeting of Shareholders;
- the assessment of the financial impact of all remuneration components for Corporate Officers on the Company's financial statements;
- the implementation of share-based remuneration plans.

The Committee may also be assisted by an external and independent advisor specialising in remuneration issues.

e. Conflict of Interest

Directors

In accordance with the Internal Regulations of the Board, each Director must inform the Board about any conflict of interest situation, even potential, that may directly or indirectly involve him/her because of the duties he/she may hold in other companies or because of personal interest. In such a case, the Director shall abstain from attending the debate and taking part in voting on the related resolution.

This obligation is complemented by an annual formal statement provided to the Company by each Director, testifying that he/she is not involved in any conflict of interest.

On March 5, 2020, the Board of Directors resolved to amend its Internal Regulations in order to enhance the Directors' attention on the topic of conflict of interest. These Internal Regulations are available on the Company's website.

Corporate Officers who are not Directors

The Corporate Officers who are not Directors (Chief Executive Officer, Deputy Chief Executive Officer, as the case may be) must inform the Executive Leadership team or, in the case of a Chief Executive Officer not being a Director, the Board of Directors, in case of any real or potential conflict of interest situation with the Company.

In any case, and in case of any doubt, each Corporate Officer (being a Director or not) has the possibility to consult the Group Ethics Committee.

B. Application of the remuneration policy

Appointment of new Corporate Officers

In the event that a new Chairman is appointed, the principles, criteria and elements of remuneration provided for in the Chairman's remuneration policy would apply.

In the event that a new Chairman and Chief Executive Officer/Chief Operating Officer is appointed, the principles, criteria and elements of remuneration provided for in the Chief Executive Officer's remuneration policy would apply.

In the event that a new director is appointed, the principles, criteria and elements of remuneration set out in the remuneration policy for directors would be applicable.

The Board of Directors, on the recommendation of the Appointment and Remuneration Committee, will then determine, adapting them to the situation of the person concerned, the objectives, performance levels, parameters, structure and maximum percentages in relation to their fixed annual remuneration, which may not exceed those of the Chairman, in the case of a new Chairman, of the Chief Executive Officer, in the case of a new Chief Executive Officer, or of the Directors, in the case of a Director.

Exceptions to the application of the remuneration policy

In the event of exceptional circumstances, the Board of Directors may, in accordance with Article L. 225-37-2, III paragraph 2 of the French Commercial Code, depart from the application of the remuneration policy when this departure is temporary, in accordance with the company's interests and necessary to guarantee the company's continuity or viability.

It should be noted that the compensation policy for corporate officers was established prior to the introduction of the state of health emergency by Act no. 2020-290 of March 23, 2020 and its economic impact.

In order to take these exceptional circumstances into account, the Board of Directors may, for the financial year 2020 alone and after consulting the Appointment and Remuneration Committee, adjust the components of the annual variable compensation in light of the economic situation, which only concerns performance criteria and/or conditions. The Board of Directors will justify these adjustments in detail in view of the impact on the company's performance and the economic consequences resulting from these exceptional circumstances. Under no circumstances may the ceiling of the annual variable compensation be modified.

These exceptions will be strictly implemented. Indeed, the annual variable compensation will be submitted to the vote of the shareholders at the General Meeting and may only be paid in the event of a positive vote by the latter in accordance with the provisions of Articles L. 225-37-3 and L. 225-100, II of the French Commercial Code.

C. Change in remuneration policy

Following the General Meeting of May 15, 2019, the Group undertook a review of the main elements of governance related to the remuneration of Corporate Officers and their communication, with the assistance of an external consultant.

The Group carried out an audit of compliance with the recommendations of the AFEP-MEDEF Code, compliance with changes in legislation (Pacte law) and investor expectations through analysis of policies and comments from voting advisory agencies.

Following this diagnosis, the Group carried out projects aimed at taking into account the comments of the various stakeholders on the following projects: long-term remuneration, communication on the remuneration of Corporate Officers and the characteristics of regulated agreements for the benefit of the Group's Corporate Officers:

- the characteristics of long-term remuneration: as soon as the 2019 plan was implemented, the Board of Directors modified the acquisition conditions for stock-options and performance shares with:
  - an extension of the acquisition period to 3 years for both stock-options and performance shares,
  - the integration of a relative performance condition with the evolution of the share price in relation to the PHLX Oil Service SectorSM (OSX^{SM}) index for stock-options,
  - stopping the re-testing of the performance conditions attached to the stock-options;
- communication on the remuneration of Corporate Officers: the group has launched an audit of its corporate governance report and has undertaken a more detailed communication of the components of the remuneration policy through:
  - the methods for determining the remuneration of Corporate Officers and their target structure,
  - target levels and ceilings for the variable elements of remuneration disclosed,
  - the mechanism for calculating the annual variable remuneration with the terms and conditions for assessing performance criteria to enable shareholders to understand the determination of the amounts paid,
  - the communication of the results of long-term incentive plans enabling shareholders to link this remuneration to the Group's performance;
- the non-competition clause has been brought into compliance with the rules of the AFEP-MEDEF Code and Order no. 2019-1234 of November 27, 2019:
  - the payment of the non-competition indemnity would therefore be excluded as soon as the Chief Executive Officer would exercise his or her retirement rights. In any event, no remuneration could be paid beyond the age of 65, and
  - on the other hand, the non-competition indemnity will have to be paid in instalments during its duration;
- the contractual termination indemnity has also been modified to comply with the provisions of the AFEP-MEDEF code:
  - the payment of the indemnity would be excluded in the event of the beneficiary's resignation (including further to a change of control) or the possibility for the beneficiary to exercise his or her retirement rights at the time of departure, and
  - the performance scale giving rise to the payment has been revised to be more stringent.

The elements of remuneration of the Corporate Officers, as determined by the Board of Directors in compliance with the principles outlined above, will be submitted for approval on the General Meeting to be held on June 16, 2020.

4.2.1.2 Information relating to each Corporate Officer

A. Remuneration policy applicable in 2020 to the Chairman of the Board of Directors

The remuneration of the Chairman of the Board of Directors is determined in accordance with the recommendations of the AFEP-MEDEF Code and in line with remuneration practices observed in France for non-executive chairs of boards. It is in line with the Company's corporate interest, contributes to its sustainability and is in line with its business strategy.

The position of Chairman of the Board of Directors is currently held by Mr. Philippe SALLE.

In accordance with Article L. 225-37-2 of the Commercial Code, this remuneration policy will be the subject of a resolution submitted for approval to the General Meeting called to approve the financial statements for the year ending December 31, 2019.

a. Term of office

On April 26, 2018, the Board of Directors appointed Mr. Philippe SALLE as Chairman for the duration of his office as Director. Mr. Philippe SALLE was appointed as Director for the first time on March 8, 2018, by cooptation in replacement of Mr. Loren Carroll, for the remainder of the term of office of his predecessor, *i.e.* until the end of the General Meeting to be held to approve the financial statements for fiscal year ending December 31, 2020. It is hereby reminded that pursuant to article 8 of the Company's articles of association, Directors are appointed for a 4-year term.

The Board of Directors may revoke the Chairman at any time. The Chairman's office comes to an end at the latest after the annual Ordinary General Meeting following the date on which he reaches the age of 65 years. However, the Board of Directors may further extend the office of the Chairman, once or several times for a total period not to exceed 3 years.

b. Total remuneration and benefits of any kind

i. Respective Importance of Remuneration Elements

The remuneration of the Chairman of the Board of Directors consists solely of fixed elements, to the exclusion of any variable or exceptional remuneration.

ii. Fixed remuneration

The Chairman of the Board of Directors may receive a fixed annual remuneration.

For the 2020 financial year, the fixed remuneration of Mr. Philippe SALLE is maintained at €170,000 gross on an annual basis by decision of the Board of Directors taken on March 5, 2020.

iii. Other short-term remuneration components

SOCIAL PROTECTION SCHEMES

The Chairman of the Board may benefit from the social protection schemes set up for the Group's employees.

Consequently, the Chairman may benefit from an insurance scheme covered by a contract taken out with Swisslife, covering death and disability risks.

Benefits are calculated on the basis of the contribution base consisting of gross annual remuneration.

This scheme is capped and guarantees:

- the payment of temporary incapacity and 2nd category invalidity benefits up to a maximum amount of €119,295 per year in addition to social security payment;
- the risk of death according to several options at the beneficiary's choice, the maximum amount of which is set at 32 PASS in case of accidental death;
- the payment of a spouse's pension, if applicable.

The benefit limits are set by the insurance contract and depend on the marital status at the time of death and the option chosen by the beneficiaries.

This scheme is capped as detailed below, and premiums are calculated in reference to the Plafond Annuel de Sécurité Sociale [Annual Social Security Ceiling] (PASS) and are set for the year 2020 at:

- tranche A – up to 100% of the PASS: 0.23% beneficiary premiums and 1.14% company premiums;
- tranche B – between 100% and 400% of the PASS: 1.52% beneficiary premiums and 1.57% company premiums;
- tranche C – between 400% and 800% of the PASS: 0.13% beneficiary premiums and 0.51% company premiums.

Premiums are paid on the employee's gross annual remuneration.

The Chairman may also benefit from medical coverage provided via an insurance contract taken out with Swisslife, covering medical fees.

Premiums are calculated in reference to the Plafond Annuel de Sécurité Sociale [Annual Social Security Ceiling] (PASS) and are set for the year 2020 at:

- a fixed fee of €33.40 borne by the beneficiary and of €33.40 borne by the Company;
- on top of which are paid premiums in proportion to earnings:
  - tranche A and B: up to 400% of the PASS: 0.52% beneficiary premiums and 0.52% company premiums.

Premiums are paid on the beneficiary's gross annual remuneration.

The amount of the premiums and the coverage provided are reviewed yearly, without necessarily being modified.

The above insurance contracts can be terminated by following standard legal procedure.

For the 2020 financial year, as in 2019, Mr. Philippe SALLE will benefit from both of the above social protection schemes.

BENEFITS IN KIND

The Chairman of the Board may receive benefits in kind linked to the allocation of a company car.

For the financial year 2020, as in 2019, Mr. Philippe SALLE will not benefit from a company car.

iv. Remuneration allocated to directors

The Chairman of the Board of Directors may receive remuneration allocated to the directors.

The Chairman of the Board of Directors receives a fixed amount of Directors' fees, in his/her capacity as Director, the amount of which is approved by the Board of Director.

For the 2020 financial year, on the recommendation of the Appointment and Remuneration Committee, and subject to shareholder approval at the Annual General Meeting to be held on June 16, 2020, it will be proposed to pay a fixed remuneration of €70,000 as remuneration allocated to Directors, for the position of Chairman of the Board.

v. Other forms of remuneration

The Chairman of the Board of Directors does not receive any other form of remuneration. In particular, he does not perceive:

- any annual or multi-annual variable remuneration;
- any stock options or stock purchase options;
- any free or performance shares.

The Chairman of the Board of Directors does not benefit from any retirement benefits, non-competition indemnities or contractual severance payments.

B. Remuneration policy applicable in 2020 to the Chief Executive Officer

The remuneration policy applicable to the Chief Executive Officer is designed to remunerate performance, measured in the short, medium and long term. The components of this policy have different and mutually consistent objectives. Consequently, is in line with corporate interest of the Company, contributes to its long-term sustainability and is in line with its sales strategy.

To determine the compensation of the Chief Executive Officer, the Board of Directors uses benchmarks of CAC Mid 60 companies. The objective is to position the Chief Executive Officer at the median of the market for total compensation comparisons (fixed remuneration, annual variable remuneration, long-term remuneration). In addition, given its exposure to the international market, the company also regularly analyses the positioning of the Chief Executive Officer's compensation in relation to international compensation benchmarks. In addition, the Board ensures that the remuneration policy for Corporate Officers remains consistent with that of the Group's other executives.

In accordance with Article L. 225-37-2 of the Commercial Code, this remuneration policy will be the subject of a resolution submitted for approval to the General Meeting called to approve the financial statements for the year ending December 31, 2019.

The position of Chief Executive Officer is currently held by Mrs. Sophie ZURQUIYAH.

a. Term of office

On March 23, 2018, the Board of Directors appointed Mrs. Sophie ZURQUIYAH as Chief Executive Officer of the Company. This appointment became effective at the end of the annual General Meeting held on April 26, 2018 and remain in force until the end of the General Meeting to be held to approve the 2021 financial statements. On April 26, 2018, the General Meeting approved the appointment of Mrs. Sophie ZURQUIYAH as Director for a 4-year term, in accordance with article 8 of the Company's articles of association. It is hereby noted that the duration of the office of Mrs. Sophie ZURQUIYAH as Chief Executive Officer is the same as the duration of her office as Director.

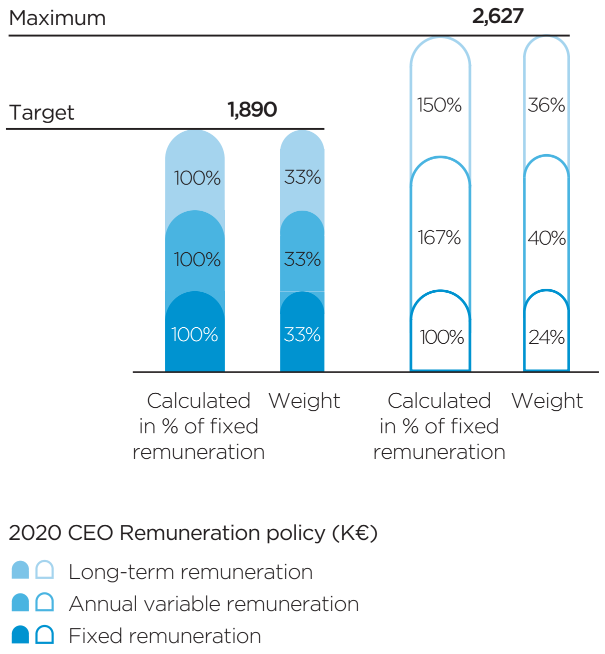
The Chief Executive Officer may be revoked at any time by the Board of Directors. The functions of Chief Executive Officer will terminate at the latest at the end of the ordinary General Meeting which follows the date on which he reaches the age of 65 years. However, the Board of Directors may extend the Chief Executive Officer's term of office beyond this limit, all at once or on several occasions, for a total duration that may not exceed three years.

b. Total remuneration and benefits of any kind

i. Respective importance of remuneration elements

The total remuneration package is structured in a balanced way around the three main remuneration components (fixed remuneration, annual variable remuneration, long-term remuneration):

2020 CEO REMUNERATION POLICY
(IN THOUSANDS OF €)



Details of the breakdown of the components of each element of remuneration are set out in the following paragraphs.

ii. Fixed Remuneration

In accordance with the AFEP-MEDEF Code, the remuneration of the Chief Executive Officer is reviewed annually by the Appointment and Remuneration Committee. On the other hand, its amount is not changed annually but at relatively long intervals (every two or three years).

Any increase shall be justified and explained.

If the Board of Directors decides, on the recommendation of the Appointment and Remuneration Committee, on a significant increase, this must be explained and take into account market practices.

To determine the fixed compensation of the Group's Chief Executive Officer, the Board of Directors uses benchmarks of CAC Mid 60 companies and analyses his positioning on the international market. It should be noted that the fixed compensation of the Chief Executive Officer currently appears to be positioned at less than 90% of the median of CAC Mid 60 companies, used as a benchmark in the French market.

The fixed remuneration is used as a reference for determining the annual variable compensation percentage and the valuation of long-term compensation.

It is paid monthly.

For the 2020 financial year, the Board of Directors of March 5, 2020 has decided to maintain the fixed remuneration of Mrs. Sophie ZURQUIYAH at €630,000 gross on an annual basis.

The stability of her fixed remuneration reflects the Board of Directors' desire to change it at relatively long intervals.

iii. Annual variable remuneration

METHODS OF DETERMINATION

Within the Group, the Company has set up an annual variable remuneration scheme that benefits the majority of employees. This policy may vary with respect to the Group's objectives and strategy. To date, the Company has implemented a programme called the Global Performance Incentive Plan (GPIP) also applicable to the Chief Executive Officer.

The Board of Directors and the Appointment and Remuneration Committee pay particular attention to ensuring that the annual variable remuneration policy of the Chief Executive Officer is aligned to Company performance and focused on creating value in the long term (financial objectives) as well as the Group's strategic development (non-financial objectives).

The above criteria contribute to the objectives of the remuneration policy by directly aligning executive remuneration with the Group's commercial strategy (via criteria related to Group governance, relationships with major clients and partners, promotion and development within the industry) and social purpose (in particular via the criterion related to corporate social and environmental responsibility), while encouraging operational and financial performance.

In accordance with the AFEP-MEDEF Code, and in order to ensure that they are in line with the Company's short-term strategy, the criteria for annual variable remuneration are reviewed by the Board of Directors every year, without necessarily being modified.

The variable annual remuneration of the Chief Executive Officer is broken down into two parts:

- the first part is based on quantifiable criteria (2/3);
- the second is based on qualitative criteria (1/3).

Quantifiable criteria (financial objectives) are precisely defined by the Board of Directors in relation to the Group's budgetary objectives. They may include, but are not limited to, the following: (i) the Free Cash flow, (ii) EBITDA, (iii) the turnover for Group and (iv) the results of operations.

Qualitative criteria (non-financial objectives) are precisely defined by the Board of Directors in relation to the annual priorities for the Group. They may, in particular, and not exclusively, concern: (i) the governance of the Group, (ii) relations with major customers, shareholders and the financial community, (iii) social and environmental responsibility, (iv) the promotion and development of the Group in its business sector, (v) the Group's operating performance and (vi) human resources.

The Board of Directors decides on the weighting assigned to the achievement of each of the considered criteria according to the context and their importance for the Group.

The amount of variable annual target remuneration (when 100% of the quantifiable and qualitative criteria are met) set for the Chief Executive Officer is expressed as a percentage of the fixed part of the remuneration.

Finally, as an incentive to outperform on quantifiable criteria, the annual variable remuneration programme allows for the payment of amounts in excess of the target remuneration. The mechanism does not affect qualitative criteria. The annual variable remuneration may therefore attain a maximum amount of 166.67% of fixed remuneration.

Target objectives are not communicated for reasons of confidentiality. Nevertheless, the rate of achievement of each of the criteria is communicated a posteriori.

The indicators set each year by the Board of Directors for the Chief Executive Officer apply to all Group employees in order to ensure consistency between the variable remuneration policy for the Chief Executive Officer, senior executives and, more generally, other Group employees.

METHOD OF EVALUATING PERFORMANCE CRITERIA

The performance appraisal for the Chief Executive Officer concerning the qualitative criteria defined by non-financial objectives is carried out by the Appointment and Remuneration Committee. The level of achievement of the criteria is assessed in the presence of the Chairman who submits his observations to the Committee.

To conclude, the Appointment and Remuneration Committee share their recommendations with the Board of Directors in order for the latter to reach a decision.

TERMS OF PAYMENT

The variable portion due in respect of a given financial year is determined by the Board of Directors approving the accounts for the same financial year. Thus, in accordance with Article L. 225-100 of the Commercial Code, the payment of the variable portion due in respect of the year 2020 will be subject to an *ex-post* vote by the General Meeting called in 2021 to approve the financial statements for the financial year 2020. It shall be paid in the month following the validation of this payment by the General Meeting.

There is no possibility for the Company to claim back the annual variable remuneration and there are no other possible deferral periods.

APPOINTMENT OR TERMINATION OF MANDATE

In the event of the appointment or departure of the Chief Executive Officer during the year, these same principles would apply pro rata temporis for the period of office.

However, in the event of an appointment during the second half of the year, the performance assessment would be carried out at the discretion of the Board of Directors on the recommendation of the Appointment and Remuneration Committee.

Applicable remuneration in 2020

For the 2020 financial year, the Board of Directors at its meetings of March 5 and 31, 2020 has decided not to modify the annual variable remuneration system applicable to the Chief Executive Officer and has determined the structure of the annual variable remuneration of Mrs. Sophie ZURQUIYAH and the applicable objectives. The Board of Directors defined the financial objectives in relation to the Group's budgetary Objectives. The Extra-financial objectives have been for their part defined in relation with the annual priorities of the Group and are based on:

- Covid-19 crisis management and strategic plans;
- the Company organization including the management of its talent and succession plan;
- the achievement of Business and Operations objectives with a strong focus on clients and technology;
- the performance of the company in HSE and Sustainable Development.

Its target amount is set at 100% of its fixed remuneration and its maximum amount is set at 166.67% of its fixed remuneration.

Variable compensation for the 2020 financial year therefore breaks down as follows:

	Target		Maximum	
Indicator	As a % of Target Variable	On a basis of 100	As a % of Target Variable	On a basis of 100
Financial Targets	**66.67%**	**66.67%**	**133.33%**	**80.00%**
Cash Flow Net of the Group	16.67%	16.67%	33.33%	20.00%
EBITDA free assets	16.67%	16.67%	33.33%	20.00%
External sales of the Group	16.67%	16.67%	33.33%	20.00%
Operating income	16.67%	16.67%	33.33%	20.00%
Extra Financial Objectives	**33.33%**	**33.33%**	**33.33%**	**20.00%**
Covid-19 crisis management and strategic plans	16.67%	16.67%	16.67%	10.00%
Organization and Human Resources Management	6.67%	6.67%	6.67%	4.00%
Operating Performance of the Group	6.67%	6.67%	6.67%	4.00%
HSE & Sustainable Development	3.33%	3.33%	3.33%	2.00%
TOTAL CRITERIA	**100.00%**	**100.00%**	**166.67%**	**100.00%**

In the event of exceptional circumstances, the performance criteria and/or conditions may be modified by the Board of Directors, after consultation with the Appointment and Remuneration Committee.

The performance criteria and/or conditions were established by the Board of March 5, 2020, prior to the introduction of the state of health emergency by law no. 2020-290 of March 23, 2020.

The first non-financial criterion was thus modified by the Council of March 31, 2020 in order to integrate the management of the Covid-19 crisis into the management of the Company's strategic plans.

In order to take into account the economic consequences resulting from these exceptional circumstances, the Board of Directors may modify the criteria and/or performance conditions of the annual variable compensation. The Board will justify these adjustments in detail in view of the impact on the Company's performance and the economic consequences resulting from these exceptional circumstances.

iv. Remuneration allocated as a director

The Chief Executive Officer, who would also be a director of the Company, does not receive any remuneration allocated to the directors.

v. Exceptional remuneration

No exceptional remuneration may be granted to the Chief Executive Officer by the Board of Directors, except in very special circumstances.

In the event of the payment of exceptional remuneration, this will be justified and explained by the Board of Directors both in terms of the criteria used to determine it and the amounts awarded.

In any case, the exceptional compensation could not exceed 150% of the fixed compensation of the Chief Executive Officer.

It is specified that these elements will have to be submitted to the approval of the Ordinary General Meeting called to approve the financial statements for the previous financial year before any payment takes place.

vi. Other short-term remuneration components

SOCIAL PROTECTION SCHEMES

The Chief Executive Officer may benefit from the social protection schemes set up for the Group's employees.

Consequently, the Chief Executive Officer may benefit from an insurance scheme covered by a contract taken out with Swisslife, covering death and disability risks.

Benefits are calculated on the basis of the contribution base consisting of gross annual remuneration.

This scheme is capped and guarantees:

- the payment of temporary incapacity and 2nd category invalidity benefits up to a maximum amount of €119,295 per year in addition to social security payment;
- the risk of death according to several options at the beneficiary's choice, the maximum amount of which is set at 32 PASS in case of accidental death;
- the payment of a spouse's pension, if applicable.

The benefit limits are set by the insurance contract and depend on the marital status at the time of death and the option chosen by the beneficiaries.

Premiums are calculated in reference to the Annual Social Security Ceiling [*Plafond Annuel de Sécurité Sociale*] ("PASS") and are set for the year 2020 at:

- tranche A – up to 100% of the PASS: 0.23% beneficiary premiums and 1.14% company premiums;
- tranche B – between 100% and 400% of the PASS: 1.52% beneficiary premiums and 1.57% company premiums;
- tranche C – between 400% and 800% of the PASS: 0.13% beneficiary premiums and 0.51% company premiums.

The Chairman may also benefit from medical coverage provided via an insurance contract taken out with Swisslife, covering medical fees.

Premiums are calculated in reference to the Annual Social Security Ceiling [*Plafond Annuel de Sécurité Sociale*] ("PASS") and are set for the year 2020 at:

- a set fee of €33.40 for the beneficiary and €33.40 for the Company;
- on top of which are paid premiums in proportion to earnings:
  - tranche A and B: up to 400% of the PASS: 0.52% beneficiary premiums and 0.52% company premiums.

Premiums are paid on the beneficiary's gross annual remuneration.

The amount of the premiums and the coverage provided are reviewed yearly, without necessarily being modified.

The above insurance contracts can be terminated by following standard legal procedure.

INTERNATIONAL MEDICAL INSURANCE

The Chief Executive Officer may benefit from an international medical insurance policy taken out by because of his/her frequent trips abroad.

BENEFITS IN KIND

The Chief Executive Officer may receive a benefit in kind linked to the allocation of a company car.

For the 2020 financial year, Mrs. Sophie ZURQUIYAH will benefit, as in 2019, from the social protection schemes applicable to the Group's employees, from an international medical insurance entered into by CGG Services (US) Inc. whose annual amount payable by the Company is estimated at €22,834, and a company car which may not give rise to a benefit in kind in excess of €11,990.

vii. Multi-year variable remuneration

The Board of Directors has decided not to use a long-term variable remuneration mechanism to be paid in cash, preferring to align the remuneration of the Chief Executive Officer with the interests of the shareholders by favouring equity instruments, which helps ensure that the remuneration policy respects the social interest.

However, it is specified that this type of remuneration could be considered in the event of regulatory changes or circumstances that would make the use of equity instruments restrictive or impossible. In this case, the principles and criteria described for share-based plans will be taken up in the structuring of such multi-annual remuneration by adapting the terms and conditions.

viii. Long-term remuneration

The Board of Directors, on the recommendation of the Appointment and Remuneration Committee and with the authorisation of the General Meeting, grants the Chief Executive Officer long-term remuneration which may take the form, in particular, of stock options covered by Articles L. 225-177 *et seq.* of the French Commercial Code or performance shares covered by Articles L. 225-197-1 *et seq.* of the French Commercial Code, or any other plan linked to the growth of the share.

The long-term remuneration instruments implemented by the Company contribute to the objective of the remuneration policy by rewarding executives' loyalty and by linking Executive Corporate Officer remuneration to shareholder interests and more globally to the Company's social purpose. This policy enables the Company to reward long-term value creation for the Company, ensuring its sustainability.

In addition, these plans are not reserved solely for the Group's managers; they may also benefit employees who have contributed to the Group's performance or who have strong potential for development within the Group. As a result, the long-term remuneration policy addresses the objectives to attract and retain talent included in the Group remuneration policy.

As a rule, grants are made annually in the first half of the year after the closing of the accounts for the previous financial year in the form of stock-options and/or performance shares.

No discount is applied when stock-options are granted or acquired. The purchase price is at least equal to the average share price over the twenty trading days preceding the Board's decision.

The implementation of these plans is subject to performance and attendance conditions for Group executives. Thus, the Chief Executive Officer may benefit from a stock option and performance share plan subject to the fulfilment of performance conditions in respect of the following years, with an acquisition period of at least three years.

The target of the total allocation linked to long-term remuneration in shares and options is equal to 100% of the fixed compensation of the Chief Executive Officer, without being able to exceed a ceiling of 150% of this same fixed compensation.

In accordance with the provisions of the AFEP-MEDEF Code, in the event of exceptional circumstances, the performance conditions may be modified during the period in question. In this case, these amendments shall be made public after the meeting of the Board of Directors that adopted them. Changes in performance conditions must maintain the alignment of the interests of shareholders and beneficiaries.

In the event of the departure of Executive Directors before the expiry of the period provided for the assessment of performance conditions, the Board of Directors will decide whether to maintain all or part of their long-term remuneration. In the event of retirement, stock-options and/or performance shares in the process of acquisition will be reduced in proportion to the time spent in service over the acquisition period and the beneficiary will remain subject to all the provisions of the plans.

The Board of Directors determines the minimum number of registered shares that the Chief Executive Officer must keep until his term of office. In addition, the Chief Executive Officer must, as a director of the Company, hold 20,000 (twenty thousand) shares in the Company. The combination of these obligations will enable the Chief Executive Officer to hold a significant number of securities.

The obligation to keep in registered form shares resulting from the allocation of performance shares and the exercise of stock-options granted applies until the value of all the shares retain in registered form represents two years of fixed and variable annual cash compensation. Above this threshold, the retention obligations no longer apply.

ALLOCATION FOR THE FINANCIAL YEAR 2020

For the financial year 2020, subject to the authorisation of the General Meeting of June 16, 2020, the Board of Directors intends to maintain the same long-term remuneration policy as in 2019 based on a mix of stock options and performance shares. These grants will be subject to a vesting period of at least three years and to demanding performance conditions that have in particular been reviewed and made more stringent in 2020 for stock option grants.

For this financial year, the target of the total allocation linked to long-term remuneration in shares and options is equal to 100% of the fixed compensation of the Chief Executive Officer, without being able to exceed a ceiling of 150% of this same fixed compensation. However, in order to integrate the potential impacts of the Covid-19 crisis on the Company and on the share price potentially lower than envisaged, the Board of Directors may decide to award less than the target of the remuneration policy (100% of the fixed remuneration).

Performance conditions applicable to performance shares that may be granted for the fiscal year 2020 are subject to the approval of the General Meeting of June 16, 2020, which will vote on resolution number 16, in accordance with Articles L. 225-197-1 *et seq*. of the French Commercial Code.

In the same way, performance conditions applicable to stock-options that may be granted for the fiscal year 2020 are subject to the approval of the General Meeting of June 16, 2020, which will vote on resolution number 17, in accordance to Articles L. 225-177 *et seq.* of the French Commercial Code.

ix. Supplementary Pension Plans

DEFINED CONTRIBUTION PENSION PLAN (ARTICLE 83 OF THE CGI (CODE GÉNÉRAL DES IMPÔTS [GENERAL TAX CODE]))

In order to enable the Group's senior executives to supplement the level of pension paid by the mandatory French pension plans, a supplementary funded collective pension plan has been put in place since January 1, 2005.

The Chief Executive Officer benefits from this pension plan.

This scheme is capped as such and calculated with reference to the *Plafond Annuel de Sécurité Sociale* [Annual Social Security Ceiling] (PASS) and are set for the year 2020 at:

- tranche A – up to 100% of the PASS: 0.5% beneficiary contribution and 1% company contribution;
- tranche B – above 100% of the PASS and up to 400% of the PASS: 2% beneficiary contribution and 3% company contribution;
- tranche C – above 400% of the PASS and up to 800% of the PASS: 3.5% beneficiary contribution and 5% company contribution.

The contribution base consists exclusively of the gross annual remuneration for the year declared, the basic salary, the annual variable remuneration and the benefit in kind (car). This base excludes, as a matter of principle, any other element of remuneration.

Pension rights under this scheme may be liquidated, at the earliest, when the beneficiary has liquidated his pension rights under the general social security scheme. The above scheme can be terminated by following standard legal procedure.

In 2020, Mrs. Sophie ZURQUIYAH will benefit, as in 2019, from the above-mentioned defined contribution pension scheme. The estimated amount for the year 2020 is €20,774, of which €12,761 to be borne by the Company.

ALTERNATIVE PENSION PLAN

The Board of Directors may decide to set up an alternative retirement plan for the benefit of the Chief Executive Officer, giving preference to defined contribution plans or any other similar mechanism, depending on legislative and regulatory developments.

This plan would be subject to the fulfillment of demanding performance conditions defined by the Board of Directors, in accordance with the legislation in force and the recommendations of the AFEP-MEDEF Code to which the Company refers.

x. Individual unemployment insurance

The Chief Executive Officer, not benefiting from an employment contract, is not subject to the legislation of ordinary law concerning remuneration for unemployment when he loses his job. The Board of Directors may therefore authorise the conclusion of a specific unemployment guarantee for his benefit.

For the 2020 financial year, Mrs. Sophie ZURQUIYAH will benefit, as in 2019, from individual unemployment insurance. The amount for this year is €11,260.98 to be borne by the Company.

xi. Contractual termination indemnity in the event of departure from the Group

The Chief Executive Officer of the Company may benefit from a contractual termination indemnity in the event of departure from the Group, the terms and conditions of which are defined by the Board of Directors on the recommendation of the Appointment and Remuneration Committee.

The contractual termination indemnity may only be paid in the event of a forced departure (in the absence of serious or gross misconduct). The amount of this indemnity is set at the difference between (i) a gross amount equal to 200% of the annual reference remuneration of the Corporate Officer and (ii) any sums to which the Chief Executive Officer may be entitled as a result of the termination of his corporate office, in particular, the indemnity likely to be paid under the Chief Executive Officer's non-competition commitment. The total amount of the contractual termination indemnity is therefore capped at 200% of the annual reference remuneration.

The annual reference remuneration is exclusively comprised of the annual fixed remuneration paid over the 12-month period prior to notice data, to which is added the annual average variable remuneration over the previous 3 financial years before date of departure or date of notice (if applicable).

The aggregate of the termination indemnity and the non-competition indemnity may under no circumstances exceed 200% of the Corporate Officer's Annual Reference remuneration. If the aggregate amount exceeds that amount, the contractual termination indemnity will be reduced to the level of the aforementioned cap.

Payment of the contractual termination indemnity is subject to the fulfilment of performance conditions defined by the Board of Directors.

No compensation will be paid if the Chief Executive Officer is able to exercise his retirement rights at the time of his departure.

The payment of the indemnity is contingent on achieving a defined performance condition. This condition is defined by the Board of Directors as the average rate of achievement of the objectives related to the Chief Executive Officer's variable remuneration, as measured over the three complete financial years prior to the date of the Chief Executive Officer's termination.

The payment of the indemnity will be contingent upon the recognition by the Board of Directors of the achievement of the above performance condition as appraised on the date of termination, following the conditions contained in the applicable legal framework.

The above performance condition, derived from the achievement of variable remuneration performance criteria, contributes to the remuneration policy's objectives by aligning the Chief Executive Officer's remuneration with Group strategy and social purpose while encouraging operational and financial performance.

The terms of payment and the assessment of the performance conditions of the indemnity comply with the recommendations of the AFEP-MEDEF Code.

CONTRACTUAL TERMINATION INDEMNITY IN FORCE

The Board of Directors meeting on April 26, 2018, following the appointment of office by Mrs. Sophie ZURQUIYAH as Chief Executive Officer for a term of four years, also approved, for the duration of this term of office, the terms and conditions of the benefits granted to Mrs. Sophie ZURQUIYAH in the event of termination of her corporate office. These benefits were ratified during the General Meeting of May 15, 2019.

In accordance with the decision of the Board of Directors on March 5, 2020, and in order to comply with the provisions of the AFEP-MEDEF Code to which the Company refers, the terms and conditions of the benefit have been modified on several points: no compensation in the event of resignation (including further to a change of control) and in the event of the possibility of exercising pension rights at the time of departure, and review of the performance scale giving rise to the payment of the indemnity.

They now have the following characteristics:

- Mrs. Sophie ZURQUIYAH benefits from a contractual termination indemnity in the event of dismissal, and in the event of non-renewal of her term of office within twelve months following a change of control, in the absence of any situation of failure characterised by the non-achievement of the performance conditions described below;
- No payment may be made in the event of serious or gross misconduct, regardless of the reason for departure.

The payment of the contractual termination indemnity will depend on the average rate of achievement of the objectives relating to the annual variable portion of Mrs. Sophie ZURQUIYAH's remuneration for the last three financial years ended prior to the departure date, in accordance with the following rule:

- if the average achievement rate is less than 80%, no contractual termination indemnity fee will be paid;
- if the average achievement rate is equal to or greater than 80% and less than 90%, the contractual termination indemnity will be due at 50% of its amount;
- if the average achievement rate is equal to or greater than 90%, the contractual termination indemnity will be due on a straight-line basis between 90% and 100% of its amount.

In the event of departure from the Group during the financial year 2020, the achievement of performance conditions will exceptionally be measured by the Board of Directors over the two financial years ending prior to the date of the beginning of the notice period.

This contractual termination indemnity will be equal to the difference between (i) a gross amount capped at 200% of the Annual Reference Remuneration and including all sums of any nature whatsoever, and on any basis whatsoever, to which Mrs. Sophie ZURQUIYAH may be entitled as a result of the termination, and (ii) all sums to which she may be entitled as a result of the implementation of the non-competition commitment.

The aggregate of the contractual termination indemnity and the non-competition indemnity may under no circumstances exceed 200% of the Corporate Officer's Annual Reference remuneration. Should the combined amount of the two benefits be greater, the contractual indemnity would be reduced to the level of this cap.

It is specified that the Board of Directors must acknowledge, prior to the payment of the contractual termination indemnity, (i) that the performance conditions described above have been met and (ii) that the contractual termination indemnity complies with the recommendations of the AFEP-MEDEF Code in force at the date of the departure of the person concerned.

xii. Non-competition commitment

In order to protect the interests of the Group in the event of the departure of certain senior executives, including the Chief Executive Officer, the Company provides for the application of non-competition clauses.

This commitment applies to activities involving the acquisition, processing or interpretation of geophysical data, or the provision of equipment or products designed for the acquisition, processing or interpretation of geophysical data, and involving the individual's contribution to projects or activities in the same field as those in which he or she participated within CGG group.

In consideration for this commitment for a term defined at the conclusion of the agreement, the Chief Executive Officer receives remuneration corresponding to a percentage of their annual reference remuneration. For the determination of these elements, the Company refers to the recommendations of the AFEP-MEDEF Code and also provides for a stipulation authorising the Board of Directors to waive the implementation of the clause upon the beneficiary's departure.

The indemnity shall be paid in instalments and shall not be payable when the person concerned claims his pension rights and, in any event, beyond the age of 65 years.

The non-competition commitment exists for the protection of the Group's interest, and the non-competition indemnity fulfils the imperative financial compensation in response to the restrictions incurred. However, the Board of Directors reserves the right to unilaterally renounce the enforcement of the non-competition commitment, at the date of termination of the Chief Executive Officer at the latest, in which case the latter would be free from any non-competition commitments and no related financial compensation would be owed on that basis.

NON-COMPETITION COMMITMENT IN FORCE

At its meeting of April 26, 2018, the Board of Directors approved, in accordance with the procedure applicable to regulated agreements and provided for in Articles L. 225-38 *et seq*. of the Commercial Code, the conclusion of a non-competition commitment between the Company and Mrs. Sophie ZURQUIYAH. This commitment was ratified by the General Meeting held to approve the financial statements for the year ended December 31, 2018.

In accordance with the decision of the Board of Directors on December 11, 2019, this commitment has been amended, in particular in order to comply with the provisions of Order no. 2019-1234 of November 27, 2019 and the decree of the same date issued for its application. The indemnity will now be paid in instalments and will not be paid if the person concerned claims his or her pension rights and, in any event, beyond the age of 65.

This commitment applies to activities involving services for the acquisition, processing or interpretation of geophysical data, or the supply of equipment or products designed for the acquisition, processing or interpretation of geophysical data, and involving the contribution of the person concerned to projects or activities in the same field as those in which Mrs. Sophie ZURQUIYAH participated within the CGG group.

In consideration for this commitment for a period of 18 months from the date of Mrs. Sophie ZURQUIYAH's departure from the Group, Mrs. ZURQUIYAH would receive remuneration corresponding to 100% of her Annual Reference Remuneration.

The annual reference remuneration is exclusively comprised of the annual fixed remuneration paid over the 12-month period prior to notice data, to which is added the annual average variable remuneration over the previous 3 financial years before date of departure or date of notice (if applicable).

The non-competition commitment exists for the protection of the Group's interest, and the non-competition indemnity is the imperative financial compensation in response to the restrictions incurred. However, the Board of Directors reserves the right to unilaterally renounce the enforcement of the non-competition commitment, at the date of termination of the Chief Executive Officer at the latest, in which case the latter would be free from any non-competition commitments and no financial compensation would be owed on that basis.

xiii. Severance position

The Board of Directors may, if necessary, grant a severance payment to a new Chief Executive Officer coming from a company outside the Group in accordance with the AFEP-MEDEF recommendations. The payment of this indemnity, which may take different forms, is limited to compensating for the loss of the benefits enjoyed by the executive and must be duly substantiated.

C. Remuneration policy applicable to directors in 2020

a. Term of office

The directors are appointed for a four-year term. The dates of appointment, renewal and termination of each director are summarized in the table below:

	First appointment	Last renewal	Expiration date
Mr. Philippe SALLE	March 8, 2018[(b)]	n.a.	General Meeting 2021
Mrs. Sophie ZURQUIYAH	April 26, 2018	n.a.	General Meeting 2022
Mr. Michael DALY	September 30, 2015[(b)]	October 31, 2017	General Meeting 2021
Mr. Patrice GUILLAUME[(a)]	December 15, 2017	n.a.	General Meeting 2021
Mrs. Anne-France LACLIDE-DROUIN	October 31, 2017	n.a.	General Meeting 2021
Mrs. Helen LEE BOUYGUES	March 23, 2018[(b)]	n.a.	General Meeting 2020[(c)]
Mrs. Colette LEWINER	March 8, 2018[(b)]	May 15, 2019	General Meeting 2023
Mrs. Heidi PETERSEN	March 23, 2018[(b)]	n.a.	General Meeting 2020[(c)]
Mr. Mario RUSCEV	March 8, 2018[(b)]	May 15, 2019	General Meeting 2023

(a) Director representing the employees.
(b) Appointment by cooptation of another director in office.
(c) The renewal of this office is submitted to the General Meeting to be convened to approve the financial statements ending on December 31, 2019.

b. Allocation rules applicable to the directors' remuneration

i. Maximal annual remuneration for directors proposed at the General Meeting

For information purposes, it is reminded that the maximum amount proposed to the General Meeting convened for June 16, 2020 as aggregate annual remuneration of the directors is set at €550,000, for the financial year 2020 and until further amendment by new decision of the General Meeting. This amount is lower than in the 2019 fiscal year, as the Annual General Meeting of May 15, 2019 approved a maximum of €630,000 in annual aggregate remuneration for directors.

ii. General distribution rules

The total amount of directors' fees, which is submitted to the General Meeting on a yearly basis for approval, is divided into a fixed component relating to the function and a variable component for meeting attendance, as well as a fixed indemnity per trip for directors travelling from abroad. The variable remuneration based on the attendance at Board and Committee meetings has a higher weight in the total envelope compared to the fixed remuneration based on the function.

The total amount paid to each director is determined after taking into account the actual attendance at each Board and Board Committee meetings. In case the final aggregate amount to be paid to the directors reaches the maximum amount approved by the General Meeting, a prorata calculation shall be done for each director in order to respect and not exceed such maximum amount.

iii. Specific rules applicable to the Chairman of the Board, the Chief Executive Officer and the Director(s) representing the employees

Chairman of the Boards of Directors

The Chairman of the Board receives:

- in his/her capacity as director: A fixed amount of directors' fees, as well as travel indemnity (if any), as set-out in the table below; and
- in his/her capacity as Chairman of the Board: A fixed remuneration, as described in section 4.2.1.2.A. of this Universal Registration Document.

Chief Executive Officer

The Chief Executive Officer, who is also a director of the Company, does not receive any directors' fees nor any travel indemnity. The various remuneration components of the Chief Executive Officer are as described in section 4.2.1.2.B. of this Universal Registration Document.

Director(s) representing the employees

The director(s) representing the employees, appointed pursuant to Article 8 of the Company's articles of association, do(es) not receive any remuneration pursuant to his/her/their office as director nor any travel indemnity. He/she/they receive(s) a salary pursuant to the employment agreement he/she/they entered into with the Company or any of its affiliates.

c. Amounts to be applied in 2020

For 2020, based on the recommendations of the Appointment-Remuneration Committee and subject to the approval by the shareholders in the General Meeting to be held on June 16, 2020, the rules proposed will be broken down as follows, based on the number of directors in office and the number of meetings expected to be held in the calendar year:

Fixed remuneration (for an entire fiscal year) based on the function

	Fixed remuneration
Chairman of the Board	€70,000
Director [(a)]	€7,000
Chairman of the Audit Committee [(a)]	€10,000
Member of the Audit Committee [(a)]	€5,000
Chairman of any Board Committee other than the Audit Committee [(a)]	€4,000
Member of any Board Committee other than the Audit Committee [(a)]	€2,000

(a) This does not apply to the Chief Executive Officer, the Director(s) representing the employees and the Chairman of the Board of Directors.

The fixed remuneration of any director appointed in the course of the year will be calculated on a *prorata temporis* basis.

Variable remuneration based on the attendance to the Board and Board Committee meetings [(a)]

	Variable remuneration
Attendance to a Board meeting	€4,600
Attendance to a Board Committee meeting	€2,300

(a) This does not apply to the Chief Executive Officer, the Director(s) representing the employees and the Chairman of the Board of Directors.

A director who participates in a Board Committee's meeting as a guest does not receive any fee.

These variable remunerations' amounts will be divided by two in case of a Board meeting convened and held by phone for approval of specific matters requiring a Board approval, out of the Board and Committees which had been planned for the relevant year.

Travel indemnity, irrespective of the director's nationality [(a)]

	Travel indemnity
Intercontinental travel	€2,000
Travel within the same continent	€500

(a) This does not apply to the Chief Executive Officer and the Director(s) representing the employees.

This travel indemnity also applies to the annual Board seminar, if any.

d. Stock options and performance shares

Pursuant to applicable law, directors, except to the Chief Executive Officer and the director(s) representing the employees, are not entitled to receive stock options and/or performance shares of the Company.

e. Expenses

Travel expenses incurred by reason of the attendance to Board and Board Committee meetings are reimbursed by the Company.

f. Allocation of the annual fixed amount allocated to each director for the year 2020

Mr. Philippe SALLE

For the 2020 fiscal year, Mr. Philippe SALLE will benefit from a fixed remuneration pursuant to his office as director and from a fixed remuneration pursuant to his position as Chairman of the Board of Directors, in accordance with the remuneration policy applicable to Corporate Officers here above described.

Mrs. Sophie ZURQUIYAH

For the 2020 fiscal year, Mrs. Sophie ZURQUIYAH will not benefit from any remuneration pursuant to her office as director, but she will benefit from a remuneration in her capacity as Chief Executive Officer in accordance with the remuneration policy applicable to Corporate Officers here above described.

Mr. Michael DALY

For the 2020 fiscal year, and pursuant to his office as director, M. Michael DALY will benefit from a remuneration in accordance with the remuneration policy applicable to Corporate Officers here above described.

Mr. Patrice GUILLAUME

For the 2020 fiscal year, in accordance with the remuneration policy applicable to Corporate Officers here above described, Mr. Patrice GUILLAUME will not receive any compensation pursuant to his office as director. He will receive a salary pursuant to the employment agreement he entered into with CGG Services SAS, a fully owned subsidiary of the Company.

Mrs. Anne-France LACLIDE-DROUIN

For the 2020 fiscal year, and pursuant to her office as director, Mrs. Anne-France LACLIDE-DROUIN will benefit from a remuneration in accordance with the remuneration policy applicable to Corporate Officers here above described.

Mrs. Helen LEE BOUYGUES

For the 2020 fiscal year, and pursuant to her office as director, Mrs. Helen LEE BOUYGUES will benefit from a remuneration in accordance with the remuneration policy applicable to Corporate Officers here above described.

Mrs. Colette LEWINER

For the 2020 fiscal year, and pursuant to her office as director, Mrs. Colette LEWINER will benefit from a remuneration in accordance with the remuneration policy applicable to Corporate Officers here above described.

Mrs. Heidi PETERSEN

For the 2020 fiscal year, and pursuant to her office as director, Mrs. Heidi PETERSEN will benefit from a remuneration in accordance with the remuneration policy applicable to Corporate Officers here above described.

Mr. Mario RUSCEV

For the 2020 fiscal year, and pursuant to his office as director, M. Mario RUSCEV will benefit from a remuneration in accordance with the remuneration policy applicable to Corporate Officers here above described.

4.2.2 Global remuneration of Corporate Officers in 2019

4.2.2.1 Total annual remuneration of the chairman of the Board of Directors for the 2019 financial year

A. Total remuneration and benefits of any kind

The gross remuneration amounts paid by the Company and the companies controlled to Mr. Philippe SALLE for the 2018 and 2019 financial years are shown in the table below.

a. Remuneration elements

i. Fixed Remuneration

The table below presents the gross fixed remuneration of the Chairman of the Board of Directors and how it has changed:

	2018	2019	2018-2019 variation
Philippe SALLE, Chairman of the Board of Directors	€170,000*	€170,000	0%

* *Annualised amount.*

The fixed remuneration of the Chairman of the Board of Directors on an annual basis remained unchanged compared to 2018.

ii. Other short-term remuneration elements

SOCIAL PROTECTION SCHEMES

The Board of Directors, at its meeting of April 26, 2018, authorised, in accordance with the procedure applicable to regulated agreements and provided for in Articles L. 225-38 *et seq.* of the French Commercial Code, the extension of the general compulsory provident and health care scheme of the Group applicable to all employees, to Mr. Philippe SALLE, Chairman of the Board of Directors. For 2019, the amount corresponding to the expense borne by the Company under this scheme represents €3,879 for Mr. Philippe SALLE.

This commitment was ratified by the General Meeting of May 15, 2019.

BENEFITS IN KIND

Mr. Philippe SALLE did not benefit from any benefit in kind (including company car) during the 2019 financial year.

iii. Remuneration allocated to directors

In accordance with the applicable allocation rules decided by the Board on May 15, 2019, Mr. Philippe SALLE received a fixed amount of remuneration allocated to the directors of €70,000 for the financial year 2019 and also benefited from a travel indemnity amounting to €500.

iv. Other forms of remuneration

The Chairman of the Board of Directors did not receive any other form of remuneration. In particular, he did not receive:

- any annual or multi-annual variable remuneration;
- any stock-options;
- any performance shares.

The Chairman of the Board of Directors did not benefit from any retirement benefits, non-competition indemnities or contractual termination indemnities.

b. Remuneration paid by a Company within the scope of consolidation

The Chairman of the Board of Directors did not receive any remuneration paid by the companies included in the scope of consolidation of the Company.

c. Respective importance of remuneration elements

The Chairman of the Board received only fixed items, to the exclusion of any variable or exceptional remuneration.

B. Equity ratio

(Pursuant to Article L. 225-37-3, 6° and 7° of the French Commercial Code).

The table below presents the median and average ratios of the overall remuneration of the Chairman of the Board of Directors. In accordance with the recommendation of the AFEP-MEDEF Code to which the Company refers, and taking into account the small number of employees of the parent company, which does not allow to disclose representative data, the ratio was calculated on the basis of the Group's scope of consolidation in France (CGG SA, CGG services SAS and Sercel France SAS), on the basis of compensation paid in fiscal year 2019, *i.e.*:

- the 2019 fixed remuneration;
- the variable remuneration paid in 2019 for 2018;
- the exceptional remuneration paid in 2019 for 2018;
- the profit-sharing and participation paid in 2019;
- the options and shares allocated during the 2019 financial year (valued amount of the benefit under IFRS 2);
- the benefits in kind paid during the 2019 financial year;
- the employer contributions paid in respect of defined contribution plans paid in respect of the financial year 2019.

In the interests of consistency, employees' remuneration considers the following:

- the 2019 fixed remuneration;
- the variable remuneration paid in 2019 for 2018;
- the exceptional remuneration paid in 2019;
- the profit-sharing and participation paid in 2019;
- the options and shares allocated during the 2019 financial year (valued amount of the benefit under IFRS 2);
- the benefits in kind paid during the 2019 financial year;
- the employer contributions paid in respect of defined contribution plans paid in respect of the financial year 2019.

The procedure is the same as for previous years.

Equity Ratio between the Level of Remuneration of the Chairman of the Board of Directors and the Average and Median Remuneration of the Employees of the Company

The scope taken into account is that of the Group's employees located in France, including CGG SA, CGG Services SAS and Sercel SAS.

	2015	2016	2017	2018	**2019**
Average ratio	3.1	2.9	2.8	3.5	3.6
Median ratio	3.7	3.4	3.4	4.4	4.4
Segment EBITDA *(in millions of US$)**	453	386	434	556	721

* *IFRS restated 2016-2019.*

In the event of a change in leadership during the year, it is specified that the remuneration taken into account for the table above is that paid for the position.

C. Consideration of the last vote of the General Meeting

Following the General Meeting of May 15, 2019, the Group nonetheless undertook a review of the main elements of governance related to the remuneration of Corporate Officers and their communication, with the assistance of an external consultant.

The Group carried out an audit of compliance with the recommendations of the AFEP-MEDEF Code, compliance with changes in legislation (*Pacte* Law) and investor expectations through analysis of policies and comments from voting advisory agencies.

Following this assessment, the Group carried out projects aimed at taking into account the comments of the various stakeholders on the following projects: communication on the remuneration of Corporate Officers and the characteristics of regulated agreements for the benefit of the Group's Corporate Officers.

D. Compliance of the remuneration paid with the remuneration policy

The remuneration paid to the Chairman of the Board of Directors complies with the principles and criteria for determining, distributing and allocating the elements of fixed, variable, exceptional remuneration and all benefits of all kinds attributable to the Chairman of the Board of Directors approved by the General Meeting of May 15, 2019 and applicable for the 2019 financial year.

The remuneration paid to the Chairman of the Board of Directors complies with the long-term financial and extra-financial performance objectives of the Company.

For the 2019 financial year, the Company did not deviate or derogate from the procedure for implementing the remuneration policy.

E. Suspension of the remuneration paid to directors

As the Board of Directors is composed in accordance with the provisions of Article L. 225-18-1 of the French Commercial Code, the payment of the remuneration provided for in the first paragraph of Article L. 225-45 of the aforementioned Code has not been suspended.

4.2.2.2 Total annual remuneration of the Chief Executive Officer for the 2019 financial year

A. Total remuneration and benefits of any kind

a. Remuneration elements

i. Fixed remuneration

The table below presents the fixed remuneration of the Chief Executive Officer and how it has changed:

	2018	**2019**	**2018-2019 variation**
Sophie ZURQUIYAH, Chief Executive Officer	€630,000*	€630,000	0%

* *For her duties as Chief Executive Officer on an annual basis.*

The fixed remuneration of the Chief Executive Officer on an annual basis remained unchanged compared to 2018.

ii. Annual variable remuneration

The annual variable remuneration of Mrs. Sophie ZURQUIYAH, Chief Executive Officer, is based on financial objectives, representing two thirds of variable remuneration, as well as on extra-financial objectives, representing one third of variable remuneration.

Her target amount is set at 100% of her fixed remuneration and the criteria for allocating the variable annual portion are of two types:

- quantifiable criteria (financial objectives); and
- qualitative criteria (extra-financial objectives).

Finally, it is specified that in order to encourage financial performance, the quantifiable (financial) objectives make it possible to reach a variable amount whose ceiling is set at 166.67% of the fixed remuneration.

For the financial year 2019, the structure of the variable remuneration of Mrs. Sophie ZURQUIYAH was determined by the Board of Directors at its meeting of March 7, 2019.

Details of the structure of the objectives set and their level of achievement noted by the Board of Directors meeting on March 5, 2020, are set out below.

I. The quantifiable criteria (financial targets), based on fulfilling the Group's budgetary objectives, are as follows:

- the Group's Net Cash Flow (weighting of 25% on the financial portion);
- EBITDA free assets (weighting of 25% on the financial portion);
- the Group's external revenue (weighting of 25% on the financial portion); and
- operating income (weighting of 25% on the financial portion).

The minimum payment for each of the criteria is subject to at least 70% of the achievement of the objective. Depending on the rate of achievement of the objective for each criterion, the payment may be increased to up to 200% of the target amount associated with the criterion in question.

For the 2019 financial year, taking into account the Group's financial performance and the achievement of its financial objectives, the financial portion of the variable annual compensation amounted to 117.93% of the total variable remuneration target. The details of the calculation of the achievement of these objectives are summarized in the summary table below.

II. The qualitative criteria (extra-financial objectives) are focused on:

A. Implementation of the strategy (weighting of 50% on the extra-financial portion)

Half of the individual objectives are linked to the implementation of the Group's strategy for 2021 on the basis of precise objectives, managed through indicators. Details of the criteria are confidential. On the one hand, they group together criteria linked to the organisation of the CGG group and the construction of strategic alliances linked to this road map.

→ For the 2019 fiscal year, this objective relative to the implementation of the 2021 Group strategic roadmap has been achieved at 95%. Indeed, The performance appraisal is based on the following main achievements: significant steps were achieved toward the implementation of the asset-light business model, especially with the planned and organized exit of the main part of the acquisition business through divestment or monetization, the implementation of the strategic partnership on Marine acquisition, and the rightsizing of the Company workforce in line with this strategy.

B. Human resources management (weighting of 20% on the extra-financial portion)

20% of the qualitative objectives are linked to talent management with the retention of key personnel joining the organisation, succession planning for key employees and the transformation of the Group through simplification and streamlining. In a context of transformation, these retention and planning criteria are key parameters of the Group's medium-term performance.

→ For the 2019 fiscal year, the objectives with regards to the Group human resources management have been achieved at 100%. The performance appraisal is based on the following main achievements: the talent management and succession plan process was carried out during the year and presented to the Board of Directors, succession plans for key business positions were prepared for implementation, and a plan was developed and implemented to identify the actions necessary to simplify the organization of the Company especially with regards to its support structure.

C. Operating performance of the Group (weighting of 20% on the extra-financial portion)

- consolidating and developing relationships with major customers to ensure their satisfaction;
- maintaining the operating performance of the Group;
- developing and promoting the Group in its sector of activity and positioning as an advanced technical leader in Geoscience and Equipment, including through digitalisation, especially with Artificial Intelligence, Machine Learning and the Cloud.

→ For the 2019 fiscal year, the objectives with regards to the Group operational performance have been achieved at 100%. The performance appraisal is based on the following main achievements: the Chief Executive Officer continued to maintain and develop a privileged relationship with the Company key clients, by regularly meeting the executives of major clients and visiting key regions, clients' feedbacks are still outstanding with regards to the quality of the work carried out by the Company, the Group's operational performance was overall excellent this year, as reflected by the financial results for 2019. Regarding technology, 2019 was a good year, especially with the release of new processing algorithms and new nodes equipment. Finally, the Company continued to deploy its digitalization strategy, particularly with regards to data library access and delivery, while improving its processing algorithms with Machine Learning.

D. HSE/Compliance (weighting of 10% on the extra-financial portion)

As an industrial company, CGG has implemented Health, Safety, Environment and Compliance policies that aim to maintain improvement efforts in Health, Safety and Environment related to its activity. In addition, in 2019, the Group has worked to strengthen CGG's compliance with the various regulations, particularly in terms of compliance.

→ For the 2019 fiscal year, the objectives with regards to Health, Safety, Environment and Compliance policies have been achieved at 100%. The performance appraisal is based on the following main achievements: the Company has had no fatalities, the Company's position in terms of Health Safety Environment improved in 2019, there were no environmental and incidents to report, and the Company carried out a complete mapping of its risks and processes with regard to the *Sapin II* Law and dealt with all the missing elements.

The variable portion linked to the qualitative criteria varies between 0% and 100% of the target amount, or between 0% and a third of the target variable remuneration (with no possibility of outperformance on these criteria).

Each of the quantitative and qualitative criteria is weighted and a target and maximum weight are determined for each.

For the financial year 2019, taking into account the performance achieved in relation to the extra-financial objectives, the extra-financial part of the variable annual remuneration amounted to 32.67% of the total variable remuneration target. The details of the calculation of the achievement of these objectives are summarized in the summary table below.

In total, the overall rate of achievement for the financial year 2019 was 150.60% of their target. In accordance with the applicable policy, this rate was applied to Mrs. ZURQUIYAH's annual variable remuneration target to determine the amount to be paid in respect of financial year 2019. As a reminder, this rate was 137% in 2018.

SUMMARY TABLE OF THE 2019 VARIABLE PORTION FOR MRS. SOPHIE ZURQUIYAH, CHIEF EXECUTIVE OFFICER

	Target		Maximum		**Rate of Fulfilment**	
Indicator	As a% of fixed remuneration	On a basis of 100	As a% of fixed remuneration	On a basis of 100	**As a % of Target Variable**	**On a basis of 100**
Financial Targets	**66.67%**	**66.67%**	**133.33%**	**80.00%**	**117.93%**	**78.31%**
Cash Flow Net of the Group	16.67%	16.67%	33.33%	20.00%	33.33%	22.13%
EBITDA free assets	16.67%	16.67%	33.33%	20.00%	33.33%	22.13%
External sales of the Group	16.67%	16.67%	33.33%	20.00%	17.93%	11.91%
Operating income	16.67%	16.67%	33.33%	20.00%	33.33%	22.13%
Extra Financial Objectives	**33.33%**	**16.67%**	**33.33%**	**20.00%**	**32.67%**	**21.69%**
Implementation of the 2021 strategy	16.67%	6.67%	16,67%	10.00%	15.83%	10.51%
Human Resources Management	6.67%	6.67%	6,67%	4.00%	6.67%	4.43%
Operating Performance of the Group	6.67%	3.33%	6,67%	4.00%	6.67%	4.43%
HSE / Compliance	3.33%	100.00%	3,33%	2.00%	3.33%	2.21%
TOTAL CRITERIA	**100.00%**	**100.00%**	**166.67%**	**100.00%**	**150.60%**	**100.00%**

With regard to the fulfilment of the above criteria, the Board of Directors meeting on March 5, 2020 decided the amount of annual variable remuneration for Mrs. Sophie ZURQUIYAH at €948,780.

As a reminder, this amount was €861,000 in 2018 in full-time equivalent, which corresponds to an increase of 10% of the variable remuneration.

In accordance with what is provided for in the remuneration policy, the Company has not requested the return of the variable remuneration of Mrs. Sophie ZURQUIYAH.

iii. Exceptional remuneration

Mrs. Sophie ZURQUIYAH did not receive any exceptional remuneration for the 2019 financial year.

iv. Remuneration allocated to directors

Mrs. Sophie ZURQUIYAH, who is also a director since April 26, 2018, does not receive any remuneration allocated to directors.

v. Other short-term remuneration elements

GENERAL BENEFITS PLAN

The Board of Directors, at its meeting of April 26, 2018, authorised, in accordance with the procedure applicable to regulated agreements and provided for in Articles L. 225-38 *et seq.* of the French Commercial Code, the extension of the general compulsory provident and health care scheme of the Group applicable to all employees, to Mrs. Sophie ZURQUIYAH, Chief Executive Officer. For 2019, the amount corresponding to the expense borne by the Company under this scheme represents €4,421 for Mrs. Sophie ZURQUIYAH. This commitment was ratified by the General Meeting held on May 15, 2019.

INTERNATIONAL MEDICAL INSURANCE

The Board of Directors, during its meeting of April 26, 2018, authorised, according to the procedure applicable to regulated agreements and provided for in Articles L. 225-38 *et seq.* of the French Commercial Code, the conclusion of a contract for international medical insurance taken out by CGG Services (US) Inc. for the benefit of Mrs. Sophie ZURQUIYAH, Chief Executive Officer, due to her frequent trips abroad. The annual contribution paid by CGG Services (US) Inc. under this contract amounts to €20,862 for 2019. This commitment was ratified by the General Meeting held on May 15, 2019.

BENEFITS IN KIND

Mrs. Sophie ZURQUIYAH benefited from a company car during the 2019 financial year. The valued amount of the benefit is €9,473.

vi. Multi-annual variable remuneration

Mrs. Sophie ZURQUIYAH did not receive any cash multi-annual variable remuneration for the 2019 financial year.

vii. Long-term remuneration

Each year, the Company's Board of Directors, on the recommendation of the Appointment and Remuneration Committee, implements a long-term remuneration system. This remuneration is allocated through stock option and/or free share plans subject to past performance conditions ("performance conditions"), and has a twofold objective:

- implement a globally harmonised variable remuneration system that is more in line with the Group's growing internationalisation;
- more closely link the remuneration of the main executives with the combined stock performance and the economic and extra-financial performance of the Group as a whole and over the medium term; and
- retain and maintain attractive remuneration for the most effective and high-potential employees in a context of tension on the labour market in engineering and digital professions in all countries where the Group has a presence.

Members of the Executive Leadership Team (including the Chief Executive Officer), executives and employees who have contributed to the Group's performance or who have strong potential for development within the Group are eligible for this system.

ALLOCATION 2019 AND PERFORMANCE CONDITIONS FOR PREVIOUS PLAN EVALUATED IN 2019

In 2019, the Board of Directors maintained the allocation of long-term remuneration through stock option and performance share plans and also noted the rate of achievement of the performance conditions of the previous plans in accordance with their respective provisions and maturities.

For the Chief Executive Officer, the level of allocation of long-term remuneration for 2019 has been set at 80% of the base salary (value amount of the benefit under IFRS 2). The Board of Directors took into account the low share price and decided to allocate below the target of the remuneration policy (100% of fixed remuneration).

I. Stock options

1) Grant of stock options to the Chief Executive Officer under the terms of the plan dated the June 27, 2019

- *Performance conditions*

The Board of Directors as of June 27, 2019 changed the long-term remuneration policy applicable to the Chief Executive Officer by replacing the progressive acquisition of options with a single acquisition in June 2022, subject to the fulfilment of a performance condition relating to a growth in the CGG stock market price at least equal to 75%(1) of the relative change, over the acquisition period, of the PHLX Oil Service Sector[SM]) (OSX[SM]) index, calculated on the acquisition date. The target rate takes into account the volatility of CGG shares, which is greater than that of the companies making up the comparative index.

The Board of Directors wished to replace the condition of performance of the stock market price in absolute value with a comparison against an index in order to better reflect the performance of the share price in relation to the Group's business sector in response to the request from shareholders.

The fulfilment of the performance condition gives the right to the allocation of 100% of the options on the date on which this fulfilment has be noted by the Board.

On June 27, 2019, 2,273,520 options were allocated to 246 beneficiaries within the Group, including 360,000 stock options to the Chief Executive Officer. The exercise price of the said options is €1.52, set on the basis of the average opening price of the CGG share during the twenty (20) trading sessions preceding the grant.

The options have a term of eight years.

- *Applicable rules*
  - *Obligation to retain registered shares*

The Board of Directors also decided that, in accordance with the provisions of Article L. 225-185 of the French Commercial Code, the quantity of shares resulting from the exercise of stock options that Mrs. Sophie ZURQUIYAH is required to keep in registered form, for the duration of her mandate, should represent 25% of the amount of the net capital gain upon exercise of the options allocated by the Board of Directors.

In addition, the Chief Executive Officer must, in his capacity as director of the Company, own 20,000 (twenty thousand) shares in the Company. The combination of these obligations will enable the Chief Executive Officer to hold a significant number of securities.

The Chief Executive Officer's obligation to keep in registered form shares resulting from the allocation of performance shares and the exercise of stock-options granted applies until the value of all the shares retain in registered form represents two years of fixed and variable annual cash compensation. Above this threshold, the retention obligations no longer apply.

  - *Prohibition from using hedging instruments*

In accordance with the provisions of the Code to which the Company refers and the recommendations of the Financial Markets Authority, Mrs. Sophie ZURQUIYAH has committed to not to use hedging transactions both on options and on shares resulting from the exercise of options until the end of the retention period for registered shares set by the Board of Directors in accordance with the provisions of Article L. 225-185 of the French Commercial Code.

- *Stock-options exercise period*

The Board of Directors recalls that the exercise of options by Mrs. Sophie ZURQUIYAH is subject to compliance with the rules for abstention from trading in the Company's shares set by the Group applicable to all of the Group's permanent insiders (see paragraph 4.1.3.h) of this Universal Registration Document).

- *Stock-options exercised in 2019 financial year by the Chief Executive Officer*

No stock-options were exercised during the 2019 financial year.

2) Status of performance condition fulfilment for previous plans

- *Rate of Fulfilment of the performance criteria of the 2015 option plan*

In 2019, the Board of Directors noted that the performance conditions had not been achieved on the last tranche (25%) of the stock-option plan allocated on June 25, 2015 for the members of the Corporate Committee and Corporate Officers. Consequently, no stock-option was acquired under this last tranche by the members of the Corporate Committee and the Corporate Officers.

As a reminder, for the first tranche (50%) that matured in June 2017, no stock-option was acquired by the members of the Corporate Committee and the Corporate Officers. The second tranche (25%) that matured in June 2018 had been partially acquired.

Thus, the final acquisition rate of the 2015 stock-option plan was 25% for the members of the Corporate Committee and the Corporate Officers and the exercise price of these options is set at €62.92 (adjusted further to various transactions on the Company's share capital since the date of allocation).

- *Rate of fulfilment of the performance criteria of the 2016 option plan*

In 2019, the Board of Directors noted that the performance conditions had not been achieved on the second tranche (25%) of the stock-option plan allocated on June 23, 2016 for the members of the Corporate Committee and the Corporate Officers.

Consequently, no stock-option was acquired under this second tranche by the members of the Corporate Committee and the Corporate Officers.

The achievement of the performance condition will be assessed again in June 2020, in accordance with the plan's rules.

As a reminder, for the first tranche (50%) that matured in June 2018, no stock-option was acquired by the members of the Corporate Committee and the Corporate Officers.

(1) This rate and the scale of vesting are revised upwards as from the allocation of the year 2020

The exercise price of these options is set at €8.52 (adjusted further to various transactions on the Company's share capital since the date of allocation).

- *Rate of fulfilment of the performance criteria of the 2018 option plan*

In 2019, the Board of Directors noted that the performance condition had not been achieved on the first tranche (25%) of the option plans allocated on June 27, 2018 and on December 11, 2018 for the members of the Executive Leadership Team and the Corporate Officers. Consequently, no option was acquired under this first tranche by the members of the Executive Leadership Team and the Corporate Officers. The achievement of the performance condition will be assessed again in June 2020, in accordance with the plan's rules.

The exercise price of these options is €2.15 for the allocation of June 27, 2018 and €1.39 for the allocation of December 11, 2018.

II. Performance shares

1) Grant of performance shares to the Chief Executive Officer under the terms of the plan dated the June 27, 2019

- *Performance conditions*

On June 27, 2019, the Board of Directors maintained the same performance conditions as for the 2018 performance share plan. The acquisition of the shares is subject to a condition of presence in June 2022, subject to the fulfilment of two performance conditions assessed over the vesting period, and relating to:

- achieving a cumulative Free EBITDA objective (giving rise to the acquisition of 50% of the rights; if the objective is not achieved, no rights are acquired);
- achieving an Average Net Debt to EBITDAs ratio objective by 2021 (giving rise to the acquisition of 50% of the rights; if the objective is not achieved, no rights are acquired).

Achievement of the two performance conditions is based on budgetary objectives in line with the Group's strategic plan and entitles the holder to the allocation of shares on the date on which such achievement is acknowledged by the Board.

On June 27, 2019, the Board of Directors decided to allocate 2,007,720 performance shares subject to performance conditions to 245 beneficiaries within the Group, including 220,000 performance shares allocated to the Chief Executive Officer.

These free shares subject to performance conditions will be acquired in June 2022. The acquisition period is set at the later of the two following dates: June 27, 2022 or the date of the General Meeting to approve the 2021 financial statements, and after the Board of Directors has noted the achievement of the performance conditions.

- *Applicable rules*
  - *Obligation to retain registered shares*

The Board of Directors also decided that, in accordance with the provisions of Article L. 225-185 of the French Commercial Code, the quantity of shares resulting from the acquisition of shares that Mrs. Sophie ZURQUIYAH is required to keep in registered form, for the duration of her mandate, should represent 25% of the shares permanently allocated by the Board of Directors.

In addition, the Chief Executive Officer must, in her capacity as director of the Company, own 20,000 (twenty thousand) shares in the Company. The combination of these obligations will enable the Chief Executive Officer to hold a significant number of securities.

The Chief Executive Officer's obligation to keep in registered form shares resulting from the allocation of performance shares and the exercise of options granted applies until the value of all the shares retained in registered form represents two years of fixed and variable annual cash compensation. Above this threshold, the retention obligations no longer apply.

  - *Prohibition from using hedging instruments*

In accordance with the provisions of the Code to which the Company refers and the recommendations of the Financial Markets Authority, Mrs. Sophie ZURQUIYAH undertook not to use hedging transactions on the performance shares allocated until the end of the retention period for registered shares set by the Board of Directors in accordance with the provisions of Article L. 225-185 of the French Commercial Code.

- *Performance shares made available over the period of the 2019 financial year for the Chief Executive Officer*

No performance shares became available during the 2019 financial year.

2) Status of performance condition fulfilment for previous performance share plans

No performance share plans were evaluated in the 2019 financial year. The performance conditions pertaining to the 2018 plan are appraised over a period of two years and will be assessed in June 2020.

III. Performance units

1) Grant of performance units to the Chief Executive Officer during the 2019 financial year

- *Performance units granted to the Chief Executive Officer during the 2019 financial year*

No performance units were granted to the Chief Executive Officer during the 2019 financial year.

- *Performance units permanently acquired by the Chief Executive Officer during the 2019 financial year*

No performance units were permanently acquired by the Chief Executive Officer during the 2019 financial year.

2) Status of performance condition fulfilment for previous performance unit plans

On June 23, 2016, the Board of Directors of the Company, on the recommendation of the Appointment and Remuneration Committee, implemented a multi-annual variable remuneration system in the form of performance units for Corporate Officers and members of the Corporate Committee, as well as executives and employees who have contributed to the Group's performance or who have strong potential for development within the Group.

The performance units are permanently acquired by the beneficiaries at the end of a period of three years from the date of allocation subject to compliance with a condition of presence in the Group at the time of the final allocation and achievement of performance conditions.

The permanently acquired performance units will be valued on the basis of the average closing price of the CGG share on Euronext during the five trading days preceding the final acquisition date. The performance units will be paid for half in cash and half in existing CGG shares.

- *Rate of fulfilment of the performance criteria of the 2016 performance unit plan*

On June 27, 2019, the Board of Directors noted that the performance conditions of the performance unit plan allocated on June 23, 2016 to the Corporate Officers, members of the Corporate Committee and other beneficiaries were not met either on the Group criteria or business segments. Consequently, no performance units were acquired by the beneficiaries.

viii. Supplementary pension plans

DEFINED CONTRIBUTION PENSION PLAN (ARTICLE 83 OF THE CGI (CODE GÉNÉRAL DES IMPÔTS [GENERAL TAX CODE]))

Mrs. Sophie ZURQUIYAH benefits from the collective defined-contribution funded pension plan implemented for the Group's executives since January 1, 2005 according to the same terms as those applicable to the said executives.

This scheme is capped as such and calculated with reference to the Annual Social Security Ceiling [*Plafond Annuel de Sécurité Sociale*] ("PASS") and are set for 2020 at:

- tranche A – up to 100% of the PASS: 0.5% beneficiary contribution and 1% company contribution;
- tranche B – above 100% of the PASS and up to 400% of the PASS: 2% beneficiary contribution and 3% company contribution;
- tranche C – above 400% of the PASS and up to 800% of the PASS: 3.5% beneficiary contribution and 5% company contribution.

The contribution base consists exclusively of the gross annual remuneration for the year declared, the basic salary, the annual variable remuneration and the benefit in kind (company car). As a matter of principle, this base excludes any other remuneration element.

For 2019, the amount corresponding to the expense borne by the Company under this scheme represents €12,157 for Mrs. Sophie ZURQUIYAH.

ALTERNATIVE PENSION PLAN

Mrs. Sophie ZURQUIYAH does not benefit from an alternative pension plan.

ix. Individual unemployment insurance

The Board of Directors, during its meeting of April 26, 2018, authorised, according to the procedure applicable to regulated agreements and provided for in Articles L. 225-38 *et seq.* of the French Commercial Code, the conclusion of a specific guarantee of unemployment insurance with the GSC for the benefit of Mrs. Sophie ZURQUIYAH.

The annual contribution paid by the Company under this guarantee amounts to €11,094 in 2019. This insurance provides for the payment of a maximum percentage of 14.15% of Mrs. Sophie ZURQUIYAH's target remuneration in 2019 (*i.e.*€178,306) over a period of 12 months. This commitment was ratified by the General Meeting held on May 15, 2019.

x. Contractual termination indemnity in the event of departure from the Group and non-competition commitment

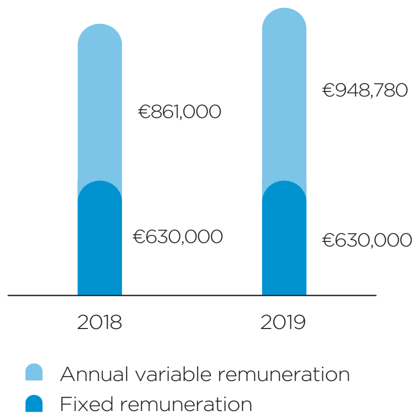
Mrs. Sophie ZURQUIYAH benefits from a contractual termination indemnity in case of departure from the Group and a non-competition commitment, the details of which are presented in section 4.2.1.2.B. of this Universal Registration Document.

b. Remuneration paid by a company within the scope of consolidation

Mrs. Sophie ZURQUIYAH did not receive any remuneration paid by the companies included in the scope of consolidation of the Company.

c. Respective importance of remuneration elements

The short-term remuneration of Mrs. Sophie ZURQUIYAH (fixed + variable) increased by 5.9% full-time equivalent from 2018 to 2019.



The gross remuneration amounts paid by the Company and the controlled companies to Mrs. Sophie ZURQUIYAH for the 2018 and 2019 financial years are presented in the table below. It is recalled that the office of Mrs. Sophie ZURQUIYAH as Chief Executive Officer became effective on April 26, 2018.

For the 2019 financial year, Mrs. Sophie ZURQUIYAH's remuneration structure consisted of fixed remuneration (€630,000 gross on an annual basis), variable remuneration (€948,780 gross on an annual basis), and benefits in kind (€20,567 on an annual basis).

B. Equity ratio

(*Pursuant to Article L. 225-37-3, 6° and 7° of the French Commercial Code*).

The table below presents the median and average ratios of the overall remuneration of the Chairman of the Board of Directors. In accordance with the recommendation of the AFEP-MEDEF Code to which the Company refers, and taking into account the small number of employees of the parent company, which does not allow to disclose representative data, the ratio was calculated on the basis of the Group's scope of consolidation in France (CGG SA, CGG services SAS and Sercel France SAS), on the basis of compensation paid in fiscal year 2019, *i.e.*:

- the 2019 fixed remuneration;
- the variable remuneration paid in 2019 for 2018;
- the exceptional remuneration paid in 2019 for 2018;
- the profit-sharing and participation paid in 2019;
- the options and shares allocated during the 2019 financial year (valued amount of the benefit under IFRS 2);
- the benefits in kind paid during the 2019 financial year;
- the employer contributions paid in respect of defined contribution plans paid in respect of the financial year 2019.

In the interests of consistency, employees' remuneration takes the following into account:

- the 2019 fixed remuneration;
- the variable remuneration paid in 2019 for 2018;
- the exceptional remuneration paid in 2019;
- the profit-sharing and participation paid in 2019;
- the options and shares allocated during the 2019 financial year (valued amount of the benefit under IFRS 2);
- the benefits in kind paid during the 2019 financial year;
- the employer contributions paid in respect of defined contribution plans paid in respect of the financial year 2019.

The procedure is the same as for previous years.

EQUITY RATIO BETWEEN THE LEVEL OF REMUNERATION OF THE CHIEF EXECUTIVE OFFICER AND THE AVERAGE AND MEDIAN REMUNERATION OF THE EMPLOYEES OF THE COMPANY

The scope taken into account is that of the Group's employees located in France, including CGG SA, CGG Services SAS and Sercel SAS.

	2015	2016	2017	2018	2019
Average Ratio	20.5	21.4	17.2	34.7	30.0
Median Ratio	24.5	25.6	20.5	43.0	36.6
Segment EBITDA *(in millions of US$)**	453	386	434	556	721

* *IFRS restated 2016-2019.*

In the event of a change in leadership during the year, it is specified that the remuneration taken into account for the table above is that paid for the position.

C. Consideration of the last vote of the General Meeting

Following the General Meeting held on May 15, 2019, the Group undertook a review of the main elements of governance related to the remuneration of Corporate Officers and their communication, with the assistance of an external consultant.

The Group carried out an audit of compliance with the recommendations of the AFEP-MEDEF Code, compliance with changes in legislation (*Pacte* Law) and investor expectations through analysis of policies and comments from voting advisory agencies.

Following this assessment, the Group carried out projects aimed at taking into account the comments of the various stakeholders on the following projects: long-term remuneration, communication on the remuneration of Corporate Officers and the characteristics of regulated agreements for the benefit of the Group's Corporate Officers.

- the characteristics of long-term remuneration: as soon as the 2019 plan was implemented, the Board of Directors modified the acquisition conditions for options and shares with:
  - an extension of the acquisition period to three years for both options and shares,
  - the integration of a relative performance condition with the evolution of the stock market price in relation to the PHLX Oil Service Sector^{SM}) (OSX^{SM}) index,
  - stopping the re-testing of the performance conditions attached to the options;
- communication on the remuneration of Corporate Officers: the Group has launched an audit of its corporate governance report and has undertaken a more detailed communication of the components of the remuneration policy through:
  - the methods for determining the remuneration of Corporate Officers and their target structure,
  - target levels and ceilings for the variable elements of remuneration disclosed,
  - the mechanism for calculating the annual variable remuneration with the terms and conditions for assessing performance criteria to enable shareholders to understand the determination of the amounts paid,
  - the communication of the results of long-term incentive plans enabling shareholders to link this remuneration to the Group's performance;
- the non-competition clause has been brought into compliance with the rules of the AFEP-MEDEF Code and Order no. 2019-1234 of November 27, 2019:
  - the payment of the non-competition indemnity would therefore be excluded and the Chief Executive Officer would exercise their retirement rights. In any event, no remuneration could be paid beyond the age of 65, and
  - on the other hand, the non-competition indemnity will have to be paid in instalments during its duration;
- the contractual termination indemnity has also been modified to comply with the provisions of the AFEP-MEDEF Code:
  - the payment of the indemnity would be excluded in the event of the beneficiary's resignation or the possibility for the beneficiary to exercise his or her retirement rights at the time of departure, and
  - the performance scale giving rise to the payment has been revised to be more stringent.

D. Compliance of the remuneration paid with the remuneration policy

The remuneration paid to the Chief Executive Officer complies with the principles and criteria for determining, distributing and allocating the elements of fixed, variable, exceptional remuneration and all benefits of all kinds attributable to the Chief Executive Officer approved by the General Meeting held on April 26, 2018 and applicable for the 2019 financial year.

Indeed, this policy was applicable for the financial year 2019 due to the negative vote of the General Meeting of Shareholders held on May 15, 2019 on the draft remuneration policy submitted for its approval.

The remuneration paid to the Chief Executive Officer complies with the long-term performance objectives of the Company.

For the 2019 financial year, the Company did not deviate or derogate from the procedure for implementing the remuneration policy.

E. Suspension of the remuneration paid to directors

As the Board of Directors is composed in accordance with the provisions of Article L. 225-18-1 of the French Commercial Code, the payment of the remuneration provided for in the first paragraph of Article L. 225-45 of the aforementioned Code has not been suspended.

4.2.2.3 Total remuneration of directors for the 2019 fiscal year

On May 15, 2019, further to the approval of the global amount of Directors' fees by the General Meeting, set a €630,000, the Board of Directors resolves on the remuneration principles applicable to the directors as defined hereafter.

In accordance with the remuneration policy in force, Mrs. Sophie ZURQUIYAH does not receive any remuneration pursuant to her office as director.

A. Total remuneration and benefits of any kind

a. Remuneration elements

i. General principles

ALLOCATION OF THE BASIC AMOUNT

For 2019, Directors received remuneration in accordance with the policy applicable to them, set by the Board of Directors on May 15, 2019 and described below. For the 2019 fiscal year, the basic amount applicable to the directors was set as follows:

- one third of the remuneration allocated to the directors is a fixed part linked to their position. It is calculated on the basis of one share for each director and one additional share as a Committee member. The remuneration of any director appointed in the course of the year is calculated on a *prorata temporis* basis;
- two thirds of the remuneration allocated to the directors is a variable part linked to their actual attendance at the Board or the Board Committees' meetings. It is calculated as follows:
  - two shares for participation in a Board meeting,
  - one share for participating to a Committee meeting,
  - one and a half share for chairing a Committee meeting.

A director attending a Board Committee meeting as a guest is not entitled to any remuneration for this meeting.

TRAVEL INDEMNITY

A travel indemnity is allocated to each director, whatever his/her nationality, as follows:

- €2,000 per intercontinental travel;
- €500 per travel in the same continent.

This travel indemnity also applies to the Board seminar, as the case may be.

STOCKS OPTIONS AND PERFORMANCE SHARES

In accordance with the law, the directors, with the exception of the Chief Executive Officer and the director representing the employees do not benefit from stock options or performance shares of the Company.

ii. Specific rules

CHAIRMAN OF THE BOARD OF DIRECTORS

For the 2019 fiscal year, Mr. Philippe SALLE received:

- a fixed compensation amounting to €70,500 in his capacity as director (including €500 as travel indemnity), as set by the Board of Directors held on May 15, 2019; and
- a fixed compensation amounting to €170,000 in his capacity as Chairman of the Board of Directors, as set by the Board of Directors held on March 7, 2019.

CHIEF EXECUTIVE OFFICER

For the 2019 fiscal year, Mrs. Sophie ZURQUIYAH, Chief Executive Officer and director, did not receive any compensation pursuant to her office as director.

DIRECTOR REPRESENTING THE EMPLOYEES

For the 2019 fiscal year, Mr. Patrice GUILLAUME, director representing the employees appointed in accordance with Article 8 of the Company's articles of association, did not receive any compensation pursuant to his office as director. He received a compensation pursuant to his employment agreement entered into with CGG Services SAS, a fully owned subsidiary of the Company.

AUDIT COMMITTEE MEMBERS

In addition, a lump-sum is allocated to the Audit Committee members, as follows:

- €10,000 for the Chairman of the Audit Committee;
- €5,000 for each of the other members of the Audit Committee.

b. Remuneration paid by a Company within the scope of consolidation

With the exception of the director representing the employees, who received a compensation from CGG Services SAS pursuant to his employment agreement, directors do not receive any remuneration paid by the companies included in the scope of consolidation of the Company.

c. Respective importance of remuneration elements

With the exception of the director representing the employees, who received a variable compensation from CGG Services SAS pursuant to his employment agreement, directors receive only fixed items, to the exclusion of any variable or exceptional remuneration.

B. Consideration of the last vote of the General Meeting

The General Meeting held on May 15, 2019 set the total amount allocated as remuneration to the directors of the Company at €630,000 for the 2019 financial year.

C. Compliance of the remuneration paid with the allocation rules set by the Board of Directors

The compensation allocated to the directors for the 2019 fiscal year complies with the allocation rules set by the Board of Directors held on May 15, 2019. The aggregate remuneration allocated to the directors for 2019 amounted to €541,780.82, paid in February 2020.

D. Suspension of the remuneration paid to directors

As the Board of Directors is composed in accordance with the provisions of Article L. 225-18-1 of the French Commercial Code, the payment of the remuneration provided for in the first paragraph of Article L. 225-45 of the aforementioned Code has not been suspended.

E. Remuneration paid to the Non-Executive Directors for the 2019 fiscal year

The remuneration paid to the Non-Executive Directors for the 2019 fiscal year is presented on page 136 of this Universal Registration Document (Table 3 of the AMF recommendation no. 2009-16).

4.2.2.4 Presentation table of Corporate Officers' remuneration

The table below presents a summary of the remuneration elements of Corporate Officers for the 2018 and 2019 financial years. These elements are detailed in the rest of the report.

SUMMARY TABLE OF REMUNERATION AND OPTIONS AND SHARES ALLOCATED TO EACH CORPORATE OFFICER

	2018 financial year	**2019 financial year**
Philippe SALLE, Chairman of the Board of Directors		
TOTAL REMUNERATION DUE FOR THE FINANCIAL YEAR (detailed in one of the tables below)	**€168,142.39**	**€240,500**
Valuation of multi-annual variable remuneration allocated during the financial year[(a)]	n.a.	n.a.
Valuation of the options allocated during the financial year[(a)]	n.a.	n.a.
Valuation of the performance shares allocated during the financial year[(a)]	n.a.	n.a.
TOTAL POTENTIAL DEFERRED REMUNERATION RIGHTS SUBJECT TO THE FUTURE RESULTS OF THE COMPANY	**n.a.**	**n.a.**
Sophie ZURQUIYAH, Chief Executive Officer		
TOTAL REMUNERATION DUE FOR THE FINANCIAL YEAR (detailed in one of the tables below)	**€1,315,097.00**	**€1,599,347.00**
Valuation of multi-annual variable remuneration allocated during the financial year[(a)]	n.a.	
Valuation of the options allocated during the financial year (detailed in one of the tables below)[(a)]	€491,669.00	€316,589.00
Valuation of the performance shares allocated during the financial year (detailed in one of the tables below)[(a)]	€297,955.00	€176,342.00
TOTAL POTENTIAL DEFERRED REMUNERATION RIGHTS SUBJECT TO THE FUTURE RESULTS OF THE COMPANY	**€789,624.00**	**€492.931.00**

Table 1 of the 2009-16 Financial Markets Authority Recommendation.

(a) The Company considers that these elements cannot be combined with the other elements of remuneration actually due for the financial year and that the total is therefore not representative of the remuneration received during the year. Indeed, the final allocations of these elements of remuneration are on the one hand subject to the fulfilment of performance conditions (there can therefore be no allocation if these conditions are not met) and on the other hand, the valuation amount of multi-annual variable remuneration, options and performance shares at fair value on the date of allocation that does not correspond to the remuneration received by beneficiaries during the financial year of allocation.

The valuation of options according to the method used for the consolidated accounts does not necessarily correspond to the real value that could be derived from the possible exercise of these options by their beneficiaries. Indeed, it is recalled that exercising these options is subject to the fulfilment of performance conditions and supposes an exercise price lower than the stock market price. The pre-tax profit that can, in addition, be withdrawn from the exercise of the said options will depend on the share price on the day of the transaction. The profit may be zero if, during the entire exercise period of the options, the exercise price remains higher than the share price.

SUMMARY TABLE OF REMUNERATION FOR MR. PHILIPPE SALLE, CHAIRMAN OF THE BOARD OF DIRECTORS

The gross remuneration amounts paid by the Company and the controlled companies to Mr. Philippe SALLE for the 2018 and 2019 financial years are shown in the table below. It is recalled that Mr. Philippe SALLE was appointed Chairman of the Board of Directors on April 26, 2018.

For the 2019 financial year, Mr. Philippe SALLE's remuneration structure consisted of:

- in his capacity as director: a fixed amount of remuneration allocated to directors (€70,000 gross on an annual basis for the Chairman); and
- in his capacity as Chairman of the Board: a fixed remuneration unchanged from 2018 (€170,000 gross on an annual basis).

	2018		**2019**	
Philippe SALLE	Amounts due	Amounts paid	**Amounts due**	**Amounts paid**
Chairman of the Board of Directors as of April 26, 2018				
Fixed remuneration	€115,697.00	€115,697.00	€170,000.00	€170,000.00
Annual variable remuneration	n.a.	n.a.	n.a.	n.a.
Multi-annual variable remuneration	n.a.	n.a.	n.a.	n.a.
Exceptional remuneration	n.a.	n.a.	n.a.	n.a.
Remuneration allocated to directors	€52,445.39[(a)]	n.a.	€70,500.00[(b)]	€52,445.39[(a)]
Benefits in kind	n.a.	n.a.	n.a.	n.a.
TOTAL	**€168,142.39**	**€115,697.00**	**€240,500.00**	**€222,445.39**

Table 2 of the 2009-16 Financial Markets Authority Recommendation.

(a) Paid in February 2019 for the 2018 financial year.
(b) Paid in February 2020 for the 2019 financial year (including €500 of travel indemnity).

SUMMARY TABLE OF THE REMUNERATION FOR MRS. SOPHIE ZURQUIYAH, CHIEF EXECUTIVE OFFICER

	2018		**2019**	
Sophie ZURQUIYAH	Amounts due	Amounts paid	**amounts due**	**Amounts paid**
Chief Executive Officer as of April 26, 2018				
Fixed remuneration	€571,826.00[(a)]	€571,826.00[(a)]	€630,000	€630,000
Annual variable remuneration	€727,516.00[(b)]	€533,017.00[(c)]	€948,780[(g)]	€727,516[(b)]
Multi-annual variable remuneration*	n.a.	n.a.	n.a.	n.a.
Exceptional remuneration	n.a.	n.a.	n.a.	n.a.
Remuneration allocated to directors	n.a.	n.a.	n.a.	n.a.
Benefits in kind	€10,877.00[(d)]	€3,577.00[(e)]	€20,567[(h)]	€27,867[(i)]
Other statutory indemnities	€4,878.00 (f)	€4,878.00[(f)]	n.a.	n.a.
TOTAL	**€1,315,097.00**	**€1,113,298.00**	**€1,599,347**	**€1,385,383**

Table 2 of the 2009-16 Financial Markets Authority Recommendation.

(a) This amount includes (i) amounts paid by CGG Services (US) Inc. in respect of its salaried functions between January 1, 2018 and April 26, 2018, and paid in US dollars, and (ii) amounts paid by CGG SA in respect of its corporate mandate as of April 26, 2018, and paid in euros.
(b) In accordance with the provisions of Article L. 225-100 of the French Commercial Code. Variable portion of the remuneration due for the 2018 financial year owing to the corporate office of Mrs. Sophie ZURQUIYAH as Chief Executive Officer paid in 2019, after approval of the accounts by the General Meeting held on May 15, 2019.
(c) Variable compensation due for the year 2017 and paid in March 2018, in US dollars, corresponding to the period during which Mrs. Sophie ZURQUIYAH was under an employment contract with CGG Services (US) Inc.
(d) Includes a benefit in kind for a company car up to €3,577 and a benefit in kind for the unemployment insurance taken out with the GSC (the call for contributions was received in January 2019; the integration of the benefit in kind will be carried out in 2019 for an amount of €7,299).
(e) Benefit in kind for a company car, which Mrs. Sophie ZURQUIYAH benefited from starting on May 4, 2018.
(f) Vacation pay related to termination of employment with CGG Services (US) Inc. paid in US dollars.
(g) The variable portion of the remuneration due for the 2019 financial year owing to the corporate office of Mrs. Sophie ZURQUIYAH as Chief Executive Officer will be paid in 2020, after approval of the accounts by the General Meeting called to approve the financial statements for the year ended December 31, 2019, in accordance with the provisions of Article L. 225-100 of the French Commercial Code.
(h) Includes a benefit in kind in respect of a company car in the amount of €9,473 and a benefit in kind in respect of unemployment insurance taken out with the GSC for 2019 in the amount of €11,094.
(i) This amount includes the benefit in kind of EUR 7,299 under the 2018 GSC unemployment guarantee.
** No multi-annual remuneration mechanism was implemented during the 2018 and 2019 financial years.*

REMUNERATION PAID TO NON-EXECUTIVE DIRECTORS

Directors	Amount paid for fiscal year 2018	**Amount paid for fiscal year 2019**
Bpifrance Participations[(a)]		
Directors' fees	€14,415.11	n.a.
Other remuneration	n.a.	n.a.
Loren CARROLL[(b)]		
Directors' fees	€7,391.26	n.a.
Other remuneration	n.a.	n.a.
Michael DALY		
Directors' fees	54,725.33	€58,907.65
Other remuneration	n.a.	n.a.
Patrice GUILLAUME[(c)]		
Directors' fees	n.a.	n.a.
Other remuneration	n.a.	n.a.
Didier HOUSSIN[(d)]		
Directors' fees	€€16,690.64	n.a.
Other remuneration	n.a.	n.a.
Anne-France LACLIDE-DROUIN		
Directors' fees	€61,017.97	€75,651.86
Other remuneration	n.a.	n.a.
Helen LEE BOUYGUES[(e)]		
Directors' fees	€46,425.41	€71,615.11
Other remuneration	n.a.	n.a.
Colette LEWINER[(f)]		
Directors' fees	€42,516.00	€68,460.97
Other remuneration	n.a.	n.a.
Gilberte LOMBARD[(g)]		
Directors' fees	€89,378.51	€37,978.95
Other remuneration	n.a.	n.a.
Hilde MYRBERG[(h)]		
Directors' fees	€8,672.86	n.a.
Other remuneration	n.a.	n.a.
Heidi PETERSEN[(i)]		
Directors' fees	€53,597.88	€57,543.06
Other remuneration	n.a.	n.a.
Mario RUSCEV[(j)]		
Directors' fees	€60,641.47	€69,778.23
Other remuneration	n.a.	n.a.
Robert F. SEMMENS[(k)]		
Directors' fees	€85,579.76	€31,344.99
Other remuneration	n.a.	n.a.
Kathleen SENDALL[(l)]		
Directors' fees	€34,077.20	n.a.
Other remuneration	n.a.	n.a.

Table 3 of the AMF Recommendation no. 2009-16.

(a) The term of office of Bpifrance Participations ended on March 23, 2018.
(b) The term of office of Mr. Loren CARROLL ended on March 8, 2018.
(c) Mr. Patrice GUILLAUME, as a director representing the employees, does not receive directors' fees.
(d) The term of office of Mr. Didier HOUSSIN ended on March 23, 2018.
(e) Mrs. Helen LEE BOUYGUES was coopted on March 23, 2018 in place of Bpifrance Participations.
(f) Mrs. Colette LEWINER was coopted on March 8, 2018 in place of Mrs. Hilde MYRBERG.
(g) The term of office of Mrs. Gilberte LOMBARD ended on May 15, 2019.
(h) The term of office of Mrs. Hilde MYRBERG ended on March 8, 2018.
(i) Mrs. Heidi PETERSEN was coopted on March 23, 2018 in place of Mr. Didier HOUSSIN.
(j) Mr. Mario RUSCEV was coopted on March 8, 2018 in place of Mr. Jean-Georges MALCOR.
(k) The term of office of Mr. Robert F. SEMMENS ended on May 15, 2019.
(l) The term of office of Mrs. Kathleen SENDALL ended on April 26, 2018.

STOCK OPTIONS OR STOCK PURCHASE OPTIONS ALLOCATED TO THE CHIEF EXECUTIVE OFFICER BY THE ISSUER AND ANY GROUP COMPANY IN THE COURSE OF THE 2019 FISCAL YEAR

In accordance with the provisions of Article L. 225-102-1 of the French Commercial Code, the Chief Executive Officer was allocated, within the framework of the plans implemented by the Company during the 2019 financial year, the stock options shown in the table.

Name of the Executive Corporate Officer	Plan date	Nature of options	Valuation of options according to the method used for the consolidated accounts *(in €)*	Maximum number of options allocated during the financial year in question[a]	Price[b]	Exercise period
Sophie ZURQUIYAH *Chief Executive Officer*	06.27.2019	Stock options	€176,352	360,000 0.051%	€1.52	06.28.2022 to 06.27.2027 inclusive

Table 4 of the 2009-16 Financial Markets Authority Recommendation.

(a) Allocation submitted on condition of performance described below.
(b) The exercise price corresponds to the average opening price of the CGG share during the twenty trading sessions preceding the meeting of the Board of Directors that allocated them.
** Portion of the allocation in relation to the share capital on the date of allocation.*

The valuation of options according to the method used for the consolidated accounts does not necessarily correspond to the real value that could be derived from the possible exercise of these options by their beneficiaries. Indeed, it is recalled that exercising these options is subject to the fulfilment of performance conditions and supposes an exercise price lower than the stock market price. The pre-tax profit that can, in addition, be withdrawn from the exercise of the said options will depend on the share price on the day of the transaction. The profit may be zero if, during the entire exercise period of the options, the exercise price remains higher than the share price.

No discount is applied when allocating stock options.

The terms and conditions of the plans applicable to the Chief Executive Officer are those of the general plans plus those described below:

- the vesting of rights is subject to the condition of presence in June 2022 *(i.e.* three years from the grant), subject to the fulfilment of a performance condition relating to a growth in the CGG share price at least equal to 75% of the relative evolution, over the vesting period, of the PHLX Oil Service Sector[SM]) (OSX[SM]) index, calculated on the vesting date. The target rate set takes into account the volatility of CGG shares, which is higher than that of the companies making up the comparative index;
- the achievement of the performance condition entitles the grant of 100% of the options on the date on which such achievement will be recognized by the Board.

The Chief Executive Officer is subject to the other conditions applicable to beneficiaries, as well as to an obligation to keep the shares in registered form and a prohibition on the use of hedging instruments, which are set out in paragraph 4.2.2.2.A of this Document.

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STOCK-OPTIONS EXERCISED BY THE EXECUTIVE OFFICERS IN THE COURSE OF THE 2019 FISCAL YEAR

Name of the Executive Officer	Date of the plan	Number of stock-options exercized in 2019	Subscription price*
Sophie ZURQUIYAH *Chief Executive Officer*	06.26.2012	n.a.	€186.62
	06.24.2013	n.a.	€193.27
	06.26.2014	n.a.	€107.66
	06.25.2015	n.a.	€62.92
	06.23.2016	n.a.	€8.52
	06.27.2018	n.a.	€2.15
	06.27.2019	n.a.	€1.52
TOTAL		**N.A.**	

Table 5 of the 2009-16 Financial Markets Authority Recommendation.

** Considering the adjustments done further to the capital increase of October 23, 2012 for all plans previously granted and the adjustments done further to the capital increase of February 5, 2016, to the stock reverse split of July 20, 2016 and the capital increase of February 21, 2018.*

PERFORMANCE SHARES ALLOCATED TO THE CHIEF EXECUTIVE OFFICER (ARTICLE L. 225-97-1 OF THE FRENCH COMMERCIAL CODE) IN THE COURSE OF THE 2019 FISCAL YEAR

In accordance with the provisions of Article L. 225-97-1 of the French Commercial Code, the Chief Executive Officer was allocated, within the framework of the plans implemented by the Company during the 2019 financial year, the performance shares show in the table below:

Name of the Executive Corporate Officer	Plan date	Number of shares allocated during the financial year	Valuation of shares according to the method used for the consolidated accounts *(in €)*	Acquisition date	Availability date	Performance conditions
Sophie ZURQUIYAH *Chief Executive Officer*	06.27.2019	220,000	€316,589	06.27.2022(a)	06.27.2022[(b)]	Free EBITDA Average Net Debt to EBITDAs Ratio

Table 6 of the 2009-16 Financial Markets Authority Recommendation.

(a) The acquisition date is based on the assumption that the Annual General Meeting called to approve the accounts closed on December 31, 2021 could have been held before June 27, 2022. If it cannot be held on this date, the final acquisition date will be that of the meeting of the 2022 Annual General Meeting.
(b) No retention period has been set by the Board of Directors.

The valuation of performance shares according to the method used for the consolidated accounts does not necessarily correspond to the real value that could be derived from the possible acquisition of these shares by their beneficiaries. Indeed, it is recalled that acquiring these shares is subject to the fulfilment of performance conditions.

The acquisition of shares by Mrs. Sophie ZURQUIYAH is subject to a condition of presence in June 2022 (*i.e.* three years from the grant), subject to the fulfilment of two performance conditions relating to:

- the achievement of a target of cumulative Free EBITDA over the vesting period (which gives rise to the acquisition of 50% of the rights; if the objective is not achieved, no rights are acquired);
- the achievement of an objective of Average Net Debt-to-EBITDAs ratio in 2021 (which results in the vesting of 50% of the rights; if the objective is not achieved, no rights are acquired).

The Chief Executive Officer is subject to the other conditions applicable to beneficiaries, as well as to an obligation to keep the shares in registered form and a prohibition on the use of hedging instruments, which are set out in paragraph 4.2.2.2.A of this Document.

No performance share plan had been implemented between the 2012 and 2018 financial years.

HISTORY OF PERFORMANCE SHARES WHICH BECAME AVAILABLE AS OF DECEMBER 31, 2019

Name of the Executive Officer	Date of the plan	Number of performance shares which became available in the 2019 fiscal year	Acquisition conditions
Sophie ZURQUIYAH *Chief Executive Officer*	06.27.2018	n.a.	Free EBITDA Average net debt over EBITDAs ratio
	06.27.2019	n.a.	Free EBITDA Average net debt over EBITDAs ratio
TOTAL		**N.A.**	

Table 7 of the 2009-16 Financial Markets Authority Recommendation.

No performance share plan had been implemented between the 2012 and 2018 financial years.

HISTORY OF ALLOCATIONS OF STOCK OPTIONS AS OF DECEMBER 31, 2019

	2012 plan	2013 plan	2014 plan	2015 plan	2016 plan	2018 plan		**2019 plan**	**Total**
Date of the General Meeting	05.04.2011	05.03.2013	05.03.2013	05.29.15	05.29.2015	04.26.2018	04.26.2018	04.26.2018[8]	
Date of the Board of Directors' meeting	06.26.2012	06.24.2013	06.26.2014	06.25.2015	06.23.2016	06.27.2018	12.11.2018[9]	06.27.2019	
Number of beneficiaries	413	672	752	749	683	530	4	246	
Total number of shares that can be subscribed[3]:	1,410,625	1,642,574	1,655,843	1,769,890	6,658,848	6,544,389	671,171	2,273,520	22,626,860
Out of which the number can be exercised by:									
Executive Officers:									
Philippe SALLE[f]	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Sophie ZURQUIYAH[7]	n.a.	120,000[b]	60,000[c]	79,500[d]	444,000[e]	732558[f]	n.a.	360,000	1,796,058
Start date of options exercise	06.27.2014	06.25.2015	06.27.2016	06.26.2017	06.24.2018	06.28.2019	06.28.2019	**For CEO:** 06.28.2022 **For other beneficiaries:** 06.28.2021	
Expiration date	06.26.2020	06.24.2021	06.26.2022	06.25.2023	06.23.2024	06.27.2026	06.27.2026	06.27.2027	
Subscription price *(in €)*[1][2][4]	186.62	193.27	107.66	62.92	8.52	2.15	1.39	1.52	
Exercise rules (when the plan provides for several batches of options)[5]	• Options accrue rights in three batches (50% after 2 years, 25% after 3 years and 25% after 4 years) • Prohibition to sell or transfer his shares before June 26, 2016 for French tax residents.	• Options accrue rights in three batches (50% after 2 years, 25% after 3 years and 25% after 4 years)	• Options accrue rights in three batches (50% after 2 years, 25% after 3 years and 25% after 4 years)	• Options accrue rights in three batches (50% after 2 years, 25% after 3 years and 25% after 4 years)	• Options accrue rights in three batches (50% after 2 years, 25% after 3 years and 25% after 4 years)	• Options accrue rights in four batches (25% after 1 year, 25% after 2 years, 25% after 3 years and 25% after 4 years)	• Options accrue rights in four batches (25% after 1 year, 25% after 2 years, 25% after 3 years and 25% after 4 years)	**For CEO:** Options accrue rights in one batch after 3 years **For other beneficiaries:** Options accrue in two batches (50% after 2 years and 50% after 3 years)	
Number of shares subscribed as of December 31, 2019[4]	0	0	0	0	0	2,038	0	0	2,038
Cumulated number of stock-options which were cancelled or lapsed as of December 31, 2019[4]	1,002,304	544,223	434,455	181,268	206,648	844,743	33,559	8,530	3,255,730
Remaining stock-options as of December 31, 2019[4]	48,113	70,178	78,210	78,634	288,665	5,705,070	637,612	2,264,990	9,171,472

	2012 plan	2013 plan	2014 plan	2015 plan	2016 plan	2018 plan		**2019 plan**	**Total**
Out of which the remaining number is held by:									
Executive officers									
Philippe SALLE[f]	*n.a.*	*n.a.*	*n.a.*	*n.a.*	*n.a.*	*n.a.*	*n.a.*	*n.a.*	*n.a.*
Sophie ZURQUIYAH[g]	*n.a.*	*0*	*359*	*475*	*15,498*	*695,930*	*n.a.*	*360,000*	*1,072,262*

(1) Considering the adjustements done further to the capital increase of February 5, 2016, to the stock reverse split of July 20, 2016 and the capital increase of February 21, 2018.
(2) The subscription price corresponds to the average of the opening share prices of the share on the last twenty trading days prior to the meeting of the Board of Directors granting the options.
(3) Without taking into account the various adjustments that have occurred after the implementation of the plans.
(4) Considering the adjustments done further to the capital increase of October 23, 2012 for all plans previously granted and the adjustments done further to the capital increase of February 5, 2016, to the stock reverse split of July 20, 2016 and the capital increase of February 21, 2018.
(5) In addition, certain performance conditions are applicable to the Corporate Officers and the members of Executive Committee/Corporate Committee/Executive Leadership (depending in the attribution date) – see section 4.2.2.2.A of this Document.
(6) Executive Officer of CGG SA since April 26, 2018
(7) Executive Officer of CGG SA from September 1, 2015 to January 4, 2017 (member of the Corporate Committee) and since April 26, 2018 (Chier Executive Officer).
(8) Figures presented in this column include stock-options granted by the Chief Executive Officer pursuant to the subdelegation granted by the Board of Directors, to the benefit of certain employees. In such a case, the subscription price has been set to reflect the average opening price of the CGG shares for the 20 trading days preceding the allotment date.
(a) For the Corporate Officers and members of the Corporate Committee, this 2012 plan is subject to performance conditions which have not been met for each of the three batches in 2014, 2015 and 2016.
(b) For the Corporate Officers and members of the Corporate Committee, this 2013 plan is subject to performance conditions which have not been met for each of the three batches in 2015, 2016 and 2017.
(c) For the Corporate Officers and members of the Corporate Committee, this 2014 plan is subject to performance conditions:
which have not been met in 2016 for the first batch nor for the second batch in 2017; and
which have been partically met (leading to a 25% vesting only) for the third batch in 2018.
(d) For the Corporate Officers and members of the Corporate Committee, this 2015 plan is subject to performance conditions:
which have not been met in 2017 for the first batch;
which have been partically met (leading to a 25% vesting only) for the second batch in 2018; and
which have not been met in 2019 for the third batch.
(e) For the Corporate Officer and members of the Corporate Committee, this 2016 plan is subject to performance conditions:
which have not been met in 2018 for the first batch; and
which have been partically met (leading to a 25% vesting only) for the second batch in 2019.
(f) For the Corporate Officer and members of the Executive Leadership team, this 2018 plan is subject to performance conditions:
which have not been met in 2019 for the first batch.
(g) Allocation subject to the terms and conditions of the stock options plan date June 27, 2018, except for the subscription price

STOCK OPTIONS GRANTED TO THE GROUP'S TOP 10 EMPLOYEES OTHER THAN EXECUTIVE DIRECTORS AND OPTIONS EXERCISED BY THE GROUP'S TOP 10 EMPLOYEES OTHER THAN EXECUTIVE DIRECTORS DURING FY19

	Number of options allocated/shares subscribed or purchased	Weighted average price *(in €)*	Date of the plan
Options granted during the financial year by the issuer and any companies within its Group granting options to the top ten employees of the Company and any such Group company, receiving the highest number of options	968,230	1,52	06.27.2019
Options held on the issuer and the companies included in the scope of allocation of the options exercised, during the year by the top 10 employees of the issuer and any company included in this scope, exercising the highest number of options	0	n.a.	n.a.

Table 9 of the 2009-16 Financial Markets Authority Recommendation.

HISTORY OF ALLOCATIONS OF PERFORMANCE SHARES AS OF DECEMBER 31, 2019

As part of the 18th resolution of the Combined General Meeting held on April 26, 2018, the Board of Directors, at its meeting held on June 27, 2018 and June 27, 2019, decided to allocate performance shares as detailed in the table below.

	Information about performance shares		
Date of General Meeting	**04.26.2018**	**04.26.2018[a]**	**04.26.2018**
Date of Board of Directors' resolution	06.27.2018	12.11.2018[a]	06.27.2019
Total number of performance shares allocated, of which the number allocated to:	3,108,217	132,821	2,007,720
Sophie ZURQUIYAH, Chief Executive Officer	157,500	n.a.	220,000
Date of acquisition of performance shares (for Chief Executive Officer)	Acquisition in 2 batches: • 06.27.2020: 50% of the performance shares allocated • 06.27.2021: 50% of the performance shares allocated	n.a.	Acquisition in 1 batch: • 06.27.2022: 100% of the performance shares allocated
Date of acquisition of performance shares (for Members of the Executive Leadership team and employees)	Acquisition in 2 batches: • 06.27.2020: 50% of the performance shares allocated • 06.27.2021: 50% of the performance shares allocated	Acquisition in 2 batches: • 12.11.2020: 50% of the performance shares allocated • 06.27.2021: 50% of the performance shares allocated	Acquisition in 2 batches: • 06.27.2021: 50% of the performance shares allocated • 06.27.2022: 50% of the performance shares allocated
Date of the end of the retaining period	n.a.[b]	n.a.[b]	n.a.[b]
Performance conditions	Free EBITDA and Average Net Debt over EBITDAs ratio	Free EBITDA and Average Net Debt over EBITDAs ratio	Free EBITDA and Average Net Debt over EBITDAs ratio
Number of performance shares acquired as of December 31, 2019	0	0	0
Cumulative number of performance shares cancelled or lapsed as of December 31, 2019	256,646	0	10,510
Performance shares remaining at the end of the financial year as of December 31, 2019	2,851,571	132,821	1,997,210

Table 10 of the 2009-16 Financial Markets Authority Recommendation.

(a) Acquisition subject to the terms and conditions of the performance shares plan of June 27, 2018, except for the first batch's acquisition date.
(b) Considering the vesting period, no holding period has been set by the Board of Directors.

The individual details of the performance shares allocated to the Company's Corporate Officers are presented above in this paragraph.

No performance share plan had been implemented between the 2012 and 2018 financial years.

SUMMARY TABLE AS OF DECEMBER 31, 2019

	Employment contract		Supplementary pension plan		Indemnities or benefits due or likely to be due owing to the termination or change of position		Non-competition clause indemnity	
Executive Corporate Officers	Yes	No	Yes	No	Yes	No	Yes	No
Philippe SALLE *Chairman of the Board of Directors* First appointment: 2018 End of term of office: 2021		X		X		X		X
Sophie ZURQUIYAH *Chief Executive Officer* First appointment: 2018 End of term of office: 2022		X	X[a]		X[b]		X[c]	

Table 11 of the 2009-16 Financial Markets Authority Recommendation.

(a) The details of the supplementary pension plan are in paragraph 4.2.2.2.A of the present document. Executive Corporate Officers are beneficiaries of a defined-contribution funded pension plan implemented for Group executives. This plan is partly covered by the Company. For 2019, the amount corresponding to the expense borne by the Company under this scheme represents €12,157 for Mrs. Sophie ZURQUIYAH.
(b) The details of the indemnities due owing to departure from the Group are in paragraph 4..2.2.2.A of the present document.
(c) The details of the indemnities due for non-competition commitments are in paragraph 4..2.2.2.A of the present document.

4.2.2.5. Remuneration elements paid or allocated for the 2019 financial year submitted to the shareholders for approval

In accordance with Article L. 225-100, III of the French Commercial Code, the fixed, variable and exceptional elements making up the total remuneration and benefits of any kind paid or allocated for the 2019 financial year to Executive Corporate Officers, presented below, will be put to the vote of the shareholders, by separate resolutions for each person concerned, at the General Meeting of June 16, 2020.

A. Remuneration elements paid or allocated for the 2019 financial year to Mr. Philippe SALLE, Chairman of the Board of Directors submitted to the shareholders for approval

Remuneration elements put to the vote	Amounts paid for the year-end	Amount allocated for the year-end or accounting valuation	Information
Fixed remuneration	€170,000.00	Not applicable	On April 26, 2018, the Board of Directors decided that Mr. SALLE would receive fixed annual remuneration of €170,000 for his duties as Chairman of the Board of Directors. This fixed remuneration on an annual basis has remained unchanged for the year 2019.
Annual variable remuneration	Not applicable	Not applicable	Mr. SALLE does not receive any variable remuneration.
Deferred variable remuneration	Not applicable	Not applicable	Mr. SALLE does not receive any deferred variable remuneration.
Multi-annual variable remuneration (cash)	Not applicable	Not applicable	Mr. SALLE does not receive any multi-annual variable remuneration.
Exceptional remuneration	Not applicable	Not applicable	Mr. SALLE does not receive any exceptional remuneration.
Stock options, performance shares, and any other long-term remuneration element	Not applicable	Not applicable	Mr. SALLE does not receive any allocation of stock options or performance shares.
Remuneration allocated to directors	€52,445 (for the 2018 fiscal year)	€70,500.00	On April 26, 2018, the Board of Directors decided that Mr. SALLE would receive a fixed annual amount of remuneration allocated to directors of €70,000 for his duties as Chairman of the Board of Directors. In accordance with the applicable allocation rules decided by the Board on May 15, 2019, Mr. Philippe SALLE received, in 2020 for the year 2019, a fixed amount of remuneration allocated to the directors of €70,000 and also benefited from travel indemnity in the amount of €500.
Valuation of benefits of any kind	Not applicable	Not applicable	Mr. SALLE does not benefit from any benefit in kind
Severance pay	Not applicable	Not applicable	Mr. SALLE is not entitled to any severance pay.
Non-competition indemnity	Not applicable	Not applicable	Mr. SALLE is not entitled to any non-competition indemnity.
General Benefits plan	Not applicable	€3,879	The Board of Directors, at its meeting of April 26, 2018, authorised, in accordance with the procedure applicable to regulated agreements and provided for in Articles L. 225-38 *et seq.* of the French Commercial Code, the extension to Mr. SALLE of the general compulsory benefits plan of the Group applicable to all employees. This benefit was ratified by the General Meeting held on May 15, 2019. For 2019, the amount corresponding to the expense borne by the Company under this scheme represents €3,879 for Mr. SALLE.
Supplementary pension plan	Not applicable	Not applicable	Mr. SALLE does not benefit from a supplementary pension plan.

B. Remuneration elements paid or allocated for the 2019 financial year to Mrs. Sophie ZURQUIYAH, Chief Executive Officer, submitted to the shareholders for approval

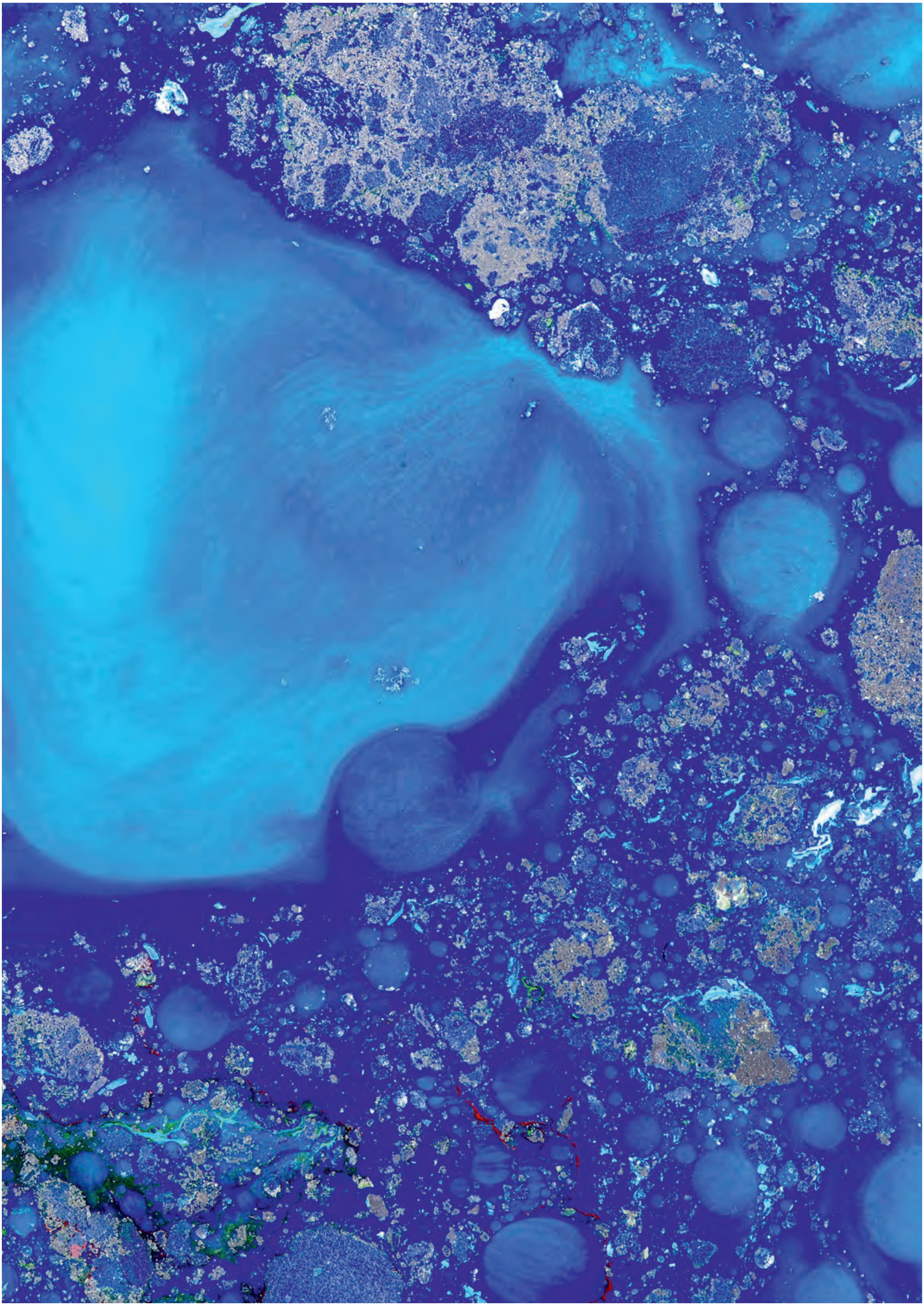
Remuneration elements put to the vote	Amounts paid for the year-end	Amount allocated for the year-end or accounting valuation	Information
Fixed remuneration	€630,000.00	Not applicable	On April 26, 2018, the Board of Directors decided that Mrs. ZURQUIYAH would receive a fixed annual remuneration of €630,000 for her duties as Chief Executive Officer. This fixed remuneration on an annual basis has remained unchanged for the year 2019.
Annual variable *remuneration (Payment of the annual variable remuneration is subject to approval by the General Meeting convened for June 16, 2020 under the conditions provided for in Article L. 225-100, III of the French Commercial Code)*	*€727,516.00 (for the 2018 fiscal year)*	€948,780.00	Mrs. ZURQUIYAH receives a variable remuneration subject to fulfilling qualitative objectives (representing one third of variable remuneration) and quantifiable objectives (representing two thirds of variable remuneration). The quantifiable criteria are based on fulfilling the Group's budgetary objectives, set by the Board of Directors. Her target amount is set to 100% of her fixed remuneration. For the 2019 financial year, the structure of the variable remuneration of Mrs. Sophie ZURQUIYAH was determined by the Board of Directors at its meeting of March 7, 2019, as follows: **The quantifiable criteria (financial objectives)** are as follows: • the Group's Net Cash Flow (25% weighting); • EBITDA free assets (25% weighting); • the Group's external turnover (25% weighting); and • operating income (25% weighting). **The qualitative criteria (extra-financial objectives)** are focused on: • implementation of the 2021 strategy (50% weighting); • human resources management (20% weighting); • operating performance of the Group (20% weighting); • HSE/Compliance (10% weighting). On the basis of fulfilling the above qualitative and quantifiable criteria and the financial statements for the year 2019, and upon recommendation of the Appointment and Remuneration Committee, the Board of Directors, at its meeting of March 5, 2020, set this variable remuneration at €948,780. This payment corresponds to an overall fulfilment rate of 150% of the objectives (out of a possible maximum of 166.67%). This rate is applied to the target amount of variable remuneration (corresponding to 100% of the annual fixed remuneration of Mrs. ZURQUIYAH). Payment of this remuneration will be subject to the approval by the General Meeting of June 16, 2020.
Deferred variable remuneration	Not applicable	Not applicable	Mrs. ZURQUIYAH does not receive any deferred variable remuneration.
Exceptional remuneration	Not applicable	Not applicable	Mrs. ZURQUIYAH did not receive any exceptional remuneration in 2019.
Remuneration allocated to directors	Not applicable	Not applicable	Mrs. ZURQUIYAH does not receive any remuneration allocated to directors.
General Benefits plan	Not applicable	€4,421.00	The Board of Directors, at its meeting of April 26, 2018, approved, in accordance with the procedure applicable to regulated agreements and provided for in Articles L. 225-38 *et seq.* of the French Commercial Code, the extension to Mrs. ZURQUIYAH of the general compulsory benefits plan of the Group applicable to all employees. This commitment was ratified by the General Meeting of May 15, 2019 (9^{th} resolution). For 2019, the amount corresponding to the expense borne by the Company under this scheme represents €4,421 for Mrs. ZURQUIYAH.
International medical insurance	Not applicable	€20,862.00	In accordance with the provisions of Articles L. 225-38 *et seq.* of the French Commercial Code, the Board of Directors, at its meeting of April 26, 2018, approved the conclusion of an international medical insurance contract for the benefit of Mrs. ZURQUIYAH. This commitment was ratified by the General Meeting of May 15, 2019 (9^{th} resolution). For 2019, the amount corresponding to the expense borne by the Company under this contract is €20,862 (US$23,435 converted in euros on the basis of a conversion rate of 0,8902).

Remuneration elements put to the vote	Amounts paid for the year-end	Amount allocated for the year-end or accounting valuation	Information
Valuation of benefits of any kind	Not applicable	€9,473	The Board of Directors, at its meeting of April 26, 2018, decided that for her duties as Chief Executive Officer for the 2018 financial year, Mrs. ZURQUIYAH would benefit from a company car, the reinstatement of which cannot give rise to a benefit in kind greater than an annual amount of €11,880.
	Not applicable	€11,094	In accordance with the procedure applicable to regulated agreements and provided for in Articles L. 225-38 et *seq.* of the French Commercial Code, the Board of Directors, at its meeting of April 26, 2018, authorised the conclusion of an individual insurance covering loss of employment with the GSC for the benefit of Mrs. ZURQUIYAH. A regularization of the benefit in kind linked to this insurance in respect of the year 2018 has been made over the financial year 2019 for an amount of €7,300. This guarantee provides for the payment of a maximum percentage of 14.15% of Mrs. Sophie ZURQUIYAH's target remuneration in 2019 (*i.e.* €178,306) over a period of 12 months. This commitment was ratified by the General Meeting of May 15, 2019 (9^{th} resolution).
Remuneration allocated to directors	Not applicable	Not applicable	Mrs. ZURQUIYAH does not receive any remuneration allocated to the directors.
Multi-annual variable remuneration (cash)	Not applicable	Not applicable	No multi-annual variable remuneration plan was implemented by the Company during the 2019 financial year.
Stock options, performance shares, and any other long-term remuneration *element (Valuation according to the method used for the consolidated accounts for the 2019 financial year)*		Stock options:	During its meeting of June 27, 2019, and on the basis of the 17^{th} resolution of the General Meeting of April 26, 2018, the Board of Directors allocated 360,000 stock options to Mrs. ZURQUIYAH, *i.e.* 0.05% of the share capital of the Company on the date of allocation.
		€176,342.00	The vesting of rights is subject to the condition of presence in June 2022 (*i.e.*3 years from the grant by the Board of Directors).
		The acquisition of rights is subject to the achievement of performance conditions and the final value will depend on the number of options finally acquired and the level of the share price on the date of exercise of the options.	The rights will be acquired subject to the fulfilment of a performance condition relating to a growth in the CGG stock market price at least equal to 75% of the relative change, over the acquisition period, of the PHLX Oil Service Sector^{SM} (OSX^{SM}) index, calculated on the acquisition date. The fulfilment of the performance condition gives the right to the allocation of 100% of the options on the date on which this fulfilment will be noted by the Board. The exercise price of the said options is €1.52, set on the basis of the average opening price of CGG shares over the twenty (20) trading days preceding the grant. The options have a term of eight years. The other conditions applicable to this plan are in paragraph 4.2.2.2.A of the Universal Registration Document for 2019.
		Performance shares: €316,589	During its meeting of June 27, 2019, and on the basis of the 18^{th} resolution of the General Meeting of April 26, 2018, the Board of Directors allocated 220,000 performance shares to Mrs. ZURQUIYAH, *i.e.* 0.03% of the share capital of the Company on the date of allocation. Thus, the acquisition of the shares is subject to a condition of presence in June 2022 (*i.e.* 3 years from the grant), subject to the fulfilment of two performance conditions assessed over the vesting period relating to: • achieving a cumulative Free EBITDA objective over the acquisition period (giving rise to the acquisition of 50% of the rights;if the objective is not achieved, no rights are acquired); • achieving an Average Net Debt to EBITDAs ratio objective by 2021 (giving rise to the acquisition of 50% of the rights;if the objective is not achieved, no rights are acquired). The other conditions applicable to this plan are in paragraph 4.2.2.2.A of the Universal Registration Document for 2019.

Remuneration elements put to the vote	Amounts paid for the year-end	Amount allocated for the year-end or accounting valuation	Information
Supplementary pension plan	Not applicable	€12,157	In accordance with the procedure applicable to regulated agreements and provided for in Articles L. 225-38 *et seq.* of the French Commercial Code, the Board of Directors, at its meeting of April 26, 2018, authorised the extension to Mrs. ZURQUIYAH of the collective defined-contribution funded pension plan implemented for the Group's executives since January 1, 2005. The contribution is calculated with reference to the Annual Social Security Ceiling: • tranche A – up to 1 Annual Social Security Ceiling: 0.5% employee contribution and 1% employer contribution; • tranche B – between 1 and 4 Annual Social Security Ceilings: 2% employee contribution and 3% employer contribution; • tranche C – between 4 and 8 Annual Social Security Ceilings: 3.5% employee contribution and 5% employer contribution. The contribution base consists exclusively of the gross annual remuneration for the year declared, the basic salary, the annual variable remuneration and the benefit in kind (company car). As a matter of principle, this base excludes any other remuneration element. For 2019, the amount corresponding to the expense borne by the Company under this scheme represents €12,157 for Mrs. Sophie ZURQUIYAH. This commitment was ratified by the Shareholders' Meeting of May 15, 2019 (9th resolution).

Remuneration elements put to the vote	Amounts paid for the year-end	Amount allocated for the year-end or accounting valuation	Information
Contractual Termination Indemnity	No amount paid to Mrs. ZURQUIYAH for the 2019 financial year	No amount allocated to Mrs. ZURQUIYAH for the 2019 financial year	The Board of Directors meeting on April 26, 2018, following the appointment of office by Mrs. Sophie ZURQUIYAH as Chief Executive Officer for a term of four years, also approved, for the duration of this term of office, the terms and conditions of the benefits granted to Mrs. Sophie ZURQUIYAH in the event of termination of her corporate office. These benefits were ratified during the General Meeting of May 15, 2019. The Board of Directors meeting on March 5, 2020 amended the terms of these benefits. They now have the following characteristics: Mrs. Sophie ZURQUIYAH benefits from a contractual termination indemnity in the event of revocation and non-renewal of her term of office in the twelve months following a change of control, in the absence of any situation of failure characterised by the non-achievement of the performance conditions described below; No payment shall be made in the event of serious or gross misconduct regardless of the reason for leaving. The payment of the contractual termination indemnity will depend on the average rate of achievement of the objectives relating to the annual variable portion of Mrs. Sophie ZURQUIYAH's remuneration for the last three financial years ended prior to the departure date, in accordance with the following rule: a) if the average achievement rate is less than 80%, no contractual termination indemnity will be paid; b) if the average achievement rate is equal to or greater than 80% and less than 90%, the contractual termination indemnity will be due at 50% of its amount; c)if the average achievement rate is equal to or greater than 90%, the contractual termination indemnity will be due on a straight-line basis between 90% and 100% of its amount. In the event of departure from the Group during the 2020 financial year, the achievement of performance conditions will exceptionally be measured by the Board of Directors over the two financial years ending prior to the date of the beginning of the notice period. This contractual termination indemnity will be equal to the difference between (i) a gross amount capped at 200% of the Annual Reference Remuneration and including all sums of any nature whatsoever, and on any basis whatsoever, to which Mrs. Sophie ZURQUIYAH may be entitled as a result of the termination, and (ii) all sums to which she may be entitled as a result of the implementation of the non-competition commitment. The aggregate of the contractual termination indemnity and the non-competition indemnity may under no circumstances exceed 200% of the Corporate Officer's Annual Reference Remuneration. Should the combined amount of the two benefits be greater, the contractual termination indemnity would be reduced by the amount of this cap. The Annual Reference Remuneration consists exclusively of the annual fixed remuneration received during the twelve rolling months prior to the notice date, plus the annual average of the variable remuneration due for the last three financial years ended prior to the departure date or beginning of the notice period, if applicable. At its meeting on March 5, 2020, the Board of Directors authorized, in accordance with the procedure applicable to regulated agreements provided for in Articles L. 225-38 *et seq.* of the French Commercial Code, the signature of an agreement formalizing these changes. The agreement concluded in this respect on March 6, 2020 is subject to the approval of the General Meeting of June 16, 2020 (7th resolution). It is specified that, the Board of Directors must acknowledge, prior to the payment of the special termination indemnity, (i) that the performance conditions described above have been met and (ii) that the contractual termination indemnity complies with the Corporate Governance Code in force at the date of the departure of the person concerned.

Remuneration elements put to the vote	Amounts paid for the year-end	Amount allocated for the year-end or accounting valuation	Information
Non-competition commitment indemnity	No amount paid to Mrs. ZURQUIYAH for the 2019 financial year	No amount allocated to Mrs. ZURQUIYAH for the 2019 financial year	Mrs. ZURQUIYAH has a non-competition commitment applicable to activities involving services for the acquisition, processing or interpretation of geophysical data, or the supply of equipment or products designed for the acquisition, processing or interpretation of geophysical data, and involving the contribution of the person concerned to projects or activities in the same field as those in which she participated within the CGG group. In consideration for this commitment for a period of 18 months from the date of the termination of Mrs. ZURQUIYAH's duties, she would receive remuneration corresponding to 100% of her Annual Reference Remuneration. The Board of Directors' meeting of December 11, 2019 authorized the modification of the terms of payment of the commitment in order to bring it into compliance, in particular, with the recommendations of the AFEP-MEDEF code and the provisions resulting from Order no. 2019-1234 of November 27, 2019 and the decree of the same date adopted for its application, and the signature of an agreement formalizing these modifications. Pursuant to these amendments, the allowance will be paid in instalments and will not be payable when the person concerned claims his or her pension rights and, in any event, beyond the age of 65. The agreement concluded in this respect on March 6, 2020 is subject to the approval of the General Meeting of June 16, 2020 (7th resolution).



5

Operating and financial review

5.1 Operating and financial review

Group organization

Strategic Plan, changed segment presentation and discontinued operations

We organized our activities in four segments for financial reporting: (i) Contractual Data Acquisition, (ii) Geology, Geophysics & Reservoir ("GGR"), (iii) Equipment and (iv) Non-Operated Resources, which are described below under the heading "– Description of our segments."

In November 2018, at our "Capital Markets Day", we announced a new strategy for our Group that included the transition to an asset-light model by reducing CGG's exposure to the Contractual Data Acquisition business.

As a result of these strategic announcements and actions undertaken since then, our Contractual Data Acquisition segment and part of our Non-Operated Resources segment were presented as discontinued operations in our income statement and assets held for sale in our balance sheet in accordance with IFRS 5. This presentation applied for the first time as of and for the year ended December 31, 2018 and 2019 (and applied retroactively as of and for the years ended December 31, 2016 and 2017). The discussion in this operating and financial review is based on the new presentation.

The costs of implementation of our strategic plan described above, referred to as the "CGG 2021 Plan", are reported in discontinued operations in the related Contractual Data Acquisition business lines.

Exit of Data Acquisition business

Marine Exit and Streamer NewCo

In June 2019 together with Shearwater GeoServices Holding AS ("Shearwater"), we announced the signature of a binding term sheet that included the following elements:

(i) Shearwater's acquisition of all the shares in Global Seismic Shipping AS ("GSS"), the 50/50 joint venture between Eidesvik Offshore ASA and CGG. GSS, through subsidiaries, owns five high-end seismic vessels and two legacy vessels with associated bank debt. Shearwater also agreed to acquire the streamers owned by CGG, which were associated with GSS's five high-end seismic vessels;

(ii) A five-year services contract (the "Capacity Agreement") between Shearwater and CGG. Under this agreement, CGG committed to using Shearwater for 730 vessel days annually on average over five years with flexibility in terms of actual utilization. The Capacity Agreement ensures our access to strategic capacity for our future multi-client projects through Shearwater's global fleet of high-end 3D and source vessels;

(iii) The establishment of a technology partnership through the creation of a company under the Sercel brand name and with CGG's majority ownership to which the parties will contribute their respective towed marine streamer equipment businesses. The company will be focused on the development, manufacturing, commercialization and support of streamers, navigation software and steering systems (the "Streamer Newco Transaction"). The closing of Shearwater's acquisition of the shares in GSS and the streamers and the entry into force of the Capacity Agreement, took place on January 8, 2020 (the "Marine Closing"). The agreements for the Streamer Newco Transaction remain under negotiation.

All impacts of the Marine Closing have been taken into consideration in the financial statement of position as at December 31, 2019 through the remeasurement of the fair value less cost to sell of the Marine disposal group for a net amount of US$(108.3) million.

Divestment in Seabed Geosolutions BV

In line with our strategy to exit the Contractual Data Acquisition business, on December 30, 2019 CGG SA entered into a Share Purchase and Exit Agreement ("Exit Agreement") to transfer on that date 15% (out of its total 40% stake) of its shares in the Seabed Geosolutions BV joint venture ("Seabed") to its partner Fugro NV ("Fugro"), with its remaining 25% shareholding to be transferred before April 1, 2020.

In addition, CGG SA paid US$35 million to Fugro to settle any disputes and claims between them relating to Seabed, such as those related to the partners' respective obligations to jointly finance Seabed and the differing interpretations of non-competition provisions in the Seabed joint venture agreement.

Land exit

CGG progressively reduced the land data acquisition business over 2019 and fully shut down activity in the first quarter of 2020. Some of the assets used in this business were sold for US$3 million during 2019, and the rest is currently for sale. Most of the corresponding staff have departed under the social plan described below.

Multi-Physics exit

We started discussions with potential acquirers of our Multi-Physics business in 2019. The negotiations are progressing, and we signed a memorandum of understanding in February 2020.

CGG continues to carry out these strategic changes in compliance with all legal requirements.

GeoSoftware

In 2019, after CGG was approached by several potential buyers interested in GeoSoftware, which is part of the GGR segment, the related assets were reclassified to the line "assets held for sale" and liabilities to the line "liabilities directly associated with the asset classified as held for sale". The GeoSoftware activity does not meet the criteria of a major line of business under IFRS 5, therefore the GeoSoftware operations were not presented as discontinued operations in the consolidated statements of operations and in the consolidated statements of cash flows (hence triggering no retrospective presentation).

For more information on these transactions, please refer to note 2 and note 5 to our Consolidated Financial Statements.

Description of our segments

Financial information by segment is reported in accordance with our internal reporting system and provides internal segment information that is used by the chief operating decision maker to manage and measure performance. A summary of our segments is set out below.

Continuing operations

GGR

This operating segment comprises the Geoscience business lines (processing and imaging of geophysical data, reservoir characterization, geophysical consulting and software services, geological data library and data management solutions) and the multi-client data business line (development and management of seismic surveys that we undertake and licence to a number of clients on a non-exclusive basis). Both activities regularly combine their offerings, generating overall synergies between their respective activities.

Equipment

This operating segment comprises our manufacturing and sales activities for seismic equipment used for data acquisition, both on land and marine. The Equipment segment carries out its activities through our subsidiary Sercel.

Discontinued operations

Contractual Data Acquisition

This operating segment comprises the following business lines:

- Marine: offshore seismic data acquisition undertaken by us on behalf of a specific client; and
- Land and Multi-physics: other seismic data acquisition undertaken by us on behalf of a specific client.

Non-Operated Resources

We started implementing our Transformation Plan in the first quarter of 2014 to address the cyclical trough in the seismic market, and as market conditions deteriorated further, we implemented additional steps, ultimately downsizing our marine fleet to five 3D high-end vessels. As a result, some of our owned vessels were not operated for a certain period of time. The costs of the non-operated acquisition resources as well as the costs of the implementation linked to the downsizing of our Contractual Data Acquisition businesses are reported in the discontinued operations portion of this segment.

Factors affecting our results of operations

Our operating results are generally affected by a variety of factors, some of which are described below and others that are set out in paragraphs 1.2 "Business Description" and 2.1 "Risks Factors". In particular, our results of operations are affected by the geophysical market environment, which is discussed in those paragraphs.

Geophysical market environment

Overall demand for geophysical services and equipment is dependent on spending by oil and gas companies for exploration, development and production and field management activities. We believe the level of spending of such companies depends on their assessment of their ability to efficiently supply the oil and gas market in the future and the current balance of hydrocarbon supply and demand. The geophysical market has historically been extremely volatile. We believe many factors contribute to the volatility of this market, such as the geopolitical uncertainties that can harm the confidence and visibility that are essential to our clients' long-term decision-making processes and the expected balance in the mid- to long-term between supply and demand for hydrocarbons. Lower or volatile hydrocarbon prices tend then to limit the demand for seismic services and products. In recent years, oil and gas companies have reduced their exploration and production spending due to falling or volatile oil prices, affecting demand for our products and services as reflected in our results.

The Covid-19 crisis, which started in China in December 2019, impacted the overall commodity demand since the beginning of 2020 and caused significant drop in Brent oil price, which decreased from US$63/bl on December 31, 2019 down to US$50/bl on March 5, 2020, the date of approval of 2019 accounts by the CGG Board of Directors. This evolutive situation which may negatively affect the activity is scrutinized. It had no impact as of December 31, 2019.

Fixed costs, fleet reduction, Transformation Plan, and CGG 2021

The Group had high fixed costs and its seismic data acquisition activities required substantial capital expenditures and long-term contractual commitments. As discussed below, the Group took steps to reduce its costs in the past, and the current strategy involves the transition to an asset-light model with reduced exposure to the data acquisition business.

In order to lower our high fixed cost base in light of the difficult market environment, the Group took drastic measures to reduce the operated seismic fleet, from 18 vessels in 2014 to five 3D high-end vessels by the end of 2016, mainly dedicated to multi-client programs. Within the context of the Transformation Plan, the Group implemented additional measures in 2017 to further reduce our maritime exposure and improve the fleet's competitiveness, through the new ownership set up for our seismic fleet, that allowed us to access high-end capacity at a fair market price while externalizing the cold-stacking costs.

Because structural marine overcapacity continued putting pressure on prices down to very low level, in November 2018, the Group decided to further downsize the fleet to three vessels in 2019 and to find a strategic partnership with the objective to not operate any vessels by 2021. In June 2019, CGG signed a binding term-sheet with Shearwater. Such transaction including Shearwater's acquisition of the shares in GSS and the streamers, and the entry into force of the Capacity Agreement (the "Marine Closing") closed on January 8, 2020.

As of December 31, 2019, we operated three 3D high end vessels.

For more information on the Marine strategic partnership, please refer to note 2 and note 5 to our Consolidated Financial Statements.

Write-off, impairment and restructuring costs

To adjust to the volatile market environment, the Group may have to incur restructuring costs, as it did over the last years with its Transformation Plan, or, more recently, within the context of the CGG 2021 Plan. The group had in the past and may have in the future impairment losses or write-offs as events or changes in circumstances occur that reduce the fair value of an asset below its book value.

In 2019, in Continuing Operations, we recognized impairments and restructuring costs as follows:

- US$3 million of restructuring costs corresponding mainly to sundry right sizing measures;
- US$6 million of impairment mainly relating to buildings (notably in the United States);
- US$33 million of impairment of Multi-Client surveys mostly due to changes in government regulations in Ireland and Africa;

In 2019, in Discontinued Operations, we recognized US$156 million of impairments of assets and restructuring costs as part of the CGG 2021 Plan, comprising:

- US$12 million of restructuring costs, mostly related to exit, agency wind down measures, and advisory fees;
- US$50 million of net impairment loss, including US$44 million of impairment loss recognized on the remeasurement to fair value less cost to sell for the disposal groups and US$6 million of impairment of intangible assets in Multi-Physics;
- US$94 million of losses on divestment in Seabed Geosolutions BV, including the US$35 million settlement payment to Fugro.

In 2018, in Continuing Operations, we recognized write-offs, impairments and restructuring costs as follows:

- US$18 million of costs relating to the Transformation Plan and the financial restructuring;
- US$30 million of valuation allowance of Sercel inventory;
- US$240 million of impairment (mainly linked to the US Gulf of Mexico Stagseis data library for US$197 million).

In 2018, in Discontinued Operations, write-offs, impairments and net restructuring costs related to our Transformation Plan amounted to US$27 million (mainly redundancy packages). As part of the CGG 2021 Plan, we recognized US$402 million of impairments, provisions and restructuring costs at the operating income level in 2018, including:

- US$139 million of write-offs and impairments of assets;
- US$126 million of provisions for onerous contracts related to the reduction of our operating fleet from 5 to 3 vessels; and
- US$137 million of additional provisions, mainly related to redundancy costs.

For more information on these line items, please refer to note 5 "Non-current Assets held for sales and discontinued operations" and note 22 "Other revenues and expenses" to our Consolidated Financial Statements.

Foreign exchange fluctuations

As a company that derives a substantial amount of its revenues from international sales, that are often denominated or linked to the US dollar but with costs that are to a certain extent denominated in euros, our results of operations are affected by fluctuations in currency exchange rates. Changes between the US dollar and euro or other currencies may adversely affect our business by negatively impacting our results of operations and earnings. The exchange rates as of December 31, 2018 and 2019 were, US$1.1450 and US$1.1233, respectively, per euro, and the average exchange rates for the years 2018 and 2019 were US$1.1828 and US$1.1208, respectively, per euro.

For more information on these line items, please refer to chapter 2.1 "Risk factors".

Seasonality

We have historically experienced higher levels of activity in our Equipment manufacturing operations in the fourth quarter as our clients seek to fully deploy annual budgeted capital. The same happens in our Multi-Client activity with oil and gas companies that seek to fully deploy their exploration budget in the last quarter of the year.

Accounting policies

The following operating and financial review and prospects should be read in conjunction with our Consolidated Financial Statements and the notes thereto included in this annual report, which have been prepared in accordance with International Financial Reporting Standards (IFRS) and its interpretations as issued by the International Accounting Standards Board (IASB) and as adopted by the European Union as at December 31, 2019.

Our significant accounting policies are fully described in note 1 to our consolidated financial statements.

IFRS 16 application

CGG implemented IFRS 16 effective January 1, 2019 with a modified retrospective application. Therefore, the cumulative effect of adopting IFRS 16 was recognized as an adjustment to the opening balance of retained earnings on January 1, 2019, with no restatement of comparative information.

The impact of IFRS 16 on the net income from continuing operations in 2019 was not material, as the increase in depreciation and financial expense was offset by the decrease in operating lease expense. Similarly, in 2019, operating and investing cash flows from continuing operations increased and financing cash flows from continuing operations decreased by approximately US$50 million as operating lease payments are now treated as financial debt repayment.

For more information, please refer to note 1.3 "New standards impacts".

IFRS 15 application, internal reporting and Segment figures

CGG implemented the new accounting standard for revenue, IFRS 15, on January 1, 2018 with a modified retrospective application. Therefore, the cumulative effects of adopting IFRS 15 were recognized as an adjustment of the opening balances on January 1, 2018, with no restatement of comparative information.

The only change from Group historical practices related to recognition of multi-client prefunding revenues. Before the implementation of IFRS 15, the Group applied the percentage of completion method for these revenues. Following the implementation of IFRS 15, the Group, instead recognizes multi-client prefunding revenues only upon delivery of final processed data. Consequently, the implementation of IFRS 15 impacts the timing of revenue recognition and amortization compared to previous accounting principles that provided for recognition of revenues and amortization over time as work was carried out. Multi-client prefunding revenues and related amortization are generally recognized later under IFRS 15 compared to the previous accounting principles.

Although IFRS fairly presents the Group's statement of financial position, for internal reporting purposes, CGG management continues to apply the previous (pre-IFRS 15) revenue recognition principle, with multi-client prefunding revenues recorded based on percentage of completion. CGG management believes this method aligns revenues more closely with the activities and resources used to generate it and provides useful information as to the progress made on multi-client surveys, while also allowing for useful comparison across time periods.

CGG therefore presents the Group's results of operations in two ways:

(i) the "Reported" or "IFRS" figures, prepared in accordance with IFRS, with multi-client prefunding revenues recognized upon delivery of the final data;

(ii) the "Segment" figures, for purposes of internal management reporting, prepared in accordance with the Group's previous method for recognizing multi-client prefunding revenues.

Beyond IFRS 15, the "Segment" figures also exclude the financial impacts of events and/or decisions made in consideration of exceptional conditions, such as the Group's Transformation Plan and its financial restructuring completed in February 2018. CGG management believes that Segment figures presented this way provide a useful indication of the underlying profitability of operating activities for the period, while allowing for better tracking of organic performance and comparison across periods.

However, other companies may present Segment and related measures differently than we do. Segment figures are not a measure of financial performance under IFRS and should not be considered as an alternative to operating revenues, operating income or any other measures of performance derived in accordance with IFRS as indicators of our operating performance.

Changes in estimate for multi-client surveys amortization

Because the majority of the multi-client surveys sales take place during the prefunding phase and the subsequent four years and in order to harmonize reporting practices with other multi-client players, we decided from October 1, 2018 to adopt a four-year straight-line post-delivery amortization in accordance with the industry standard. Amortization was previously based on the sales forecast method (80% of the sales in most cases).

The prefunding cost of sales, recognized concurrently with the revenue upon delivery of the survey, is calculated from October 1, 2018 as the difference between the total capitalized cost of a survey upon delivery and the fair value based upon discounted future expected sales. The net book value of the survey upon delivery thus equals the net present value of future expected sales. Prefunding cost of sales was previously 80% of the prefunding sales recognized upon delivery.

5.1.1 Acquisitions and divestitures

During the periods under review, the most significant change to our perimeter was the divestment from Seabed as described above.

For more information regarding other acquisitions and divestitures, please refer to note 2 "Significant Events, Acquisitions and Divestitures" to our Consolidated Financial Statements.

5.1.2 Year ended December 31, 2019 compared to year ended December 31, 2018

Unless otherwise specified, comparisons made in this section are between the twelve months ended December 31, 2019 and the twelve months ended December 31, 2018. References to 2019 correspond to the twelve months ended December 31, 2019 and references to 2018 correspond to the twelve months ended December 31, 2018.

Operating Revenues

The following table sets forth our operating revenues by division for each of the periods stated:

	2019			2018			Increase/(Decrease)	
In millions of US$	**Segment figures**	**IFRS 15 adjustment**	**As reported**	Segment figures	IFRS 15 adjustment	As reported	Segment figures	As reported
Geoscience	385.2	–	385.2	396.0		396.0	(3)%	(3)%
Multi-Client Data	574.7	(44.6)	530.1	517.4	(33.9)	483.5	11%	10%
GGR Revenues	**959.9**	**(44.6)**	**915.3**	**913.4**	**(33.9)**	**879.5**	**5%**	**4%**
Equipment Revenues	**452.1**	**-**	**452.1**	**350.8**		**350.8**	**29%**	**29%**
Eliminated revenues and others	(11.5)	–	(11.5)	(36.8)		(36.8)	–	–
Total operating revenues	**1,400.5**	**(44.6)**	**1,355.9**	**1,227.4**	**(33.9)**	**1,193.5**	**14%**	**14%**

Our consolidated operating revenues as reported, following the implementation of IFRS 15, increased by 14% to US$1,356 million in 2019 from US$1,194 million in 2018.

The respective contributions from the Group's businesses to our segment operating revenues were 69% from GGR and 31% from Equipment in 2019.

GGR

In 2019, GGR revenues as reported increased by 4% compared to 2018. Excluding IFRS 15 adjustments, GGR segment revenues increased by 5% to US$960 million from US£913 million in 2018.

Geoscience

Operating revenues from our Geoscience business lines decreased 3% to US$385 million in 2019 from US$396 million in 2018, mainly due to project delays and increased focus on more profitable businesses. In 2019, Geoscience expanded its position in the Middle East, particularly in Abu Dhabi and Kuwait. The demand for high-end OBN (ocean bottom node) projects remained strong.

Multi-Client Data

Multi-Client Data revenues as reported increased by 10% in 2019 compared to 2018. Excluding IFRS 15 negative adjustments of US$45 million, Multi-Client Data segment revenues were up 11% at US$575 million in 2019.

Prefunding revenues as reported decreased by 4% to US$174 million in 2019. Excluding IFRS 15 adjustments, prefunding segment revenues increased by 1% to US$218 million in 2019 from US$216 million in 2018, despite capital expenditures' decreasing by 17%, down to US$186 million in 2019 mostly due to programs and permits delays. The cash-prefunding rate was 118%, compared to 97% reached in 2018.

After-sales revenues were very strong in active basins at US$356 million in 2019, up 18% compared to US$302 million in 2018, including a significant one-off transfer fee in Q3 2019. Without the non-recurring transfer fee portion, after-sales revenues would have been essentially flat in 2019 compared to 2018.

Equipment

Total revenues for our Equipment segment (including internal and external sales) increased by 29% to US$452 million in 2019.

Internal sales represented 3% of total revenues in 2019 compared to 10% in 2018. External revenues for our Equipment segment increased by 40% to US$441 million in 2019 from US$314 million in 2018, due to higher land equipment volumes with more deliveries of 508XT systems.

Land equipment sales represented 72% of total revenues in 2019, compared to 61% in 2018, with significant deliveries in the Middle East, Russia and North Africa (with close to 100 thousand 508XT channels delivered in the fourth quarter of 2019) and the first sale of our new, recently launched WiNG system.

Marine equipment sales represented 18% of total revenues in 2019 compared to 26% in 2018 as a result of demand for streamers replacement continuing to be constrained by low capital expenditures from our customers. Our Equipment segment is preparing for the ramp-up to manufacture the first batch of GPR nodes launched in late 2019.

Downhole gauges sales represented 7% of equipment revenues in 2019 and 10% in 2018, with sales of artificial lift gauges slowing in the United States.

Non-oil field related sales increased compared to 2018 and represented 4% of total revenues in 2019.

Operating expenses

In millions of US$	December 31, 2019		December 31, 2018	
	Segment figures	As reported	Segment figures	As reported
Operating revenues	1,400.5	1,355.9	1,227.4	1,193.5
Costs of operations	(1,007.8)	(967.0)	(930.7)	(931.0)
% of operating revenues	*(72)%*	*(71)%*	*(76)%*	*(78)%*
Gross margin	**393.4**	**389.6**	**298.1**	**263.9**
% of operating revenues	28%	29%	24%	22%
Research and development	(23.6)	(23.6)	(30.5)	(30.5)
% of operating revenues	*(2)%*	*(2)%*	*(2)%*	*(3)%*
Marketing and selling	(47.0)	(47.0)	(45.9)	(45.9)
% of operating revenues	*(3)%*	*(3)%*	*(4)%*	*(4)%*
General and administrative	(66.2)	(66.2)	(81.1)	(81.1)
% of operating revenues	*(5)%*	*(5)%*	*(7)%*	*(7)%*
Other incomes (expenses)	(9.3)	(9.3)	1.7	(286.1)
Operating income	**247.3**	**243.5**	**142.3**	**(179.7)**
% of operating revenues	*18%*	*18%*	*12%*	*(15)%*

The amortization cost of our seismic library as reported corresponded to 58% of the multi-client data revenues as reported in 2019 compared to 67% in 2018. Excluding IFRS 15 adjustments, the segment amortization costs of our seismic library decreased to 61% of the multi-client data segment revenues in 2019 compared to 63% in 2018, mainly due to a favourable after-sales mix despite impairments.

Cost of operations as reported, including depreciation and amortization, increased by 4% to US$967 million in 2019 compared to US$931 million in 2018, mainly as a consequence of the significant growth in activity of our Equipment segment, partially offset by the reduction in amortization costs of our seismic library as mentioned above.

As a percentage of operating revenues as reported, cost of operations as reported decreased to 71% in 2019 from 78% in 2018. Excluding IFRS 15 adjustments, segment cost of operations decreased to 72% in 2019 from 76% in 2018 mainly due to activity and revenue increase triggering better absorption of structure costs.

Gross margin as reported increased to US$390 million in 2019 from US$264 million in 2018, representing 29% and 22% of operating revenues, respectively as a result of the factors discussed above. Segment gross margin was a profit of US$393 million in 2019, representing 28% of segment operating revenues and 24% of segment operating revenues in 2018.

Research and development expenditures decreased to US$24 million in 2019 from US$31 million in 2018, representing 2% and 3% of operating revenues as reported, respectively. They also represented 2% of segment operating revenues in 2019. The decrease in research and development expenditures in 2019 compared to 2018 is mainly due to the write-down of a research tax credit in the United States in 2018.

Marketing and selling expenses increased by 2% to US$47 million in 2019 from US$46 million in 2018. They represented 3% of operating revenues as reported and of segment operating revenues in 2019, compared to 4% in 2018.

General and administrative expenses decreased by 18% to US$66 million in 2019 from US$81 million in 2018, mostly due to (i) the reduction in support costs as part of our CGG 2021 Plan and (ii) a favourable exchange rate environment with an average rate of US$1.12 per euro for 2019 compared to US$1.18 per euro in 2018. General and administrative expenses represented 5% of operating revenues as reported in 2019 from 7% in 2018. Excluding IFRS 15 adjustments, they represented 5% of segment operating revenues in 2019.

Other expenses were US$9 million in 2019, including US$5 million of impairment relating mainly to unused spaces in buildings (notably in the United States) and US$3 million of net restructuring costs relating to sundry right sizing measures. In 2018, other expenses as reported amounted to US$286 million, including mostly US$240 million of impairment of intangible assets principally related to our offshore multi-client library and,US$30 million of valuation allowance of inventory and US$18 million of other restructuring costs relating to our Transformation Plan and financial restructuring (mostly fees relating to the financial restructuring completed in early 2018).

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Operating income

Operating income as reported amounted to a gain of US$244 million in 2019 as a result of the factors described above, compared to a loss of US$180 million in 2018. Excluding IFRS 15 adjustments, the impact of the Transformation Plan and the financial restructuring and impairments and provisions, the segment operating income amounted to a gain of US$247 million in 2019 compared to a gain of US$142 million in 2018.

Segment operating income from our GGR segment was an income of US$212 million in 2019 compared to an income of US$176 million in 2018, mainly coming from a favourable sales mix in Multi-Client, boosted by the one-off transfer fee, while Geoscience businesses delivered a steady performance.

Segment operating income from our Equipment segment was an income of US$67 million in 2019 compared to an income of US$12 million in 2018, mostly due to high volumes in land equipment sales driving a better absorption of manufacturing costs.

Equity in income of affiliates

Net income from investments accounted for under the equity method was nil in 2019 compared to a loss of US$1 million in 2018.

Financial income and expenses

Net cost of financial debt increased by 3% to US$132 million in 2019 from US$127 million in 2018 mostly due to the payment in kind feature in our second lien senior secured notes due 2024 and the impact of the application of IFRS 16 which amounted to US$7 million in 2019.

Other financial income and expenses amounted to an income of US$6 million in 2019, compared to an income of US$820 million in 2018, mainly resulting from the strong positive impact of our financial restructuring for US$771 million.

Income taxes

Income taxes as reported amounted to an income of US$9 million in 2019 compared to an expense of US$7 million in 2018, mainly due to deferred taxation impacts in France and in the United States.

Net income from continuing operations

Net income as reported from continuing operations amounted to US$126 million in 2019 compared to a gain of US$504 million in 2018 as a result of the factors discussed above.

Excluding IFRS 15 adjustments, the impact of the Transformation Plan and the financial restructuring and impairments and provisions, segment net income from continuing operations amounted to a gain of US$130 million in 2019 compared to a gain of US$78 million in 2018.

Net income from discontinued operations

Operating revenues for Contractual Data Acquisition decreased by 15% to US$191 million in 2019 from US$226 million in 2018.

Operating expenses decreased by 58% to US$198 million in 2019 from US$340 million in 2018 due to the wind-down of activities.

Other expenses amounted to US$156 million in 2019, including:

(i) US$12 million of restructuring costs, mostly related to exit and wind down measures;

(ii) US$50 million of net impairment loss, including US$44 million of impairment loss recognized on the remeasurement to fair value less cost to sell for the disposal groups and US$6 million of impairment of intangible assets in Multi-Physics; and

(iii) US$94 million of losses on thedivestment in Seabed Geosolutions BV, including the US$35 million settlement payment to Fugro.

Other expenses net amounted to US$425 million in 2018, including (i) US$402 million of impairments and provisions relating to our CGG 2021 Plan, (ii) US$ 27 million of net restructuring costs relating to our Transformation Plan and (iii) US$4 million of net gain on sales of assets.

Net loss from discontinued operations amounted to US$188 million in 2019 compared to a loss of US$600 million in 2018 as a result of factors described above.

Net income

Net loss as reported was US$62 million in 2019 compared to a loss of US$96 million in 2018 as a result of the factors discussed above.

Net income attributable to the shareholders of CGG SA was US$(69) million (€(62) million) in 2019 compared to net loss of US$102 million (€86 million) in 2018.

Statutory financial statements of CGG SA

Operating revenues of CGG SA in 2019 were €26 million compared to €28 million in 2018.

Operating loss in 2019 amounted to €17 million compared to a loss of €16 million in 2018.

Financial income amounted to €195 million in 2019 compared to a loss of €152 million in 2018, mainly as a consequence of (i) dividends received from affiliates for €216 million compared to €260 million in 2018, (ii) a net reversal of provisions for €18 million mainly related to the exit of Seabed compared to a provision allowance of € (474) million in 2018, and (iii) interests income on loans to affiliates; offset by (iv) interests expenses of €79 million compared to €69 million in 2018.

Extraordinary income and expense amounted to an expense of €(101) million in 2019, including mainly due to the sale of Seabed shares for €(75) million and the €(31) million payment to Fugro to terminate the Seabed joint venture agreement. Extraordinary income and expense amounted to expense of €(103) million in 2018, including financial restructuring costs of €(41) million and €(64) million of grants provided by CGG SA to its subsidiary CGG International SA.

Net income tax was a credit of €20 million in 2019 partly resulting from the reversal of the provision for the use of subsidiaries' deficits. Net income tax was nil in 2018.

Net income was an income of €97 million compared to a net loss of €271 million in 2018, resulting from the above factors.

The shareholders' equity as of December 31, 2019 amounted to €1.9 billion compared to €1.8 billion as of December 31, 2018 including the net income for the period of €97 million.

No dividend has been distributed in the last three fiscal years.

5.1.3 Comments on the financial situation of the Company and the Group

Liquidity and capital resources

Our principal financing needs are the funding of ongoing operations and capital expenditures, investments in our Multi-client data library, the funding of restructuring measures relating to the "CGG 2021 Plan" and of our debt services obligations. We do not have any major debt repayment scheduled before 2023, the maturity date of our first lien senior secured notes. We intend to fund our capital requirements through cash generated by operations and liquidity on hand. In the past we have obtained financing through bank borrowings, capital increases and issuances of debt and equity-linked securities.

Our ability to make scheduled payments of principal, or to pay the interest or additional amounts, if any, or to refinance our indebtedness, or to fund planned capital expenditures will depend on our future performance, which, to a certain extent, is subject to general economic, financial, competitive, legislative, regulatory and other factors that are beyond our control.

Cash flows

Operating activities

The following table presents a summary of the net cash provided by operating activities for each of the periods stated:

	Year ended December 31, 2019			
In millions of US$	**Segment figures**	**Transformation Plan, provisions and impairments**	**IFRS 15 adjustments**	**As reported**
Net cash before changes in working capital	682.4	–	(44.6)	637.8
Change in working capital	69.0	–	44.6	113.6
Net cash provided by operating activities	751.4	–	–	751.4

	Year ended December 31, 2018			
In millions of US$	Segment figures	Transformation Plan, provisions and impairments	IFRS 15 adjustments	As reported
Net cash before changes in working capital	543.4	(75.4)	(33.9)	434.1
Change in working capital	(113.2)	10.5	33.9	(68.8)
Net cash provided by operating activities	430.2	(64.9)	–	365.3

Before changes in working capital, net cash provided by operating activities in 2019 was US$638 million compared to US$434 million in 2018 mainly due to increased profitability of our continuing operations in a context of solid revenue growth. Changes in working capital had a positive impact on cash from operating activities of US$114 million in 2019 compared to a negative impact of US$69 million in 2018, mainly due to a significant decrease in accounts receivables (as a result of the collection in 2019 of the high revenue from the fourth quarter of 2018 and faster than usual collection in the fourth quarter of 2019).

Net cash provided by operating activities was US$751 million in 2019 compared to US$365 million in 2018.

Investing activities

The following table presents the summary of main items of net cash used in investing activities for each of the periods stated:

	Year ended December 31,	
In millions of US$	**2019**	2018
Net cash used in investing activities	**261.5**	**300.8**
Of which		
Industrial capital expenditures	42.9	44.9
Capitalized development costs	32.4	33.1
Multi-Client Data	185.7	222.8

Net cash used in investing activities was US$262 million in 2019 compared to US$301 million in 2018. In 2019, we slightly decreased our industrial capital expenditures inclusive of the Sercel lease pool, and net of asset suppliers' variance to US$43 million compared to US$45 million in 2018, while we kept development costs stable.

The decrease in multi-client data was principally due to lower capital expenditures in delayed offshore multi-client projects (permits delays in particular). We invested in multi-client data primarily in Brazil, North Sea and US Land during 2019, while in 2018 we invested primarily in Latin America, Mozambique and Scandinavia.

As of December 31, 2019, the net book value of our multi-client data library as reported was US$531 million compared to US$633 million as of December 31, 2018. Excluding IFRS 15 adjustments, the segment net book value of our multi-client data library was US$376 million as of December 31, 2019, compared to US$519 million as of December 31, 2018.

For more information regarding investing activities, please refer to paragraph 1.4 "Investing activities".

Financing activities

The net cash flow used by financing activities was US$142 million in 2019 compared to net cash provided of US$191 million in 2018 as the result of the finalization of our financial restructuring plan on February 21, 2018

In 2019, the net cash flow used by financing activities includes US$57 million of lease repayments, mostly resulting from the application of IFRS 16.

For more information on these line items, please refer to note 13 to our Consolidated Financial Statements.

Net cash flow from discontinued operations

The following table presents a summary of the cash flows of the discontinued operations for each of the periods stated:

	Year ended December 31,	
In millions of US$	**2019**	2018
Net cash-flow provided by operating activities	(92.7)	(113.6)
Net cash-flow used in investing activities	(37.5)	(5.7)
Net cash-flow provided by (used in) financing activities	(37.4)	–
NET CASH FLOW FROM DISCONTINUED OPERATIONS	**(167.6)**	**(119.3)**

The net cash flow incurred by discontinued operations was US$168 million in 2019 compared to net cash incurred of US$119 million in 2018. In 2019, the net cash flow incurred by discontinued operations included disbursements related to the CGG 2021 Plan for an amount of US$136 million, including the settlement payment of US$35 million to Fugro relating to our exit from Seabed.

Financial debt

As of December 31, 2019, our material financing arrangements consisted of US$300 million and €280 million first lien senior secured notes due 2023 and US$355million and €80 million second lien senior secured notes due 2024.

"Gross financial debt" is the amount of bank overdrafts, plus current portion of financial debt, plus financial debt, and "net financial debt" is gross financial debt less cash and cash equivalents. Net financial debt is presented as additional information because we understand that certain investors believe that netting cash against debt provides a clearer picture of our financial liability exposure. However, other companies may present net financial debt differently than we do. Net financial debt is not a measure of financial performance under IFRS and should not be considered as an alternative to any other measures of performance derived in accordance with IFRS.

Gross financial debt was US$1,326 million as of December 31, 2019 compared to US$1,167 million as of December 31, 2018. The increase in the gross debt was mainly due to the impact of IFRS 16 application as of January 1, 2019, which amounted to US$132 million as of December 31, 2019.

Net financial debt was US$716 million as of December 31, 2019 compared to US$733 million as of December 31, 2018. Excluding IFRS 16, net financial debt was US$584 million as of December 31, 2019.

The ratio of net debt to equity as of December 31, 2019 and 2018 was 46% and 45%, respectively.

The amount of our financial debt was materially reduced by our financial restructuring, which was completed on February 21, 2018.

The following table presents a reconciliation of net financial debt to financing items of the balance sheet at December 31, 2019 and 2018 (according to IFRS):

	Year ended December 31,	
In millions of US$	**2019**	2018
Bank overdrafts	0.0	0.0
Current portion of financial debt	59.4	17.8
Financial debt	1,266.6	1,148.9
Gross financial debt	**1,326.0**	**1,166.7**
Less cash and cash equivalents	(610.5)	(434.1)
NET FINANCIAL DEBT	**715.5**	**732.6**

EBIT and EBITDAs

EBIT is defined as operating income plus our share of income in companies accounted for under the equity method. As a complement to operating income, EBIT may be used by management as a performance indicator for segments because it captures the contribution to our results of the significant businesses that we manage through our joint ventures.

EBITDAs is defined as earnings before interest, tax, income from equity affiliates, depreciation, amortization net of amortization expense capitalized to multi-client, and share-based compensation cost. Share-based compensation includes both stock options and shares issued under our share allocation plans. EBITDAs is presented as additional information because we understand that it is one measure used by certain investors to determine our operating cash flow and historical ability to meet debt service and capital expenditure requirements.

However, other companies may present EBIT and EBITDAs differently than we do. EBIT and EBITDAs are not a measure of financial performance under IFRS and should not be considered as an alternative to cash flow from operating activities or as a measure of liquidity or an alternative to net income as indicators of our operating performance or any other measures of performance derived in accordance with IFRS.

The following table presents a reconciliation of EBITDAs and EBIT to net income for the periods indicated:

	Year ended December 31, 2019			
In millions of US$	**Segment figures**	**Transformation Plan, provisions and impairments**	**IFRS 15 adjustments**	**As reported**
EBITDAs	**720.8**		**(44.6)**	**676.2**
Depreciation and amortization	(138.2)		–	(138.2)
Multi-Client surveys impairment and amortization	(348.8)	–	40.8	(308.0)
Depreciation, amortization and impairment	18.8	–	–	18.8
Share-based compensation expenses	(5.3)	–	–	(5.3)
Operating income	**247.3**		**(3.8)**	**243.5**
Share of (income) loss in companies accounted for under equity method	(0.1)	–	–	(0.1)
EBIT	**247.2**		**(3.8)**	**243.4**
Cost of financial debt, net	(131.7)		–	(131.7)
Other financial income (loss)	5.6		–	5.6
Total income taxes	8.9	–		8.9
NET INCOME FROM CONTINUING OPERATIONS	**130.0**		**(3.8)**	**126.2**

	Year ended December 31, 2018			
In millions of US$	Segment figures	Transformation Plan, provisions and impairments	IFRS 15 adjustments	As reported
EBITDAs	**556.0**	**(47.9)**	**(33.9)**	**474.2**
Depreciation and amortization	(104.0)	(13.9)	–	(117.9)
Multi-Client surveys impairment and amortization	(326.0)	(226.0)	(0.3)	(552.3)
Depreciation, amortization and impairment	18.8	–	–	18.8
Share-based compensation expenses	(2.5)	–	–	(2.5)
Operating income	**142.3**	**(287.8)**	**(34.2)**	**(179.7)**
Share of (income) loss in companies accounted for under equity method	(1.2)	–	–	(1.2)
EBIT	**141.1**	**(287.8)**	**(34.2)**	**(180.9)**
Cost of financial debt, net	(126.1)	(1.3)	–	(127.4)
Other financial income (loss)	66.7	753.2	–	819.9
Total income taxes	(3.3)	–	(4.1)	(7.4)
NET INCOME FROM CONTINUING OPERATIONS	**78.4**	**464.1**	**(38.3)**	**504.2**

For 2019, EBITDAs as reported represented 50% of operating revenues as reported compared to 40% for 2018. In 2018, EBITDAs as reported included US$18 million of restructuring expenses relating to our Transformation Plan.

The following table presents EBITDAs by segment for the periods indicated:

	Year ended December 31, 2019			
In millions of US$	**Segment figures**	**Transformation Plan, provisions and impairments**	**IFRS 15 adjustments**	**As reported**
GGR	652.1	–	(44.6)	607.5
Equipment	96.6		–	96.6
Non-Operated Resources	–		–	–
Eliminations and other	(27.9)	–	–	(27.9)
EBITDAs	**720.8**		**(44.6)**	**676.2**

	Year ended December 31, 2018			
In millions of US$	Segment figures	Transformation Plan, provisions and impairments	IFRS 15 adjustments	As reported
GGR	557.8	–	(33.9)	523.9
Equipment	42.1	(30.1)	–	12.0
Non-Operated Resources	–	(17.8)	–	(17.8)
Eliminations and other	(43.9)	–	–	(43.9)
EBITDAs	**556.0**	**(47.9)**	**(33.9)**	**474.2**

Net cash flow

"Net cash flow" is defined as "Net cash flow provided by operating activities" plus "Total net proceeds from disposals of assets", minus (i) the "Total capital expenditures" and "Investments in multi-client surveys, net cash" as set out in our consolidated statement of cash flows under the "Investing section", (ii) "Lease repayment" and "Financial expenses paid" as set out in our consolidated statement of cash flows under the "Financing section", and (iii) "Net cash flows incurred by Discontinued Operations.

Net cash flow as reported amounted to inflows of US$186 million in 2019 compared to outflows of US$129 million in 2018. Before Net cash flows incurred by Discontinued Operations, Net cash flow amounted to inflows of US$353 million in 2019, compared to outflows of US$10 million in 2018.

	Year	
In millions of US$	**2019**	2018
Net cash flow provided by operating activities	751.4	365.3
Total capital expenditures (including variation of fixed assets suppliers, excluding multi-client surveys)	(75.3)	(78.0)
Investments in multi-client surveys, net cash	(185.7)	(222.8)
Total net Proceeds	0.2	4.4
Lease repayments	(56.9)	(5.7)
Financial expenses paid	(80.5)	(73.2)
Net cash flow before net cash flows incurred by Discontinued Operations	**353.2**	**(10.0)**
Net cash flows incurred by Discontinued Operations	(167.6)	(119.3)
NET CASH FLOW	**185.6**	**(129.3)**

Contractual obligations

The following table presents payments in future periods relating to contractual obligations as of December 31, 2019:

	Payments due by period				
In millions of US$	**Less than** 1 year	2-3 years	4-5 years	**After** 5 years	Total
Long-term debt obligations:					
• Repayments: fixed rates	0.3	0.6	615.2	4.4	620.5
• Repayments: variables rates[(a)]	–	–	738.0	–	738.0
• Bonds and facilities interests	82.4	172.7	75.3	–	330.4
Total Long-term debt obligations	**82.7**	**173.3**	**1,428.5**	**4.4**	**1,688.9**
Lease obligations – other than bareboat agreements	**55.9**	**66.7**	**35.4**	**15.1**	**173.1**
Lease obligations – bareboat agreements	**45.0**	**90.0**	**90.0**	**101.3**	**326.3**
TOTAL CONTRACTUAL OBLIGATIONS[(B)]	**183.6**	**330.0**	**1553.9**	**120.8**	**2,188.3**

(a) *Payments are based on the variable rates applicable as of December 31, 2019.*
(b) *Payments in foreign currencies are converted in US$ at December 31, 2019 exchange rates.*

The amount of our financial debt was materially reduced by our financial restructuring, which was completed on February 21, 2018.

Off-balance sheet arrangements and contractual obligations

In 2019, we have not entered into any other off-balance sheet arrangements that have or are reasonably likely to have a current or future material effect on our financial condition, changes in financial condition, revenues or expenses, results of operations, liquidity, capital expenditures or capital resources that are material to investors.

The obligations relating to the Capacity Agreement will materialize in 2020 as of the Marine Closing date. If the Step-In Agreements were to be triggered in the future, the obligations relating to the Capacity Agreement would be terminated and replaced by the obligations of the Step-In Agreements, for an amount in reduction compared to the Capacity Agreement.

For more information, please refer to note 2 "Significant events acquisitions and divestitures – Marine exit and streamer Newco" and note 18 "Contractual obligations, commitments and contingencies" to our Consolidated Financial Statements.

Currency fluctuations

We face foreign exchange risks because a large percentage of our revenues and cash receipts are denominated in US dollars, while a significant portion of our operating expenses and income taxes accrue in euro and other currencies. Movements between the US dollar and euro or other currencies may adversely affect our operating results. Approximately 73% of total Group turnover was denominated in US dollars in 2019, compared to approximately 72% in 2018.

As of December 31, 2019, we estimate our net annual recurring expenses in euro at Group level to be approximately €250 million and as a result, an unfavourable variation of US$0.10 in the average yearly exchange rate between the US dollar and the euro would reduce our net profit and our shareholders' equity by approximately US$25 million.

Please refer to paragraph 2.1 "Risk Factors" for further details on the effect of fluctuations in the exchange rate of US dollar against euro upon our results of operations.

Interest rates

Following our financial restructuring effective February 21, 2018 and pursuant first lien secured notes refinancing, the total amount of second lien notes is subject to variable interest rates that are reset at each interest period (every three months). As a result, our interest expenses vary in line with movements in short term interest rates.

For more information about our variable interest rate exposure, please refer to paragraph 2.1 "Risk factors" and note 14 to our Consolidated Financial Statements.

Income taxes

We conduct the majority of our activities outside of France and pay taxes on income earned or deemed profits in each foreign country pursuant to local tax rules and regulations.

We have significant tax losses carried forward that are available to offset future taxation on income earned in certain OECD countries. Deferred tax assets are recognized only when their recovery is considered as probable or when there are existing taxable temporary differences, of an appropriate type, that reverse in an appropriate period. When tax laws limit the extent to which unused tax losses can be recovered against future taxable profits in each year, the amount of deferred tax assets recognized from unused tax losses as a result of suitable existing taxable temporary differences is restricted as specified by the tax law. When financial forecast are revised downward, we consider the depreciation of our deferred tax assets recognized on prior period.

5.2 Information on the utilization of financial instruments

In 2019 and 2018, our turnover was mainly denominated in US dollars, representing respectively 73% and 72% of our total turnover and to a significantly lesser extent in euro, Brazilian reais, Chinese yuan, British pounds, Norwegian kroner, Australian dollars and Canadian dollars.

Most of our expenses in 2019 were paid in US dollars, euro, British pounds, Norwegian kroner and Chinese yuan.

We aim to match our foreign currency revenues and expenses in order to balance, to the extent possible, our net position of receivables and payables denominated in foreign currencies, in particular currencies that are not readily available or are difficult to convert. Nevertheless, over past years, the Group did not succeed in totally balancing its foreign currency revenues and expenses, especially for euros, due to personnel costs payable in euros in France and in certain European countries.

In addition, our general policy is, when possible, to hedge major currency exposures related to forecasted excess currency originating from operational contracts at the time such contracts are entered in the backlog. This strategy to reduce foreign exchange risks led us to mitigate, without eliminating the positive or negative impact of the foreign exchange rate variation on the operating income of the Group.

On the contrary, we do not enter into forward foreign currency exchange contracts to hedge recurring fixed expenses in any currency, especially euros.

We maintain our financing primarily in US dollars. As of December 31, 2019 and 2018, our total outstanding debt (excluding IFRS 16) denominated in US dollars was US$716 million and US$683 million, respectively, representing 63% and 59% of our total financial debt outstanding at such dates.

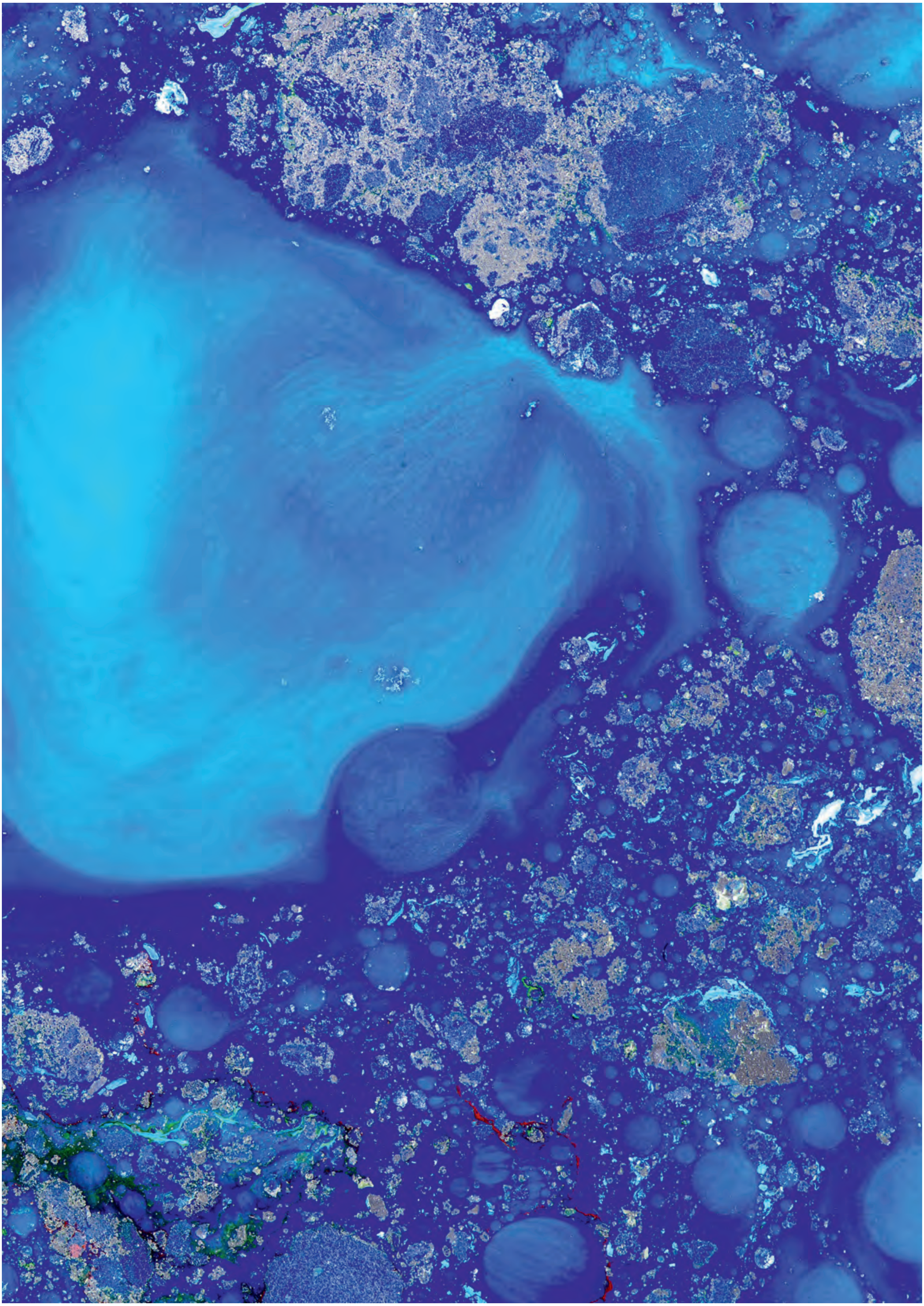
As of December 31, 2019, contracts were outstanding for the US dollar equivalent of US$10.8 million (of which US$2.6 million were applied), of which US$7.5 million against euro, US$2.4 million against Brazilian reais, and US$0.9 million against Chinese yuan.

As of December 31, 2018, contracts were outstanding for the US dollar equivalent of US$34.2 million (of which US$15.8 million were applied), of which US$13.6 million against Brazilian reais and US$20.6 million against euro.

5.3 Subsidiaries main aggregates

The following table provides the main aggregates for the top holding company CGG SA, the GGR segment and the Equipment segment (Sercel and its subsidiaries).

IFRS *In millions of US$ except for personnel*	CGG SA	Services Subsidiaries	Equipment Subsidiaries	Consolidation adjustments	**Total CGG group**
2019					
Non-current assets	2,806.0	2,805.1	284.5	(3,647.8)	2,247.8
Financial debt	571.1	1 176.3	12.1	(433.5)	1,326.0
Cash and cash equivalents	430.4	92.7	87.5	(0.1)	610.5
Dividends paid to CGG SA	-	215.2	-	(215.2)	-
Operating revenues	29.6	954.6	452.1	(80.4)	1,355.9
Operating income	(126.3)	302.5	66.5	0.8	243.5
Net income (loss) from continuing operations	108.2	100.8	64.2	(146.9)	126.3
Total equity	2,385.9	1 518.1	837.4	(3,134.0)	1,607.4
Personnel	20	3 001	1 543	-	4,564
2018					
Non-current assets	3,364.1	2 994.4	283.6	(4,271.2)	2,370.9
Financial debt	537.1	1 071.1	-	(441.5)	1,166.7
Cash and cash equivalents	235.4	117.4	81.9	(0.6)	434.1
Dividends paid to CGG SA	-	307.5	-	(307.5)	-
Operating revenues	32.6	880.1	350.8	(70.0)	1,193.5
Operating income	(102.3)	(129.6)	(22.1)	74.3	(179.7)
Net income (loss) from continuing operations	189.2	(294.6)	(17.8)	627.5	504.2
Total equity	2,867.3	1 725.4	780.5	(3,699.1)	1,674.1
Personnel	26	3,528	1,545	-	5,099



6

2019 Financial statements

6.1 2018-2019 CGG consolidated financial statements

6.1.1 Consolidated statements of operations

		Year	
In millions of US$	Notes	**2019**	2018
Operating revenues	5, 19, 20	1,355.9	1,193.5
Other income from ordinary activities	19, 20	0.7	1.4
Total income from ordinary activities		**1,356.6**	**1,194.9**
Cost of operations		(967.0)	(931.0)
Gross profit		**389.6**	**263.9**
Research and development expenses – net	21	(23.6)	(30.5)
Marketing and selling expenses		(47.0)	(45.9)
General and administrative expenses		(66.2)	(81.1)
Other revenues (expenses) – net	5, 22	(9.3)	(286.1)
Operating income	**5, 20**	**243.5**	**(179.7)**
Expenses related to financial debt		(135.2)	(129.7)
Income provided by cash and cash equivalents		3.5	2.3
Cost of financial debt, net	**23**	**(131.7)**	**(127.4)**
Other financial income (loss)[(a)]	2, 5, 24	5.6	819.9
Income (loss) before income taxes and share of income (loss) in companies accounted for under the equity method		**117.4**	**512.8**
Income taxes	5, 25	8.9	(7.4)
Share of income (loss) in companies accounted for under the equity method	5	(0.1)	(1.2)
Net income (loss) from continuing operations		**126.2**	**504.2**
Net income (loss) from discontinued operations[(b)]	5	(187.7)	(600.0)
Net income (loss)		**(61.5)**	**(95.8)**
Attributable to:			
Owners of CGG SA	$	(69.1)	(101.6)
Non-controlling interests	$	7.6	5.8
Weighted average number of shares outstanding	30	709,950,455	608,438,241
Dilutive weighted average number of shares outstanding adjusted when dilutive	30	711,922,761	617,593,353
Net income (loss) per share	**30**		
• Basic		(0.10)	(0.17)
• Diluted		(0.10)	(0.17)
Net income (loss) from continuing operations per share			
• Basic		0.17	0.82
• Diluted		0.17	0.81

(a) See note 2 for more information regarding the impact of our financial restructuring on February 21, 2018.
(b) See note 5 for more information regarding the impact of IFRS 5 "Non-current assets held for sale and discontinued operations".

The accompanying notes are an integral part of the consolidated financial statements

Consolidated statements of comprehensive income (loss)

	Year	
In millions of US$	**2019***	2018*
Net income (loss) from statements of operations	**(61.5)**	**(95.8)**
Other comprehensive income to be reclassified in profit (loss) in subsequent period:		
Net gain (loss) on cash flow hedges	0.2	(0.1)
Exchange differences on translation of foreign operations	(1.9)	(14.0)
Net other comprehensive income to be reclassified in profit (loss) in subsequent period (1)	**(1.7)**	**(14.1)**
Other comprehensive income not to be classified in profit (loss) in subsequent period:		
Net gain (loss) on actuarial changes on pension plan	(7.1)	6.8
Net other comprehensive income not to be reclassified in profit (loss) in subsequent period (2)	**(7.1)**	**6.8**
Total other comprehensive income (loss) for the period, net of taxes (1)+(2)	**(8.8)**	**(7.3)**
Total comprehensive income (loss) for the period	**(70.3)**	**(103.1)**
Attributable to:		
Owners of CGG	(77.2)	(106.7)
Non-controlling interests	6.9	3.6

* *Including other comprehensive income related to the discontinued operations which is not material.*

The accompanying notes are an integral part of the consolidated financial statements

6.1.2 Consolidated statements of financial position

In millions of US$	Notes	December 31, 2019	2018
ASSETS			
Cash and cash equivalents	29	610.5	434.1
Trade accounts and notes receivable, net	1, 3, 19	436.0	520.2
Inventories and work-in-progress, net	4	200.1	204.8
Income tax assets		84.9	72.1
Other current assets, net	4	116.7	99.1
Assets held for sale, net[(a)]	5	316.6	195.5
Total current assets		**1,764.8**	**1,525.8**
Deferred tax assets	1, 19, 25	19.7	22.6
Investments and other financial assets, net	7	27.4	31.1
Investments in companies under the equity method	8	3.0	0.1
Property, plant and equipment, net	9	300.0	189.2
Intangible assets, net	1, 10, 19	690.8	898.9
Goodwill, net	11	1,206.9	1,229.0
Total non-current assets		**2,247.8**	**2,370.9**
TOTAL ASSETS		**4,012.6**	**3,896.7**
LIABILITIES AND EQUITY			
Bank overdrafts	13	–	–
Financial debt – current portion	2, 13	59.4	17.8
Trade accounts and notes payable		117.4	126.4
Accrued payroll costs		156.6	135.8
Income taxes payable		59.3	49.6
Advance billings to customers		36.9	35.7
Provisions – current portion	16	50.0	172.4
Other current liabilities	1, 12, 19	327.3	250.9
Liabilities directly associated with the assets classified as held for sale[(a)]	5	259.2	131.7
Total current liabilities		**1,066.1**	**920.3**
Deferred tax liabilities	1, 19, 25	10.4	44.4
Provisions – non-current portion	16	58.1	95.9
Financial debt – non-current portion	2, 13	1,266.6	1,148.9
Other non-current liabilities	17	4.0	13.1
Total non-current liabilities		**1,339.1**	**1,302.3**
Common stock: 1,181,522,927 shares authorized and 709,956,358 shares with a €0.01 nominal value outstanding at December 31, 2019	15	8.7	8.7
Additional paid-in capital		3,184.7	3,184.6
Retained earnings	1	(1,531.1)	(1,457.8)
Other Reserves		(23.5)	(27.9)
Treasury shares		(20.1)	(20.1)
Cumulative income and expense recognized directly in equity		(0.7)	(0.9)
Cumulative translation adjustment		(56.3)	(55.1)
Equity attributable to owners of CGG SA		**1,561.7**	**1,631.5**
Non-controlling interests		45.7	42.6
Total equity		**1,607.4**	**1,674.1**
TOTAL LIABILITIES AND EQUITY		**4,012.6**	**3,896.7**

(a) See note 5 for more information regarding the impact of IFRS 5 "Non-current assets held for sale and discontinued operations" as of December 31, 2019.

The accompanying notes are an integral part of the consolidated financial statements

6.1.3 Consolidated statements of cash flows

In millions of US$	Notes	Year 2019	2018
OPERATING			
Net income (loss)	1, 19	(61.5)	(95.8)
Less: Net income (loss) from discontinued operations	5	187.7	600.0
Net income (loss) from continuing operations		**126.2**	**504.2**
Depreciation amortization and impairment	1, 19, 29	138.2	117.9
Multi-Client surveys impairment and amortization	10, 29	308.0	552.3
Depreciation and amortization capitalized in multi-client surveys	10	(18.8)	(18.8)
Variance on provisions		(10.5)	(18.2)
Share-based compensation expenses		5.3	2.5
Net (gain) loss on disposal of fixed and financial assets		1.0	(1.5)
Equity (income) loss of investees		0.1	1.2
Dividends received from investments in companies under the equity method		–	–
Other non-cash items		(4.3)	(823.3)
Net cash flow including net cost of financial debt and income tax		**545.2**	**316.3**
Less: Net cost of financial debt		131.7	127.4
Less: Income tax expense (gain)	1, 19	(8.9)	7.4
Net cash flow excluding net cost of financial debt and income tax		**668.0**	**451.1**
Income tax paid	29	(30.2)	(17.0)
Net cash flow before changes in working capital		**637.8**	**434.1**
Changes in working capital		113.6	(68.8)
• Change in trade accounts and notes receivable	1, 19	150.0	(75.5)
• Change in inventories and work-in-progress		(3.7)	33.3
• Change in other current assets		(33.7)	4.3
• Change in trade accounts and notes payable		7.7	(4.9)
• Change in other current liabilities		(6.7)	(26.0)
Net cash flow provided by operating activities		**751.4**	**365.3**
INVESTING			
Total capital expenditures (including variation of fixed assets suppliers, excluding multi-client surveys)	9	(75.3)	(78.0)
Investments in multi-client surveys, net cash	10	(185.7)	(222.8)
Proceeds from disposals of tangible and intangible assets		0.1	4.4
Total net proceeds from financial assets	29	0.1	–
Acquisition of investments, net of cash & cash equivalents acquired	29	–	–
Variation in loans granted	29	–	(0.4)
Variation in subsidies for capital expenditures		–	(0.2)
Variation in other non-current financial assets		(0.7)	(3.8)
Net cash flow used in investing activities		**(261.5)**	**(300.8)**
FINANCING			
Repayment of long-term debt		(0.4)	(195.9)
Total issuance of long-term debt		–	336.5
Lease repayments		(56.9)	(5.7)
Change in short-term loans		–	(0.2)
Financial expenses paid		(80.5)	(73.2)
Net proceeds from capital increase:			
from shareholders	29	–	129.3
from non-controlling interests of integrated companies		–	–
Dividends paid and share capital reimbursements:			
to shareholders		–	–
to non-controlling interests of integrated companies		(3.8)	–
Acquisition/disposal of treasury shares		–	–
Net cash flow provided by (used in) financing activities		**(141.6)**	**190.8**

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In millions of US$	Notes	Year 2019	2018
Effect of exchange rates on cash		(4.3)	(17.3)
Impact of changes in consolidation scope		-	-
Net cash flows incurred by discontinued operations[(a)]	**5**	**(167.6)**	**(119.3)**
Net increase (decrease) in cash and cash equivalents		**176.4**	**118.7**
Cash and cash equivalents at beginning of year	29	434.1	315.4
Cash and cash equivalents at end of period	**29**	**610.5**	**434.1**

(a) See note 5 for more information regarding the impact of IFRS 5 “Assets held for sale and discontinued operations”.

The accompanying notes are an integral part of the consolidated financial statements

6.1.4 Consolidated statements of changes in equity

Amounts in millions of US$, except share data	Number of shares issued	Share capital	Additional paid-in capital	Retained earnings	Other reserves	Treasury shares	Income and expense recognized directly in equity	Cumulative translation adjustment	Equity attributable to owners of CGG SA	Non-controlling interests	Total equity
Balance at December 31, 2017	**22,133,149**	**20.3**	**1,850.0**	**(1,354.6)**	**37.6**	**(20.1)**	**(0.8)**	**(43.3)**	**489.1**	**39.0**	**528.1**
IFRS 15 First Time Application				(11.6)					(11.6)		(11.6)
Balance at January 1, 2018	**22,133,149**	**20.3**	**1,850.0**	**(1,366.2)**	**37.6**	**(20.1)**	**(0.8)**	**(43.3)**	**477.5**	**39.0**	**516.5**
Net gain (loss) on actuarial changes on pension plan (1)				6.8					6.8		6.8
Net gain (loss) on cash flow hedges (2)							(0.1)		(0.1)		(0.1)
Exchange differences on foreign currency translation (3)								(11.8)	(11.8)	(2.2)	(14.0)
Other comprehensive income (1)+(2)+(3)				**6.8**	**-**	**-**	**(0.1)**	**(11.8)**	**(5.1)**	**(2.2)**	**(7.3)**
Net income (4)				(101.6)					(101.6)	5.8	(95.8)
Comprehensive income (1)+(2)+(3)+(4)				**(94.8)**	**-**	**-**	**(0.1)**	**(11.8)**	**(106.7)**	**3.6**	**(103.1)**
Share capital reduction		(20.0)	20.0						-		-
Capital increase[(a)]	71,932,731	0.9	126.5						127.4		127.4
Debt equitization[(a)]	484,509,122	5.9	1,187.8						1,193.7		1,193.7
Exercise of warrants[(a)]	131,369,814	1.6	0.3						1.9		1.9
Cost of share-based payment				2.9					2.9		2.9
Exchange differences on foreign currency translation generated by the parent company				-	(65.5)				(65.5)		(65.5)
Changes in consolidation scope and other				0.3					0.3	-	0.3
Balance at December 31, 2018	**709,944,816**	**8.7**	**3,184.6**	**(1,457.8)**	**(27.9)**	**(20.1)**	**(0.9)**	**(55.1)**	**1,631.5**	**42.6**	**1,674.1**

(a) See note 2 for information regarding the impact of our financial restructuring completed on February 21, 2018.

Amounts in millions of US$, except share data	Number of shares issued	Share capital	Additional paid-in capital	Retained earnings	Other reserves	Treasury shares	Income and expense recognized directly in equity	Cumulative translation adjustment	Equity attributable to owners of CGG SA	Non-controlling interests	Total equity
Balance at December 31, 2018	**709,944,816**	**8.7**	**3,184.6**	**(1,457.8)**	**(27.9)**	**(20.1)**	**(0.9)**	**(55.1)**	**1,631.5**	**42.6**	**1,674.1**
IFRS 16 First Time Application[(a)]											
Balance at January 1, 2019	**709,944,816**	**8.7**	**3,184.6**	**(1,457.8)**	**(27.9)**	**(20.1)**	**(0.9)**	**(55.1)**	**1,631.5**	**42.6**	**1,674.1**
Net gain (loss) on actuarial changes on pension plan (1)				(7.1)					(7.1)		(7.1)
Net gain (loss) on cash flow hedges (2)							0.2		0.2		0.2
Exchange differences on foreign currency translation (3)								(1.2)	(1.2)	(0.7)	(1.9)
Other comprehensive income (1)+(2)+(3)				(7.1)	–	–	0.2	(1.2)	(8.1)	(0.7)	(8.8)
Net income (4)				(69.1)					(69.1)	7.6	(61.5)
Comprehensive income (1)+(2)+(3)+(4)				**(76.2)**	**–**	**–**	**0.2**	**(1.2)**	**(77.2)**	**6.9**	**(70.3)**
Exercise of warrants	9,504										
Dividends									–	(3.8)	(3.8)
Cost of share-based payment	2,038		0.1	5.2					5.3		5.3
Exchange differences on foreign currency translation generated by the parent company				–	4.4				4.4		4.4
Changes in consolidation scope and other				(2.3)					(2.3)	–	(2.3)
Balance at December 31, 2019	**709,956,358**	**8.7**	**3,184.7**	**(1,531.1)**	**(23.5)**	**(20.1)**	**(0.7)**	**(56.3)**	**1,561.7**	**45.7**	**1,607.4**

(a) See note 1 and 18 for more information regarding the impact of IFRS 16 "Leases".

The accompanying notes are an integral part of the consolidated financial statements.

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6.1.5 Notes to consolidated financial statements

Note 1 Summary of significant accounting policies

CGG SA ("the Company"), along with its subsidiaries (together, the "Group") is a global geoscience technology leader, providing a comprehensive range of data, products, services and equipment that support the discovery and responsible management of the Earth's natural resources.

Given that the Company is listed on a European Stock Exchange and pursuant to European Regulation n(o)1606/2002 dated July 19, 2002, the accompanying consolidated financial statements have been prepared in accordance with International Financial Reporting Standards ("IFRS") and its interpretations as issued by the International Accounting Standards Board (IASB) and as adopted by the European Union as at December 31, 2019.

The consolidated financial statements were authorized for issue by the Board of Directors on March 5, 2020 and will be submitted to the General Meeting convened on June 16, 2020 for approval.

1.1 Critical Accounting Policies

Our accounting policies, which we have applied consistently, are described below. However, the accounting policies related to the accounts impacted by the judgments and estimates described below are particularly important to reflect our financial position and results of operations. As we must exercise significant judgment when we apply these policies, their application is subject to an inherent degree of uncertainty.

Those accounting policies are consistent with those used to prepare our consolidated financial statements as of December 31, 2018, except for the first adoption of the following Standards, Amendments, and Interpretations:

- IFRS 16 "Leases";
- amendments to IFRS 9 "Prepayment features with negative compensation and modifications of financial liabilities";
- IFRIC 23 "Uncertainty over income tax treatments";
- annual Improvements (2015-2017);
- amendments to IAS 19 "Employee Benefits";
- amendments to IAS 28 "Long-term interests in associates and joint ventures".

The impacts of the application of IFRS 16 "Leases" and IFRIC 23 "Uncertainty over income tax treatments" are detailed below. The adoption of the other Standards, Amendments, and Interpretations listed above had no impact on the consolidated financial statements.

The Group decided not to early adopt those Standards, Amendments and Interpretations that the European Union adopted but that were not effective as of December 31, 2019, namely:

- amendments to References to the Conceptual Framework in IFRS Standards;
- amendments to IAS 1 and IAS 8 "Definition of Material".

At the date of issuance of these consolidated financial statements, the following Standards, Amendments, and Interpretations were issued but not yet adopted by the European Union and were thus not effective:

- amendment to IFRS 3 "Business Combinations";
- amendments to IFRS 9, IAS 39 and IFRS 7 "Interest Rate Benchmark Reform";
- IFRS 17 "Insurance Contracts".

We are currently reviewing these Standards, Amendments, and Interpretations to measure their potential impact on our consolidated financial statements.

1.2 Key items and where to find them

	Statement of operations	Statement of financial position	Statement of cash flows
Consequences of November 7, 2018 Capital Market Day strategy announcement (CGG 2021). Change in profile and impacts.	Loss of discontinued operations of US$(187.7) million in 2019, broken down into US$(155.5) million impact of restructuring costs related to the implementation of CGG 2021 Plan and US$(32.2) million of operating losses. *See note 5*	US$206.4 million presented as Assets held for sale as of December 31, 2019. US$(256.0) million in liabilities directly associated with the assets held for sale as of December 31, 2019. *See note 5*	Net cash flows incurred of US$(167.6) million, presented as discontinued operations in 2019. *See note 5*
Segment figures of the new profile (continuing operations) See note 2 – Capital Market Day announcement	2019 Revenues of new profile is US$1,400.5 million 2019 Operating Income of new profile is US$247.3 million 2019 EBITDAs of new profile is US$720.8 million. *See note 20*	GGR capital employed as of December 31, 2019 is US$1.8 billion Equipment capital employed as of December 31, 2019 is US$0.5 billion. *See note 20*	2019 EBITDAs of new profile is US$720.8 million 2019 capital expenditures of new profile is US$(261.0) million. *See note 20*
Application of IFRS 16	2019 impact on net income is not material as the increase in depreciation and financial expense is largely offset by the decrease in operating lease expense.	Nil on opening equity Right-of-use assets recognized for continuing operations of US$175.1 million as of December 31, 2019 Discounted lease liability from continuing operations amounts for US$175.5 million as of December 31, 2019. *See notes 1, 9, 13*	No impact on net cash flow. Cash flows from operating and investing activities increase while cash flows from financing activities decrease. US$56.9 million of lease repayment in full-year 2019. *See notes 1. 29*
Multi-Client surveys impairment	Impairment of US$(33) million incurred in 2019. *See note 10*	The NBV of the multi-client library presented is reduced by US$(33) million due to the impairment. *See note 10*	No net impact on cash flows statement. Impacts on various lines disclosed.

1.3 New standards impacts

IFRS 16 "Leases", applicable as at January 1, 2019

IFRS 16 was issued in January 2016 and is endorsed by the EU. It supersedes IAS 17 "Leases" and a number of lease-related interpretations, and it results in almost all leases being recognized on the consolidated statement of financial position, as the distinction between operating and finance leases is removed for lessees. Under the new standard, both a right-of-use asset (the right to use the leased item) and a financial liability corresponding to the minimum lease payments are recognized. The only exemptions are for short-term leases and leases of low-value asset, and the Group has decided to use them both. Moreover, initial direct costs were not taken into account for the measurement of the right-of-use asset at the date of first time application. The Group has no material lease contracts as a lessor.

As at January 1, 2019, the Group had identified non-cancellable operating lease commitments of US$491 million (undiscounted) which are relevant for IFRS 16 adoption. The commitments related to lease assets consist mainly of vessels (c. 60%), offices (c. 33%) and Geoscience servers (6%). It is worth noting that the right-of-use asset and the debt related to vessels leases with our GSS JV and some assets and lease liabilities related to the Multi-physics Business lines are respectively classified as "Assets held for sale" and "Liabilities directly associated with the assets classified as held for sale" according to IFRS 5. The discounted lease liability is US$210 million for the assets classified as held for sale (US$299 million undiscounted).

The Group recognized right-of-use assets for continuing operations of US$129 million (after impairment) from the identified operating lease commitments and a discounted lease liability of US$146 million on January 1, 2019. In addition, the existing finance lease assets (US$67 million) and liabilities (US$50 million) determined in accordance with IAS 17 as at December 31, 2018 are classified in the same line item as the right-of-use assets and lease liabilities on operating leases determined in accordance with IFRS 16 on January 1, 2019.

The Group applies the modified retrospective approach. Therefore, the cumulative effect of adopting IFRS 16 (if any) is recognized as an adjustment to the opening balance of retained earnings on January 1, 2019, with no restatement of comparative information. We applied the following practical expedients, as permitted by IFRS 16, on the transition date:

- reliance on the previous definition of a lease (as provided by IAS 17 and IFRIC 4) for all contracts that existed on the date of initial application;
- the use of a single discount rate for a portfolio of leases with reasonably similar characteristics;
- reliance on previous assessments on whether vessels leases are onerous applying IAS 37 "Provisions, Contingent Liabilities and Contingent Assets" and accordingly adjusting the right-of-use assets, instead of performing an impairment review for vessel leases;
- the accounting for operating leases with a remaining lease term of less than 12 months as at January 1, 2019 as short-term leases.

In December 2019, the IFRIC published its final decision relating to the enforceable period of a lease, and to the useful life of any non-removable leasehold improvements. The Group will need to reassess the lease term for these contracts and determine if the enforceable period is beyond the date on which the contract can be terminated. As of December 31st 2019, the lease terms applied in our Group financial statements were the non-cancellable period of the lease and the period covered by an option to extend the lease if the lessee is reasonably certain to exercise that option or and the period covered by an option to terminate the lease if the lessee is reasonably certain not to exercise that option. The IFRIC decision may consequently require to revise the lease term for some contracts and an alignement of the useful life of any non-removable leasehold improvement related to such lease. This review may lead to the revision of the lease term of some of the building lease agreements. This would impact the lease liability and the associated right of use asset as well as the depreciation charges.

The following reconciliation to the opening balance for the lease liabilities as at January 1, 2019 is based upon the operating lease obligations as at December 31, 2018:

In millions of US$	
• Vessels commitments related to Global Seismic Shipping (GSS)	358
• Commitments related to vessels cold stacked	7
Total bareboats	365
Real estate (excluding real estate previously classified as financial lease)	152
Machinery & Equipment	21
Operating lease obligations at December 31, 2018[(a)]	**538**
Leases added – previously not reported under IAS 17[(b)] and hypothesis reassessment impact[(c)]	15
Future vessels commitments excluded[(d)]	(62)
Gross lease liabilities at January 1, 2019	**491**
Discounting	(135)
Leases liabilities directly associated with the assets classified as held for sale	(210)
Additional Lease liabilities at January 1, 2019	**146**
Present value of finance lease liabilities at December 31, 2018	50
Total – Lease liabilities at January 1, 2019	**196**

(a) *Short-term leases and low-value assets not included in the operating lease obligations reported as of December 31, 2018.*
(b) *Mainly related to leases previously considered as non-material.*
(c) *Mainly impact of lease period reassessment when the exercise of the renewal option is estimated as being reasonably certain.*
(d) *Related to Vessel commitments were to begin in June 2020 prior to Marine exit (see note 2).*

The weighted average discount rate calculated without the liabilities directly associated with the assets classified as held for sale is 7.0%.

Opening consolidated statement of financial position

The cumulative effects on our consolidated statement of financial position due to the changes related to the adoption of IFRS 16 are disclosed in the table below:

In millions of US$	Balance as of December 31, 2018	**Balance as of January 1, 2019**	Adjustments due to IFRS 16
ASSETS			
Assets held for sale, net	195.5	338.1	142.6
Property, plant & equipment, net	189.2	318.0	128.8
LIABILITIES			
Financial debt – current portion	17.8	53.3	35.5
Provisions – current portion	172.4	169.6	(2.8)
Liabilities directly associated with the assets classified as held for sale[(a)]	131.7	274.3	142.6
Provisions – non-current portion	95.9	91.0	(4.9)
Financial debt – non current-portion	1,148.9	1,259.2	110.3
Trade accounts and notes payables	126.4	125.0	(1.4)
Other current liabilities	250.9	250.4	(0.5)
Other non-current liabilities	13.1	5.6	(7.5)
Total Equity	1,674.1	1,674.1	-

(a) The adjustment due to IFRS 16 includes leases liabilities directly associated with the assets classified as held for sale for US$210 million and the release of US$68 million of provision for onerous contracts related to the assets classified as held for sale.

The impact of IFRS 16 on the net income from continuing operations in 2019 is not material as the increase in depreciation and financial expense is largely offset by the decrease in operating lease expense. Similarly, in 2019, operating and investing cash flows from continuing operations increased and financing cash flows from continuing operations decreased by approximately US$50 million as operating lease payments are now considered as financial debt repayment.

IFRIC 23 "Uncertainty over income tax treatments", applicable at January 1, 2019

IFRIC 23 supplements IAS 12 "Income Taxes" by clarifying how to apply the recognition and measurement requirements in IAS 12 when there is uncertainty over income tax treatments. This interpretation is mandatory for accounting periods beginning on or after January 1, 2019. The implementation of IFRIC 23 has no impact on opening equity at January 1, 2019.

The amount of provisions reclassified as tax liabilities is US$12 million as at January 1, 2019.

1.4 Use of judgments and estimates

The preparation of consolidated financial statements in accordance with IFRS requires management to make estimates, assumptions and judgments that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the consolidated financial statements and the reported amounts of revenues and expenses during the reporting period. Actual results could differ materially from those estimates due to the change in economic conditions, changes in laws and regulations, changes in strategy and the inherent imprecision associated with the use of estimates.

Key judgments and estimates used in the financial statements are summarized in the following table:

Note	Judgments and estimates	Key assumptions
Note 1, 9 and 13	Discount rate IFRS 16	Assessment of implicit borrowing rate
Note 2	Fair value of the shares issued	Fair value of the shares at the date of restructuring
Note 3	Recoverability of client receivables	Assessment of clients' credit default risk
Notes 2 and 5	Classification of disposal groups as held for sale Valuation of disposal groups classified as held for sale	Likelihood of disposal within twelve months Assessment of disposal groups at fair value less cost to sell Final terms of disposals are in line with currently contemplated terms
Note 7	Valuation of investments	Financial assets fair value
Note 10	Impairment of multi-client surveys	Expected sales for each survey
Note 10	Depreciation and amortization of tangible and intangible assets	Assets useful lives
Note 10	Development costs	Assessment of future benefit of each project
Note 11	Recoverable amount of goodwill and intangible assets	Expected geophysical market trends and strength of recovery Discount rate (WACC)
Note 15	Stock options	Fair value of each plans
Note 16	Post-employment benefits	Discount rate Participation rate to post employment benefit plans Inflation rate
Note 16	Provisions for restructuring and onerous contracts	Assessment of future costs related to restructuring plans and onerous contracts
Note 16	Provisions for risks, claims and litigations	Assessment of risks considering court rulings and attorney's positions
Note 20	Revenue recognition	Geoscience contract completion rates
Note 25	Income tax liabilities – Uncertain tax positions	Assessment of most likely amount or expected value of the tax treatment
Note 25	Deferred tax assets	Hypothesis supporting the achievement of future taxable benefits

1.5 Accounting policies

1. Basis of consolidation

Our consolidated financial statements include CGG SA and all its subsidiaries.

Subsidiaries are fully consolidated from the date of acquisition, being the date on which we obtain control, and continue to be consolidated until the date when such control ceases. Control is achieved when we are exposed or have rights to variable returns from our involvement with the investee and have the ability to affect those returns through our power over the investee. When we have less than a majority of the voting or similar rights of an investee, we consider all relevant facts and circumstances in assessing whether we have power over the investee, including contractual arrangements with the other holders or potential voting rights.

The financial statements of the subsidiaries are prepared for the same reporting period as the parent company, using consistent accounting policies. All intra-group balances, transactions, unrealized gains and losses resulting from intra-group transactions and dividends are eliminated in full.

Losses within a subsidiary are attributed to the non-controlling interest even if that results in a deficit balance. A change in the ownership interest of a subsidiary, without a loss of control, is accounted for as an equity transaction.

We use the equity method for investments classified as joint venture. A joint venture is a joint arrangement whereby the parties that have joint control of the arrangement have rights to the net assets of the arrangement. Joint control is the contractually agreed sharing of control of an arrangement, which exists only when decisions about the relevant activities require the unanimous consent of the parties sharing control.

2. Foreign currency

Effective January 1, 2012, we changed the presentation currency of our consolidated financial statements from the euro to the US dollar to better reflect the profile of our revenues, costs and cash flows, which are primarily generated in US dollars, and hence, to better present the financial performance of the Group.

The functional currency is the currency in which the subsidiaries primarily conduct their business. The functional currency of most of our subsidiaries is the US dollar. Goodwill attributable to subsidiaries is accounted for in the functional currency of the applicable entities.

For the subsidiaries with a functional currency different than US dollar, the financial statements are translated to US dollars using the following method:

- year-end exchange rates are applied to the statement of financial position items;
- average annual exchange rates are applied to statement of financial operations items;
- adjustments resulting from this process are recorded in a separate component of shareholders' equity.

With respect to affiliates accounted for using the equity method, the effects of exchange rates changes on the net assets of the affiliates are recorded in a separate component of shareholders' equity.

Transactions denominated in currencies other than the functional currency of a given entity are recorded at the exchange rate prevailing on the date of the transaction. Monetary assets and liabilities denominated in foreign currencies other than the functional currency are revalued at year-end exchange rates and any resulting unrealized exchange gains and losses are included in income. Unrealized exchange gains and losses arising from monetary assets and liabilities for which settlement in neither planned nor likely to occur in the foreseeable future are recorded in a separate component of shareholder's equity.

3. Business combinations

Business combinations are accounted for using the acquisition method. The cost of an acquisition is measured as the aggregate of the consideration transferred, measured at acquisition date fair value and the amount of any non-controlling interest in the acquiree. For each business combination, we measure the non-controlling interest in the acquiree either at fair value or at the proportionate share in the recognized amounts of the acquiree's identifiable net assets. Acquisition costs incurred are expensed and included in administrative expenses.

After initial recognition, goodwill is measured at cost less any accumulated impairment losses. For the purpose of impairment testing, goodwill acquired in a business combination is, from the acquisition date, allocated to each of the Group's cash-generating units that are expected to benefit from the combination, irrespective of whether other assets or liabilities of the acquiree are assigned to those units.

Where goodwill forms part of a cash-generating unit and part of the operation within that unit is disposed of, the goodwill associated with the operation disposed of is included in the carrying amount of the operation when determining the gain or loss on disposal of the operation. Goodwill disposed of in this circumstance is measured based on the relative values of the operation disposed of and the portion of the cash-generating unit retained.

4. Operating revenues

Revenues from contracts with customers are recognized using the five-step model of the IFRS 15 standard. The following provides a description of the main nature of our performance obligations broken down by business line, the timing of their satisfaction, and detail on the transaction prices and their allocations, if applicable.

GGR

Geoscience (previously known as Subsurface Imaging & Reservoir) contracts

Under our Geoscience contracts, we process seismic data for a specific customer. These contracts may encompass one or several performance obligations. For each performance obligation, we recognize the revenues over time as the services are rendered. The measure of revenue recognized is based on the time spent over the total time expected to satisfy the performance obligation. The balance of revenue recognized that has not yet been invoiced to the clients is recorded as an unbilled revenue, *i.e.* as a contract asset.

We also recognize revenue related to the sale of software upon delivery of the software and of the access code/key as the case may be, to the client. We recognize revenue related to the maintenance of the software over time during the specific contractual period. In case of a contract providing for both the sale and maintenance of software, the price allocation is based on the stand alone selling price of each component and the revenue for the software is recognized upon delivery, while the maintenance revenue is recognized over time. In most cases, only one invoice is issued for such contracts upon license delivery and the amount corresponding to the maintenance is recorded as deferred revenues, *i.e.* as a contract liability, at invoicing.

We also provide geological consulting services or training for specific customers. We recognize the revenues over time as the services are rendered.

We provide licenses to use geological data to several clients. We recognize the revenue upon delivery of the data to the client.

In addition, we provide licenses to access dynamic geological databases for a specific duration. We recognize the revenue related to such licenses over the duration of the contract. In most cases, only one invoice is issued for such contracts at the beginning of the year and the total amount is recorded as deferred revenues, *i.e.* as a contract liability, at invoicing.

Multi-Client after sales contracts and prefunding contracts

Pursuant to our multi-client contracts, we provide non-exclusive licenses to use seismic processed data to several clients. We recognize the revenue upon delivery of the data to the client. In certain cases, significant after sales agreements contain multiple deliverable elements, and the associated revenues are allocated to the various elements based on specific objective evidence of the stand-alone sale price for such elements, regardless of any separate allocations stated within the contract for each element. In these cases, one invoice is issued upon delivery of the data for the total contractual amount.

In certain circumstances, revenues can also be recognized relating to a performance obligation that has already been fulfilled in the past. This happens when a customer is already in possession of the license for certain data and either (i) the customer is taken-over by a competitor who does not yet have the license for such data (and thus is required to pay a transfer fee) or (ii) the customer involves another partner, not already having access to the licensed data, for the exploration of the block (farm-in, uplift). Such revenues are recognized when there is an agreement on the fee and, in the case of transfer fee, when the buyer notifies us that they will not return the data to the Group.

Equipment

We recognize revenues on equipment sales upon delivery to the customer, *i.e.* when control is transferred. When such contracts require a partial or total advance payment, such payments are recorded as advance billings to customers, *i.e.* as a contract liability.

We recognize the sale of software upon delivery of the software to the client. We recognize the maintenance of the software over time during the specific contractual period. In case of a contract providing for both the sale and maintenance of software, the price allocation is based on the stand alone selling price of the software, the price of the maintenance being the total price less the stand alone selling price of the software. The revenue for the software is recognized upon delivery, while the maintenance revenue is recognized over time. In most cases, we issue only one invoice, issued upon license delivery, and the amount corresponding to the maintenance is recorded as deferred revenues, *i.e.* as a contract liability, at invoicing.

Contractual Data Acquisition (classified as discontinued operations)

As a result of our 2021 strategic roadmap announcements and actions undertaken subsequently, we have presented our data acquisition operations, in accordance with IFRS 5, as discontinued operations and assets held for sale in our Consolidated Financial Statements as of and for the years ended December 31, 2018 and 2019.

Please refer to note 5 "Assets held for sale and discontinued operations" as of December 31, 2018 and 2019.

Marine exclusive contracts

Under our marine exclusive contracts, we acquire seismic data for a specific customer. We recognize these revenues over time. The measurement of revenue recognized is based on the data acquired and delivered to the customer.

Either the total price of the contract, for turnkey and lump sum contracts, or the unitary prices, for day-rate contracts or contracts based on square kilometers are specified in the contract. With respect to contracts for both the acquisition and processing of data, the allocation is based on the stand alone selling price of each service with revenue recognized according to respective percentages of completion.

In most cases, invoicing is carried out on a monthly basis, based on the amount of data acquired and delivered to the customer, as evidenced by a customer acceptance. As the acceptance is often obtained a few days after the balance sheet date, the counterpart of the revenue during the month is recorded as unbilled revenue, *i.e.* as a contract asset.

When the costs are expected to be recovered, *i.e.* when the contract margin is positive, the costs related to the transit of the vessel toward the survey area are recognized as an asset to fulfil the contract. They are then expensed over the duration of the survey.

Land exclusive and Multi Physics contracts

Under our land exclusive and multi physics contracts, we acquire seismic data for a specific customer. We recognize these revenues over time. For Land turnkey contracts, the measure of revenue recognized is based on direct cash costs. For land day rate and multi physics contracts, the measure of revenue recognized is based on monthly reports of data acquired or services rendered.

Either the total price of the contract, for turnkey and lump sum contracts, or the unitary prices, for day-rate or contracts on square kilometers, are specified in the contract. With respect to contracts for both the acquisition and processing of data, the allocation is based on the stand alone selling price of each service with revenue recognized according to respective percentages of completion.

In most cases, invoicing is carried out on a monthly basis, based on the amount of data acquired and delivered to the customer, evidenced by a customer acceptance. As the acceptance is often obtained after the balance sheet date, the counterpart of the revenue during the month is recorded as unbilled revenue, *i.e.* as a contract asset.

When the costs are expected to be recovered, *i.e.* when the contract margin is positive, the costs related to the mobilization of a Land crew are recognized as an asset to fulfill the contract. They are then expensed over the duration of the survey.

5. Cost of net financial debt

Cost of net financial debt includes:

- the expenses related to long-term financial debt composed of bonds and other loans;
- the lease expenses and income from the lease obligations for the year 2019 (IFRS 16 first time application);
- other charges paid to financial institutions for financing operations;
- net income provided by cash and cash equivalents.

6. Income taxes and deferred taxes

Income taxes includes all tax based on taxable profit.

Deferred taxes are recognized on all temporary differences between the carrying value and the tax value of assets and liabilities, as well as on carry-forward losses. Deferred tax assets are recognized only when their recovery is considered as probable or when there are existing taxable temporary differences, of an appropriate type, that reverse in an appropriate period. When tax laws limit the extent to which unused tax losses can be recovered against future taxable profits in each year, the amount of deferred tax assets recognized from unused tax losses as a result of suitable existing taxable temporary differences is restricted as specified by the tax law.

Deferred tax assets and deferred tax liabilities are not discounted.

7. Intangible and tangible assets

In accordance with IAS 16 "Property, Plant and equipment" and IAS 38 "Intangible assets" only items for which cost can be reliably measured and for which the future economic benefits are likely to flow to us are recorded in our consolidated financial statements.

Property, plant and equipment

Property, plant and equipment are valued at historical cost less accumulated depreciation and impairment losses. Depreciation is generally calculated over the following useful lives:

- equipment and tools: 3 to 10 years;
- vehicles: 3 to 5 years;
- buildings for industrial use: 20 years;
- buildings for administrative and commercial use: 20 to 40 years.

Depreciation expense is determined using the straight-line method.

We exclude residual value when calculating the depreciable amount. We segregate tangible assets into their separate components if there is a significant difference in their expected useful lives, and depreciate them accordingly.

Lease agreements

IFRS 16 was issued in January 2016 and is endorsed by the EU. It supersedes IAS 17 "Leases" and a number of lease-related interpretations, and it results in almost all leases being recognized on the consolidated statement of financial position, as the distinction between operating and finance leases is removed for lessees. Under the new standard, both a right-of-use asset (the right to use the leased item) and a financial liability corresponding to the minimum lease payments are recognized. The only exemptions are for short-term leases and leases of low-value asset, and the Group has decided to use them both. Moreover, initial direct costs were not taken into account for the measurement of the right-of-use asset at the date of first time application.

Goodwill

Goodwill is determined according to IFRS 3 "Revised – Business Combinations". Goodwill is not amortized but subject to an impairment test at least once a year at the statement of financial position dates or when a triggering event occurs.

Multi-Client surveys

Multi-Client surveys consist of seismic surveys to be licensed to customers on a non-exclusive basis. All costs directly incurred in acquiring, processing and otherwise completing seismic surveys are capitalized into the multi-client surveys (including transit costs when applicable). The carrying amount of our multi-client library is stated on our statement of financial position at the aggregate of those costs less accumulated amortization. A systematic impairment test of all delivered surveys is performed at least at delivery date and for the yearly closing. Whenever there is an indication that a survey may be impaired, an impairment test is performed.

Before October 1, 2018, each survey was amortized in a manner that reflected the pattern of consumption of its economic benefits during both prefunding and after-sale periods. An amortization rate of 80% corresponding to the ratio of capitalized costs to total expected sales over the accounting life of the survey was applied to each normative sale, unless specific indications led to application of a different rate. If that was the case, the amortization rate was adjusted to reflect the commercial effects of price elements.

The Group decided from October 1, 2018 to adopt a four-year straight-line post-delivery amortization in accordance with the industry standard. Prefunding revenue is recognized upon delivery of the final product to the pre-funder(s) and the prefunding cost of sales is calculated as the difference between the total capitalized cost of a survey upon delivery and the fair value based upon discounted future expected sales. The net book value of the survey upon delivery thus equals the net present value of future expected sales. After sale revenues are recognized upon delivery of the final product to the client.

Development costs

Expenditures on research activities undertaken with the prospect of gaining new scientific or technological knowledge and understanding are recognized in the income statement as expenses as incurred and are presented as "Research and development expenses – net". Expenditures on development activities, whereby research findings are applied to a plan or design for the production of new or substantially improved products and processes, are capitalized if:

- the project is clearly defined, and costs are separately identified and reliably measured;
- the product or process is technically and commercially feasible;
- we have sufficient resources to complete development; and
- the intangible asset is likely to generate future economic benefits, either because it is useful to us or through an existing market for the intangible asset itself or for its products.

The expenditures capitalized include the cost of materials, direct labor and an appropriate proportion of overhead. Other development expenditures are recognized in the income statement as expenses as incurred and are presented as "Research and development expenses – net".

Capitalized development expenditures are stated at cost less accumulated amortization and impairment losses.

Capitalized development costs are amortized over 5 years.

Research and development expenses in our income statement represent the net cost of development costs that are not capitalized, of research costs, offset by government grants acquired for research and development.

Other intangible assets

Other intangible assets consist primarily of customer relationships, technology and trade name acquired in business combinations. Customer relationships are generally amortized over periods ranging from 10 to 20 years and acquired technology are generally amortized over periods ranging from 5 to 10 years.

Impairment of assets

The carrying amounts of our assets (excluding inventories, contract assets and assets arising from costs to obtain or fulfil a contract that are recognized in accordance with IFRS 15, non-current assets classified as held for sale in accordance with IFRS 5, deferred tax assets, assets arising from employee benefits and financial assets) are reviewed at each statement of financial position date and whenever any indication exists that an asset may be impaired, in compliance with IAS 36 "Impairment of assets". Factors we consider important that could trigger an impairment review include the following:

- significant underperformance relative to expected operating results based upon historical and/or projected data;
- significant changes in the manner of our use of the tested assets or the strategy for our overall business; and
- significant negative industry or economic trends.

The recoverable amount of tangible and intangible assets is the greater of their net fair value less costs of disposal and value in use.

Goodwill, assets that have an indefinite useful life and intangible assets are allocated to cash generating units or groups of cash generating units whose recoverable value is assessed as soon as an indication of loss of value of a cash generating unit arises.

We determine the value in use by estimating future cash flows expected from the assets or from the cash generating units, discounted to their present value using the sector weighted average cost of capital (WACC) estimated on a yearly basis by the Group. When the recoverable amount retained is the fair value less cost of disposal, the fair value is determined by reference to an active market.

We recognize an impairment loss whenever the carrying amount of an asset exceeds its recoverable amount. For an asset that does not generate largely independent cash inflows, the recoverable amount is determined for the cash-generating unit to which the asset belongs.

Impairment losses are recognized in the statement of operations. Impairment losses recognized in respect of a group of non-independent assets allocated to a cash-generating unit are allocated first to reduce the carrying amount of any goodwill allocated to cash-generating units (group of units) and then, to reduce the carrying amount of the other assets in the unit (group of units) on a pro rata basis provided that the carrying amount of an individual asset is not reduced below its value in use or fair value less costs of disposal.

A previously recognized impairment loss is reversed only if there has been a change in the assumptions used to determine the asset's recoverable amount since the last impairment loss was recognized. The reversal is limited so that the carrying amount of the asset does not exceed its recoverable amount, nor exceed the carrying amount that would have been determined, net of depreciation or amortization, had no impairment loss been recognized for the asset in prior years. Such reversal is recognized in the income statement unless the asset is carried at a revalued amount, in which case the reversal is treated as a revaluation increase.

Impairment losses recognized on goodwill cannot be reversed.

Non-current assets held for sale and discontinued operations

Non-current assets and disposal groups comprising assets and liabilities that are expected to be recovered primarily through sale rather than through continuing use are classified as held for sale. They are valued at the lower of carrying amount and fair value less costs to sell.

Non-current assets classified as held for sale and the assets of a disposal group classified as held for sale are presented separately from the other assets in the consolidated statement of financial position. The liabilities of a disposal group are presented separately from other liabilities in the consolidated statement of financial position.

A discontinued operation is a component of an entity that has either been disposed of or is classified as held for sale, and represents a separate major line of business or geographical area of operations; and is a part of a single coordinated plan to dispose of a separate major line of business or geographical area of operations; or is a subsidiary acquired exclusively with a view to resale.

Any gain or loss from disposal, together with the results of these operations until the date of disposal, is reported separately as discontinued operations in the consolidated statements of cash flows and consolidated statements of operations. The prior periods are restated accordingly.

Further information on discontinued operations and non-current assets held for sale can be found in note 5.

8. Investments in companies under the equity method

Under the equity method, the investments in our associates or joint ventures are carried in the statement of financial position at cost plus post acquisition changes in our share of net assets of the associates or joint ventures. Goodwill relating to the associates is included in the carrying amount of the investment and is neither amortized nor individually tested for impairment.

After application of the equity method, we determine whether it is necessary to recognize an additional impairment loss on our investment in the associates. We determine at each reporting date whether there is any objective evidence that the investments in our associates are impaired. If this is the case we calculate the amount of impairment as the difference between the recoverable amount of the associates and their carrying value and usually recognize the amount in the 'share of profit of an associate' in the statement of operations.

From the date when an investment ceases to be an associate or a joint venture and becomes a financial asset we discontinue the use of the equity method. The retained interests are measured at fair value. We recognize in profit or loss any difference between (i) the fair value of any retained interest and any proceeds from disposing of a part interest in the associate or joint venture; and (ii) the carrying amount of the investment at the date the equity method was discontinued.

9. Investments and other financial assets

Investments and other financial assets include investments in non-consolidated entities, loans and non-current receivables.

Investments and other financial assets currently in our statement of financial position are measured at fair value through profit and loss. The fair value for listed securities is their market price at the statement of financial position date.

We derecognize a financial asset (or, where applicable, a part of a financial asset or part of a group of similar financial assets) when:

- the rights to receive cash flows from the asset have expired; or
- we have transferred the rights to receive cash flows from the asset or have assumed an obligation to pay the received cash flows in full without material delay to a third party under a 'pass-through' arrangement; and either (a) we have transferred substantially all the risks and rewards of the asset, or (b) we have neither transferred nor retained substantially all the risks and rewards of the asset, but have transferred control of the asset.

When we have transferred the rights to receive cash flows from an asset, we evaluate if and to what extent we have retained the control of this asset. When we have neither transferred nor retained substantially all of the risks and rewards of the asset, nor transferred control of the asset, the asset is recognized to the extent of our continuing involvement in the asset. In that case, we also recognize an associated liability. The transferred asset and the associated liability are measured on a basis that reflects the rights and obligations that we have retained.

Continuing involvement that takes the form of a guarantee over the transferred asset is measured at the lower of the original carrying amount of the asset and the maximum amount of consideration that we could be required to repay.

10. Treasury shares

We value treasury shares at their cost, as a reduction of shareholders' equity. Proceeds from the sale of treasury shares are included in shareholders' equity and have no impact on the statement of operations.

11. Inventories

We value inventories at the lower of cost (including direct production costs where applicable) and net realizable value.

We calculate the cost of inventories on a weighted average price basis for our Equipment segment and on a first-in first-out basis for Contractual Data Acquisition segment.

The additions and deductions in valuation allowances for inventories and work-in-progress are presented in the consolidated statements of operations as "Cost of sales".

12. Trade accounts and notes receivable

In the Contractual Data Acquisition and Geology, Geophysics & Reservoir (GGR) segments, customers are generally large national or international oil and gas companies, which management believes reduces potential credit risk.

In the Equipment segment, a significant portion of sales is paid by irrevocable letters of credit.

The Group maintains an allowance for doubtful accounts based upon factors surrounding the credit risk of specific customers, historical trends and other information. Credit losses have not been material for the periods presented and have consistently been within management's expectations.

Contract assets represent the Group's right to consideration in exchange for goods or services that the Group has transferred to a customer when that right is conditioned by something other than the passage of time *(e.g.* revenue recognised from the application of the Percentage of Completion method before the Group has a right to invoice).

13. Provisions

We record a provision when the Group has a present obligation (legal or constructive) as a result of a past event for which it is probable that an outflow of resources embodying economic benefits (that can be reliably determined) will be required to settle the obligation.

Onerous contracts

We record a provision for onerous contracts equal to the excess of the unavoidable costs of meeting the obligations under the contract over the economic benefits expected to be received under it, as estimated by the Group.

Pension and other post-employment benefits

We record obligations for contributions to defined contribution pension plans as an expense in the income statement as incurred. We do not record any provision for such plans as we have no further obligation.

Our net obligation in respect of defined benefit pension plans is calculated separately for each plan by estimating the amount of future benefit that employees have earned in return for their service in the current and prior periods. We perform the calculation by using the projected unit credit method.

The methodology of calculation and booking of the defined benefit pension plans is as follows:

- That benefit is discounted to determine its present value, and the fair value of any plan assets is deducted.
- Net interest is calculated by applying the discount rate to the net defined benefit liability or asset. Interest is recorded in the profit and loss.
- Unvested past services costs are recognized immediately if the benefits have vested immediately following the introduction of, or changes to, a pension plan.
- We record actuarial gains and losses on defined benefits plans directly in equity.

14. Financial debt

Bond debts and other interest-bearing loans are initially recognized at their fair value less transaction costs directly attributable to the issuance of the debt. These financial liabilities are then valued at their amortized cost using the effective interest method. Where applicable, the financial debt is increased by capitalized interest.

By exception of this accounting policy, the issuing costs of the First and Second Lien issued in 2018 were recognized, as incurred, as an expense of the period.

15. Derivative financial instruments

We use over-the-counter derivative financial instruments to hedge our exposure to foreign exchange fluctuations from operational, financing and investment activities denominated in a currency different from the functional currency. In accordance with our treasury policy, we do not hold or issue derivative financial instruments for trading purposes. However, derivatives that do not qualify for hedge accounting are accounted for as trading instruments in "Other financial income (loss)".

Over-the-counter derivatives are entered into in the frame master agreements that provide a right of set-off in the event of default, insolvency or bankruptcy of one of the parties to the agreement (those netting agreements do not fulfill IAS 32 criteria to offset the fair value of derivatives on the statement of financial position).

Exchange gains or losses on foreign currency financial instruments that represent the efficient portion of an economic hedge of a net investment in a foreign subsidiary are reported as translation adjustments in shareholder's equity under the line item "Cumulative translation adjustments", the inefficient portion being recognized in the statement of operations. The cumulative value of foreign exchange gains and losses recognized directly in equity will be transferred to statement of operations when the net investment is sold.

Derivative financial instruments are stated at fair value. The gain or loss on reassessment to fair value is recognized immediately in the statement of operations. However, where derivatives qualify for cash flow hedge accounting, we account for changes in the fair value of the effective portion of the hedging instruments in shareholder's equity. The ineffective portion is recorded in "Other financial income (loss)". Amounts recorded in other comprehensive income are reclassified into the statement of operations when the hedged risks impact the statement of operations.

When derivatives do not qualify for cash flow hedge accounting, we account for changes in the fair value into the statement of operations in "Other financial income (loss)".

16. Cash flow statement

The cash flows of the period are presented in the cash flow statement within three activities: operating, investing and financing activities:

Operating activities

Operating activities are the principal revenue-producing activities of the entity and other activities that are not investing or financing activities.

Investing activities

Investing activities are the acquisition and disposal of long-term assets and other investments not included in cash equivalents. When a subsidiary is acquired, a separate item, corresponding to the consideration paid net of cash and cash equivalents held by the subsidiary at the date of acquisition, provides the cash impact of the acquisition.

Investments in multi-client surveys are presented net of depreciation and amortization capitalized in multi-client surveys. Depreciation and amortization capitalized in multi-client surveys are also restated in operating activities.

Financing activities

Financing activities are activities that result in changes in the size and composition of the contributed equity and borrowings of the entity.

They include the cash impact of financial expenses and lease repayments.

Cash and cash equivalents

Cash and cash equivalents in the consolidated statement of financial position comprise cash at banks and on hand and short-term deposits with a maturity of three months or less that are readily convertible to known amounts of cash.

17. Share-based payments, including stock options

Employees (including senior executives) of the Group receive remuneration in the form of share-based payments. These rights can be settled either in equity (equity-settled transactions) or in cash (cash-settled transactions).

Equity-settled transactions

We include stock options granted to employees in the financial statements using the following principles: the stock option's fair value is determined on the grant date and is recognized in personnel costs, with a corresponding increase in equity, on a straight-line basis over the period between the grant date and the end of the vesting period. We calculate stock option fair value using the Black-Scholes mathematical model.

Cash-settled transactions

The cost of cash-settled transactions is measured initially at the grant date using a binomial model. A provision is recognized over the period until the vesting date. This liability is re-measured at fair value at each reporting date up to and including the settlement date, with changes in fair value recognized in the statement of operations.

18. Grants

Government grants, including non-monetary grants at fair value, are not recognized until there is reasonable assurance that the entity will comply with the conditions of the grant and that the grants will be received.

Government grants are recognized as income over the periods necessary to match them with the related costs which they are intended to compensate. They are presented as a reduction of the corresponding expenses in the item “Research and development expenses, net” in the statement of operations.

Refundable grants are presented in the statement of financial position as “Other non-current liabilities”.

19. Earnings per share

Basic earnings per share amounts are calculated by dividing net income for the year attributable to ordinary equity holders of the Company by the weighted average number of ordinary shares outstanding during the year.

Diluted earnings per share amounts are calculated by dividing the net income attributable to ordinary equity holders of the Company, by the weighted average number of ordinary shares outstanding during the year plus the weighted average number of ordinary shares that would be issued on the exercise of stock options and shares from performance share plans.

Note 2 Significant events, acquisitions and divestitures

During 2019

Exit from Data Acquisition business

During 2019, we delivered several key milestones on our strategic path. Aiming at ensuring growth and sustainable returns through the cycles, the strategic roadmap announced in November 2018 (the "CGG 2021 Plan") includes a planned transition to an asset-light business model by reducing our exposure to the Data Acquisition business. The Data Acquisition business has been adversely affected over the years by structural industry overcapacity, lack of differentiation, commodity pricing and a heavy fixed cost base. The CGG 2021 Plan thus foresees the following changes:

Marine:

  - reduction of seismic vessels in operation in 2019,
  - search for a strategic partnership to cost efficiently operate and control the vessels,
- Land: wind down and exit the market;
- Multi-physics: market for sale and monetize when suitable;
- divest equity stakes in Argas and Seabed Geosolutions BV joint ventures;
- general and administrative expenses and support costs: adjust in line with new size and footprint.

As a result of these strategic announcements and actions undertaken subsequently, we have presented our Data Acquisition operations and the costs of implementation of the related measures, referred to as the "CGG 2021 Plan", in accordance with IFRS 5, as discontinued operations and assets held for sale in our Consolidated Financial Statements as of and for the years ended December 31, 2018 and 2019 (and applied retroactively as of and for the year ended December 31, 2016 and 2017).

The detail of these line items is disclosed in the note 5 as of December 31, 2018 and 2019.

For more information on the Group's strategy, see Chapter 1 "Presentation of the CGG group and its activities".

Marine Exit and Streamer NewCo

We, together with Shearwater GeoServices Holding AS ("Shearwater"), announced the signature of a binding term sheet in June 2019 that included the following elements:

(i) Shearwater's acquisition of all the shares in Global Seismic Shipping AS ("GSS"), the 50/50 joint venture between Eidesvik Offshore ASA and CGG. GSS, through subsidiaries, own five high-end seismic vessels and two legacy vessels with associated bank debt. Shearwater also agreed to acquire the streamers owned by CGG, which were associated with GSS's five high-end seismic vessels; and

(ii) a five-year services contract (the "Capacity Agreement") between Shearwater and CGG. Under this agreement, CGG commits to using Shearwater acquisition services for 730 vessel days annually in average over five years with flexibility in term of actual annual utilization. The Capacity Agreement ensures our access to strategic capacity for our future multi-client projects through Shearwater's global fleet of high-end 3D and source vessels; and

(iii) the establishment of a technology partnership through the creation of a company under the Sercel brand name and with CGG's majority ownership to which the parties will contribute their respective towed marine streamer equipment businesses. The Company will be focused on the development, manufacturing, commercialization and support of streamers, navigation software and steering systems (the "Streamer Newco Transaction").

The closing of Shearwater's acquisition of the shares in GSS and the streamers and the entry into force of the Capacity Agreement, took place on January 8, 2020 (the "Marine Closing"). The agreements for the Streamer Newco Transaction remain under negotiation.

All impacts of the Marine closing have been taken into consideration in the financial statement of position as at December 31, 2019 through the remeasurement of the fair value less cost to sell of the Marine disposal group for a net amount of US$(108.3) million.

On January 8, 2020, the following transactions have occurred:

- CGG has acquired the 50% interest held by Eidesvik in GSS and has indemnified Eidesvik for the end of the relationship against Shearwater shares. CGG also granted Eidesvik with an associated put option (the "Eidesvik Put Option");
- Shearwater has acquired 100% of GSS and the streamers from CGG against Shearwater vendor notes exchangeable into Shearwater shares (the "Shearwater Vendor Notes");
- the existing umbrella agreement and the existing bareboat charter agreements between CGG and GSS subsidiaries have been terminated as well as the guarantee granted by CGG;
- Shearwater CharterCo AS entered into five-year bareboat charter agreements with GSS subsidiaries, guaranteed by Shearwater, for the five high end vessels equipped with streamers (the "Shearwater Charter Agreements") and CGG Services SAS entered into the Capacity Agreement;
- under payment instructions agreement (the "Payment Instructions Agreement"), Shearwater and Shearwater CharterCo AS direct CGG Services SAS to pay amounts due under the Capacity Agreement directly to GSS subsidiaries to cover Shearwater CharterCo's obligations under its bareboat charter agreements;
- CGG also entered into step-in agreements with Shearwater and GSS (the "Step-In Agreements") which could come into force if certain conditions are met and would require CGG to substitute itself for Shearwater CharterCo AS as charterer of GG subsidiaries' fve high end seismic vessels (equipped with streamers).

After those transactions, CGG will have in its statement of financial position the main following items:

- US$53.3 million of Shearwater Vendor Notes;
- US$(148.0) million of liabilities related to the Capacity Agreement;
- US$(4.6) million of liability related to fair value of the Eidesvik Put Option.

Shearwater Vendor Notes

Those notes are exchangeable into Shearwater shares. They can also be used to setoff payment obligations or buy assets, but only as agreed with Shearwater. Shearwater is in no case required to settle the notes with cash. If those notes are not settled by December 31, 2020, Shearwater may require CGG to use the notes as consideration in kind for the purchase of shares in Shearwater at the price of US$25.2262 per share.

Capacity Agreement

The main terms of the Capacity Agreement are as follows:

- work exclusively with Shearwater, for seismic streamer acquisition and source vessels for nodes projects, up to 730 vessel days per year on average for the next five years;
- pay a pre-agreed day rate for the first 2.5 years and the higher of market rate or the pre-agreed day rate for the remaining 2.5 years;
- reimburse Shearwater for project-related operational costs and fuel; and
- compensate Shearwater for days during which more than one of its high end seismic vessels are idle, for a maximum of three vessels (the "Idle Vessels Compensation").

The pre-agreed day rate as negotiated in summer 2019 is higher than the current estimated average market day rate. Thus, an operational liability of US$(69) million will be recognized at Marine closing date representing the net present value of the positive difference between the pre-agreed rate and the estimated market rate over the five-year contractual term.

The Idle Vessels Compensation will give rise to a US$(79) million financial liability at Marine closing date representing the net present value of expected payments under this clause. The expected payments are estimated based on Shearwater fleet utilization assumptions over the five-year commitment period.

Eidesvik Put Option

Eidesvik has the right to sell all its Shearwater shares to CGG at a strike price of US$30 million. The exercise period starts at the earlier of: i) the date of Shearwater IPO, and ii) 1 year after Marine closing. It ends at the earlier of: i) 6 months after the date of Shearwater IPO, and ii) 3 years after Marine closing. The fair value of this put option has been assessed to be US$(4.6) million.

Step-In Agreements

As described above, following the Marine Closing, Shearwater CharterCo AS has entered into five-year bareboat charter agreements with GSS subsidiaries, guaranteed by Shearwater, for the five high end vessels equipped with streamers. CGG has agreed to substitute itself for Shearwater CharterCo AS as charterer of GSS subsidiaries' five high end seismic vessels (equipped with streamers) in the event of a payment default under the charter party agreement between the GSS subsidiaries and Shearwater CharterCo AS. Given that CGG is required under the Payment Instructions Agreement to pay amounts due under the Capacity Agreement directly to the GSS subsidiaries to cover Shearwater CharterCo's obligations under its bareboat charter agreements, a payment default can be triggered by CGG only, or a Shearwater insolvency.

Were the Step-in Agreements to be triggered:

- CGG would be entitled to terminate the Capacity Agreement;
- CGG would have the right to use the five high end seismic vessels equipped with streamers under bareboat charter agreements;
- CGG would be entitled, through pledge in its favor, to acquire all the share capital of GSS, knowing that GSS and subsidiaries' principal assets would be the vessels and streamers and its principal liabilities would be the debt associated with the vessels.

The Step-In Agreements shall not impact the financial statement of position unless a trigger, as described above,occurs. In such circumstance, the obligations under the Capacity Agreement shall be terminated and replaced by the obligations under the Step-In Agreements, for a lower amount compared to the Capacity Agreement.

Divestment from Seabed Geosolutions BV

In line with our strategy to exit the Contractual Data Acquisition business, on December 30, 2019 CGG SA entered into in a Share Purchase and Exit Agreement ("Exit Agreement") to transfer on that date 15% (out of its total 40% stake) of its shares in the Seabed Geosolutions BV joint venture ("Seabed") to its partner Fugro NV ("Fugro"), with its remaining 25% shareholding to be transferred before April 1, 2020.

In addition, CGG SA paid US$35 million to Fugro to settle any disputes and claims between them relating to Seabed, such as those related to the partners' respective obligations to jointly finance Seabed and the differing interpretations of non-competition provisions in the Seabed joint venture agreement.

Land exit

We progressively reduced the land data acquisition business over 2019 and fully shut down activity in the first quarter of 2020. Some of the assets used in this business were sold for US$3 million during 2019, and the rest are currently for sale. Most of the corresponding staff have departed under the social plan described below.

Multi-Physics exit

We started negotiations with potential acquirers in 2019 with the intention of selling our Multi-Physics business. These discussions are progressing and we signed a memorandum of understanding in February 2020.

CGG continues to carry out these strategic changes in compliance with all legal requirements.

GeoSoftware

In 2019, after CGG was approached by several potential buyers interested in GeoSoftware, part of GGR segment, the related assets were reclassified to the line "assets held for sale" and liabilities to the line "liabilities directly associated with the asset classified as held for sale". The GeoSoftware activity does not meet the criteria of a major line of business under IFRS 5, therefore the GeoSoftware operations were not presented as discontinued operations in the consolidated statements of operations and in the consolidated statements of cash flows (hence triggering no retrospective presentation). Any sale of these related assets would be independent from the CGG 2021 strategic roadmap.

Convertible bondholders' appeal

On July 17, 2018, certain holders of CGG's convertible bonds filed a recourse before the French Supreme Court *(Cour de cassation)* against the ruling rendered on May 17, 2018 by the Appeals Court of Paris rejecting a claim by a group of Convertible Bondholders against the ruling of the Commercial Court of Paris sanctioning the Safeguard Plan on December 1, 2017.

On February 26, 2020, the French Supreme Court (Cour de cassation) confirmed the ruling rendered by the Appeals Court of Paris and rejected the claim from a group of Convertible Bondhlders, putting a definitive end to this litigation.

Social Plan

In the affected countries, CGG group has complied with the administrative and legal procedures required by the employment reductions in the data acquisition business and the related support functions. In France, CGG group implemented a social plan after reaching an agreement with union representatives that was approved by the relevant regulatory body, DIRECCTE *(Direction régionale des enterprises, de la concurrence et de la consummation, du travail et de l'emploi).* Because CGG SA remains subject to certain undertakings given as part of the Safeguard Plan, we sought and received approval to the French Commercial Courts in June 2019 to carry out the strategic changes in our data acquisition business.

See note 16 for related provision for restructuring costs.

During 2018

Financial restructuring process

In the Extraordinary General Meeting of Shareholders held on November 13, 2017, the shareholders decided to reduce the Company's share capital by a total amount of €17,485,188, by reducing the nominal value of each share from €0.80 to €0.01. The completion of such share capital reduction was acknowledged by the Board of Directors on January 15, 2018, with the Board's approval of a reduction of the share capital from €17,706,519 to €221,331 by reducing the nominal value of the Company's shares from €0.80 to €0.01. The amount of €17,485,188, corresponding to the share capital reduction, was allocated in full to the "additional paid in capital" account.

On February 21, 2018, CGG successfully completed a rights issue with preferential subscription rights for an amount of €112,215,060.36 (including the share premium), through the issuance of 71,932,731 shares of the Company (the "New Shares") each with one warrant attached (the "Warrants #2" and together with the New Shares, the "ABSA") at a subscription price of €1.56 per ABSA (*i.e.* €0.01 nominal value and €1.55 share premium).

At the end of the subscription period, on February 2, 2018, the total demand, which amounted to €132.5 million, was €20.3 million higher than the target amount (amounting to a subscription rate of 118.06%). The number of ABSA subscribed on a non-reducible basis *(à titre irréductible)* was 65,283,036 and represented 90.76% of the ABSA to be issued. Additionally, 19,639,466 ABSA were subscribed on a reducible basis and such subscription has therefore been only partially satisfied, up to 6,649,695 ABSA.

On February 21, 2018, CGG finalized the implementation of its financial restructuring plan, which meets the Company's objectives of strengthening its balance sheet and providing financial flexibility to continue investing in the future. This plan comprised (i) the equitization of nearly all of the unsecured senior debt, (ii) the extension of the maturities of the secured senior debt and (iii) the provision of additional liquidity to meet various business scenarios.

As part of the implementation of its financial restructuring plan, the following securities were issued on February 21, 2018:

- US$663.6 million in principal amount of first lien senior secured notes due 2023, bearing floating rate interest at Libor (floor of 1%) + 6.5% in cash, and 2.05% paid-in-kind (PIK) issued by CGG Holding (US) Inc. in exchange for the balance of the Secured Loans (taking into account an upfront paydown of US$150 million of the Secured Loans). The first lien senior secured notes due 2023 were refinanced with the New First Lien Notes on April 24, 2018;
- US$355.1 million and €80.4 million in principal amount of second lien senior secured notes due 2024, bearing floating rate interest at Libor/Euribor (floor of 1%) depending on the currency + 4% in cash, and 8.5% paid-in-kind (PIK) issued by CGG SA. This issuance comprised US$275 million and €80.4 million as new money and US$80.2 million in exchange for part of the accrued interest claims under the Group's existing senior notes (the "Senior Notes") (with the US$ new money notes and accrued interest notes being fungible);
- 71,932,731 shares of the Company (the "New Shares") each with one share purchase warrant (the "Warrants #2" and together with the New Shares, the "ABSA"), all of which were subscribed by holders of preferential subscription rights. The final gross proceeds amounted to €112 million;
- 35,311,528 new shares (the "Creditor Shares 1") resulting from the equitization of the Convertible Bonds;
- 449,197,594 new shares (the "Creditor Shares 2") resulting from the equitization of the Senior Notes;
- 22,133,149 warrants allocated to the shareholders of CGG (the "Warrants #1");
- 113,585,276 warrants in favor of the subscribers to the Second Lien Notes (the "Warrants #3");
- 7,099,079 warrants allocated to the members of the *Ad Hoc* Committee of holders of Senior Notes (the "Coordination Warrants");
- 10,648,619 warrants allocated to the members of the *Ad Hoc* Committee of holders of Senior Notes (the "Backstop Warrants").

Following the issuance of New Shares, Creditor Shares 1 and Creditor Shares 2, the Company's share capital as of February 21, 2018 amounted to €5,785,750.02, divided into 578,575,002 shares with a nominal value of €0.01 per share.

	Warrants#1	Warrants#2	Warrants#3	Coordination Warrants	Backstop Warrants
Number of warrants issued	22,133,149	71,932,731	113,585,276	7,099,079	10,648,619
Exercise ratio	3 Warrants #1 for 4 new shares	3 Warrants #2 for 2 new shares	1 Warrant #3 for 1 new share	1 Coordination Warrant for 1 new share	1 Backstop Warrant for 1 new share
Exercise price	€3.12 per new share	€4.02 per new share	€0.01 per new share	€0.01 per new share	€0.01 per new share
Maximum number of shares to be issued upon exercise of the warrants (subject to adjustments)	29,477,536	47,955,154	113,585,276	7,099,079	10,648,619
Expiry date of the warrants	February 21, 2022	February 21, 2023	August 21, 2018	August 21, 2018	August 21, 2018

Please refer to note 15 for more information regarding the exercise of Warrants between February 21, 2018 and December 31, 2018.

Prior to the equitization of the unsecured senior debt, the Senior Notes and the Convertible Bonds were delisted from the Euro MTF market of the Luxembourg Stock Exchange and Euronext Paris, respectively.

CGG's financial restructuring plan was finalized on February 21, 2018.

Following its financial restructuring, and with the settlement and delivery of all securities and instruments contemplated thereby, CGG benefits from a healthier balance sheet with notably:

- net proceeds from the completion of the financial restructuring on February 21, 2018 of US$308 million (or US$260 million after payment of financial restructuring fees) converted at the February 21, 2018 exchange rate of US$1.2312 per €1.00;

	Part denominated *(in €)*	Part denominated *(in US$)*	Total
	(in M€)	*(in MUS$)*	*(in MUS$)*
Rights issue with preferential subscription rights net proceeds	103.5	–	127.4
Second lien senior secured notes due 2024 net proceeds	72.1	247.8	336.5
First lien senior secured notes due 2023 repayment	–	(150.0)	(150.0)
Convertible Bonds interests payment	(4.5)	–	(5.5)
Net proceeds from financial restructuring	**171.1**	**97.8**	**308.4**
Financial restructuring fees payment	(20.3)	(22.9)	(48.0)
Net proceeds	**150.8**	**74.9**	**260.4**

- in the twelve months ended December 31, 2018, the financial restructuring, the settlement and delivery of all securities and instruments contemplated thereby, and the expenses linked to the equitized unsecured senior debt, resulted in a US$759 million gain in our consolidated statement of operations. In addition, the equity increased by US$1,323 million through the issuance of new shares (as a result of the equitization of the unsecured debt, the rights issue and the future exercise of Warrants #3, Coordination Warrants and Backstop Warrants), to reach a total equity increase of US$2,082 million.

The table below details the impacts of the financial restructuring:

	Statements of operations	Other retained earnings	Total *(in MUS$)*
Unsecured debt equitization	1,062.1	930.6	1,992.7
Rights issue with preferential subscription rights	–	127.4	127.4
Future exercise of Warrants #3, Coordination Warrants and Backstop Warrants	(250.6)	250.6	–
Second lien backstop & commitment fees	(37.4)	–	(37.4)
Rollover Fees[(a)]	–	–	–
Consulting Fees	(12.5)	–	(12.5)
Deferred tax impact	–	12.6	12.6
Others	(2.9)	1.8	(1.1)
TOTAL	**758.7**	**1,323.0**	**2,081.7**

(a) *Pursuant to the indenture governing the first lien senior secured notes issued on February 21, 2018 in connection with the financial restructuring, a 3% rollover fee (US$19.9 million) would have applied if the notes were not refinanced within three months following the financial restructuring. However, given the refinancing of such notes on April 24, 2018 as described below no such rollover fee were due.*

The conversion into shares of the unsecured debt impacts the equity up to the debt carrying value. Under IFRS (IFRIC 19), the impact on the Statements of Operations (in other financial income) is the difference between the carrying value of the debt converted and the fair value of the shares issued. Considering the share price evolution on February 21 and 22, 2018, the Group concluded that €1.56 per share was a reasonable fair value estimation.

The issuance of Warrants #3, Coordination Warrants and Backstop Warrants negatively impacted the other financial income (loss) line item in the Statement of Operations, according to IFRS 2, without any impact on the equity. Given the strike price of €0.01 and the very short maturity of six months, the Black & Sholes fair value is equivalent to 1.56-0.01 = €1.55 per warrant. An equity impact will be recognized when the warrants are exercised, equal to the cash consideration received (which will be marginal given the €0.01 strike price).

All the fees have been expensed (in other financial income for the second lien backstop and commitment fees and in other revenues and expenses for the consulting fees) without any portion capitalized.

The deferred tax liabilities linked to the equity portion of the convertible bonds have been reversed through equity, without any impact on the Statements of Operations.

First lien senior secured notes due 2023 refinancing

Because the terms of the first lien senior secured notes due 2023 issued on February 21, 2018 by CGG Holding (US) Inc., a wholly-owned indirect subsidiary of CGG SA, as part of the restructuring plan (the "Refinanced First Lien Notes") provided a window to refinance them at par until May 21, 2018, we commenced an offering of new first lien senior secured notes in April 2018 to refinance the Refinanced First Lien Notes.

On April 24, 2018, CGG Holding (US) Inc. issued US$300 million in aggregate principal amount of 9.000% first lien senior secured notes due 2023 and €280 million in aggregate principal amount of 7.875% first lien senior secured notes due 2023 (together, the "New First Lien Notes").

These New First Lien Notes represented at issuance a total principal amount of US$645 million (using an exchange rate of $1.2323 per €1.00) at a weighted average coupon of 8.40%. The refinancing of the Refinanced First Lien Notes during the par window allowed the CGG group to save the 3% rollover fee (representing US$19.9 million), reduces the Group's interest cost compared to the Refinanced First Lien Notes (which bore cash interest at a rate equal to three-month LIBOR plus 6.50% *per annum* and interest paid-in-kind at 2.05% per annum) and provides a shorter non-call period (April 2020 under the New First Lien Notes *versus* February 2021 under the Refinanced First Lien Notes).

CGG Holding (US) Inc. used the net proceeds from the issuance, together with cash on hand, to redeem the Refinanced First Lien Notes in full on May 9, 2018 in accordance with their terms.

The New First Lien Notes and the second lien senior secured notes due 2024 share the same security package encompassing notably the US Multi-Client Library, the shares of the main Sercel operating entities (Sercel SAS and Sercel Inc.), the shares of significant GGR operating entities, and certain intercompany loans.

Renewal of the governance

In 2018, CGG completed the process of renewing its governance with the cooptation of five Directors (Philippe SALLE, Colette LEWINER, Mario RUSCEV, Helen LEE BOUYGUES and Heidi PETERSEN) and the appointment of one Director (Sophie ZURQUIYAH).

The members of the Board of Directors are:

Name	Position
Mr. Philippe SALLE[(a)]	Independent director and Chairman of the Board
Mrs. Sophie ZURQUIYAH[(a)]	Director and Chief Executive Officer
Mr. Mario RUSCEV[(a)]	Independent director
Mr. Robert F. SEMMENS	Director (this office expired on May 15, 2019)
Mrs. Anne-France LACLIDE-DROUIN	Independent director
Mrs. Gilberte LOMBARD	Independent director (this office expired on May 15, 2019)
Mrs. Colette LEWINER[(a)]	Independent director
Mrs. Helen LEE BOUYGUES[(a)]	Independent director
Mrs. Heidi PETERSEN[(a)]	Independent director
Mr. Michael DALY	Independent director
Mr. Patrice GUILLAUME[(b)]	Director representing the employees

(a) Appointed in 2018.
(b) Director representing employees pursuant to section L. 225-27-1 of the French Commercial Code.

Geowave Voyager

SeaBird Exploration Plc announced on July 11, 2018 that it was in an exclusive process to acquire our seismic vessel Geowave Voyager and certain seismic equipment for cash consideration of US$17 million. The transfer of ownership of the Vessel and closing of the transaction was effective in November 2018.

NYSE delisting and SEC deregistration

On September 11, 2018 CGG announced that the Board of Directors has unanimously approved the voluntary delisting of its American Depositary Shares ("ADSs") from the New York Stock Exchange ("NYSE") and its voluntary deregistration with the United States Securities and Exchange Commission ("SEC"). CGG believes that the costs associated with continuing the listing and registration of its ADSs exceed the benefits received by CGG, as the primary market for CGG shares is Euronext Paris.

Accordingly, CGG filed a Form 25 with the SEC on September 21, 2018 to effect the delisting with the NYSE and filed a Form 15F with the SEC on October 1, 2018 to terminate its SEC reporting obligations and the registration of its ADSs under the Securities Exchange Act of 1934, as amended.

The termination of the registration of its ADSs is effective 90 days after the date of filing of the Form 15F with the SEC. However, as a result of the filing of a Form 15F, CGG's obligation to file certain reports, including its obligation to file annual reports on Form 20-F and to furnish reports on Form 6-K with the SEC is immediately suspended.

Following delisting of the ADSs from the NYSE, CGG has maintained its American Depositary Receipt program at "level one". This will enable investors to retain their ADSs and facilitate trading on the US over-the-counter market.

Capital Market Day announcements

Following the "CGG 2021" strategic plan announced on November 7, 2018 and actions undertaken afterwards, Contractual Data Acquisition is accounted under IFRS 5 as discontinued operations and therefore its contributions to statements of operations and statements of cash flows are aggregated in a single line item in both statements, respectively "Net income (loss) from discontinued operations" and "Net cash flows incurred by Discontinued Operations" for all periods presented.

The Group "continuing operations" namely GGR (Geoscience and Multi-Client) & Equipment represent the new profile of the Group going forward.

Implementation of the CGG 2021 strategic plan must comply with the undertakings and requirements in the CGG Safeguard Plan and other applicable local legal requirements.

Please refer to note 5 and 20 for more information on the impact of the Capital Market Day announcements and the new organization of the Group.

Note 3 Trade accounts and notes receivable

Analysis of trade accounts and notes receivable is as follows:

In millions of US$	December 31, 2019	2018
Trade accounts and notes receivable gross – current portion	376.9	425.5
Less: allowance for doubtful accounts – current portion	(27.0)	(33.4)
Trade accounts and notes receivable net – current portion	**349.9**	**392.1**
Trade accounts and notes receivable gross – non-current portion	–	–
Less: allowance for doubtful accounts – non-current portion	–	–
Trade accounts and notes receivable net – non-current portion	**–**	**–**
Contract assets	86.1	128.1
TOTAL TRADE ACCOUNTS AND NOTES RECEIVABLE[(a)]	**436.0**	**520.2**

(a) *The amount does not include US$17.0 million of trade accounts and notes receivable, net, reclassified as assets held for sale as of December 31, 2019 (US$14.3 million of trade accounts and notes receivable, net, reclassified as assets held for sale as of December 31, 2018).*

Allowances for doubtful accounts only relate to overdue receivables at the closing date.

As of December 31, 2019 the ageing analysis of net trade accounts and notes receivable is as follows:

In millions of US$	Not past due	30 days	30-60 days	60-90 days	90-120 days	> 120 days	Total
2019	238.6	39.3	12.3	6.5	10.1	43.0	349.9
2018	275.8	46.8	10.4	5.6	5.3	48.2	392.1

Litigation

On March 18, 2013, CGG Services SAS and Wavefield Inseis AS (together "CGG"), both fully owned subsidiaries of CGG SA, initiated arbitration proceedings against ONGC, an Indian company, to recover certain unpaid amounts under three commercial contracts entered into by ONGC and CGG Services SAS on one hand and ONGC and Wavefield Inseis AS on the other hand, between 2008 and 2010. The Arbitration Tribunal issued an award in favor of CGG on July 26, 2017 and at the same date dismissed ONGC's counter claims against CGG. ONGC submitted an application against the Tribunal award on October 27, 2017. On January 6, 2020, ONGC's application to set aside the Tribunal awards was dismissed by the Single Judge of the Bombay High Court without costs. ONGC has filed an appeal on March 2, 2020 against this judgment, which appeal is pending before the Division Bench of the Bombay High Court. We believe that the Tribunal's award which is affirmed by the recent Bombay High Court's judgment will allow us to recover at a minimum the amount of the receivables that are recorded on our balance sheet as unpaid receivables as of December 31, 2019.

Factoring agreements

There were no factoring agreements as of December 31, 2019 and 2018.

Note 4 Inventories, work in progress and other current assets

In millions of US$	December 31, 2019			December 31, 2018		
	Cost	Valuation Allowance	Net	Cost	Valuation Allowance	Net
Consumables and spares parts	8.2	(2.5)	5.7	15.8	(0.4)	15.4
Raw materials and sub-assemblies	73.5	(16.6)	56.9	71.6	(20.3)	51.3
Work in progress	140.0	(36.9)	103.1	127.4	(40.1)	87.3
Finished goods	74.7	(40.3)	34.4	91.3	(40.5)	50.8
INVENTORIES AND WORK IN PROGRESS	**296.4**	**(96.3)**	**200.1**	**306.1**	**(101.3)**	**204.8**

Variation of inventories and work in progress

VARIATION OF THE PERIOD

In millions of US$	December 31, 2019	2018
Balance at beginning of period	**204.8**	**239.3**
Variations	(10.0)	(0.9)
Movements in valuation allowance[(a)]	3.3	(29.0)
Change in exchange rates	(3.0)	(9.3)
Change in consolidation scope	–	–
Others	5.0	4.7
BALANCE AT END OF PERIOD	**200.1**	**204.8**

(a) Following the November 7, 2018 Capital Market Day announcements, the Equipment division revised its perspectives of sales of its inventories as external outputs could not fully replace expected internal outputs. The revision of perspectives led to a provision of US$30 million of its inventories (mainly Land equipment).

The US$5 million in other variation is due to the reclassification of finished goods to asset under construction under the Equipment segment.

Other current assets

In millions of US$	December 31, 2019	2018
Personnel and other tax assets	51.3	43.3
Fair value of financial instruments	–	–
Restricted cash	13.4	12.4
Other miscellaneous receivables	22.5	12.3
Supplier prepayments	12.0	15.6
Prepaid expenses	17.5	15.5
OTHER CURRENT ASSETS[(a)]	**116.7**	**99.1**

(a) The amount does not include US$1.9 million of other current assets reclassified as assets held for sale as of December 31, 2019 (US$2.9 million of other current assets reclassified as assets held for sale as of December 31, 2018).

Note 5 Assets held for sale and discontinued operations

Assets held for sale

The 2021 strategic roadmap includes a transition to an asset-light model by reducing CGG's exposure to the data acquisition business, which has been impacted over the years by structural industry overcapacity, lack of differentiation, commodity pricing and a heavy fixed cost base. As a result of these strategic announcements and actions undertaken subsequently, we presented our data acquisition operations and the costs of implementation of the related measures, referred to as the CGG 2021 Plan, in accordance with IFRS 5, as discontinued operations and assets held for sale in our Consolidated Financial Statements as of and for the years ended December 31, 2018 and 2019 (and applied retroactively as of and for the year ended December 31, 2016 and 2017).

The fair value measurement of assets held for sale is categorized within Level 3 of the fair value hierarchy. The valuation technique and inputs are described in note 2.

In 2019, after CGG was approached by several potential buyers interested in GeoSoftware business, part of our GGR segment, the related assets were reclassified to the line "assets held for sale" and liabilities to the line "liabilities directly associated with the asset classified as held for sale". The GeoSoftware activity does not meet the criteria of a major line of business under IFRS 5, therefore the GeoSoftware operations were not presented as discontinued operations in the consolidated statements of operations and in the consolidated statements of cash flows (hence triggering no retrospective presentation). Any sale of these related assets would be independent from the CGG 2021 Plan.

Disaggregation of assets

	December 31, 2019				December 31, 2018
In millions of US$	**Marine**	**GeoSoftware**	**Other**	**Net**	
Goodwill	-	23.0	-	23.0	
Intangible assets, net	-	76.0	1.2	77.2	–
Property, plant and equipment, net	36.2	1.2	11.0	48.4	46.7
Right of use-assets(a)	82.0	0.0	-	82.0	
Investments in companies formerly under the equity method	26.4	0.0	45.6	72.0	131.6
Trade accounts and notes receivable, net	-	8.6	3.5	12.1	14.3
Other current assets, net	-	1.4	0.5	1.9	2.9
ASSETS HELD FOR SALE, NET	**144.6**	**110.2**	**61.8**	**316.6**	**195.5**

(a) Due to first application of IFRS 16 "Leases", the bareboat charter agreements have been recognized on January 1, 2019 as right-of-use assets for US$208.2 million before impairment. The provisions for onerous contracts related to the operating fleet under lease contracts have been reclassified from provisions for onerous contracts to impairment of right-of-use assets for US$(52) million.

Disaggregation of liabilities

	December 31, 2019				December 31, 2018
In millions of US$	**Marine**	**GeoSoftware**	**Other**	**Net**	
Trade accounts and notes payable			2.6	2.6	4.1
Accrued payroll costs		3.2		3.2	0.2
Other non-current liabilities	1.1		0.6	1.7	1.1
Lease liability(a)	190.7			190.7	
Provisions for onerous contracts(a)	61.0			61.0	126.3
LIABILITIES DIRECTLY ASSOCIATED WITH THE ASSETS CLASSIFIED AS HELD FOR SALE	**252.8**	**3.2**	**3.2**	**259.2**	**131.7**

(a) See footnote 1 in "disaggregation of assets" table.

Net income (loss) from discontinued operations:

	December 31,	
In millions of US$	**2019**	2018
Operating revenues	191.4	225.9
Operating expenses[(a)]	(198.1)	(339.8)
Other revenues (expenses) – net	(155.5)	(425.3)
Operating income	**(162.2)**	**(539.2)**
Interest on lease contracts	(18.5)	
Other financial income (loss)	(1.6)	(31.6)
Income taxes	(5.4)	(25.0)
Share of income (loss) in companies accounted for under the equity method	(0)	(4.2)
NET INCOME (LOSS) FROM DISCONTINUED OPERATIONS	**(187.7)**	**(600.0)**

(a) Includes cost of operations, research and development expenses, net, marketing and selling expenses, and general and administrative expenses.

For the period ended December 31, 2019, we recognized US$(155.5) million of restructuring costs as part of the CGG 2021 plan. The breakdown is as follows:

(i) US$(50.0) million of impairment of assets, coming from the loss recognized on the remeasurement to fair value less cost to sell of our disposal groups including, US$(25.7) million for marine disposal group, US$(11.1) million for Multi-physics disposal group, US$(6.1) million for Multi-physics intangible assets, US$(7.9) million of equity investment impairment, and US$0.8 million for Land assets;

(ii) US$(11.8) million of other costs, mostly related to exit and wind down costs for US$(5.2) million and transaction fees for US$(6.6) million;

(iii) US$(93.7) million of losses on divestment in Seabed Geosolutions BV, including US$(35) million settlement payment to Fugro.

As part of the CGG 2021 plan, we recognized US$(422.8) million of restructuring costs for the period ended December 31, 2018. These restructuring costs included:

(i) US$(139.1) million impairment of which US$116.9 million of impairment loss recognized on the remeasurement to fair value less cost to sell, US$16.0 million of vessels related equipment's and US$6.1 million of equity investment impairment;

(ii) US$(126.3) million of provision for onerous contracts related to the reduction of our operating fleet from 5 to 3 vessels;

(iii) US$(113.9) million additional provisions relating to the reduction of 712 positions worldwide and across the Group;

(iv) US$(22.8) million of other costs related to our CGG 2021 plan;

(v) US$(17.2) million of fair value decrease of our Global Seismic Shipping AS vendor loan; and

(vi) US$(3.5) million of provisions for tax contingencies.

Net cash flows incurred by discontinued operations

	December 31,	
In millions of US$	**2019**	2018
Net cash flow provided by (used in) operating activities	(92.7)	(113.6)
Net cash flow used in investing activities[(b)]	(37.5)	(5.7)
Net cash flow provided by (used in) financing activities[(a)]	(37.4)	–
NET CASH FLOWS INCURRED BY DISCONTINUED OPERATIONS	**(167.6)**	**(119.3)**

(a) Related to the first application of IFRS 16 "Leases" in 2019, lease repayments are recognized in financing activities.
(b) Includes US$35 million settlement payment for the Seabed Geosolutions BV divestment.

The net cash flow incurred by discontinued operations was US$(167.6) million in 2019 and US$(119.3) million in 2018. In 2019, the net cash flow includes disbursements related to CGG 2021 Plan for an amount of US$(136) million, including the settlement payment of US$(35) million to Fugro.

Note 6 Assets Valuation allowance

	December 31, 2019					
In millions of US$	Balance at beginning of year	Additions	Deductions	Unused Deductions	Others[(a)]	Balance at end of period
Trade accounts and notes receivable	33.4	7.8	(14.4)	–	0.2	27.0
Inventories and work-in-progress	101.3	4.2	(7.5)	–	(1.7)	96.3
Tax assets	4.9	–	(0.3)	–	–	4.6
Other current assets	3.0	–	(0.1)	–	–	2.9
TOTAL ASSETS VALUATION ALLOWANCE	**142.6**	**12.0**	**(22.3)**	**–**	**(1.5)**	**130.8**

(a) *Includes the effects of exchange rate changes and changes in the scope of consolidation.*

	December 31, 2018					
In millions of US$	Balance at beginning of year	Additions	Deductions	Unused Deductions	Others[(a)]	Balance at end of period
Trade accounts and notes receivable	33.1	9.1	(8.6)	–	(0.2)	33.4
Inventories and work-in-progress[(b)]	75.2	30.7	(1.7)	–	(2.9)	101.3
Tax assets	8.2	–	(3.2)	–	(0.1)	4.9
Other current assets	3.8	–	(0.8)	–	–	3.0
TOTAL ASSETS VALUATION ALLOWANCE	**120.3**	**39.8**	**(14.3)**	**–**	**(3.2)**	**142.6**

(a) *Includes the effects of exchange rate changes and changes in the scope of consolidation.*
(b) *Following the November 7, 2018 Capital Market Day announcements, the Equipment division revised its perspectives of sales of its inventories as external outputs could not fully replace expected internal outputs. The revision of perspectives led to a provision of US30 million of its inventories (mainly Land equipment).*

Note 7 Investments and other financial assets

In millions of US$	2019	2018
Non-consolidated investments	1.1	1.8
Loans and advances	7.3	10.2
Deposits and other[(a)]	19,0	19.1
TOTAL	**27.4**	**31.1**

(a) *In 2019, the amount of pledged financial assets is US$18.3 million.*

Non-consolidated investments

	December 31,	
In millions of US$	2019	2018
Investments in non-consolidated companies[(a)]	1.1	1.8
TOTAL NON-CONSOLIDATED INVESTMENTS	**1.1**	**1.8**

(a) *Mainly Interactive Network for US$1 million.*

No restriction or commitment exists between CGG and the non-consolidated investments.

Note 8 Investments in companies under the equity method

In millions of US$	Country/Head office	2019 % of interests	December 31, 2019	2018
Marine acquisition				
CGG Eidesvik Ship Management AS	Norway/Bergen	49.0%	–	0.2
PT Elnusa-CGGVeritas Seismic	Indonesia/Jakarta	49.0%	0.3	0.3
PTSC CGGV Geophysical Survey Limited	Vietnam/Vung Tau City	49.0%	–	–
GGR				
Petroleum Edge Limited[(a)]	UK/London	–	–	(3.4)
Reservoir Evaluation Services LLP	Kazakhstan/Almaty	49.0%	2.7	3.0
Investments in companies under the equity method			**3.0**	**0.1**

(a) Petroleum Edge Limited has been dissolved on December 24, 2019.

Subsequently to the presentation on November 7, 2018 of the CGG strategic roadmap during the Capital Market Day, the investments in the following companies under the equity method have been reclassified as assets held for sale:

In millions of US$	Country/Head office	**2019 % of interests**
Marine acquisition		
Global Seismic Shipping AS	Norway/Bomlo	50.0%
Land and Multi-physics acquisition		
Argas	Saudi Arabia/Al-Khobar	49.0%
Seabed Geosolutions BV[(a)]	The Netherlands/Amsterdam	25.0%

(a) On December 30, 2019, in line with its strategy to exit the data acquisition business, CGG has agreed to transfer its 40% shareholding in Seabed Geosolutions to Fugro before April 1, 2020. 15% out 40% have been transferred to Fugro as of December 31, 2019.

The variation of "Investments in companies under the equity method" is as follows:

In millions of US$	December 31, 2019	2018
Balance at beginning of period	**0.1**	**192.7**
Change in consolidation scope	–	0.4
Investments made during the year	3.1	–
Equity in income	(0.2)	(5.4)
Impairment		(6.1)
Dividends received during the period, reduction in share capital	–	–
Investments reclassified as Assets held for sale	–	(181.6)
Change in exchange rate and other	–	0.1
BALANCE AT END OF PERIOD	**3.0**	**0.1**

The investments in 2019 corresponded for US$3.1 million to our participation in Petroleum Edge Limited capital increase through the conversion of part of the existing debt.

For transactions with investments in companies under the equity method, please see note 28 "Related party transactions".

Note 9 Property, plant and equipment

	December 31,					
	2019			2018		
In millions of US$	**Gross**	**Accumulated depreciation**	**Net**	Gross	Accumulated depreciation	Net
Land	6.8	–	6.8	14.7	–	14.7
Buildings[(a)]	156.5	(110.1)	46.4	234.0	(130.1)	103.9
Machinery & equipment	215.0	(147.4)	67.6	245.2	(195.3)	49.9
Other tangible assets	122.7	(118.6)	4.1	108.4	(87.7)	20.7
Right-of-use assets[(a)]	264.5	(89.4)	175.1	–	–	–
• Property	207.9	(67.1)	140.8	–	–	–
• Machinery & Equipment	56.6	(22.3)	34.3	–	–	–
TOTAL PROPERTY, PLANT AND EQUIPMENT	**765.5**	**(465.5)**	**300.0**	**602.3**	**(413.1)**	**189.2**

(a) Prior to IFRS 16 first application, capital leases were disclosed by nature of tangible assets and are presented in right-of-use assets as of December 31, 2019.

Short-term leases and leases of low-value assets

As allowed by IFRS 16 the Group decided to use the exemptions for short-term leases (<12 months) and leases of low-value assets (US$5,000) which are not material as of December 31, 2019.

Revenues from subleases

The Group entered into arrangements to sublease leased office assets to a third party, these subleases are classified as operating leases and the revenues are not material as of December 31, 2019.

Variation of the period

	December 31,	
In millions of US$	**2019**	2018
Balance at beginning of period	**189.2**	**330.3**
IFRS 16 first time application right-of-use assets (net)[(a)]	128.8	–
Acquisitions[(b)]	73.8	63.0
Depreciation[(c)]	(75.0)	(65.9)
Disposals	(3.4)	(4.6)
Change in exchange rates	(1.2)	(6.0)
Change in consolidation scope	–	–
Impairment of assets[(d)]	(5.5)	(16.0)
Reclassification of tangible assets as “Assets held for sale”	(1.1)	(104.5)
Other	(5.6)	(7.1)
BALANCE AT END OF PERIOD	**300.0**	**189.2**

(a) The line item “IFRS 16 first time application right-of-use assets” includes impairments of US$17 million.
(b) Including US$33.2 million additional right-of-use assets.
(c) US$45.2 million are related to right-of-use assets.
(d) US$5.5 million are related to the impairment of right-of-use assets.

On January 1, 2019, for the first application of IFRS 16, the Group recognized right-of-use assets of US$128.8 million (after impairments) from the identified operating lease commitments. See note 1 for more information on the first application of IFRS 16.

In 2018, the Reclassification of tangible assets as “Assets held for sale” line item included reclassification of assets related to the Contractual Data Acquisition segment (see note 5 “Non-current assets held for sale and discontinued operations”). The Impairment of assets line item included impairment loss recognized following our Capital Market Day announcement.

Reconciliation of acquisitions with the consolidated statements of cash flows and capital expenditures in note 20

In millions of US$	December 31, 2019	2018
Acquisitions of tangible assets, excluding lease	40.6	63.0
Development costs capitalized (see notes 10 and 21)	32.4	33.1
Additions in other intangible assets, excluding non-exclusive surveys (see note 10)	1.2	3.0
Variance of fixed assets suppliers	1.1	4.4
Reclassification of flows as discontinued operations	–	(25.5)
TOTAL PURCHASES OF TANGIBLE AND INTANGIBLE ASSETS ACCORDING TO CASH FLOW STATEMENT ("CAPITAL EXPENDITURES")	**75.3**	**78.0**

Note 10 Intangible assets

	December 31,					
	2019			2018		
In millions of US$	Gross	Accumulated depreciation	Net	Gross	Accumulated depreciation	Net
Multi-Client surveys Marine	5,013.5	(4,554.0)	459.5	4,845.8	(4,279.1)	566.7
Multi-Client surveys Land	784.5	(713.0)	71.5	751.2	(684.6)	66.6
Development costs capitalized	418.8	(316.0)	102.8	445.3	(266.3)	179.0
Software	102.8	(95.4)	7.4	107.2	(92.1)	15.1
Customer relationships	227.4	(182.2)	45.2	232.1	(173.8)	58.3
Other intangible assets	209.3	(204.9)	4.4	215.8	(202.6)	13.2
TOTAL INTANGIBLE ASSETS	**6,756.3**	**(6,065.5)**	**690.8**	**6,597.4**	**(5,698.5)**	**898.9**

VARIATION OF THE PERIOD

In millions of US$	December 31, 2019	2018
Balance at beginning of period	**898.9**	**1,152.2**
IFRS 15 First time application	–	119.0
Increase in multi-client surveys	204.5	241.6
Development costs capitalized	32.4	33.1
Other acquisitions	1.2	3.1
Depreciation on multi-client surveys	(308.0)	(552.3)
Other depreciation	(58.7)	(78.0)
Disposals	–	(0.3)
Change in exchange rates	(1.3)	(10.6)
Reclassification of intangible assets as "Assets held for sale"[(a)]	(76.0)	(9.1)
Other	(2.2)	0.3
BALANCE AT END OF PERIOD	**690.8**	**898.9**

(a) In 2019, intangible assets related to GeoSoftware activity and reclassified in asset held for sale. See note 5.

In 2019, the "Depreciation on multi-client surveys" includes US$(33.0) million of impairment of multi-client surveys. These impairment are mainly coming from the Irish Prime Minister decision to restrict oil exploration in Ireland in 2019 as well as the potential lifting of the obligation to use CGG's services for oil groups in Gabon.

In 2018, the "Depreciation on multi-client surveys" line item included:

(i) US$(226) million of impairment of multi-client surveys, including StagSeis survey fully impaired for US$(197.0) million;

(ii) US$(94) million impact of the multi-client changes in estimate, including catch-up effect.

Reconciliation of acquisitions with the consolidated statements of cash flows and capital expenditures in note 20

	December 31,	
In millions of US$	**2019**	2018
Increase in multi-client surveys	204.5	241.6
Multi-Client depreciations & amortizations capitalized	(18.8)	(18.8)
INVESTMENT IN MULTI-CLIENT SURVEYS ACCORDING TO CASH FLOW STATEMENT	**185.7**	**222.8**

Note 11 Goodwill

Analysis of goodwill is as follows:

VARIATION OF THE PERIOD

In millions of US$	**2019**	2018
Balance at beginning of period	1,229.0	1,234.0
Additions	–	–
Reclassification of intangible assets as "Assets held for sale"[(a)]	(23.0)	–
Change in exchange rates	0.9	(5.0)
BALANCE AT END OF PERIOD	**1,206.9**	**1,229.0**

(a) Goodwill associated to GeoSoftware activity is reclassified in asset held for sale. See note 5.

Impairment review

The Group management undertakes at least an annual impairment test covering goodwill, intangible assets and indefinite lived assets allocated to the cash generating units to consider whether impairment is required.

For this year's impairment test, due to IFRS 16 first time application, the capital employed included the net amount between Right Of Use of assets and lease liabilities. There was no impact on the impairment test result

The recoverable amount retained by the Group corresponds to the value in use of the assets, cash generating units or group of cash generating units, defined as the discounted expected cash flows. In certain occasions, the recoverable amount retained is the fair value less costs of disposal.

There are nine cash generating units. A cash generating unit is a homogeneous group of assets that generates cash inflows that are largely independent of the cash inflows from other groups of assets.

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The following table provides the split of the total Group Goodwill per segment:

In millions of US$	**2019**	2018
Contractual Data Acquisition	**–**	**–**
Non-Operated Resources	**–**	**–**
CGU Multi-Client	*284*	*284*
CGUs in Geoscience	*748*	*771*
GGR	**1,032**	**1,055**
Equipment	**175**	**174**
TOTAL	**1,207**	**1,229**

Key assumptions used in the determination of recoverable amount

In determining the asset recoverable amount through value in use, management makes estimates, judgments and assumptions on uncertain matters. For each cash generating unit tested for goodwill impairment, the value in use is determined based on economic assumptions and forecasted operating conditions as follows:

- expected cash flows estimated in the 2020 budget and 2021-2022 outlook as presented to the Board of Directors on December 11, 2019;
- use of normative cash flows beyond Year 3, the discounted normative cash flows weigh more than 80% of the total value in use;
- long-term growth rate at 2.0% for all the CGUs;
- discount rates which we consider reflect the respective sector weighted average cost of capital (WACC):
  - 9.75% for the Equipment segment (compared to 10.0% in 2018) corresponding to a pre-tax rate of 12.6%,
  - 9.0% for the cash generating units within the GGR segment (compared to 10.0% in 2018) corresponding to a pre-tax rate from 11.1% up to 11.7%.

Our WACCs are calculated using the standard capital asset pricing model (CAPM) methodology. We requested an external valuation firm to perform an independent assessment in 2019. The pre-tax WACC is the discount rate leading to the same net present value calculated with post-tax WACC with tax expenses excluded from cash flows projections.

In 2019

GGR

Increasing oil and gas prices have significantly improved the profitability and cash flows within customer base, which should lead to an improved market for GGR. However, most large clients have publicly stated that they will maintain tight spending discipline and structure their companies to generate cash flows and returns at commodity prices lower than today's prices. Many customers are focusing their exploration and production budgets on increasing production from current installations. GGR participates in and benefits from this activity through our leading 4D and ocean bottom nodes processing, and through sales of licenses to our multi-client surveys, covering these mature areas.

We believe that our strategy based on high-end technology, services and data that support our clients' reservoir development and production optimization efforts should allow us to navigate more favorably through cycles, close to our customers.

In such an environment we plan to:

- increase our investment in new multi-client surveys from the relatively low level of 2019 while maintain acceptable levels of pre-funding and returns;
- continue to invest in research and development, people, and computer equipment to maintain our lead in high-end imaging and advance our software offering.

The capital employed of the Multi-Client cash generating unit amounts to US$707 million as of December 31, 2019, including US$284 million of goodwill.

The capital employed of the Geoscience cash generating units amounted to US$1,005 million as of December 31, 2019, including US$748 million of goodwill.

No impairment of goodwill was recognized in 2019.

Equipment

The worldwide demand for geophysical equipment increased by 30% in terms of revenues in 2019 after an increase of 50% in 2018. The demand in land seismic equipment should sustain the growth going forward while the marine streamer market should remain at a very low level, with the demand for seabed equipment driving the growth in demand, which should remain limited. The marine contractors should indeed continue to face a difficult market, restricting their ability to invest in new equipment. However, their current fleets are aging and their excess of equipments generated by the stacking of vessels is shrinking.

We believe that technology should remain the principal competitive advantage, as oil and gas companies have increasingly demanded new equipment for activities such as reservoir management and data acquisition in difficult terrain. Oil and gas companies have also become more demanding with regard to the quality of data acquired. Other competitive factors include price and customer support services.

In this environment, and notably considering its important installed base, Sercel believes that it should maintain its leading position in the seismic equipment market by capitalizing on growth opportunities resulting from the strength of its current product range, the application of new technologies in all of its products as well as from its diversified geographical presence.

The capital employed of the Equipment cash generating unit amounted to US$490 million as of December 31, 2019, including US$175 million of goodwill.

No impairment of goodwill was recognized in 2019.

In 2018

The capital employed of the Multi-Client cash generating unit amounts to US$876 million as of December 31, 2018, including US$284 million of goodwill.

The capital employed of the Subsurface Imaging and Reservoir cash generating units amounted to US$1,151 million as of December 31, 2018, including US$771 million of goodwill.

The capital employed of the Equipment cash generating unit amounted to US$534 million as of December 31, 2018, including US$174 million of goodwill.

No impairment of goodwill was recognized in 2018.

Sensitivity to changes in assumptions

Changing the assumptions selected by Group management, in particular the discount rate and the normative cash flows (based on EBITDAs – see definition in note 20) could significantly affect the evaluation of the value in use of our cash generating units and, hence, the Group's impairment test result. The profile of the business cycle could affect, to a lesser extent compared to the two previous assumptions, the evaluation of the value in use of our cash generating units.

The following changes to the assumptions used in the impairment test lead to the following:

			Sensitivity on 2021 cash flows		Sensitivity on normative cash flows		Sensitivity on discount rate (after tax)	
In millions of US$	Goodwill	Excess of the expected future Discounted cash flows over the carrying value of assets including goodwill	Decrease by 10%	Increase by 10%	Decrease by 10%	Increase by 10%	Decrease by 0.25bps	Increase by 0.25bps
CGU Multi-Client	284	910	(12)	+12	(128)	+128	+58	(54)
CGUs in Geoscience	748	426	(8)	+8	(119)	+119	+54	(50)
CGU Equipment	175	591	(3)	+3	(102)	+102	+41	(39)
TOTAL	**1,207**							

Note 12 Other current liabilities

	December 31,	
In millions of US$	**2019**	2018
Value added tax and other taxes payable	40.8	45.3
Deferred revenue	280.7	199.9
Fair value of financial instruments (see note 14)	0.1	0.3
Other liabilities	5.7	5.4
OTHER CURRENT LIABILITIES	**327.3**	**250.9**

Note 13 Financial debt

Gross financial debt as of December 31, 2019 was US$1,326.0 million compared to US$1,166.7 million as of December 31, 2018.

The breakdown of our gross debt is as follows as of December 2019:

	December 31,					
	2019			2018		
In millions of US$	Current	Non-current	Total	Current	Non-current	Total
New First lien senior secured notes due 2023	–	614.5	614.5	–	620.6	620.6
Second lien senior secured notes due 2024 (including PIK)[(a)]	–	520.8	520.8	–	480.7	480.7
Bank loans and other loans	0.0	3.3	3.3	0.4	3.0	3.4
Lease liabilities	47.5	128.0	175.5	5.4	44.6	50.0
Sub-total	**47.5**	**1,266.6**	**1,314.1**	**5.8**	**1,148.9**	**1,154.7**
Accrued interests	11.9	–	11.9	12.0	–	12.0
Financial debt	**59.4**	**1,266.6**	**1,326.0**	**17.8**	**1,148.9**	**1,166.7**
Bank overdrafts	–	–	–	–	–	–
TOTAL	**59.4**	**1,266.6**	**1,326.0**	**17.8**	**1,148.9**	**1,166.7**

(a) PIK: payment-in-kind interest.

Changes in liabilities arising from financing activities

In the frame of IFRS 16 adoption, the Group has recognized from the identified operating lease commitments, for continuing operations, a discounted lease liability of $US146 million on January 1, 2019. It is worth noting that the debt related to vessels leases with our GSS joint-venture and some assets related to the Multi-physics business lines are classified as "Liabilities directly associated with the assets classified as held for sale" according to IFRS 5.

In 2018, CGG finalized the implementation of its financial restructuring plan and the refinancing of the first lien secured note due 2023. *See note 2 for further details.*

	December 31,	December 31,
In millions of US$	2019	2018
Balance at beginning of period	**1,166.7**	**2,955.1**
First time application of IFRS 16 at January 1, 2019	146.0	
Decrease in long term debts	(0.4)	(195.9)
Increase in long term debts	–	336.5
Lease repayments	(56.9)	(5.7)
Financial interests paid	(80.5)	(73.2)
Total cash flows	(137.8)	61.7
Cost of financial debt, net	131.7	127.4
Increase in lease liabilities	33.5	–
Unsecured debt equitization (see note 2)	–	(1,992.7)
Commitment fees on 1st lien and 2nd lien (see note 2)	–	57.9
Change in exchange rates	(8.3)	(34.3)
Other	(5.8)	(8.4)
BALANCE AT END OF PERIOD	**1,326.0**	**1,166.7**

Financial debt by financing sources

	Issuing date	Maturity	Nominal amount 12.31.2019 *(in millions of currency)*	Net balance 12.31.2019 *(in MUS$)*	Interest rate
New First lien secured notes due 2023	2018	2023	€280.0	314.5	7.875%
New First lien secured notes due 2023	2018	2023	US$300.0	300.0	9.0%
Sub-total New First lien				**614.5**	
Second lien secured notes due 2024	2018	2024	€80.4	90.3	Euribor 3M + 4% in cash, + 8.5% PIK
Second lien secured notes due 2024	2018	2024	US$355.1	355.1	Libor 3M + 4% in cash, + 8.5% PIK
PIK Second lien secured notes due 2024[(a)]	–	–	–	75.4	Same as principal amount
Sub-total Second lien				**520.8**	
Other loans	–	–	–	3.3	–
Sub-total bank loans and other loans				**3.3**	
Sub-total Lease liabilities				**175.5**	
TOTAL FINANCIAL DEBT, EXCLUDING ACCRUED INTERESTS AND BANK OVERDRAFTS				**1,314.1**	

(a) PIK: payment-in-kind interests.

Financial debt by currency

In millions of US$	**December 31, 2019**	December 31, 2018
USD	802.8	682.8
EUR	475.1	471.9
GBP	11.7	
AUD	5.5	
CAD	5.3	
NOK	4.4	
SGD	3.2	
RUB	1.0	
Other	5.1	
TOTAL FINANCIAL DEBT, EXCLUDING ACCRUED INTERESTS AND BANK OVERDRAFTS	**1,314.1**	**1,154.7**

Financial debt by interest rate

In millions of US$	**December 31, 2019**	December 31, 2018
Variable rates (average effective rate December 31, 2019: 13.39%, 2018: 14.37%)	520.8	480.7
Fixed rates (average effective rate December 31, 2019: 7.97%, 2018: 8.08%)	793.3	674.0
TOTAL FINANCIAL DEBT, EXCLUDING ACCRUED INTERESTS AND BANK OVERDRAFTS	**1,314.1**	**1,154.7**

Variable interest rates are generally based on inter-bank offered rates of the related currency.

New First lien secured notes due 2023

The outstanding value at December 31, 2019, is US$614.6 million.

These New First Lien Notes represented at issuance a total principal amount of US$645 million (using an exchange rate of $1.2323 per €1.00) at a weighted average coupon of 8.40%.

CGG Holding (US) Inc. used the net proceeds from the issuance, together with cash on hand, to redeem the Refinanced First Lien Notes in full on May 9, 2018 in accordance with their terms.

The New First Lien Notes and the second lien senior secured notes due 2024 share the same security package encompassing notably the US Multi-Client Library, the shares of the main Sercel operating entities (Sercel SAS and Sercel Inc.), the shares of significant GGR operating entities, and certain intercompany loans.

Second lien senior secured notes due 2024

The outstanding value at December 31, 2019, is US$520.8 million.

On February 21, 2018, CGG SA issued US$355.1 million and €80.4 million in principal amount of second lien senior secured notes due 2024 (US$480.7 million as of December 31, 2018, including the paid-in-kind (PIK) from February 21, 2018 to December 31, 2018 and converted at the December 31, 2018 exchange rate of US$1.1450 per €1.00), bearing floating rate interest at Libor/Euribor (floor of 1%) depending on the currency + 4% in cash, and 8.5% PIK. This issuance comprises US$275 million and €80.4 million as new money and US$80.2 million in exchange for part of the accrued interest claims under the Senior Notes (with the US$ new money notes and accrued interest notes being fungible).

The New First Lien Notes due 2023 and the second lien senior secured notes due 2024 share the same security package encompassing notably the US Multi-Client Library, the shares of the main Sercel operating entities (Sercel SAS and Sercel Inc.), the shares of significant GGR operating entities, and certain intercompany loans.

Other Loan

As part of the financial restructuring plan, each Senior Noteholder was offered the option for the Accrued Senior Note Interest claim computed as at October 31, 2017 to (i) subscribe on a pro rata basis to their interest claim for New Second lien senior secured notes due 2024 for a global maximum amount of US$86 million, or to (ii) retain its claim in respect of Accrued Senior Note Interest amended as follow:

(a) maturity extended by 10 years

(b) rescheduling of payments as follows:

(i) 1% p.a. in Y1 to Y2 from December 1st, 2017,

(ii) 5% p.a. in Y3 to Y9, and

(iii) 63% in Y10;

(c) existing guarantee package released (in accordance with "Chapter 11" proceedings);

(d) for the avoidance of doubt, does not benefit from the security and guarantee package granted in respect of the Second Lien Notes.

A portion of equivalent US$5.7 million didn't choose the option (i), and was therefore rescheduled following the payment terms above, this amount is presented on a discounted basis in the CGG accounts. The outstanding value of this loan at December 31, 2019, is US$3.2 million.

Note 14 Financial instruments

Because we operate internationally, we are exposed to general risks linked to operating abroad. Our major market risk exposures are changing interest rates and currency fluctuations. We do not enter into or trade financial instruments including derivative financial instruments for speculative purposes. Please also refer to Chapter 2 of our annual report for qualitative information.

Foreign currency risk management

As a company that derives a substantial amount of its revenue from sales internationally, we are subject to risks relating to fluctuations in currency exchange rates. Our revenues and expenses are mainly denominated in US dollars and euros, and to a significantly lesser extent, in Canadian dollars, Mexican pesos, Brazilian reals, Australian dollars, Norwegian kroner, British pounds and Chinese yuan.

Foreign currency sensitivity analysis

Fluctuations in the exchange rate of other currencies, particularly the euro, against the US dollar, have had in the past and will have in the future a significant effect upon our results of operations. We manage our balance sheet exposures (including debt exposure) by maintaining our monetary assets and liabilities in the same currency to the extent practicable and rebalances through spot and forward currency sales or equity purchases or transactions. Although we attempt to reduce the risks associated with exchange rate fluctuations, the fluctuations in the values of the currencies in which we operate may materially adversely affect our future results of operations.

As of December 31, 2019, we estimate our annual fixed needs in euros to be approximately €250 million and as a result, an unfavorable variation of US$0.10 in the average yearly exchange rate between the US dollar and the euro would reduce our operating income and our shareholders' equity by approximately US$25 million.

The following table shows our exchange rate exposure as of December 31, 2019:

	As of December 31, 2019					
	Assets	Liabilities	Currency commitments	Net position before hedging	Forward contracts applied	Net position after hedging
Converted in millions of US$	(a)	(b)	(c)	(d) = (a) – (b) ± (c)	(e)	(f) = (d) + (e)
US$[(a)]	897.4	1,218.3	–	(320.9)	–	(320.9)
EUR[(b)]	134.4	433.6	–	(299.2)	–	(299.2)
US$[(c)]	2.5	(8.9)	–	11.4	2.3	13.7
BRL[(d)]	11.1	–	–	11.1	–	11.1

(a) US$-denominated assets and liabilities in the entities whose functional currency is the euro.
(b) Euro-denominated assets and liabilities in the entities whose functional currency is the US$.
(c) US$-denominated assets and liabilities in the entities whose functional currency is the Brazilian real.
(d) BRL-denominated assets and liabilities in the entities whose functional currency is the US$.

"Gross financial debt" is the amount of bank overdrafts, plus current portion of financial debt, plus financial debt, and "net financial debt" is gross financial debt less cash and cash equivalents. Net financial debt is presented as additional information because we understand that certain investors believe that netting cash against debt provides a clearer picture of our financial liability exposure. However, other companies may present net financial debt differently than we do. Net financial debt is not a measure of financial performance under IFRS and should not be considered as an alternative to any other measures of performance derived in accordance with IFRS.

Our financial debt is partly denominated in euro and converted in US dollars at the closing exchange rate. As of December 31, 2019, our US$716 million of net financial debt included a part of debt denominated in euro of €217 million based on the closing exchange rate of US$1.1233.

From one year end closing to another, a variation of US$0.10 in the closing exchange rate between the US dollar and the euro would impact our net debt by approximately US$22 million.

Foreign forward exchange contracts

Forward exchange transactions are aimed at hedging future cash flows against rate fluctuation in relation with awarded commercial contracts. Usually these foreign forward exchange contracts maturity is less than one year.

We do not enter into forward foreign currency exchange contracts for trading purpose.

As of December 31, 2019, contracts were outstanding for the US dollar equivalent of US$10.8 million (of which US$2.6 million were applied), of which US$7.5 million against euros, US$2.4 million against Brazilian reals, and US$0.9 million against Chinese yuan.

Effects of forward exchange contracts on financial statements are as follows:

	December 31,	
In millions of US$	2019	2018
Carrying value of forward exchange contracts (see notes 4 and 12)	(0.1)	(0.3)
Gains (losses) recognized in profit and loss (see note 22)	(0.2)	(0.8)
Gains (losses) recognized directly in equity	0.2	(0.1)

Interest rate risk management

We are subject to interest rate risk on our floating rate debt and when we refinance any of our debt. As of December 31, 2019, we had US$521 million of debt, under our second lien notes, bearing variable interest, and an increase of one percentage point in the applicable three-month interest rate would have had a negative impact on our net results before taxes of US$5.2 million. Our second lien notes are subjects to paid-in-kind (PIK) interests at a fixed rate of 8.5%. As a result, the principal amount increases each period and as such, the variable component of interest is paid on an increasing amount each period. Changes in the monetary policies of the US Federal Reserve and the European Central Bank, developments in financial markets and changes in our perceived credit quality may increase our financing costs and consequently adversely impact our ability to refinance our indebtedness, which could have a negative impact on our business, liquidity, results of operations and financial condition. We aim at having medium-term fixed rates debts.

Interest rate sensitivity analysis

The following table shows our variable interest rate exposure by maturity as of December 31, 2019.

	Financial assets* (a)		Financial liabilities* (b)		Net position before hedging (c) = (a) - (b)		Off-balance sheet position (d)		Net position after hedging (e) = (c) + (d)	
12.31.2019 In millions US$	Fix rate	Variable rate	Fix rate	Variable rate	Fix rate	Variable rate	Fix rate	Variable rate	Fix rate	Variable rate
Overnight to 1 year	117	89	47	–	70	89	–	–	70	89
1 to 2 years	–	–	55	–	(55)	–	–	–	(55)	–
3 to 5 years	–	–	675	521	(675)	(521)	–	–	(675)	(521)
More than 5 years	–	–	16	–	(16)	–	–	–	(16)	–
TOTAL	**117**	**89**	**793**	**521**	**(676)**	**(432)**	**–**	**–**	**(676)**	**(432)**

* *Excluding bank overdrafts and accrued interest.*

Our sources of liquidity include debt securities which are or may be subject to variable interest rates. As a result, our interest expenses could increase if short-term interests' rates increase. The sensitivity analysis is based on a net liability exposure of US$432 million. Our variable interest rate indebtedness carried an average interest rate of 13.4% in 2019. Each 100 basis points increase would increase our interest expenses by US$4.3 million per year and each 100 basis point decrease in this rate would decrease our interest expenses by US$4.3 million per year.

Commercial and counterparty risk

Our receivables and investments do not represent a significant concentration of credit risk due to the wide variety of markets in which we sell our services and products. Nevertheless, some of our clients are National Oil Companies, which can lead to longer payment terms and expose us to political risk. Finally, in relation with our international operations, we operate with a wide network of banks and are subject to counterparty risks.

While we seek to reduce commercial risk by monitoring our customer credit profile, in 2019, our two most significant customers accounted for 6.7% and 6.5% of our consolidated revenues, compared with 7.1% and 6.3% in 2018. The loss of any of our significant customers or deterioration in our relations with any of them could affect our business, results of operations and financial condition.

Liquidity risk management

Our principal financing needs are the funding of ongoing operations and capital expenditures, investments in our multi-client data library, the funding of restructuring measures relating to the "CGG 2021 plan" and of our debt services obligations. We do not have any major debt repayment scheduled before the 2023, the maturity date of our first lien notes. We intend to fund our capital requirements through cash generated by operations and liquidity on hand. In the past we have obtained financing through bank borrowings, capital increases and issuances of debt and equity-linked securities.

Our ability to make scheduled payments of principal, or to pay the interest or additional amounts, if any, or to refinance our indebtedness, or to fund planned capital expenditures will depend on our future performance, which, to a certain extent, is subject to general economic, financial, competitive, legislative, regulatory and other factors that are beyond our control.

Financial instruments by categories in the Statement of financial position

The impact and the breakdown of the Group's financial instruments in the statement of financial position as of December 31, 2019 are as follows:

	December 31, 2019						
In millions of US$	Fair value hierarchy[(a)]	Carrying Amount	Fair Value	Fair value in income statement	Loans, receivables	Debts at amortized cost	Derivatives
Non-consolidated investments	Level 3	1.1	1.1	1.1	–	–	–
Financial and non-current assets	Level 3	26.3	26.3	–	26.3	–	–
Notes receivable	Level 3	436.0	436.0	–	436.0	–	–
Financial instruments	Level 2	–	–	–	–	–	–
TOTAL ASSETS		**463.4**	**463.4**	**1.1**	**462.3**	**–**	**–**
Financial debts (see note 13)	Level 1	1,314.1	1,433.0	–	–	1,433.0	–
Bank overdraft facilities	Level 2	0.0	0.0	0.0	–	–	–
Notes payable	Level 3	117.4	117.4	–	117.4	–	–
Financial instruments	Level 2	0.1	0.1		–	–	0.1
TOTAL LIABILITIES		**1,431.6**	**1,550.5**	**0.0**	**117.4**	**1,433.0**	**0.1**

(a) Level 1 – Quoted (unadjusted) market prices in active markets for identical assets or liabilities.
Level 2 – Valuation techniques for which the lowest level input that is significant to the fair value measurement is directly or indirectly observable.
Level 3 – Valuation techniques for which the lowest level input that is significant to the fair value measurement is unobservable.

There was no change of fair value hierarchy in 2019 compared to previous years.

Due to their short maturities, the fair value of cash, cash equivalents, trade receivables and trade payables is considered as being equivalent to carrying value.

As of December 31, 2019:

- the **New First lien notes due 2023** in US dollars currency were traded at a price reflecting a discount of 106.0% of their nominal value;
- the **New First lien notes due 2023** in Euro currency were traded at a price reflecting a discount of 106.3% of their nominal value;
- the **Second lien senior secured notes due 2024** in US dollars currency were traded at a price reflecting a discount of 115.9% of their nominal value;
- the **Second lien senior secured notes due 2024** in Euro currency were traded at a price reflecting a discount of 114.5% of their nominal value.

Note 15 Common stock and stock option plans

The Company's share capital at December 31, 2019 consisted of 709,956,358 shares, each with a nominal value of €0.01 and 709,944,816 as of December 31, 2018 with a nominal value of €0.01.

Rights and privileges related to ordinary shares

Ordinary shares give right to dividend. Ordinary shares registered held for more than two years give a double voting right.

Dividends may be distributed from the statutory retained earnings, subject to the requirements of French law and the Company's articles of incorporation.

Retained earnings available for distribution amounted to €1,855.2 million (US$2,084.0 million) at December 31, 2019. We did not pay any dividend during the years ended December 31, 2019 and 2018.

Common stock in 2019

Common stock operations for 2019 result from the exercise of warrants for 9.504 shares and stock options for 2.038 shares.

Common stock in 2018

Common stock operations for 2018 were:

- a reduction of the nominal value of each share from €0.80 to €0.01 (refer to note 2"Significant events" for more information),
- the issuance on February 21, 2018 of (refer to note 2 "Significant events" for more information):
  - 71,932,731 shares of the Company (the "New Shares") each with one share purchase warrant (the "Warrants #2" and together with the New Shares, the "ABSA"), all of which were subscribed by holders of preferential subscription rights. The final gross proceeds amounted to €112 million,
  - 35,311,528 new shares (the "Creditor Shares 1") resulting from the equitization of the Convertible Bonds,
  - 449,197,594 new shares (the "Creditor Shares 2") resulting from the equitization of the Senior Notes,
  - 22,133,149 warrants allocated to the shareholders of CGG (the "Warrants #1"),
  - 113,585,276 warrants in favor of the subscribers to the Second Lien Notes (the "Warrants #3");
  - 7,099,079 warrants allocated to the members of the *Ad Hoc* Committee of holders of Senior Notes (the "Coordination Warrants");
  - 10,648,619 warrants allocated to the members of the *Ad Hoc* Committee of holders of Senior Notes (the "Backstop Warrants").

Following the issuance of New Shares, Creditor Shares 1 and Creditor Shares 2, the Company's share capital as of February 21, 2018 amounted to €5,785,750.02, divided into 578,575,002 shares with a nominal value of €0.01 per share.

The exercise of warrants between February 21, 2018 and December 31, 2018 is as follows:

	Warrants #1	Warrants #2	Warrants #3	Coordination Warrants	Backstop Warrants
Number of warrants issued	22,133,149	71,932,731	113,585,276	7,099,079	10,648,619
Number of warrants exercised or lapsed	32,590	33,696	113,585,276	7,099,079	10,648,619
Number of warrants remaining	22,100,559	71,899,035	0	0	0
Exercise ratio	3 Warrants #1 for 4 new shares	3 Warrants #2 for 2 new shares	1 Warrant #3 for 1 new share	1 Coordination Warrant for 1 new share	1 Backstop Warrant for 1 new share
Exercise price	€3.12 per new share	€4.02 per new share	€0.01 per new share	€0.01 per new share	€0.01 per new share
Maximum number of shares to be issued upon exercise of the warrants (subject to adjustments)	29,477,536[(a)]	47,955,154	113,585,276	7,099,079	10,648,619
Number of shares issued	43,452	22,464	113,556,200	7,099,079	10,648,619
Number of shares to be issued	29,434,084	47,932,690	0	0	0
Expiry date of the warrants	February 21, 2022	February 21, 2023	August 21, 2018	August 21, 2018	August 21, 2018

(a) *The 24,996 Warrants #1 allocated to the Company in connection with the treasury shares were cancelled.*

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Stock options

Pursuant to various resolutions adopted by the Board of Directors, the Group has granted options to purchase Ordinary Shares to certain employees, Executive Officers and directors of the Group.

The detail of the beneficiaries and performance conditions for the plans before 2016 are not disclosed below as the expense is not significant in the consolidation statement. Details regarding the adjustments of the number of option are not presented for these aforementioned plans.

On June 23, 2016, the Board of Directors allocated:

- 4,126,368 options to certain employees. Their exercise price is €0.68. The options vest in three batches, in June 2018 (for 50% of the options allocated), June 2019 (for 25% of the options allocated) and June 2020 (for 25% of the options allocated). The options have an eight-year duration;
- 882,400 options to the Chief Executive Officer and 444,000 to each of the Corporate Officers. Their exercise price is €0.68. The options vest in three batches, in June 2018 (for 50% of the options allocated), June 2019 (for 25% of the options allocated) and June 2020 (for 25% of the options allocated). The options have an eight-year duration. Such vesting is subject to performance conditions based on the fulfillment of the following objectives:
  - a share price performance objective relative to the share price considering the SBF 120 index,
  - a share price performance objective relative to the ADS price considering the PHLX Oil Service Sector^SM (OSX^SM) index,
  - a financial indicator in the form of an EBITDAs objective expressed in US dollars and related to the target for the annual variable part of compensation of the Chief Executive Officer and Corporate Officers,
  - a share price performance objective relative to the share price increase over the vesting period;
- 318,080 options to the other Corporate Committee members. Their exercise price is €0.68. The options vest in three batches, in June 2018 (for 50% of the options allocated), June 2019 (for 25% of the options allocated) and June 2020 (for 25% of the options allocated). The options have an eight-year duration. Such vesting is subject to performance conditions based on the fulfillment of the following objectives:
  - a share price performance objective relative to the share price considering the SBF 120 index,
  - a share price performance objective relative to the ADS price considering the PHLX Oil Service Sector^SM (OSX^SM) index,
  - a financial indicator in the form of an EBITDAs objective expressed in US dollars and related to the target for the annual variable part of compensation of the Corporate Committee members,
  - a share price performance objective relative to the share price increase over the vesting period.

The exercise price of each option is the average market value of the share during the twenty-day period ending the day before the date the option is allocated.

On June 27, 2018, the Board of Directors allocated:

- 732,558 options to the Chief Executive Officer. Their exercise price is €2.15. The options vest in four batches, in June 2019 (for 25% of the options allocated), June 2020 (for 25% of the options allocated), June 2021 (for 25% of the options allocated) and June 2022 (for 25% of the options allocated). Such vesting is subject to performance condition related to CGG share price. The options have an eight-year duration;
- 1,141,088 options to the Executive Leadership members. Their exercise price is €2.15. The options vest in four batches, in June 2019 (for 25% of the options allocated), June 2020 (for 25% of the options allocated), June 2021 (for 25% of the options allocated) and June 2022 (for 25% of the options allocated). Such vesting is subject to performance conditions related to CGG share price. The options have an eight-year duration;
- 4,670,743 options to certain employees. Their exercise price is €2.15. The options vest in four batches, in June 2019 (for 25% of the options allocated), June 2020 (for 25% of the options allocated), June 2021 (for 25% of the options allocated) and June 2022 (for 25% of the options allocated). The options have an eight-year duration.

The exercise price of each option is the average market value of the share during the twenty-day period ending the day before the date the option is allocated.

On December 11, 2018, the Board of Directors allocated:

- 671,171 options to the Executive Leadership members. Their exercise price is €1.39. The options vest in four batches, in June 2019 (for 25% of the options allocated), June 2020 (for 25% of the options allocated), June 2021 (for 25% of the options allocated) and June 2022 (for 25% of the options allocated). Such vesting is subject to performance conditions related to CGG share price. The options have a seven-year and 7 months duration.

On June 27, 2019 and November 5, 2019, the Board of Directors allocated:

- 360,000 options to the Chief Executive Officer. Their exercise price is €1.52. The options vest in one batch in June 2022. Such vesting is subject to performance condition related to CGG share price. The options have an eight-year duration;
- 851,330 options to the Executive Leadership members. Their exercise price is €1.52. The options vest in two batches, in June 2021 (for 50% of the options allocated) and June 2022 (for 50% of the options allocated). Such vesting is subject to performance conditions related to CGG share price. The options have an eight-year duration;
- 1,062,190 options to certain employees. Their exercise price is €1.52. The options vest in two batches, in June 2021 (for 50% of the options allocated) and June 2022 (for 50% of the options allocated). The options have an eight-year duration.

The exercise price of each option is the average market value of the share during the twenty-day period ending the day before the date the option is allocated.

Information related to options outstanding at December 31, 2019 is summarized below:

Date of Board of Directors' Resolution	Options granted	Options granted after capital operations[(a)]	Options outstanding at Dec. 31, 2019[(b)(c)]	Exercise price per share *(in €)*[(b)(c)]	Expiration date	Remaining duration
June 26, 2012 to June 25, 2015	6,478,932	625,901	275,135	62.92-186.62	June 26, 2020 to June 25, 2023	5.9 to 41.1 months
June 23, 2016	6,658,848	531,281	288,665	8.52	June 23, 2024	53.8 months
June 28, 2018	6,544,389	6,544,389	5,705,070	2.15	June 28, 2026	78 months
December 11, 2018	671,171	671,171	637,612	1.39	June 28, 2026	78 months
June 27, 2019 & November 5,2019	2,273,520	2,273,520	2,264,990	1.52	June 27, 2027	89.9 months
TOTAL	**22,626,860**	**10,646,262**	**9,171,472**			

(a) Options granted adjusted following 2012, 2016 and 2018 capital increases and 2016 reverse split.
(b) Following the reverse split in July 2016, the stock options were adjusted as follows:
(c) Following the capital increase in February 2018, the stock options were adjusted as follows:

Date of stock options	Adjustment of number of options as of July 20, 2016	Exercise price before adjustment per share *(in €)*	Adjusted exercise price per share *(in €)*
June 23, 2016	208,089	0.68	21.76

Date of stock options	Adjustment of number of options as of February 21, 2018	Exercise price before adjustment per share *(in €)*	Adjusted exercise price per share *(in €)*
June 23, 2016	471,856	21.76	8.52

A summary of the Company's stock option activity, and related information for the years ended December 31, 2019 follows:

	2019		2018	
weighted average exercise price in €	**Number of options**	**Weighted average exercise price**	Number of options	Weighted average exercise price
Outstanding-beginning of year	**7,460,676**	**10.52**	**424,383**	**239.72**
Granted	2,273,520	1.52	7,215,560	2.08
Adjustments followings the reverse split	–	–	–	–
Adjustments followings the capital increase	–	–	567,078	199.14
Exercised	(2,038)	2.15	–	–
Forfeited	(560,686)	48.16	(746,345)	30.73
Outstanding-end of year	**9,171,472**	**5.99**	**7,460,676**	**10.52**
Exercisable-end of year	2,077,304	19.76	530,459	116.19

The average price of CGG share was €1.72 in 2019 and €1.94 in 2018, after adjustment following the reverse stock split and the capital increase in 2018.

Performance units

Allocation plan dated June 23, 2016

On June 23, 2016, the Board of Directors implemented a performance units plan for a maximum amount of 2,566,880 performance units out of which 108,960 were allocated to the Chief Executive Officer, 49,600 were allocated to each of the Corporate Officers, 39,680 were allocated to the other Corporate Committee members and 2,269,440 were allocated to certain employees.

The performance units vest upon the expiry of a three-year period from the vesting date subject to a presence condition in the Group at the time of vesting and achievement of certain performance conditions. These performance conditions are based on the achievement of Group objectives related to the return on capital employed and statement of financial position structure along with achievement of the segments' financial objectives aligned with the Group strategic orientations over a three-year period.

The number of vested 2016 performance units is determined upon achievement of the Group objectives up to 60% of the global allocation. The balance will be acquired based on the achievement of the segments' objectives.

The valuation of each vested 2016 performance unit shall be equal to the average closing prices of the CGG share on Euronext over the five trading days prior to the vesting date. The vested performance units will be paid half in cash and half in existing CGG shares.

Allocation plan dated June 27, 2018

On June 27, 2018, the Board of Directors allocated 157,500 performance shares to the Chief Executive Officer, 242,841 performance shares to the Executive Leadership members, and 2,708,180 performance shares to certain employees.

The performance shares vest in two batches, in June 2020 (for 50% of the shares allocated) and June 2021 (for 50% of the shares allocated). The end of the acquisition period for the first batch of these performance shares is set at the latest of the two following dates: June 27, 2020 or the date of the Annual Shareholders' Meeting convened to approve the financial statements for fiscal year 2019, provided that the Board of Directors decides that the performance conditions set forth in the plan regulation have been fulfilled. The end of the acquisition period for the second batch of these performance shares is set at the latest of the two following dates: June 27, 2021 or the date of the Annual Shareholders' Meeting convened to approve the financial statements for fiscal year 2020, provided that the Board of Directors decides that the performance conditions set forth in the plan regulation have been fulfilled.

Allocation plan dated December 11, 2018

On December 11, 2018, the Board of Directors allocated 132,821 performance shares to the Executive Leadership members.

The performance shares vest in two batches, in June 2020 (for 50% of the shares allocated) and June 2021 (for 50% of the shares allocated). The end of the acquisition period for the first batch of these performance shares is set at the latest of the two following dates: June 27, 2020 or the date of the Annual Shareholders' Meeting convened to approve the financial statements for fiscal year 2019, provided that the Board of Directors decides that the performance conditions set forth in the plan regulation have been fulfilled. The end of the acquisition period for the second batch of these performance shares is set at the latest of the two following dates: June 27, 2021 or the date of the Annual Shareholders' Meeting convened to approve the financial statements for fiscal year 2020, provided that the Board of Directors decides that the performance conditions set forth in the plan regulation have been fulfilled.

Allocation plan dated June 27, 2019

On June 27, 2019, the Board of Directors allocated 220,000 performance shares to the Chief Executive Officer, 518,660 performance shares to the Executive Leadership members, and 1,269,060 performance shares to certain employees.

The performance shares vest in two batches, in June 2021 (for 50% of the shares allocated) and June 2022 (for 50% of the shares allocated). The end of the acquisition period for the first batch of these performance shares is set at the latest of the two following dates: June 27, 2021 or the date of the Annual Shareholders' Meeting convened to approve the financial statements for fiscal year 2020, provided that the Board of Directors decides that the performance conditions set forth in the plan regulation have been fulfilled. The end of the acquisition period for the second batch of these performance shares is set at the latest of the two following dates: June 27, 2022 or the date of the Annual Shareholders' Meeting convened to approve the financial statements for fiscal year 2021, provided that the Board of Directors decides that the performance conditions set forth in the plan regulation have been fulfilled.

Compensation cost on stock options, performance shares and units

The following table lists the assumptions used to value the 2016, 2018 and 2019 options plans, the 2016, 2018 and 2019 performance units allocation plan according to IFRS 2, and the resulting fair values. The other previous plans have a non-significant impact on the IFRS 2 expense. The Group uses the Black & Scholes model. Dividend yield used is nil for all plans.

	Options granted	Volatility[(a)]	Risk-free rate	Exercise price per share *(in €)*	Estimated Maturity *(in years)*	Fair value per share at the grant date *(in €)*	Total cost *(in millions of €)*
2016 stock options plan	6,658,848	47%	(0.31)%	8.52	4	0.23	1.5
June 2018 stock options plan	6,544,389	56%	0%	2.15	2.5	0.63	4.1
December 2018 stock options plan	671,171	56%	0%	1.39	2.5	0.57	0.4
June 2019 stock options plan	2,273,520	57%	0%	1.52	2.5	0.50	1.1

	Performance shares granted	performance Conditions[(b)]	Fair value per share at the grant date *(in €)*[(c)]	Total cost *(in millions of €)*
2016 performance units allocation plan	2,566,880	0%	0.67	1.7
June 2018 performance units allocation plan	3,108,521	100%	2.15	6.7
December 2018 performance units allocation plan	132,821	100%	1.39	0.2
June 2019 performance units allocation plan	2,007,720	100%	1.52	3.1

(a) Corresponds to the average of restated historical volatility and implied volatility.
(b) Estimated.
(c) Corresponds to CGG share price at the date of allocation.

According to IFRS 2, fair value of stock options and performance shares and units must be recognized as an expense over the life of the plan. All plans are equity-settled, and thus are booked through equity. Detail of these expenses by year is as follows:

	IFRS 2 expense		Of which for the executive managers of the Group	
In millions of US$	**2019**	2018	**2019**	2018
2014 stock options plan	–	0.1	–	–
2015 stock options plan	0.0	0.1	0.0	–
2016 stock options plan	0.0	0.2	0.0	0.1
2018 stock options plans	1.7	0.9	0.7	0.3
2019 stock options plans	0.3	–	0.1	–
2016 performance units plan – paid in shares	–	(0.2)	–	–
2018 performance units plans – paid in shares	3.2	1.4	0.5	0.2
2019 performance units plan – paid in shares	0.8	–	0.3	–
RECOGNIZED EXPENSE FROM EQUITY-SETTLED SHARE BASED PAYMENT TRANSACTIONS	**6.0**	**2.5**	**1.6**	**0.6**

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Note 16 Provisions

	31 December, 2019					
In millions of US$	Balance at beginning of year	Additions	Deductions (used)	Deductions (unused)	Others[(a)]	**Balance at end of period**
Provisions for restructuring costs	123.9	5.8	(95.6)	(1.0)	(0.5)	32.6
Provisions for onerous contracts	31.1	0.4	(32.3)	(2.5)	5.1	1.8
Provisions for litigations	4.4	0.2	(0.4)	–	(3.5)	0.7
Other provisions related to contracts	13.0	4.9	(2.3)	–	(0.7)	14.9
Total current provisions	**172.4**	**11.3**	**(130.6)**	**(3.5)**	**0.4**	**50.0**
Provisions for cash-settled share-based payment arrangements (see note 15)[(b)]	0.3	0.8	–	–	–	1.1
Retirement indemnity provisions	36.2	2.3	(6.9)	(0.3)	8.7	40.0
Provisions for tax contingencies[(c)]	9.2	–	(0.1)	–	(8.9)	0.2
Provisions for onerous contracts	12.7	0.2	–	–	(11.9)	1.0
Customers Guarantee provisions	2.5	2.8	(2.6)	–	–	2.7
Provisions for customs and other contingencies	35.0	2.8	(24.1)	–	(0.6)	13.1
Total non-current provisions	**95.9**	**8.9**	**(33.7)**	**(0.3)**	**(12.7)**	**58.1**
TOTAL PROVISIONS	**268.3**	**20.2**	**(164.3)**	**(3.8)**	**(12.3)**	**108.1**

(a) Includes the effects of exchange rates changes, variations in scope (see note 2), IFRS 16 first adoption and IFRIC 23, reclassification, and gain (loss) on actuarial changes.
(b) Cash-settled linked to social charges.
(c) A reclassification to tax liabilities has been done for an amount of US$12 million (US$3.5 million provisions on litigations and US$8.9 million on provision for tax contingencies) as of January 1, 2019 (IFRIC 23).

Provision for restructuring costs

In 2019, the Group used US$(95.6) million of the provision for restructuring costs and facilities exit costs recognized last year.

In 2018, the Group recognized provisions for restructuring costs as part of our Group CGG 2021. They mainly included redundancy costs and facilities exit costs (see note 5 and note 22).

Provision for onerous contract (current and non-current)

In 2019, the variance on provisions for onerous contracts is due to the redelivery of 3 cold-stacked vessels (mainly Champion vessel).

In 2018, we recognized additional provisions for onerous contracts following Group decision to redeliver Champion vessel. A specific provision of US$(126.3) million linked to the reduction of our operating fleet from 5 to 3 vessels is booked in "Liabilities directly associated with the assets classified as held for sale" (see note 5).

Provision for customs and other contingencies

For the explanation on provision for customs and other contingencies (see note 25).

Retirement indemnity provisions

The Group main defined benefit pension plans are in France and in the UK. The UK scheme was closed to new entrants on December 1st, 1999 and closed to future accruals on November 30th, 2016.

In addition, a supplemental pension and retirement plan was implemented in December 2004 for the members of the Group's Management Committee and members of the Management Board of Sercel Holding. Contributions amounting to US$2.4 and US$5.7 million were paid respectively in 2019 and 2018.

The Group records retirement indemnity provisions based on the following actuarial assumptions:

- historical staff turnover and standard mortality schedule;
- age of retirement between 62 and 66 years old in France;
- actuarial rate and average rate of increase in future compensation;
- taxes on supplemental pension and retirement plan;

As of December 31, 2019, the net liability for these plans amounted to US$40.0 million.

The status of the retirement indemnity plans is as follows:

	December 31,	
	2019	2018
Amount recognized in the statement of financial position		
Present value of the obligation[(a)]	135.5	109.2
Fair value of plan assets	(95.5)	(73.0)
Deficit (surplus) of funded plans	**40.0**	**36.2**
Net liability (asset) recognized in the statement of financial position	**40.0**	**36.2**
Amounts recognized in the income statement		
Service cost	1.2	3.0
Interest cost (income)	0.8	1.7
Effects of curtailments/settlements	(1.9)	(11.1)
Payroll tax	–	–
Net periodic expense (profit)	**0.1**	**(6.4)**
Movements in the net liability recognized in the statement of financial position		
Net liability at January 1	**36.2**	**62.7**
Expense as above	0.1	(6.4)
Actuarial (gains)/losses recognized in other comprehensive income[(b)]	9.7	(8.8)
Contributions paid	(2.7)	(7.8)
Benefits paid by the Company	(2.3)	(1.1)
Consolidation scope entries and changes in exchange rates	(1.0)	(2.4)
Other	–	–
Net liability at December 31	**40.0**	**36.2**
Change in benefit obligation		
Benefit obligation at January 1	**109.2**	**152.4**
Payroll tax adjustment	–	–
Current service cost	1.2	3.0
Contributions paid	–	–
Interest cost	3.1	3.6
Past service cost	–	–
Benefits paid from plan	(6.3)	(11.4)
Actuarial (gains)/losses recognized in other comprehensive income	19.7	(11.8)
Effects of curtailments/settlements	(1.9)	(11.1)
Consolidation scope entries and changes in exchange rates	10.5	(15.5)
Other	–	–
Benefit obligation at December 31	**135.5**	**109.2**
Change in plan assets		
Fair value of plan assets at January 1	**73.0**	**89.7**
Interest income	2.3	1.9
Contributions paid	2.7	7.8
Benefits paid from plan	(4.0)	(10.3)
Actuarial gains/(losses) recognized in other comprehensive income	10.0	(3.0)
Effects of curtailments/settlements	–	–
Consolidation scope entries and changes in exchange rate	11.5	(13.1)
Other	–	–
Benefit obligation at December 31	**95.5**	**73.0**
Key assumptions used in estimating the Group's retirement obligations are:		
Discount rate[(d)]	1.75%	1.75%
Average rate of increase in future compensation[(e)]	2.20%	2.49%

(a) In 2019 the obligation amounts to US$135.5 million of which US$23.4 million for defined benefit plans not covered by plan assets (US$23.1 million in 2018). The average duration of the defined benefit plan obligation at the end of the reporting period is 17.6 in 2019 and 16.8 in 2018.
(b) Other comprehensive income.

Cumulative actuarial losses recognized in other comprehensive income amount to US$27.1 million as of December 31, 2019.

Changes in the defined benefit obligation and fair value of plan assets are, as follows:

In millions of US$	December 31, 2019	December 31, 2018
Amount recognized in the other comprehensive income		
Experience adjustment	1.1	(4.5)
Actuarial changes arising from changes in demographic assumptions	(0.7)	(0.4)
Actuarial changes arising from changes in financial assumptions	19.3	(6.9)
Return on plan assets (excluding amounts included in net interest expense)	(10.0)	3.0
Sub-total included in the other comprehensive income	**9.7**	**(8.8)**

(c) Plan assets

The major categories of plan assets as a percentage of the fair value of total plan assets are as follows:

	December 31, 2019	December 31, 2018
Equity securities	49%	42%
Debt securities	18%	23%
Real estate	7%	8%
Other	26%	27%

(d) Discount rate

The discount rate for entities belonging to the "euro zone" is 0.75% in 2019 (1.75% in 2018). The discount rate is determined by reference to the yield on private investment grade bonds (AA), using the Iboxx index.

The discount rate used for the United Kingdom is 2.00% in 2019 (3.30% in 2018).

An increase of 0.25bps of the discount rate would decrease the defined benefit plan ("DBO") by US$5.7 million, and a decrease of the discount rate of 0.25bps would increase the DBO by US$6.0 million.

A variation of 0.25bps of the discount rate would have no significant impacts on Service Cost and on Interest Cost (calculated impact is within US$0.1 million).

(e) Increase in future compensation

An increase of 0.25bps of the average rate would increase the future compensation by US$0.8 million, and a decrease of the average rate of 0.25bps would decrease the future compensation by US$0.8 million.

A variation of 0.25bps of the average rate would have no significant impacts on Service Cost and on Interest Cost (calculated impact is within US$0.1 million).

Note 17 Other non-current liabilities

Detail of other non-current liabilities is as follows:

In millions of US$	December 31, 2019	2018
Research and development subsidies	0.2	0.3
Profit sharing scheme	3.2	4.7
Other non-current liabilities	0.6	8.1
OTHER NON-CURRENT LIABILITIES	**4.0**	**13.1**

Note 18 Contractual obligations, commitments and contingencies

Status on contractual obligations

In millions of US$	December 31, 2019	2018
Long-term debt obligations	1,688.9	1,799.3
Lease obligations – other than bareboat agreements	173.1	198.8
Lease obligations – bareboat agreements[(a)]	326.3	365.4
TOTAL OBLIGATIONS	**2,188.3**	**2,363.5**

(a) As of December 31, 2019, the aggregate amount of our commitments for bareboat charters through our Global Seismic Shipping AS JV is US$326.3 million, out of which US$261.0 million corresponded to the operated vessels, and US$65.3 million corresponded to a cold stacked vessel.

The following table presents payments in future periods relating to contractual obligations as of December 31, 2019:

	Payments due by period				
In millions of US$	Less than 1 year	2-3 years	4-5 years	After 5 years	Total
Long-term debt obligations:					
• Repayments: fixed rates	0.3	0.6	615.2	4.4	620.5
• Repayments: variables rates[(a)]	–	–	738.0	–	738.0
• Bonds and facilities interests	82.4	172.7	75.3	–	330.4
Total Long-term debt obligations	**82.7**	**173.3**	**1,428.5**	**4.4**	**1,688.9**
Lease obligations – other than bareboat agreements	**55.9**	**66.7**	**35.4**	**15.1**	**173.1**
Lease obligations – bareboat agreements	**45.0**	**90.0**	**90.0**	**101.3**	**326.3**
TOTAL CONTRACTUAL OBLIGATIONS[(B)]	**183.6**	**330.0**	**1553.9**	**120.8**	**2,188.3**

(a) Payments are based on the variable rates applicable as of December 31, 2019.
(b) Payments in foreign currencies are converted in US$ at December 31, 2019 exchange rates.

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Guarantees

In millions of US$	December 31, 2019	2018
OPERATIONS		
Guarantees issued in favor of clients (guarantees issued by the Company to mainly support bids made at the subsidiaries level)	304.3	352.6
Other guarantees and commitments issued (guarantees issued by the Company on behalf of subsidiaries and affiliated companies in favor of customs or other governmental administrations)	6.0	13.2
FINANCING		
Guarantees issued in favor of banks (mainly to support credit facilities)	15.8	29.5
TOTAL	**326.1**	**395.3**

The maturity of the guarantees and commitments is as follows:

	Due date				
In millions of US$	Less than 1 year	2-3 years	4-5 years	After 5 years	**Total**
OPERATIONS					
Guarantees issued in favor of clients	101.5	130.8	39.6	32.4	320.1
Other guarantees and commitments issued	16.6	1.4	0.1	3.7	6.0
TOTAL	**118.1**	**132.2**	**39.7**	**36.1**	**326.1**

Others

The Group has no off-balance sheet obligations under IFRS that are not described above.

Legal proceedings, claims and other contingencies

From time to time we are involved in legal proceedings arising in the normal course of our business. We do not expect that any of these proceedings, either individually or in the aggregate, will result in a material adverse effect on our consolidated financial statements.

Note 19 Revenue

Disaggregation of revenues

The following table disaggregates our operating revenues by major sources for the period ended December 31, 2019:

	December 31, 2019		
In millions of US$	GGR	Equipment	Consolidated Total
Multi-Client prefunding	173.9	–	173.9
Multi-Client after sales	356.2	–	356.2
Total Multi-Client	530.1	–	530.1
Geoscience	385.2	–	385.2
Equipment	–	452.1	452.1
Internal revenues[(a)]	–	(11.5)	(11.5)
TOTAL OPERATING REVENUES	**915.3**	**440.6**	**1,355.9**

(a) Sale of equipment to the Contractual Data Acquisition segment which is classified as discontinued operations.

Analysis by geographical area – Analysis of operating revenues by location of customers

In millions of US$	2019		2018	
North America	375.5	27.7%	244.2	20.5%
Central and South Americas	180.2	13.3%	267.7	22.4%
Europe, Africa and Middle East	488.7	36.0%	446.5	37.4%
Asia Pacific	311.5	23.0%	235.1	19.7%
TOTAL OPERATING REVENUES	**1,355.9**	**100%**	**1,193.5**	**100%**

Analysis of operating revenues by category

In millions of US$	2019		2018	
Services rendered and royalties	765.7	56.5%	587.5	49.2%
Sales of goods	220.2	16.2%	292.7	24.5%
After-sales on multi-client surveys	356.2	26.3%	301.8	25.3%
Leases	13.8	1.0%	11.5	1.0%
TOTAL OPERATING REVENUES	**1,355.9**	**100%**	**1,193.5**	**100%**

In 2019, the Group's two most significant customers accounted for 6.7% and 6.5% of the Group's consolidated revenues compared with 7.1% and 6.3% in 2018.

Contracts balances

The contracts balances are presented below:

In millions of US$	Balance as of December 31, 2019	Balance as of December 31, 2018
Receivables	**349.9**	**392.1**
Unbilled revenues	86.1	128.1
Total contracts assets	**86.1**	**128.1**
Advance billing	(16.4)	(14.1)
Deferred revenues	(280.7)	(194.8)
Total contracts liabilities	**(297.1)**	**(208.9)**

The level of deferred revenues is a direct consequence of the impact of IFRS 15 as the multi-clent prefunding revenues not recognized before delivery of the final data increase the deferred revenues balance (and decrease the unbilled revenues to a lesser extent).

The revenues generated during the period ended December 31, 2019 from contract liabilities balances as of January 1, 2019 amount to US$137.8 million.

The revenues generated during the period ended December 31, 2019 from performance obligations satisfied (or partially satisfied) prior to January 1, 2019 amount to US$193.3 million.

Backlog – Transaction price allocated to remaining performance obligations

The aggregate amount of the transaction price allocated to the performance obligations that are unsatisfied or partially unsatisfied (*i.e.* the contractual backlog) as of December 31, 2019 amounted to US$701.8 million for continuing operations. Out of this amount, the Group expects to recognize US$557.5 million in 2020 and US$144.3 million in 2021 and beyond for continuing operations. These amounts include multi-client prefunding revenues recognized at delivery.

Assets recognized from costs to obtain or fulfill a contract

The Group has no cost falling into the definition of a cost to obtain or fulfill a contract.

Note 20 Analysis by operating segment

Group organization

Strategic Plan

Aiming at ensuring growth and sustainable returns through the cycles, the strategic roadmap announced in November 2018 (the “CGG 2021 Plan”) includes a planned transition to an asset-light business model by reducing our exposure to the Data Acquisition business. The Data Acquisition business has been adversely affected over the years by structural industry overcapacity, lack of differentiation, commodity pricing and a heavy fixed cost base. The 2021 strategy hence foresees the following changes:

- Marine: reduction of seismic vessels in operation in 2019 and search for a strategic partnership to cost efficiently operate and control the vessels;
- Land: wind down and exit the market;
- Multi-physics: market for sale and monetize when suitable;
- Divest equity stakes in Argas and Seabed Geosolutions BV joint ventures;
- Implement the appropriate adjustments to general & administrative expenses and support costs to adapt to our new size and footprint.

During 2019, we delivered several key milestones on our strategic path.

- Marine partnership;

  In June 2019, we announced the signature of a binding term sheet with Shearwater GeoServices Holding AS (“Shearwater”). The closing of the Marine Partnership with Shearwater took place on January 8, 2020 (the “Marine Closing”). All impacts of the Marine closing have been included in the financial statement of position as at December 31, 2019 through the remeasurement of the fair value less cost to sell of the Marine disposal group for a net amount of US$(108.3) million.
- Land wind down;

  We progressively reduced the land data acquisition business over 2019 and fully shut down activity in the first quarter of 2020 with last crew stopped early February 2020. Some of the assets used in this business were sold for US$3 million during 2019, and the remaining equipments are currently for sale. Most of the corresponding staff have departed under the social plan described below.
- Multi-Physics exit;

  We started negotiations with potential acquirers in 2019 with the intention of selling our Multi-Physics business. These discussions are progressing and we signed a memorandum of understanding in February 2020.
- Divestment in Seabed Geosolutions BV;

  In December 30, 2019 CGG entered into Share Purchase and Exit Agreement (“Exit Agreement”) to transfer on this very date 15% (out of its total 40% stake) of the shares of the Seabed Geosolutions BV joint venture (“Seabed”) to its partner Fugro NV (“Fugro”), with its remaining 25% shareholding to be transferred before April 1, 2020.

In addition, CGG SA paid US$35 million to Fugro to settle any disputes and claims between them relating to Seabed, such as those related to the partners’ respective obligations to jointly finance Seabed and the differing interpretations of non-competition provisions in the Seabed joint venture agreement.

CGG continues to carry out these strategic changes in compliance with all legal requirements.

The detail of these line items is disclosed in note 2 and note 5 to our Consolidated Financial Statements. For further detail, please also refer to Chapter 1 “Presentation of the CGG Group and its activities”.

Segments presentation and discontinued operations

Financial information by segment is reported in accordance with our internal reporting system and provides internal segment information that is used by the chief operating decision maker to manage and measure performance.

Until the least quarter of 2018, we organized our activities in four segments for financial reporting: (i) Contractual Data Acquisition, (ii) Geology, Geophysics & Reservoir ("GGR"), (iii) Equipment and (iv) Non-Operated Resources. As a result of the strategic announcements and actions undertaken afterwards (see above), our Contractual Data Acquisition segment and part of our Non-Operated Resources segment are presented as discontinued operations and assets held for sale in accordance with IFRS 5. This presentation applied for the first time as of and for the year ended December 31, 2018.

The costs of implementation of the exit of Data Acquisition business, referred to as the "CGG 2021 Plan" are reported in the related Contractual Data Acquisition business lines. A summary of our segments is set out below.

Continuing operations

GGR

This operating segment comprises the Geoscience business lines (processing and imaging of geophysical data, reservoir characterization, geophysical consulting and software services, geological data library and data management solutions) and the multi-client business line (development and management of seismic surveys that we undertake and license to a number of clients on a non-exclusive basis). Both activities regularly combine their offerings, generating overall synergies between their respective activities.

Equipment

This operating segment comprises our manufacturing and sales activities for seismic equipment used for data acquisition, both on land and marine. The Equipment segment carries out its activities through our subsidiary Sercel.

Discontinued operations

- Contractual Data Acquisition. This operating segment comprises the following business lines:
  - Marine: offshore seismic data acquisition undertaken by us on behalf of a specific client, and
  - Land and Multi-physics: other seismic data acquisition undertaken by us on behalf of a specific client;
- Non Operated ressources (NOR)

We started implementing our Transformation Plan in the first quarter of 2014 to address the cyclical trough in the seismic market, and as market conditions deteriorated further, we implemented additional steps, ultimately downsizing our marine fleet to five 3D high-end vessels. As a result, some of our owned vessels were not operated for a certain period of time. The costs of the non-operated acquisition resources as well as the costs of the implementation linked to the downsizing of our Contractual Data Acquisition businesses are reported in the discontinued operations portion of this segment.

As a complement to Operating Income, EBIT may be used by management as a performance indicator for segments because it captures the contribution to our results of the significant businesses that are managed through our joint ventures. We define EBIT as Operating Income plus our share of income in companies accounted for under the equity method.

We define EBITDAs as earnings before interest, tax, income from equity affiliates, depreciation, amortization net of amortization expense capitalized to multi-client, and share-based compensation cost. Share-based compensation includes both stock options and shares issued under our share allocation plans. EBITDAs is presented as additional information because we understand that it is one measure used by certain investors to determine our operating cash flow and historical ability to meet debt service and capital expenditure requirements.

Inter-segment transactions are made at arm's length prices. They relate primarily to geophysical equipment sales made by the Equipment segment. These inter-segment revenues and the related earnings are eliminated in consolidation in the tables that follow under the column "Eliminations and other".

Operating Income and EBIT may include non-recurring items, which are disclosed in the reportable segment if material. General corporate expenses, which include Group management, financing, and legal activities, have been included in the column "Eliminations and other" in the tables that follow. The Group does not disclose financial expenses or financial revenues by segment because they are managed at the Group level.

Identifiable assets are those used in the operations of each segment.

Capital employed is defined as "total assets" excluding "cash and cash equivalents" less (i) "current liabilities" excluding "bank overdrafts" and "current portion of financial debt" and (ii) "non-current liabilities" excluding "financial debt".

The following tables also present operating revenues, Operating Income and EBIT by segment, and operating revenues by geographic area (by location of customers).

IFRS 15 application, Internal Reporting and Segment presentation

CGG implemented the new accounting standard for revenue, IFRS 15, on January 1, 2018 with a modified retrospective application. Therefore, the cumulative effects of adopting IFRS 15 were recognized as an adjustment of the opening balances on January 1, 2018, with no restatement of comparative information.

The only change from Group historical practices related to recognition of multi-client prefunding revenues. Before the implementation of IFRS 15, the Group applied the percentage of completion method for these revenues. Following the implementation of IFRS 15, the Group, instead recognizes multi-client prefunding revenues only upon delivery of final processed data. Consequently, the implementation of IFRS 15 impacts the timing of revenue recognition and amortization compared to previous accounting principles that provided for recognition of revenues and amortization over time as work was carried out. Multi-client prefunding revenues and related amortization are generally recognized later under IFRS 15 compared to the previous accounting principles.

Although IFRS fairly presents the Group's statement of financial position, for internal reporting purposes, CGG management continues to apply the previous (pre-IFRS 15) revenue recognition principle, with multi-client prefunding revenues recorded based on percentage of completion. CGG management believes this method aligns revenues more closely with the activities and resources used to generate it and provides useful information as to the progress made on multi-client surveys, while also allowing for useful comparison across time periods.

CGG therefore presents the Group's results of operations in two ways:

(i) the "Reported" or "IFRS" figures, prepared in accordance with IFRS, with multi-client prefunding revenues recognized upon delivery of the final data;

(ii) the "Segment" figures, for purposes of internal management reporting, prepared in accordance with the Group's previous method for recognizing multi-client prefunding revenues.

Beyond IFRS 15 effects, the "Segment" figures also exclude the financial impacts of events and/or decisions made in consideration of exceptional conditions, such as the Group's Transformation Plan and its financial restructuring completed in February 2018. CGG management believes that Segment figures presented this way provide a useful indication of the underlying profitability of operating activities for the period, while allowing for better tracking of organic performance and comparison across periods.

However, other companies may present Segment and related measures differently than we do. Segment figures are not a measure of financial performance under IFRS and should not be considered as an alternative to operating revenues, operating income or any other measures of performance derived in accordance with IFRS as indicators of our operating performance.

For more information, please refer to paragraph 1.5 - Accounting policies, note 19 – Revenues and note 22 – Other Revenues and Expenses to our Consolidated Financial Statements.

The tables below provide a reconciliation of the Group's Segment figures to the Group's the Reported figures.

ANALYSIS BY SEGMENT (CONTINUING OPERATIONS)

In millions of US$, except for assets and capital employed in billions of US$	2019						
	GGR	**Equipment**	**Eliminations and other**	**Segment figures**	**IFRS 15 adjustments**	**Non-recurring charges**	**Consolidated Total / IFRS figures**
Revenues from unaffiliated customers	959.9	440.6	–	1,400.5	(44.6)	–	1,355.9
Inter-segment revenues[a]	–	11.5	(11.5)	–	–	–	–
Operating revenues	**959.9**	**452.1**	**(11.5)**	**1,400.5**	**(44.6)**	**-**	**1,355.9**
Depreciation and amortization (excluding multi-client surveys)	(108.1)	(29.4)	(0.7)	(138.2)	–	–	(138.2)
Impairment and amortization of multi-client surveys	(348.8)	–	–	(348.8)	40.8	–	(308.0)
Operating income[b]	**211.2**	**66.7**	**(30.6)**	**247.3**	**(3.8)**	**-**	**243.5**
EBITDAs	**652.1**	**96.6**	**(27.9)**	**720.8**	**(44.6)**	**-**	**676.2**
Share of income in companies accounted for under the equity method	(0.1)	–	–	(0.1)		–	(0.1)
Earnings Before Interest and Tax[b]	**211.1**	**66.7**	**(30.6)**	**247.2**	**(3.8)**	**-**	**243.4**
Capital expenditures (excluding multi-client surveys)[c]	49.1	25.0	1.2	75.3	–	–	75.3
Investments in multi-client surveys, net cash	185.7	–	–	185.7	–	–	185.7
Capital employed[d]	**1.8**	**0.5**	**-**	**2.3**	**-**	**-**	**2.3**
TOTAL IDENTIFIABLE ASSETS[d]	**2.5**	**0.6**	**0.3**	**3.4**	**–**	**–**	**3.4**

(a) Sale of equipment to the Contractual Data Acquisition segment which is classified as discontinued operations.
(b) Includes US$(33.0) million impairment of multi-client assets and US$(5.9) million relating to other tangible and intangible assets impairment as of December 31, 2019.
For the year ended December 31, 2019, "eliminations and other" included US$(30.3) million of general corporate expenses and US$(0.3) million of intra-group margin.
(c) Capital expenditures included capitalized development costs of US$(18.8) million for the year ended December 31, 2019. "Eliminations and other" corresponded to the variance of suppliers of assets for the year ended December 31, 2019.
(d) Capital employed and identifiable assets related to discontinued operations are included under the column "Eliminations and other".

	2018						
In millions of US$, except for assets and capital employed in billions of US$	GGR	Equipment	Eliminations and other	Segment figures	IFRS 15 adjustments	Non-recurring charges	Consolidated Total/IFRS figures
Revenues from unaffiliated customers	913.4	314.0	–	1,227.4	(33.9)	–	1,193.5
Inter-segment revenues[(a)]	–	36.8	(36.8)	–	–	–	–
Operating revenues	**913.4**	**350.8**	**(36.8)**	**1,227.4**	**(33.9)**	**–**	**1,193.5**
Depreciation and amortization (excluding multi-client surveys)	(73.6)	(30.1)	(0.3)	(104.0)	–	(13.9)	(117.9)
Impairment and amortization of multi-client surveys	(326.0)	–	–	(326.0)	(0.3)	(226.0)	(552.3)
Operating income[(b)]	**175.8**	**11.7**	**(45.2)**	**142.3**	**(34.2)**	**(287.8)**	**(179.7)**
EBITDAs	**557.8**	**42.1**	**(43.9)**	**556.0**	**(33.9)**	**(47.9)**	**474.2**
Share of income in companies accounted for under the equity method	(1.2)	–	–	(1.2)		–	(1.2)
Earnings Before Interest and Tax[(b)]	**174.6**	**11.7**	**(45.2)**	**141.1**	**(34.2)**	**(287.8)**	**(180.9)**
Capital expenditures (excluding multi-client surveys)[(c)]	54.4	24.8	(1.2)	78.0	–	–	78.0
Investments in multi-client surveys, net cash	222.8	–	–	222.8	–	–	222.8
Capital employed[(d)]	**2.0**	**0.5**	**(0.1)**	**2.4**	**–**	**–**	**2.4**
TOTAL IDENTIFIABLE ASSETS[(d)]	**2.3**	**0.6**	**0.5**	**3.4**	**–**	**–**	**3.4**

(a) Sale of equipment to the Contractual Data Acquisition segment which is classified as discontinued operations.

(b) For the year ended December 31, 2018, "non-recurring charges" included US$(226.0) million impairment of multi-client surveys (of which US$197 million on StagSeis survey), US$(30.1) million inventory write-off in Equipment division, and US$(13.9) million relating to other tangible and intangible assets impairment.

For the year ended December 31, 2018, "eliminations and other" included US$(39.1) million of general corporate expenses and US$(5.0) million of intra-group margin.

(c) Capital expenditures included capitalized development costs of US$(33.1) million for the year ended December 31, 2018. "Eliminations and other" corresponded to the variance of suppliers of assets for the year ended December 31, 2018.

(d) Capital employed and identifiable assets related to discontinued operations are included under the column "Eliminations and other".

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Note 21 Research and development expenses

Analysis of research and development expenses is as follows:

	December 31,	
In millions of US$	**2019**	2018
Research and development costs	(75.9)	(71.3)
Development costs capitalized	32.4	33.1
Research and development expensed	**(43,5)**	**(38.2)**
Government grants recognized in income	19.9	7.7
RESEARCH AND DEVELOPMENT COSTS – NET	**(23.6)**	**(30.5)**

Research and development expenditures related primarily to:

- for the GGR segment, projects concerning data processing services; and
- for the Equipment segment, projects concerning seismic data recording equipment and improvement of existing equipment.

The variance in Government grants year-on-year is mainly due to a write-down of US R&D tax credit in 2018.

Note 22 Other revenues and expenses

	December 31,	
In millions of US$	**2019**	2018
Impairment of assets	(5.5)	(239.9)
Restructuring costs	(4.8)	(79.4)
Change in restructuring reserves	1.5	61.6
Other restructuring expenses	–	(30.1)
Impairment and restructuring expenses – net	**(8.8)**	**(287.8)**
Other revenues (expenses)	0.1	1.0
Exchange gains (losses) on hedging contracts	(0.2)	(0.8)
Gains (losses) on sales of assets	(0.4)	1.5
OTHER REVENUES (EXPENSES) – NET[(a)]	**(9.3)**	**(286.1)**

(a) Other revenues (expenses) – net excluding income (loss) from discontinued activities which are explained in note 5.

Year ended December 31, 2019

Impairment and restructuring costs

In 2019, we recognized other expenses for US$9.3 million comprising:

(i) US$5.5 million of impairment relating mainly to building (notably in the United States);

(ii) US$3.3 million of net restructuring costs corresponding mainly to sundry rightsizing measures.

Restructuring costs and change in restructuring reserves

As part of the Group Transformation Plan, we recognized US$(17.8) million of restructuring costs. These restructuring costs included:

(i) US$15.1 million of professional fees mainly linked to the US Chapter 11 and French Safeguard procedures (see note 2 "Financial restructuring process");

(ii) US$2.7 million of other costs related to our Transformation Plan.

Year ended December 31, 2018

Impairment of assets

In 2018, we recognized a US$(226.0) million impairment of multi-client surveys (of which US$197 million on StagSeis survey) due to specific market conditions.

Other restructuring expenses

In 2018, we recognized a US$(30.1) million of inventory valuation allowance at Sercel.

Note 23 Cost of financial debt

	December 31,	
In millions of US$	**2019**	2018
Current interest expenses related to financial debt	(124.0)	(127.3)
Interest expenses on lease liabilities	(11.2)	(2.4)
Amortization of deferred expenditures on financial debts	–	–
Income provided by cash and cash equivalents	3.5	2.3
COST OF FINANCIAL DEBT, NET	**(131.7)**	**(127.4)**

Note 24 Other financial income (loss)

	December 31,	
In millions of US$	**2019**	2018
Exchange gains (losses) net	(2.7)	32.0
Other financial income (expenses)	8.3	787.9
OTHER FINANCIAL INCOME (LOSS)	**5.6**	**819.9**

In 2018, the Other Financial Income mainly came (i) for US$771 million from the strong positive impact of our financial restructuring (ii) for US$74 million in one-off income mainly linked to the positive foreign exchange effect, associated with the shift of Euro/US$ balance sheet exposure following the financial restructuring and the subsequent first lien refinancing (our Euro/US$ balance sheet position is now balanced), partly offset by (iii) the first lien refinancing costs for US$21 million.

Note 25 Income taxes

Income tax benefit (expense)

The Company and its subsidiaries compute income taxes in accordance with the applicable tax rules and regulations of the numerous tax authorities where the Group operates. The tax regimes and income tax rates legislated by these taxing authorities vary substantially. In foreign countries, income taxes are often accrued based on deemed profits calculated as a percentage of sales as defined by local government tax authorities.

	December 31,	
In millions of US$	**2019**	2018
France		
Current income tax expense	–	–
Adjustments on income tax recognized in the period for prior periods	0.0	0.0
Deferred taxes on temporary differences for the period	26.3	3.3
Deferred taxes recognized in the period for prior periods	(0.7)	0.5
Total France	**25.6**	**3.8**
Foreign countries		
Current income tax expense, including withholding taxes	(15.5)	(19.0)
Adjustments on income tax recognized in the period for prior periods	0.7	1.4
Deferred taxes on temporary differences for the period	16.5	14.0
Deferred taxes recognized in the period for prior periods[(a) (b)]	(18.4)	(7.6)
Total Foreign countries	**(16.7)**	**(11.2)**
TOTAL INCOME TAX BENEFIT (EXPENSE)	**8.9**	**(7.4)**

(a) In 2019, included mainly US$11 million of deferred tax in US.
(b) In 2018, included valuation allowances on deferred tax assets of US$8.3 million in Mexico.

Income tax reconciliation

The reconciliation between income tax expense in the income statement and the theoretical tax expense is detailed below:

In millions of US$	**2019**	2018
Net income from continuing operations (loss)	**126.2**	**504.2**
Income taxes	**8.9**	**(7.4)**
Net Income from continuing operations (loss) before taxes	**117.3**	**511.6**
Equity investment companies income	(0.1)	(1.2)
Theoretical tax basis	**117.4**	**512.8**
Enacted tax rate in France	34.43%	34.43%
Theoretical taxes	**(40.4)**	**(176.6)**
Differences on tax:		
Differences in tax rates between France and foreign countries[(e)]	28.3	(44.5)
Change in local tax rates enacted by US and French tax laws	–	–
Non-deductible part of dividends	–	–
Adjustments on the tax expense recognized in the period for prior periods[(b)]	0.7	1.4
Adjustments on the deferred tax expense recognized in the period for prior periods	17.6	1.2
Valuation allowance on deferred tax assets previously recognized on losses on foreign entities[(a)]	(6.0)	(8.3)
Other permanent differences (including withholding taxes)[(d)]	28.7	239.5
Deferred tax unrecognized on losses of the period[(c)]	(63.5)	(30.0)
Unrecognized deferred tax on losses of prior periods	43.5	9.9
Income taxes	**8.9**	**(7.4)**

(a) (b) See comments on income tax benefit (expense) above.
(c) Corresponds notably to the French, and US tax groups according to short and medium term uncertainties and revised tax planning.
(d) Correspond notably, in 2018, to the permanent differences relatives to the debt equitization (see note 2).
(e) Correspond notably, in 2018, to the difference in tax rates between France and US for US$37 million.

Deferred tax assets and liabilities

In millions of US$	December 31, 2019	December 31, 2018
Total deferred tax assets	**19.7**	**22.6**
Total deferred tax liabilities	**(10.4)**	**(44.4)**
TOTAL DEFERRED TAXES, NET	**9.3**	**(21.8)**

Net deferred tax assets (liabilities) per nature

In millions of US$	December 31, 2019	December 31, 2018
Non-deductible provisions (including pensions and profit sharing)	11.9	33.3
Tangible assets	15.8	19.5
Effect of currency translation adjustment not recognized in income statement	(9.0)	(10.5)
Multi-Client surveys (including deferred revenues)	(24.7)	(57.1)
Assets reassessed in purchase accounting of acquisitions	(27.5)	(29.5)
Development costs capitalized	(17.1)	(18.8)
Other deferred revenues	3.9	(1.6)
Convertible bonds and other financial instruments	–	–
R&D credits	10.0	32.0
Other	0.8	(30.6)
Total deferred tax assets net of deferred tax (liabilities) related to timing differences	**(35.9)**	**(63.3)**
Tax losses carried forward	45.2	41.5
TOTAL DEFERRED TAX ASSETS NET OF DEFERRED TAX (LIABILITIES)	**9.3**	**(21.8)**

Deferred tax assets (liabilities) per tax group as of December 31, 2019

In millions of US$	France	Foreign countries	Total[(a)]
Net deferred tax assets (liabilities) related to timing differences	–	(35.9)	(35.9)
Deferred tax assets on losses carried forward[(b)]	–	45.2	45.2
TOTAL	**–**	**9.3**	**9.3**

(a) The deferred taxes recognized on losses carried forward are recoverable without expiration date.
(b) See note 1.5.6 to the consolidated statements for rules of recognition of deferred tax assets.

Net operating loss carried forward not recognized as of December 31, 2019

In millions of US$	France	Foreign countries	Total
Losses scheduled to expire in 2020	–	14.4	14.4
Losses scheduled to expire in 2021 and thereafter	–	230.2	230.2
Losses available indefinitely	2,052.1	313.2	2,365.3
TOTAL	**2,052.1**	**557.8**	**2,609.9**

Tax audit and litigation

United States

The tax audit regarding CGG Holding (US) Inc. for the 2007 fiscal year and extended to 2016 is finished and the Joint Committee has sent our refund claim to the IRS Service Center to be executed. A minimum refund plus interest is expected in Q1 2020.

The IRS has rejected part of the R&D credit claimed by CGG Holding (US) Inc. CGG Holding (US) Inc. has appealed this decision and has received a first refund of US$3 million.

Brazil

ISS disputes

Municipality of Rio de Janeiro has assessed Veritas do Brazil Ltda services taxes (ISS) for 2001 to 2008 – which has been duly disputed.

Further to the favorable decision of the judicial court received by Veritas do Brasil Ltda in 2014, the administrative procedure covering 2001 to May 2003 has been officially terminated in March 2015 and the tax assessment cancelled in January 2016. In March 2016, the Municipality filed a Rescission Action in order to have the favorable decision cancelled; the Group filed the response to the action in June 2016. In December 2016, Public attorney's office agreed that there are no grounds to re-discuss the merit of the case, but understood that the action should be ruled. In February 2017, CGG filed a petition to object the ruling. The case is still on-going. The Group considers that there is no proper ground for this action.

For years September 2003-2008 (taxes at stake: US$11 million), the administrative procedure is still ongoing and should result in the same cancellation considering that the reassessment is based on the same arguments than those cancelled by the judicial court.

No provision is recognized as the Group considers that these contingencies should resolve in its favor.

In December 2019, CGG do Brazil Participacoes Ltd has reached two agreements with Municipality of Rio through Concilia Program. The first one is on ISS on import of services for the years 2009 to 2019 where CGG do Brazil Participacoes Ltd payment agreed to pay an amount of US$8.4 million. The provision has been released. The second agreement is on ISS on licenses where CGG do Brazil Participacoes Ltd has dropped the refund litigation action for the years 2008-2009 and has paid an amount of US$5.8 million for the past years. Municipality of Rio has released the administrative deposit, plus monetary correction, for an amount of US$22.4 million.

Withholding tax and CIDE disputes

Following a 2012 audit on year 2009, CGG do Brazil Participacoes Ltda was reassessed US$6.1 million of withholding tax and US$4 million of CIDE (Contribution for Intervening in Economic Domain) on charter contracts. The reassessment was disputed. In 2014, the Company received and appealed against an unfavorable decision from the Administrative Court. In July 2017, CIDE case was ruled against CGG and the Company decided to enter into an amnesty program (PERT). The litigation has been dropped and parties agreed on a final settlement of approximately US$2.7 million fully settled in January 2018. In August 2018, the decision from the Administrative Court on WHT reassessment has been confirmed. In October 2018, CGG filed a motion to clarify the decision. In November 2019, CGG do Brazil Participacoes Ltda has been notified of the unfavorable decision from the motion to clarify and has filed a special appeal. No provision is recognized.

In 2016, a new audit was conducted for fiscal year 2013. CGG do Brazil Participacoes Ltda received tax reassessments on December 20, 2017 for amounts of US$15 million for withholding tax and US$10 million for CIDE. The Company appealed in January 2018 against the reassessments. In August 2018, both WHT and CIDE on charter were ruled favorably to CGG. Tax authorities appealed against the decision. In October 2019, the judges ruled in favor of CGG do Brazil Participacoes Ltd. We are waiting to see if Tax Authorities file an appeal. No provision is recognized.

Peru

The Peru tax authorities assessed additional withholding taxes on technical services for 2012 and 2013 for CGG Land (US) Inc. Sucursal del Peru for an amount of US$15 million. The Company disputed the reassessment. A final resolution in favor of CGG was notified in May 2017. A nullity action was launched against this resolution by the Tax Authorities. In February 2019, the nullity action was denied by the judge. In February 2019, the peruvian tax authorities appealed against the decision and in September 2019, CGG Land (US) Inc. Sucursal del Peru was notified of the second instance decision in which the Superior Court declared the nullity of the first instance decision and ordered to the first instance to rule again the case. CGG Land (US) Inc. Sucursal del Peru filed an annulment action to cancel this decision, which has been rejected. CGG Land (US) Inc. Sucursal del Peru is preparing all relevant documents for the new first instance decision. No provision is recognized for this litigation.

Note 26 Personnel

The analysis of personnel (including discontinued operations) is as follows:

	Year ended December 31,	
	2019	2018
Personnel employed under French contracts	1,089	1,253
Personnel employed under local contracts	3,475	3,846
TOTAL	**4,564**	**5,099**
Including field staff of:	*168*	*418*

The total cost of personnel employed was US$600 million in 2019 (or US$451 million excluding acquisition and CGG Transformation Plan 2021), US$559 million in 2018 (or US$452 million excluding acquisition).

Note 27 Key management personnel compensation

The table below presents the director fees and the CEO remuneration

	Year ended December 31,	
in US$	**2019**	2018
Short-term employee benefit paid[(a)]	1,802,094	4,490,770
Directors' fees	607,241	763,753
Long-term employee benefit – pension[(b)]	13,626	–
Long-term employee benefit – supplemental pension[(c)]	–	429,986
Share-based payments[(d)]	472,286	279,920

(a) *Excludes social contributions.*
(b) *Cost of services rendered and interest cost.*
(c) *Cost of services rendered and interest cost on the supplemental pension implemented by the end of 2004.*
(d) *Expense in the income statement related to the stock options and performance shares plans.*

Contractual termination indemnity in effect – Chief Executive Officer

The Board of Directors meeting on April 26, 2018, following the appointment of office by Mrs. Sophie ZURQUIYAH as Chief Executive Officer for a term of four years, also approved, for the duration of this term of office, the terms and conditions of the benefits granted to Mrs. Sophie ZURQUIYAH in the event of termination of her corporate office. These benefits were ratified during the General Meeting of May 15, 2019.

In order to comply with the provisions of the AFEP-MEDEF Code to which the Company refers, the terms and conditions of the benefit have been modified on several points: no compensation in the event of resignation and in the event of the possibility of exercising pension rights at the time of departure, and review of the performance scale giving rise to the payment of the indemnity.

They now have the following characteristics:

- Mrs. Sophie ZURQUIYAH benefits from a contractual termination indemnity in the event of dismissal, and in the event of non-renewal of her term of office within twelve months following a change of control, in the absence of any situation of failure characterised by the non-achievement of the performance conditions described below;
- No payment may be made in the event of serious or gross misconduct, regardless of the reason for departure.

The payment of the contractual termination indemnity will depend on the average rate of achievement of the objectives relating to the annual variable portion of Mrs. Sophie ZURQUIYAH's remuneration for the last three financial years ended prior to the departure date, in accordance with the following rule:

(i) if the average achievement rate is less than 80%, no contractual termination indemnity fee will be paid;

(ii) if the average achievement rate is equal to or greater than 80% and less than 90%, the contractual termination indemnity will be due at 50% of its amount;

(iii) if the average achievement rate is equal to or greater than 90%, the contractual termination indemnity will be due on a straight-line basis between 90% and 100% of its amount.

In the event of departure from the Group during the financial year 2020, the achievement of performance conditions will exceptionally be measured by the Board of Directors over the two financial years ending prior to the date of the beginning of the notice period.

This contractual termination indemnity will be equal to the difference between (i) a gross amount capped at 200% of the Annual Reference Remuneration and including all sums of any nature whatsoever, and on any basis whatsoever, to which Mrs. Sophie ZURQUIYAH may be entitled as a result of the termination, and (ii) all sums to which she may be entitled as a result of the implementation of the non-competition commitment.

The aggregate of the contractual termination indemnity and the non-competition indemnity may under no circumstances exceed 200% of the Corporate Officer's annual reference remuneration. Should the combined amount of the two benefits be greater, the contractual indemnity would be reduced to the level of this cap.

It is specified that the Board of Directors must acknowledge, prior to the payment of the contractual termination indemnity, (i) that the performance conditions described above have been met and (ii) that the contractual termination indemnity complies with the recommendations of the AFEP-MEDEF Code in force at the date of the departure of the person concerned.

Note 28 Related party transactions

The following table presents the transactions with our joint-ventures and associates. The vast majority of them belong to the contractual data acquisition segment which is classified as discontinued operation in our consolidated statements of operations.

	December 31,					
	2019			2018		
In millions of US$	**Joint Ventures[a]**	**Associates[b]**	**Total**	Joint Ventures[a]	Associates[b]	Total
Sales of geophysical equipment	–	21.0	21.0	–	14.5	14.5
Equipment rentals and services rendered	(0.1)	10.9	10.8	4.5	10.9	15.4
Operating Revenue	**(0.1)**	**31.9**	**31.8**	**4.5**	**25.4**	**29.9**
Charter expenses	(28.8)	–	(28.8)	(31.7)	–	(31.7)
Ship management expenses	(18.4)	–	(18.4)	(32.4)	–	(32.4)
Costs of services rendered	(1.6)	(0.5)	(2.1)	(6.1)	(0.5)	(6.6)
Cost of operations	**(48.8)**	**(0.5)**	**(49.3)**	**(70.2)**	**(0.5)**	**(70.7)**
Other financial income (loss)	**(4.4)**	**19.6**	**(15.2)**	**(35.0)**	**–**	**(35.0)**
Trade accounts and notes receivable, including agency arrangements	9.4	30.3	39.7	15.9	14.9	30.8
Financial assets (see note 7)	–	–	–	2.9	–	2.9
Right-of-use assets[c] [d]	156.2	–	156.2			
Receivables and assets	**165.6**	**30.3**	**195.9**	**18.8**	**14.9**	**33.7**
Trade accounts and notes payable, including agency arrangements	4.6	2.4	7.0	6.0	3.9	9.9
Provisions for onerous contracts[c]	61.0	–	61.0			
Lease liabilities[c]	190.7	–	190.7	–	–	–
Payables and liabilities	**256.3**	**2.4**	**258.7**	**6.0**	**3.9**	**9.9**
Future leases commitments	–	–	–	358.2	–	358.2
Future ship management costs	–	–	–	94.6	–	94.6
Contractual Obligations	**–**	**–**	**–**	**452.8**	**–**	**452.8**

(a) *Mainly correspond to investments in companies accounted for using the equity method in our Marine disposals groups and presented as held for sale (see note 5).*
(b) *Mainly correspond to investments in companies accounted for using the equity method in our Land disposals groups and presented as held for sale (see note 5).*
(c) *Prior IFRS 16 first time adoption, future leases commitments were presented undiscounted in contractual obligations.*
(d) *Marine only, non-revalued.*

No credit facility or loan was granted to the Company by shareholders during the last three years.

Note 29 Supplementary cash flow information

Operating activities

Depreciation and amortization, together with multi-client surveys impairment and amortization, included US$(33.0) million of assets impairment in 2019 (US$(239.9) million in 2018).

In 2018, other non-cash items mainly related to the financial restructuring plan as described in note 2.

Investing activities

In 2019 and 2018, proceeds from disposals of tangible and intangible assets related to the sale of some of our assets.

In 2019 and 2018, variation in other financial assets mainly related to long-term deposits made to fulfil some collateral.

Financing activities

In 2019, with the application of IFRS 16, the Group recognized in the cash flow statement US$56.9 million of lease repayments compared to US$5.7 in 2018 corresponding to property formerly classified as financial lease.

In millions of US$	December 31, 2019
Property lease	(32.9)
Property formerly classified as financial lease	(5.3)
Other property	(27.6)
Machinery & equipment lease	(24.0)
Total cash flow for leases	**(56.9)**

In 2018, total issuance of long-term debts related to the second lien senior secured notes due 2024 issued in by CGG SA for US$355.1 million and €80.4 million in principal amount. This issuance comprises US$275 million and €80.4 million as new money and US$80.2 million in exchange for part of the accrued interest claims under the Senior Notes (with the US$ new money notes and accrued interest notes being fungible) (see note 13).

In 2018, CGG Holding (US) Inc. issued US$663.6 million in principal amount of first lien senior secured notes due 2023, in exchange for the balance of the Secured Loans taking into account an upfront paydown of US$150 million.

Cash and cash equivalents

In millions of US$	Year ended December 31, 2019	2018
Cash	484.4	353.2
Cash equivalents (mainly short-term deposits)	126.1	80.9
TOTAL CASH AND CASH EQUIVALENTS	610.5	434.1

Cash and Cash equivalents included trapped cash amounting to US$76 million as of December 31, 2019 from US$93 million December 31, 2018 mainly driven by the release of administrative deposit in Brazil. Trapped cash means any cash and cash equivalent held by a subsidiary that operates in a country where exchange controls or other legal restrictions apply when the balances are not available for general use by the Group (cash in subsidiaries not available at Group level). The cash equivalents do not include US$31.7 million of cash pledged to fulfill some collateral requirements in 2019. The cash pledged for more than one year is recorded for US$18.3 million in other financial assets (see note 7) and the cash pledged for less than one year is recorded for US$13.4 million in restricted cash (see note 4).

Note 30 Earnings per share

In millions of US$	Year 2019	2018
Net income attributable to shareholders (a)	(69.1)	(101.6)
Effect of dilution		
Ordinary shares outstanding at the beginning of the year (b)	709,944,816	46,038,287
Weighted average number of ordinary shares outstanding during the year (c)	5,639	562,399,954
Weighted average number of ordinary shares outstanding ((d) = (b) + (c))	**709,950,455**	**608,438,241**
Total dilutive potential shares from stock options	82,674	–
Total dilutive potential shares from performance shares allocation	1,889,632	–
Total dilutive potential shares from warrants	–	9,155,112
Dilutive weighted average number of shares outstanding adjusted when dilutive (e)	**711,922,761**	**617,593,353**
Earnings per share		
Basic (a)/(d)	**(0.10)**	**(0.17)**
Diluted (a)/(e)	**(0.10)**	**(0.17)**
Net income attributable to shareholders from continuing operations	118.7	498.4
Earnings per share Basic	0.17	0.82
Earnings per share Diluted	0.17	0.81
Net income attributable to shareholders from discontinued operations	(187.7)	(600.0)
Earnings per share Basic	(0.26)	(0.99)
Earnings per share Diluted	(0.26)	(0.99)

Note 31 Subsequent events

Marine acquisition exit

On January 8 2020, CGG announced that it has completed exit from marine acquisition business by closing its strategic partnership transaction for marine seismic acquisition with Shearwater GeoServices Holding AS (Shearwater). *See Note 2.*

Land acquisition wind down

On February 18 2020, CGG announced that it has fully withdrawn from the land seismic data acquisition business after completing its last land seismic acquisition contract in Tunisia. *See Note 2.*

Multi-Physics acquisition

A Memorandum of Understanding was signed early February 2020. *See Note 2.*

Convertible bondholders' appeal

On February 26th, 2020, the French Supreme Court (Cour de cassation) confirmed the ruling rendered by the Appeals Court of Paris and rejected the claim from a group of Convertible Bondholders, putting a definitive end to this litigation. *See Note 2.*

Outlook

The Covid-19 crisis, which started in China in December 2019, impacted the overall commodity demand since the beginning of 2020 and caused significant drop in Brent oil price, which decreased from US$63/bl on December 31, 2019 down to US$50/bl on March 5, 2020, the date of approval of 2019 accounts by the CGG Board of Directors. This evolutive situation which may negatively affect the activity is scrutinized. It had no impact as of December 31, 2019.

There is no other significant subsequent event.

Note 32 List of principal consolidated subsidiaries as of December 31, 2019

Subsidiaries are fully consolidated from the date of their acquisition, being the date on which the Group obtains the control.

Dormant subsidiaries of the Group have not been included in the list below.

Percentage of interest generally corresponds to percentage of control in the Company.

Siren Number[(a)]	Companies Names	Country of incorporation	% of interest
403 256 944	CGG Services SAS	France	100.0
410 072 110	CGG Explo SARL	France	100.0
413 926 320	Geomar SAS	France	100.0
	CGG Holding BV	Netherlands	100.0
	CGG Marine BV	Netherlands	100.0
	CGG Services (NL) BV	Netherlands	100.0
	CGG International SA	Switzerland	100.0
	CGG Data Services SA	Switzerland	100.0
	CGG Services (Norway) AS	Norway	100.0
	CGG Services (UK) Limited	United Kingdom	100.0
	CGG do Brasil Participaçoes Ltda	Brazil	100.0
	Veritas do Brasil Ltda	Brazil	100.0
	LASA Prospeccoes SA	Brazil	100.0
	CGG Mexico, SA de CV	Mexico	100.0
	Geoinnovation Corporativa S. de RL de CV	Mexico	100.0
	Vitzel SA de CV	Mexico	100.0
	CGG Holding (US) Inc.	Delaware, United States of America	100.0
	CGG Services (US) Inc.	Delaware, United States of America	100.0
	CGG Land (US) Inc.	Delaware, United States of America	100.0
	CGG Canada Services Ltd	Canada	100.0
	CGG Services (Canada) Inc.	Canada	100.0
	CGG Services (Australia) Pty Ltd	Australia	100.0
	CGG Aviation (Australia) Pty Ltd	Australia	100.0
	CGGVeritas Services (B) Sdn Bhd	Brunei	100.0
	PT CGG Services Indonesia[(b)]	Indonesia	95.0
	CGG Services India Private Ltd	India	100.0
	CGG Technology Services (Beijing) Co. Ltd	China	100.0
	CGG Services (Singapore) Pte Ltd	Singapore	100.0
	CGG Services (Malaysia) Sdn Bhd	Malaysia	100.0
	CGG Vostok	Russia	100.0
866 800 154	Sercel Holding SAS	France	100.0
378 040 497	Sercel SAS	France	100.0
	Sercel-GRC	Oklahoma, United States of America	100.0
	Sercel Inc.	Oklahoma, United States of America	100.0
	Hebei Sercel-Junfeng Geophysical Prospecting Equipment Co. Ltd[(b)]	China	51.0
	Sercel Singapore Pte Ltd	Singapore	100.0
	De Regt Marine Cables BV	Netherlands	100.0

(a) Siren number is an individual identification number for company registration purposes under French law.
(b) % of control for these subsidiaries amount to 100%.

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Non-controlling interests

The Group does not fully consolidate any significant entity in which it holds less than a majority of voting rights.

Subsidiaries with non-controlling interests do not contribute materially to the activities of the Group, the consolidated net income, cash flows, liabilities or assets as of December 31, 2019. Hebei Sercel-Junfeng Geophysical Prospecting Equipment Co. Ltd, a subsidiary of Sercel SAS based in China, is the major entity with non-controlling interests.

Note 33 Audit Fees

Annual audit fees for 2019 and 2018 are as follows:

	December 31,			
	2019		2018	
In thousands of US$	**EY**	**Mazars**	EY	Mazars
Audit fees	1,991	953	3,236	1,165
Audit-related fees	59	38	33	–
Tax fees	11	29	106	–
All other fees	9	–	–	–
TOTAL	**2,070**	**1,020**	**3,375**	**1,165**

Audit related fees are linked to sustainability audits.

6.1.6 Statutory auditors' report on the consolidated financial statements

This is a translation into English of the statutory auditors' report on the consolidated financial statements of the Company issued in French and it is provided solely for the convenience of English speaking users.

This statutory auditors' report includes information required by European regulation and French law, such as information about the appointment of the statutory auditors or verification of the information concerning the Group presented in the management report and other documents provided to shareholders.

This report should be read in conjunction with, and construed in accordance with, French law and professional auditing standards applicable in France.

Statutory auditors' report on the consolidated financial statements

To the shareholders of CGG,

Opinion

In compliance with the engagement entrusted to us by your annual general meeting, we have audited the accompanying consolidated financial statements of CGG for the year ended December 31, 2019. These consolidated financial statements have been approved by the Board of Directors on March 5, 2020 based on information available at that date regarding the evolving context of Covid-19's sanitary crisis.

In our opinion, the consolidated financial statements give a true and fair view of the assets and liabilities and of the financial position of the Group as at December 31, 2019 and of the results of its operations for the year then ended in accordance with International Financial Reporting Standards as adopted by the European Union.

The audit opinion expressed above is consistent with our report to the Audit Committee.

Basis for Opinion

Audit Framework

We conducted our audit in accordance with professional standards applicable in France. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Our responsibilities under those standards are further described in the "Statutory Auditors' Responsibilities for the Audit of the Consolidated Financial Statements" section of our report.

Independence

We conducted our audit engagement in compliance with independence rules applicable to us, for the period from January 1st, 2019 to the date of our report and specifically we did not provide any prohibited non-audit services referred to in Article 5(1) of Regulation (EU) No 537/2014 or in the French Code of ethics (*code de déontologie*) for statutory auditors.

Emphasis of matter

We draw your attention to the Note 1.3 to the consolidated financial statements which presents the change in accounting method arising from the first application of accounting standard IFRS 16 "Leases" as of January 1, 2020. Our opinion is not modified in respect of this matter.

Justification of Assessments - Key Audit Matters

In accordance with the requirements of articles L.823-9 and R.823-7 of the French Commercial Code (*code de commerce*) relating to the justification of our assessments, we inform you of the key audit matters relating to risks of material misstatement that, in our professional judgment, were of most significance in our audit of the consolidated financial statements of the current period, as well as how we addressed those risks.

These matters were addressed in the context of our audit of the consolidated financial statements as a whole approved in the aforementioned context, and in forming our opinion thereon, and we do not provide a separate opinion on specific items of the consolidated financial statements.

SALE OF THE MARINE DATA ACQUISITION BUSINESS

Key audit matter	Our response
The closing of Shearwater's acquisition of the shares in Global Seismic Shipping and the streamers and the entry into force of the Capacity Agreement, took place on January 8, 2020. As presented in note 2 to the consolidated financial statements, this transaction includes the main following components: ▸ CGG acquired the shares held by Eidesvik in Global Seismic Shipping AS ("GSS") and has indemnified Eidesvik for the end of the relationship against Shearwater shares. CGG also granted Eidesvik with an associated put option (the "Eidesvik Put Option"); ▸ Shearwater acquired all shares in GSS and the streamers associated to the five GSS high end vessels; ▸ The existing umbrella agreement and the existing bareboat charter agreements between CGG and GSS subsidiaries were terminated. Shearwater CharterCo AS entered into five-year bareboat charter agreements with GSS subsidiaries; ▸ Setting up a five-year services contract (the "Capacity Agreement") between Shearwater and CGG. Under this agreement, CGG commits to using Shearwater acquisition services for 730 vessel days annually in average over five years; ▸ CGG also entered into step-in agreements with Shearwater and GSS (the "Step-In Agreements"). Through this agreement, CGG consents to substituting itself for Shearwater CharterCo AS as charterer of GSS subsidiaries' five high end seismic vessels equipped with streamers, in the event of payment default from Shearwater CharterCo AS or the insolvency of Shearwater. In accordance with IFRS 5, and as mentioned in note 1, the assets and liabilities concerned by the transaction described above are classified respectively as "assets held for sale" and "liabilities directly associated with the assets held for sale". The results and cash flows related to this activity are presented in "discontinued operations". The conditions of the disposal in the subsequent period are taken into account in the fair value, less costs to sell, of the business held for sale at December 31, 2019, which amounts to USD (108.3) million. This transaction has multiple components and is supported by numerous legal agreements including complex clauses. Therefore, the estimate of the fair value less costs to sell of the Marine Data Acquisition business held for sale at December 31, 2019 requires management to exercise its judgment in selecting the assumptions to be used. Especially, the fair value of the Capacity agreement and the fair value of the Eidesvik put option are based on multiple assumptions, for which uncertainties might significantly impact the fair values. We therefore considered the Exit from data Acquisition business as a key audit matter.	We have obtained a detailed knowlegde of the objectives and structure of the transaction through interviews with management and reading of the legal documentation relating to the transaction. We have performed an accounting analysis of all the components of the transaction and assessed the accounting treatment retained by the management. In particular, we examined the assumptions and the calculation methods used to assess the fair values of the Capacity Agreement and the Eidesvik put option. Regarding the Capacity Agreement, our procedures thus mainly consisted in: ▸ Review the consistency of the market rate and utilization assumptions for the Shearwater fleet over the five-year commitment period with respect to market expectations; ▸ Assessing the discount rate used in relation to the level of risk associated with the liabilities. We have incorporated valuation specialists to our team in order to analyze the fair value of Eidesvik put option retained by management. These specialists independently determined the fair value of the put option, and we reviewed the value selected by management in relation to the fair value we have calculated. In addition, we assessed the appropriateness of the disclosures presented in the consolidated financial statements related to this transaction.

VALUATION OF GOODWILL

Key audit matter	Our response
As of December 31, 2019, goodwill amounted to USD 1,207 million or 30% of the consolidated statement of financial position, breaking down as follows by cash-generating unit (or group of cash-generating units): ▸ Geoscience: USD 748 million ▸ Multi-client: USD 284 million ▸ Equipment: USD 175 million Management ensures, at least once a year at the statement of financial position dates, that the carrying amount of goodwill is not higher than its recoverable amount and presents no risk of impairment. The principles of the impairment testi performed and the applicable assumptions are described in note 11 to the consolidated financial statements. The determination of the recoverable amount of goodwill is very largely based on management judgment, in particular with regard to: ▸ The future cash flows expected from the cash-generating units assessed, including normative cash flows that are used beyond the third year; ▸ The discount rates applied to the future cash flows; ▸ The long-term growth rate retained for the cash flow projection. We therefore considered the valuation of goodwill as a key audit matter.	We assessed the compliance of the methodology applied by Group management with the applicable accounting standards. We focused our procedures on those assumptions to which the the recoverable value is the most sensitive, and thus the assumptions that might have a significant impact on the result of the impairment testi. Our procedures thus mainly consisted in: ▸ Assessing the consistency of the estimated future cash flows with the main underlying operating assumptions; ▸ Assessing the existence of any external information which could contradict management's assumptions; ▸ Examining the assumptions retained for the purpose of estimating normative cash flows beyond the third year; ▸ Performing a retrospective analysis of the cash flow estimates. We have incorporated valuation specialists for the purpose, in particular, of assessing the discount rates and long-term growth rate retained by management. They independently determined acceptable rate ranges and examined the rates used by management in relation to those ranges.

VALUATION OF MULTI-CLIENT SURVEYS

Key audit matter	Our response
As of December 31, 2019, the carrying amount of the multi-client surveys totals USD 531 million, or 13% of the consolidated statement of financial position, compared to USD 633 million as of December 31, 2018. The Group's multi-client surveys regroup seismic surveys for which non-exclusive licenses are granted to customers. All the costs of acquisition, processing and finalization of the surveys are recognized as intangible assets. The multi-client surveys are valued at the aggregate of those costs less accumulated amortization, or at their fair values if the latter is the lower. Management ensures, at least once a year and more frequently in the event of any indication of impairment, that the carrying amounts of multi-client surveys does not exceed their recoverable amounts. In addition, an impairment test is performed for each survey at delivery date. The assessment of the recoverable amount of multi-client surveys is very largely based on management judgment, in particular with regard to the forecasting of future sales. In that respect, and as indicated in note 10, USD 33 million of impairment losses were recognized at the end of 2019. Given the elements described above, we considered measurement of the multi-client surveys as a key audit matter.	We challenged forecasted future sales by comparison with management's revenue forecasts for the purpose of impairment testing of the previous year, with the revenue actually generated and with surveys' attractiveness for potential customers. In particular, we assessed the consistency of the revenue forecasts with the momentum of each basin. When management judged that impairment should be recognized, we inquired management about the reasons for the impairment and assessed its consistency with our understanding of the market.

Specific verifications

We have also performed, in accordance with professional standards applicable in France, the specific verifications that are required by laws and regulations about the Group's information given in the management report of the Board of Directors approved on March 5, 2020. Regarding the events that occurred and elements that have become known since the date the financial statements were approved and in relation to the effects of Covid-19's crisis, management informed us that this would be subject to a specific communication addressed to the shareholders' meeting called to vote on said financial statements.

We have no matters to report as to their fair presentation and their consistency with the consolidated financial statements.

We attest that the consolidated non-financial statement required by Article L. 225-102-1 of the French Commercial Code (Code de commerce) is included in the Group's information given in the management report, it being specified that, in accordance with article L. 823-10 of this Code, we have verified neither the fair presentation nor the consistency with the consolidated financial statements of the information contained therein. This information should be reported on by an independent third party.

Report on Other Legal and Regulatory Requirements

Appointment of the Statutory Auditors

We were appointed as statutory auditors of CGG by the annual general meeting held on May 15, 2003 for MAZARS and on June 29, 1977 for ERNST & YOUNG et Autres.

As at December 31, 2019, MAZARS and were in the seventeenth year and forty-third year of total uninterrupted engagement (out of which respectively seventeen years and thirty nine years since securities of the Company were admitted to trading on a regulated market).

Responsibilities of Management and Those Charged with Governance for the Consolidated Financial Statements

Management is responsible for the preparation and fair presentation of the consolidated financial statements in accordance with International Financial Reporting Standards as adopted by the European Union and for such internal control as management determines necessary to enable the preparation of consolidated financial statements free from material misstatement, whether due to fraud or error.

In preparing the consolidated financial statements, management is responsible for assessing the Company's ability to continue as a going concern, disclosing, as applicable, the matters related to going concern and using the going concern basis for accounting unless it is expected to liquidate the Company or to cease operations.

The Audit Committee is responsible for monitoring the financial reporting process and the effectiveness of internal control and risk management systems and where applicable, its internal audit, regarding the accounting and financial reporting procedures.

The consolidated financial statements were authorized for issue by the Board of Directors.

Statutory Auditors' Responsibilities for the Audit of the Consolidated Financial Statements

Objectives and audit approach

Our role is to issue a report on the consolidated financial statements. Our objective is to obtain reasonable assurance about whether the consolidated financial statements as a whole are free from material misstatements. Reasonable assurance is a high level of assurance but is not a guarantee that an audit conducted in accordance with professional standards will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users made on the basis of these consolidated financial statements.

As specified in Article L.823-10-1 of the French Commercial Code (*code de commerce*), our statutory audit does not include assurance on the viability of the Company or the quality of management of the affairs of your Company.

As part of an audit conducted in accordance with professional standards applicable in France, the statutory auditor exercises professional judgment throughout the audit and furthermore:

- Identifies and assesses the risks of material misstatement of the consolidated financial statements, whether due to fraud or error, designs and performs audit procedures responsive to those risks, and obtains audit evidence considered to be sufficient and appropriate to provide a basis for his opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control;
- Obtains an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the internal control;
- Evaluates the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by management in the consolidated financial statements;

- Assesses the appropriateness of management's use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Company's ability to continue as a going concern. This assessment is based on the audit evidence obtained up to the date of his audit report. However, future events or conditions may cause the Company to cease to continue as a going concern. If the statutory auditor concludes that a material uncertainty exists, there is a requirement to draw attention in the audit report to the related disclosures in the consolidated financial statements or, if such disclosures are not provided or inadequate, to modify the opinion expressed therein;
- Evaluates the overall presentation of the consolidated financial statements and assesses whether these statements represent the underlying transactions and events in a manner that achieves fair presentation;
- Obtains sufficient appropriate audit evidence regarding the financial information of the entities or business activities within the Group to express an opinion on the consolidated financial statements. The statutory auditor is responsible for the direction, supervision and performance of the audit of the consolidated financial statements and for the opinion expressed on these consolidated financial statements.

Report to the Audit Committee

We submit a report to the Audit Committee which includes in particular a description of the scope of the audit and the audit program implemented, as well as the results of our audit. We also report, if any, significant deficiencies in internal control regarding the accounting and financial reporting procedures that we have identified.

Our report to the Audit Committee includes the risks of material misstatement that, in our professional judgment, were of most significance in the audit of the consolidated financial statements of the current period and which are therefore the key audit matters that we are required to describe in this report.

We also provide the Audit Committee with the declaration provided for in Article 6 of Regulation (EU) N° 537/2014, confirming our independence within the meaning of the rules applicable in France such as they are set in particular by Articles L.822-10 to L.822-14 of the French Commercial Code (*code de commerce*) and in the French Code of Ethics (*code de déontologie*) for statutory auditors. Where appropriate, we discuss with the Audit Committee the risks that may reasonably be thought to bear on our independence, and the related safeguards.

Paris-La Défense, April 14, 2020

The statutory auditors

MAZARS	ERNST & YOUNG et Autres
Jean-Louis Simon	Nicolas Pfeuty

6.2 2018-2019 statutory financial statements of CGG SA

6.2.1 Balance sheet

This section is available in French only.

6.2.2 Income statement

This section is available in French only.

6.2.3 Cash flow statement

This section is available in French only.

6.2.4 Notes

This section is available in French only.

6.2.5. Information on terms of payment

As of December 31, 2019, the parent company's trade payables totaled €9.6 million, which can be broken down as follows:

ARTICLE D. 441 L.-1°: INVOICES RECEIVED AND NOT PAID AS OF THE END OF THE FINANCIAL YEAR ALTHOUGH THE DUE DATE HAS PASSED

	0 days	1 to 30 days	31 to 60 days	61 to 90 days	91 days or more	Total (1 day or more)
(A) Late payment periods (see note below)						
Total number of invoices concerned	21					70
Total amount of invoices concerned, in millions of euros (incl. VAT)	8.3	(0.3)	-	-	1.6	1.3
Percentage of the total amount of invoices concerned	87.2%	(2.8%)	-	-	15.6%	12.8%
(B) Invoices excluded from (A) that relate to unrecorded liabilities						
Number of excluded invoices	31					
Total amount of excluded invoices, in millions of euros (incl. VAT)	1.8					
(C) Reference payment terms used (contractual or statutory – Article L. 441-6 or Article L. 443-1 of the French Commercial Code [*Code du commerce*])						
Payment terms used to calculate late payments		Contractual payment terms				
		Statutory payment terms				

As of December 31, 2019, the parent company's trade receivables totaled €10.6 million, which can be broken down as follows:

ARTICLE D. 441 L.-1°: INVOICES RECEIVED AND NOT PAID AS OF THE END OF THE FINANCIAL YEAR ALTHOUGH THE DUE DATE HAS PASSED

	0 days	1 to 30 days	31 to 60 days	61 to 90 days	91 days or more	Total (1 day or more)
(A) Late payment periods (see note below)						
Total number of invoices concerned	37					3
Total amount of invoices concerned, in millions of euros (incl. VAT)	10.2	0.1	0.3	-		0.4
Percentage of the total amount of invoices concerned	96.2%	0.5%	3.1%	-	0.2%	3.8%
(B) Invoices excluded from (A) that relate to unrecorded liabilities						
Number of excluded invoices	None					
Total amount of excluded invoices, in millions of euros (incl. VAT)	None					
(C) Reference payment terms used (contractual or statutory – Article L. 441-6 or Article L. 443-1 of the French Commercial Code [*Code du commerce*])						
Payment terms used to calculate late payments		Contractual payment terms				
		Statutory payment terms				

6.2.6 Financial results of CGG SA (group holding Company) over the last five years

Financial results of the Company over the last five years

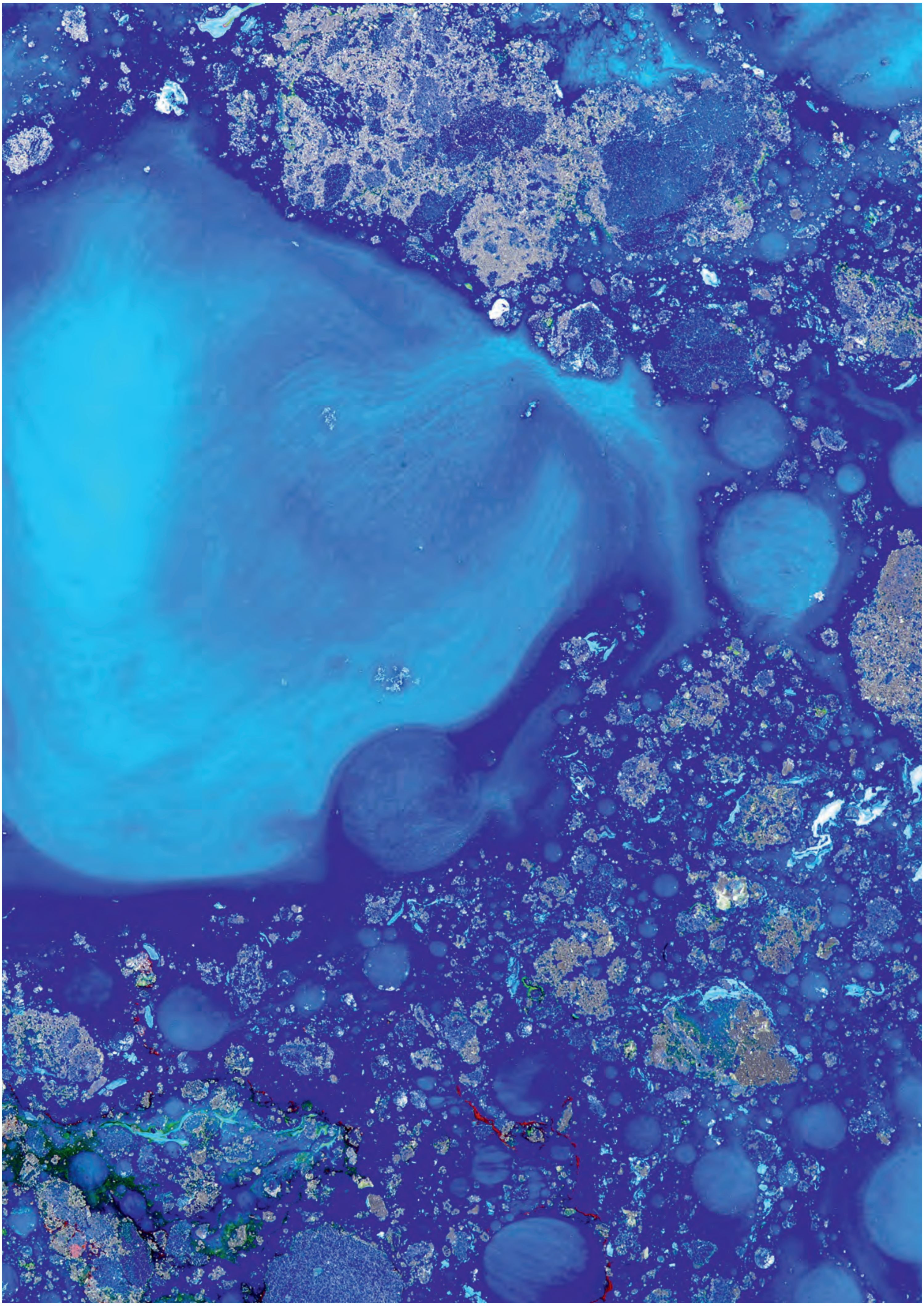
(ARTICLES 133, 135 AND 148 OF THE DECREE N°67-236 DATED MARCH 23, 1967)

In €	2015	2016	2017	2018	**2019**
I. Financial position at year-end					
a) Capital stock	70,826,077	17,706,519	17,706,519	7,099,448	7,099,563
b) Number of shares outstanding	177,065,192	22,133,149	22,133,149	709,944,816	709,956,358
c) Maximal number of shares resulting from convertible bonds (see note below)	26,372,016	1,160,368	1,160,364	–	–
d) Total Equity	1,728,884,020	1,224,949,893	280,022,548	1,790,163,681	1.887.496.882
II. Earnings					
a) Sales net of sales tax	73,984,308	49,107,467	26,467,304	27,549,575	26.389.011
b) Earnings before taxes, employee profit sharing, depreciation and reserves	2,005,006,600	424,222,896	9,019,980	52,664,150	60.121.733
c) Employee profit sharing	–	–	–	–	–
d) Income taxes	(106,127,156)	1,319,915	(57,430,849)	250,482	(19.924.332)
e) Income after taxes, employee profit sharing, depreciation and reserves	606,294,331	(841,019,498)	(944,927,344)	(271,326,175)	97.295.002
f) Dividends	–	–	–	–	–
III. Earnings per share					
a) Earnings after taxes and profit sharing but before depreciation and reserves	11,92	19,11	3,00	0,07	0,11
b) Earnings after taxes, depreciation and reserves	3,42	(38,00)	(42,69)	(0,38)	0,14
c) Net dividend per share	–	–	–	–	–
IV. Personnel					
a) Average number of employees	37	34	32	27	22
b) Total payroll	6,486,844	6,664,549	8,923,393	8,229,076	8,263,169
c) Employee benefits (social security, etc.)	2,797,478	2,301,997	3,423,145	2,731,349	3,116,675

Note on convertible bonds: On February 21, 2018, CGG finalized the implementation of its financial restructuring plan. All bonds have been converted into shares.

6.2.7. Report from the Statutory Auditors on the Statutory financial statements of CGG SA

This section is available in French only.



7

Information on share capital, shareholders and general meetings

7.1 Shareholding

7.1.1 Main shareholders

7.1.1.1 Summary of the share capital as of March 31, 2020 and over the past three years

	As of March 31, 2020	As of December 31, 2019	As of December 31, 2018	As of December 31, 2017
Share capital	€7,099,617	€7,099,563	€7,099,448	€17,706,519
Number of shares	709,961,702	709,956,358	709,944,816	22,133,149
Nominal value	€0.01	€0.01	€0.01	€0.80

7.1.1.2 Information on the share capital as of December 31, 2019

As of December 31, 2019, we had 703 shareholders in registered form.

On December 31, 2019, our Directors and the members of our Executive Leadership Team held 520,633 shares and 20,337 ADSs, representing 532,495 voting rights, *i.e.* 0.076% of the share capital and 0.075% of the voting rights.

On December 31, 2019, the number of shares held by the employees of the Group, through the Group Employee Savings Plan instituted in 1997, amounted to 273 shares corresponding to 0.00004% of the share capital and 0.0001% of the voting rights of CGG.

On December 31, 2019, the Company held 24,996 of its own shares, acquired pursuant to the authorizations granted by the shareholders.

The table below sets forth certain information with respect to entities known to us or ascertained from public filings to beneficially own a percentage of at least 5% of our voting securities as of December 31, 2019:

	December 31, 2019					
	Number of shares	% capital	Number of theoretical voting rights	% theoretical voting rights	Number of voting rights to be exercized during General Meetings	% voting rights to be exercized during General Meetings
Contrarian Capital Management LLC (a)	65,633,491	9.24%	65,633,491	9.24%	65,633,491	9.24%
Boussard & Gavaudan (b)	42,977,546	6.05%	42,977,546	6.05%	42,977,546	6.05%
Thunderbird Partners LLP (c)	40,580,161	5.72%	40,580,161	5.71%	40,580,161	5.71%
Morgan Stanley (d)	38,301,651	5.39%	38,301,651	5.39%	38,301,651	5.39%
Norges Banks (e)	36,659,401	5.16%	36,659,401	5.16%	36,659,401	5.16%
River & Mercantile (f)	35,493,107	5.00%	35,493,107	5.00%	35,493,107	5.00%
UBS Group AG (g)	35,512,657	5.00%	35,512,657	5.00%	35,512,657	5.00%
FCPE CGG Actionnariat (h)	273	0.00%	546	0.00%	546	0.00%
Public	414,773,075	58.42%	414,911,330	58.43%	414,911,330	58.43%
Treasury stock (i)	24,996	0.00352%	24,996	0.0035%	0	0.00%
TOTAL NUMBER OF SHARES OUTSTANDING AND VOTING RIGHTS	**709,956,358**	**100%**	**710,094,886**	**100%**	**710,069,890**	**100%**

(a) *Calculated on the basis of the number of shares held by Contrarian Capital Management LLC as indicated in the notice of threshold crossing dated August 12, 2018.*
(b) *Calculated on the basis of the number of shares held by Boussard et Gavaudan as indicated in the notice of threshold crossing dated August 7, 2019.*
(c) *Calculated on the basis of the number of shares held by Thunderbird Partners LLP as indicated in the notice of threshold crossing dated September 13, 2019.*
(d) *Calculated on the basis of the number of shares held by Morgan Stanley as indicated in the notice of threshold crossing dated November 18, 2019.*
(e) *Calculated on the basis of the number of shares held by Norges Bank as indicated in the notice of threshold crossing dated December 9, 2019.*
(f) *Calculated on the basis of the number of shares held by River & Mercantile as indicated in the notice of threshold crossing dated December 18, 2019.*
(g) *Calculated on the basis of the number of shares held by UBS Group AG as indicated in the notice of threshold crossing dated November 26, 2019.*
(h) *The number of shares held by FCPE CGG Actionnariat amounts to 273 as of December 31, 2019. They all benefit from double voting rights.*
(i) *Shares held by the Company (i.e. 24,996 as of December 31, 2019) are deprived of voting rights for all General Meetings.The corresponding voting rights are reflected to provide theoretical voting rights only.*

To our knowledge, on December 31, 2019, there was no other shareholder holding, on an individual basis or pursuant to any agreement with another shareholder, more than 5% of the share capital or of the voting rights.

7.1.1.3 Evolution of the share capital over the past three years – Share capital as of March 31, 2020

The table below sets forth certain information with respect to entities known to us or ascertained from public filings to beneficially own a percentage of at least 5% of our voting securities as of March 31, 2020 and December 31, 2019, 2018 and 2017:

	March 31, 2020		December 31, 2019		December 31, 2018		December 31, 2017	
	% of shares	% of voting rights*	% of shares	% of voting rights*	% of shares	% of voting rights*	% of shares	% of voting rights*
Contrarian Capital Management LLC [(a)]	9.24	9.24	9.24	9.24	9.24	9.24	-	-
Boussard & Gavaudan [(b)]	6.05	6.05	6.05	6.05	-	-	-	-
Thunderbird Partners LLP [(c)]	5.72	5.71	5.72	5.71	5.05	5.05	-	-
Morgan Stanley [(d)]	5.16	5.16	5.39	5.39	5.23	5.23	-	-
Norges Bank	-	-	5.16	5.16	-	-	-	-
River & Mercantile [(e)]	5.06	5.06	5.00	5.00	-	-	-	-
UBS Group AG	-	-	5.00	5.00	-	-	-	-
DNCA Finance	-	-	-	-	-	-	7,94	7,79
Bpifrance Participations	-	-	-	-	-	-	9,35	10,9
Treasury stock [(f)]	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.11
FCPE CGG Actionnariat [(g)]	0.00	0.00	0,00	0,00	0,00	0,00	0,00	0,00
Public	68.77	68.78	58.42	58.43	80.48	80.48	82.60	81.20
TOTAL	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**
TOTAL NUMBER OF SHARES OUTSTANDING AND VOTING RIGHTS	**709,961,702**	**710,181,334**	**709,956,358**	**710,094,886**	**709,944,816**	**709,999,163**	**22,133,149**	**22,558,848**

* *Theoretical voting rights.*
(a) *Calculated on the basis of the number of shares held by Contrarian Capital Management LLC as indicated in the notice of threshold crossing dated August 12, 2018.*
(b) *Calculated on the basis of the number of shares held by Boussard et Gavaudan as indicated in the notice of threshold crossing dated August 7, 2019.*
(c) *Calculated on the basis of the number of shares held by Thunderbird Partners LLP as indicated in the notice of threshold crossing dated September 13, 2019.*
(d) *Calculated on the basis of the number of shares held by Morgan Stanley as indicated in the notice of threshold crossing dated November 18, 2019.*
(e) *Calculated on the basis of the number of shares held by River & Mercantile as indicated in the notice of threshold crossing dated December 18, 2019.*
(f) *Shares held by the Company (i.e. 24,996 as of March 31, 2020) are deprived of voting rights for all General Meetings. The corresponding voting rights are reflected to provide theoretical voting rights only.*
(g) *The number of shares held by FCPE CGG Actionnariat amounts to 273 as of March 31, 2020. They all benefit from double voting rights.*

To our knowledge, on March 31, 2020, there was no other shareholder holding, on an individual basis or pursuant to any agreement with another shareholder, more than 5% of the share capital or of the voting rights.

7.1.2 Transactions in the Company's shares carried out by Corporate Officers *(mandataires sociaux)* or their close relatives in the course of 2019 and until the date of this Document

In accordance with provisions of Article L. 621-18-2 of the French Monetary and Financial Code and Article 223-26 of the General Regulations of the Financial Markets Authority (AMF), the summary of transactions carried out pursuant to the above-mentioned Article L. 621-18-2 are set out below.

Corporate Officers (including Directors) and members of the Executive Leadership Team (see section 4.1.2.3 of this Document) are forbidden from carrying out any transactions in the Company's shares, whatever the nature, including the exercise of stock options:

(a) During the 30 calendar days preceding the publication of semi-annual or annual results and during the 15 calendar days preceding the publication of quarterly results [(1)] (transactions in the Company's shares can be carried out the day after the date of publication of such results); and

(b) In case such Officers, Directors or Committee members hold any information which could have any influence on the share value in case of public disclosure.

Name	Type of transaction	Date	Number of shares	Unit price	Amount of the transaction
Philippe SALLE Director & Chairman of the Board	Purchase of shares	December 18, 2019	103,650	€2.7300	€282,964.50
Sophie ZURQUIYAH Director and CEO	Purchase of shares	March 11, 2019	10,000	€1.554517	€15,545.17
	Purchase of shares	March 25, 2019	10,000	€1,643	€16,430.00
	Purchase of shares	April 9, 2019	9,000	€1.8235	€16,411.50
	Purchase of shares	April 9, 2019	1,000	€1.8210	€1,821.00
	Purchase of shares	May 17, 2019	10,000	€1.6046	€16,046.00
	Purchase of shares	June 6, 2019	10,000	€1.4160	€14,160.00
Anne France LACLIDE-DROUIN Director	Purchase of shares	January 2, 2019	5,000	€1.14	€5,700.00
	Purchase of shares	April 12, 2019	5,000	€1.7448	€8,724.00
	Purchase of shares	May 29, 2019	1,000	€1,381	€1,381.00
	Purchase of shares	June 25, 2019	4,000	€1.5952	€6,380.80

Note: Pursuant to Article 223-23 of the General Regulation of the French Market Authority, the transactions reflected in this table are those (i) carried out by the persons referred to in Article L. 621-18-2 of the French Monetary and Financial Code, and (ii) if the total amount of such transactions exceeds €20,000 par calendar year.

(1) The Board of Directors held on March 5, 2020, resolved to amend its internal regulations in order to reduce the black-out periods applying prior to the publication of quarterly results from 30 days to 15 days.

7.2 Stock market information

7.2.1 Places where CGG securities are listed

The trading market for our ordinary shares is Euronext Paris SA Paris, SRD. Our ordinary shares will entitle their holders to all rights attached to them on January 1, 2019.

In addition:

- our senior first lien secured notes due 2023 and our senior second lien secured notes due 2024, are listed on the euro MTF market of the Luxembourg Stock Exchange; and,
- the Warrants #1 and Warrants #2 are listed on Euronext Paris.

On September 21, 2018, the Company filed a Form 25 with the Stock and Exchange Commission ("SEC") to effect the delisting of its American depositary Shares ("ADSs") from the New York Stock Exchange. A Form 15F was filed with the SEC on October 2, 2018 to terminate its SEC reporting obligations and the registration of its ADSs. The termination of the registration of its ADSs became effective 90 days after the date of filing of the Form 15F with the SEC, *i.e.* on January 2, 2019. Following delisting of the ADSs from the New York Stock Exchange, CGG maintains its American Depositary Receipt program at "level one". This enables investors to retain their ADSs and facilitates trading on the US over-the-counter market. The depositary of CGG's ADR program remains The Bank of New York Mellon.

7.2.2 Other market places

Since the delisting of our shares from the New York Stock Exchange, our shares are not listed on any other market place than Euronext Paris.

7.2.3 Shares and ADS price

	EURONEXT PARIS				NEW YORK STOCK EXCHANGE			
	Share price		Volumes		ADS price		Volumes	
	Highest	Lowest	Shares	Amount	Highest	Lowest	ADS	Amount
	(in €)			*(in millions of €)*	*(in US$)*			*(in millions of US$)*
2020								
March	2.54	0.76	430,081,743	492.54	2.87	0.86	n.a.	n.a.
February	3.07	2.33	103,923,244	279.02	3.24	2.59	n.a.	n.a;
January	3.12	2.53	84,779,092	243.27	3.41	2.76	n.a.	n.a.
2019								
December	2.96	2.26	91,197,671	239.48	3.37	2.52	n.a.	n.a.
November	2.50	2.05	113,523,373	268.78	2.76	2.39	n.a.	n.a.
October	2.24	1.83	94,596,716	193.27	2.47	2.03	n.a.	n.a.
September	2.38	1.97	127,739,613	274.84	2.60	2.20	n.a.	n.a.
August	2.02	1.56	115,602,961	200.94	2.27	1.76	n.a.	n.a.
July	2.01	1.68	143,853,484	265.06	2.28	1.93	n.a.	n.a.
June	1.73	1.27	133,197,470	204.76	1.94	1.51	n.a.	n.a.
May	1.77	1.29	164,933,022	252.64	1.98	1.48	n.a.	n.a.
April	1.89	1.61	125,724,488	218.79	2.13	1.82	n.a.	n.a.
March	1.85	1.42	130,035,162	219.51	2.12	1.68	n.a.	n.a.
February	1.72	1.43	87,179,236	140.67	1.98	1.66	n.a.	n.a.
January	1.71	1.08	131,122,049	189.22	1.98	1.33	n.a.	n.a.
2018								
December	1.48	1.00	146,300,057	172.65	1.68	1.11	n.a.	n.a.
November	2.24	1.28	207,657,658	326.60	2.47	1.46	n.a.	n.a.
October	2.49	1.86	92,566,376	202.62	2.86	2.17	n.a.	n.a.
September [(b)]	2.50	2.15	87,821,129	207.84	2.99	2.53	n.a.	n.a.
August	2.60	2.24	117,978,131	285.52	2.99	2.53	412,860	1.15
July	2.42	2.04	97,258,431	215.96	2.78	2.35	556,213	1.40
June	2.29	2.00	84,731,599	181.12	2.73	2.33	594,933	1.49
May	2.48	1.81	192,724,767	422.99	3.15	2.34	1,641,927	4.47
April	2.04	1.53	121,262,621	217.58	2.45	1.95	1,186,232	2.53
March	1.69	1.30	144,225,221	224.88	4.82	1.88	2,371,263	5.50
February	3.01	1.41	58,492,698	103.05	7.15	3.27	1,161,137	5.41
January	4.10 [(a)]	1.52 [(a)]	28,723,569	117.03	6.66	4.45	305,037	1.75
2017								
December	4.35	3.68	6,983,891	27.44	7.50	4.08	185,652	0.90
November	4.89	3.52	11,261,325	45.66	5.12	4.13	37,628	0.17
October	5.09	3.57	16,661,650	73.30	5.66	4.30	92,798	0.47
September	5.60	4.24	22,149,680	110.48	6.44	5.20	275,593	1.62
August	6.27	2.83	43,912,034	211.38	7.14	3.26	356,614	2.03
July	4.43	3.72	4,527,851	18.19	4.77	4.36	53,397	0.24
June	6.32	3.95	10,859,380	55.40	7.67	4.37 [(c)]	377,237	2.19
May	6.72	4.88	6,704,600	36.60	7.23	5.55	59,174	0.36
April	6.95	6.17	3,924,182	25.60	7.27	6.64	32,545	0.22
March	9.10	6.11	16,640,720	114.80	9.65	6.57	111,276	0.79
February	9.98	8.35	7,241,228	66.12	10.51	8.83	72,125	0.69
January	15.24	9.27	14,124,580	162.58	15.60	10.06	98,671	1.18

(a) Restated further to the operations linked to the financial restructuring held in February 2018.
(b) The listing of our shares on the New York Stock Exchange was terminated on October 2, 2018.
(c) On June 14, 2017, the trading of our ADSs was suspended pending the announcement of the opening of safeguard proceedings and no trading took place during the day. The theoretical closing price of our ADSs was US$3.73 per ADS as of June 14, 2017.

7.3 Financial communication policy

CGG strongly believes that prospective and existing shareholders, both individual and institutional, should be fully informed about the latest development of the Company and should have access to key information reasonably required to make an informed investment decision and exercise their rights on a fair and timely basis. The Company aims to provide and implement the best financial communication practices.

7.3.1 General financial communication policy

As per the Internal Regulations of the Board of Directors, the Chairman of the Board may communicate directly with shareholders, particularly with regard to corporate governance matters.

Information is communicated to shareholders and the investment community mainly through the Company's financial reports, annual General Meetings as well as by making available on the Company's website all corporate communications, any disclosures submitted to Euronext Stock Exchange and any other publications.

7.3.2 Communication by electronic channel

The Company's website (cgg.com) provides shareholders with access to important and relevant corporate information on an effective and timely basis. A dedicated "Investor Relations" section is available on this website. The Company will publish all important announcements/information on its website. Regular updates include, among others, the following information:

- financial performance of the Company in the form of quarterly, semi-annual or annual reports;
- webcasts and presentations on the Company's results announcements;
- announcements and press releases on the Company's latest developments;
- circulars to shareholders;
- corporate calendar with dates of important events of the Company;
- any other information, such as credit ratings, share information, etc.

Shareholders are also encouraged to visit the Euronext website for obtaining information on regulatory publications of the Company.

In order to support the protection of the environment, the Company highly encourages its shareholders to access corporate communications of the Company through these websites. The Company believes that this is also one of the most efficient and convenient mean of communication with shareholders.

7.3.3 Communication by post

Upon demand, the Company will send by post the relevant materials to any shareholders (either to holders of registered shares or to holders of bearer shares, subject to evidence of this shareholding).

7.3.4 General meetings

The Company attaches a high degree of importance to continuous communication with shareholders, especially direct dialogue with them. The annual General Meetings of the Company are the primary forum for communication between the Company and its shareholders and for shareholder participation. The Company's Board members, members of the senior management and external auditors usually attend the annual General Meetings to respond to questions and comments from shareholders. Shareholders are therefore encouraged to participate actively in the Company's annual General Meetings. Shareholders who are unable to attend the annual General Meetings are also encouraged to appoint proxies to attend and vote at the said meetings for and on their behalf.

To ensure that shareholders can have a better understanding of the agenda items to be discussed at the annual General Meetings and to encourage their active participation, the Company will provide detailed information on the annual General Meetings in the "Notice and Information Brochure" which is available on the Company's website prior to said meetings, together with the latest annual report, at least 21 calendar days prior to the annual General Meetings.

Voting results and minutes of the annual General Meetings are posted on the Company's website as soon as practicable.

The Company may also convene extraordinary General Meetings whenever needed.

7.3.5 Communication with investment community

The Company will communicate actively with the investment community in the forms of meetings, conferences and roadshows. Investment community includes existing and potential investors of the Company's securities, analysts and securities market professional. Information concerning the Company will be discussed during these meetings.

In 2019, CGG organized 27 days of roadshow in Europe and in the US and participated to 11 energy or mid-cap conferences.

7.3.6 Shareholders' enquiries

Shareholders having queries or comments in relation to the shareholder communications can send written enquiries by email to the Company's investor relations or make calls to the Company's registered office.

Subject to legal disclosure obligations, it is the Company's general practice that it does not respond to media speculation, market rumours and analysts' reports.

7.3.7 Sell-side analysts & brokers

CGG is currently covered by 12 sell-side analysts and broker firms. CGG holds regular meetings with sell-side analysts and is seeking to enlarge its coverage by global and US based analysts firms

7.4 Distribution of earnings – Dividends

7.4.1 Distribution of earnings (article 19 of the articles of association)

Out of the earnings of the fiscal year, reduced if necessary by previous losses, at least five percent shall be first appropriated to form the reserve fund required by law, until said reserve fund has reached one tenth of the stock capital.

The balance, increased by retained earnings, if any, forms the distributable earnings.

Any amounts that the General Meeting would decide, either on proposal by the Board or by its own decision, to allocate to one or more general or special reserve funds or to carry forward, shall be withdrawn from said earnings.

The balance shall be distributed among the shareholders as a dividend.

The terms and conditions for the payment of dividends are determined by the General Meeting or, failing such, by the Board of Directors.

The General Meeting deciding on the financial statements is entitled to give each shareholder, for the dividend or part of the dividend to be distributed or for any advance payments on a dividend, the choice between payment of the dividend in cash or in stock.

7.4.2 Dividends

The Company did not distribute any dividends over the past five years.

The Board of Directors does not consider proposing to distribute dividends to the next General Meeting based on 2019 results. Nevertheless, we intend to introduce a meaningful dividends policy in the next couple of years (see Chapter 2.1 “Risk factors and control measures”, and more especially section 2.1.3.10 of this Document).

7.5 General information on the Company's share capital

7.5.1 Recent major events affecting the share capital

2018

In the framework of the implementation of the financial restructuring plan, the extraordinary General Meeting held on November 13, 2017 decided, among others, to reduce the share capital of the Company in an amount of €17,485,187.71 by reducing the nominal value of each share, from €0.80 to €0.01. This share capital reduction was completed by decision of the Board of Directors on January 15, 2018.

On January 15, 2018, further to the acknowledgment of the share capital reduction by the Board of Directors, the share capital of the Company amounted to €221,331.49, divided into 22,133,148 shares, all fully paid.

As part of the implementation of its financial restructuring plan, the Company issued on February 21, 2018:

- 71,932,731 shares of the Company, each with one share purchase warrant, all of which were subscribed by holders of preferential subscription rights;
- 35,311,528 new shares resulting from the equitization of the Convertible Bonds;
- 449,197,594 new shares resulting from the equitization of the Senior Notes;
- 22,133,149 warrants allocated to the shareholders of CGG (the "Warrants #1");
- 113,585,276 warrants in favor of the subscribers of the Second Lien Notes (the "Warrants #3");
- 7,099,079 warrants allocated to the members of the *ad hoc* committee of holders of Senior Notes (the "Coordination Warrants");
- 10,648,619 warrants allocated to the members of the *ad hoc* committee of holders of Senior Notes (the "Backstop Warrants").

As a result of these transactions, our issued share capital amounted to €5,785,750 divided into 578,575,002 shares of the same class with a nominal value of €0.01 per share, all fully paid. Various changes in the share capital occurred since then, as a result of the exercise of the warrants. These changes are detailed below.

Warrants #3, Coordination Warrants and Backstop Warrants expired on August 21, 2018.

As of December 31, 2018, our issued share capital amounted to €7,099,448, divided into 709,944,816 shares of the same class with a nominal value of €0.01 per share, all fully paid.

2019

As of December 31, 2019, as a result of the exercise of warrants and stock-options over the year, our issued share capital amounted to €7,099,563 divided into 709,956,358 shares of the same class with a nominal value of €0.01 per share, all fully paid.

2020

As of March 31, 2020, as a result of the exercise of warrants and stock-options since the beginning of the year, our issued share capital amounted to €7,099,617 divided into 709,961,702 shares of the same class with a nominal value of €0.01 per share, all fully paid.

DETAILS OF CHANGES IN SHARE CAPITAL DURING THE PAST THREE YEARS AND UNTIL MARCH 31, 2020

Transaction	Nominal value	Number of shares created	Amount of the share premium	Amount of the capital variation	Resulting total share capital
Share capital increase dated April 1, 2020 (as a result of the exercise of warrants)	€0.01	458	€1,778.98	€4.58	€7,099,617.02
Share capital increase dated March 5, 2020 (as a result of yje exercise of warrants)	€0.01	1,232	€4,450.72	€12.32	€7,099,612.44
Share capital increase dated February 4, 2020 (as a result of the exercise of warrants)	€0.01	3,654	€12,503.34	€36.54	€7,099,600.12
Share capital increase dated January 9, 2020 (as a result of the exercise of warrants)					
as a result of the exercise of warrants	€0.01	1,594	€5,635.94	€15.94	€7,099,563.58
as a result of the exercise of stock options	€0.01	2,038	€4,361.32	€20.38	
Share capital increase dated December 3, 2019 (as a result of the exercise of warrants)	€0.01	846	€2,931.66	€8.46	€7,099,527.26
Share capital increase dated November 4, 2019 (as a result of the exercise of warrants)	€0.01	234	€931.14	€2.34	€7,099,518.80
Share capital increase dated October 2, 2019 (as a result of the exercise of warrants)	€0.01	144	€447.84	€1.44	€7,099,516.46

Transaction	Nominal value	Number of shares created	Amount of the share premium	Amount of the capital variation	Resulting total share capital
Share capital increase dated September 4, 2019 (as a result of the exercise of warrants)	€0.01	1,260	€3,983.40	€12.60	€7,099,515.02
Share capital increase dated August 1, 2019 (as a result of the exercise of warrants)	€0.01	330	€1,085.70	€3.30	€7,099,502.42
Share capital increase dated July 4, 2019 (as a result of the exercise of warrants)	€0.01	758	€2,859.58	€7.58	€7,099,499.12
Share capital increase dated May 31, 2019 (as a result of the exercise of warrants)	€0.01	312	€1,251.12	€3.12	€7,099,491.54
Share capital increase dated May 13, 2019 (as a result of the exercise of warrants)	€0.01	100	€311.00	€1.00	€7,099,488.42
Share capital increase dated May 3, 2019 (as a result of the exercise of warrants)	€0.01	776	€2,740.96	€7.76	€7,099,487.42
Share capital increase dated April 2, 2019 (as a result of the exercise of warrants)	€0.01	208	€693.68	€2.08	€7,099,479.66
Share capital increase dated February 28, 2019 (as a result of the exercise of warrants)	€0.01	402	€1,266.42	€4.02	€7,099,477.58
Share capital increase dated February 6, 2019 (as a result of the exercise of warrants)	€0.01	2,540	€9,584.20	€25.40	€7,099,473.56
Share capital increase dated January 9, 2019 (as a result of the exercise of warrants)	€0.01	418	€1,308.98	€4.18	€7,099,448.16
Share capital increase dated December 5, 2018 (as a result of the exercise of warrants)	€0.01	512	€1,653.52	€5.12	€7,099,443.98
Share capital increase dated November 8, 2018 (as a result of the exercise of warrants)	€0.01	1,006	€3,292.46	€10.06	€7,099,438.86
Share capital increase dated October 2, 2018 (as a result of the exercise of warrants)	€0.01	2,162	€6,873.22	€21.62	€7,099,428.80
Share capital increase dated September 4, 2018 (as a result of the exercise of warrants)	€0.01	858	€2,878.98	€8.58	€7,099,407.18
Share capital increase dated August 23, 2018 (as a result of the exercise of warrants)	€0.01	10,613,316	€0	€106,133.16	€7,099,398.60
Share capital increase dated August 2, 2018 (as a result of the exercise of warrants)	€0.01	497,637	€6,827.84	€4,976.37	€6,993,265.44
Share capital increase dated July 2, 2018 (as a result of the exercise of warrants)	€0.01	1,115,710	€4,750.46	€11,157.10	€6,988,289.07
Share capital increase dated June 1, 2018 (as a result of the exercise of warrants)	€0.01	2,372,284	€9,939.32	€23,772.84	€6,977,131.97
Share capital increase dated May 4, 2018 (as a result of the exercise of warrants)	€0.01	68,953	€2,214.32	€689.53	€6,953,409.13
Share capital increase dated April 24, 2018 (as a result of the exercise of warrants)	€0.01	9,863,863	€27,608.64	€98,638.63	€6,952,719.60
Share capital increase dated April 3, 2018 (as a result of the exercise of warrants)	€0.01	99,950,700	€142,803.78	€999,507.00	€6,854,080.97
Share capital increase dated March 9, 2018 (as a result of exercise of certain warrants by their holders)	€0.01	6,882,395	€15,064.84	€68,823.95	€5,854,573.97
Share capital increase dated February 21, 2018 (reserved to the senior noteholders)	€0.01	449,197,594	€1,397,004,517.34	€4,491,975.94	€5,785,750.02
Share capital increase dated February 21, 2018 (reserved to the convertible bondholders)	€0.01	35,311,528	€361,943,162.00	€353,115.28	€1,293,774.08
Share capital increase dated February 21, 2018 (with preferential subscription right)	€0.01	71,932,731	€111,495,733.05	€719,327.31	€940,658.80
Share capital reduction dated January 15, 2018	€0.01	-	-	€17,485,187.17	€221,331.49

7.5.2 Dilutive instruments

As of December 31, 2019 and as of the date of this Document, the only dilutive instruments issued were stock options and performance shares (see section 4.2.2.4. of this Document) as well as warrants described below.

The number of shares that could derive from our dilutive instruments in circulation on December 31, 2019 and as of March 31, 2020, on the basis of their terms in force as of these dates, as well as the corresponding percentage of dilution are presented in the table below.

	12.31.2019	Dilution %	03.31.2020	Dilution %
Stock-options	9,171,472[(a)]	1.29%	9,051,896[(a)]	1.27%
Performance shares	4,981,602	0.70%	4,979,098	0.70%
Warrants #1	29,429,208	4.15%	29,426,212	4.14%
Warrants #2	47,928,062	6.75%	47,925,714	6.75%

(a) *Number of shares adjusted further to the share capital increase dated February 5, 2016, to the stock reverse split dated July 20, 2016 and to the share capital increase dated February 21, 2018.*

Warrants

The following table sets out some of the key characteristics of the warrants issued in the framework of the implementation of our financial restructuring on February 21, 2018:

	Warrants #1	Warrants #2	Warrants #3	Coordination Warrants	Backstop Warrants
Number of warrants issued	22,133,149	71,932,731	113,585,276	7,099,079	10,648,619
Exercise ratio	3 Warrants #1 for 4 new shares	3 Warrants #2 for 2 new shares	1 Warrant #3 for 1 new share	1 Coordination Warrant for 1 new share	1 Backstop Warrant for 1 new share
Exercise price	€3.12 per new share	€4.02 per new share	€0.01 per new share	€0.01 per new share	€0.01 per new share
Maximum number of shares to be issued upon exercise of the warrants (subject to adjustments)	29,477,536 [(a)]	47,955,154	113,585,276	7,099,079	10,648,619
Expiry date of the warrants	February 21, 2022	February 21, 2023	August 21, 2018	August 21, 2018	August 21, 2018

(a) *The 24,996 Warrants #1 allocated to the Company in connection with the treasury shares were cancelled.*
(b) *Subject to extension cases.*

Warrants #1: warrants allocated to the shareholders of CGG;

Warrants #2: warrants associated to new shares ("ABSA"), all of which were subscribed by holders of preferential subscription rights;

Warrants #3: warrants in favor of the subscribers of the Second Lien Notes;

Coordination Warrants: warrants allocated to the members of the *ad hoc* committee of holders of Senior Notes;

Backstop Warrants: warrants allocated to the members of the *ad hoc* committee of holders of Senior Notes.

These warrants can be exercised pursuant to the terms and conditions described in the prospectuses no. 17-551 dated October 13, 2017 and no. 18-018 dated January 16, 2018.

Warrants #3, Coordination Warrants and Backstop Warrants expired on August 21, 2018.

7.5.3 Share buyback program

a) Share buyback program approved by the General Meeting held on April 26, 2018

At the General Meeting held on April 26, 2018, our shareholders authorized the Board of Directors to acquire up to 10% of our share capital through purchases of shares and to resell shares so acquired for the 18 months following the date of such meeting, with the following objectives:

- to support liquidity of our shares through a liquidity contract entered into with an investment service provider in compliance with the Code of Practice of the French *Autorité des Marchés Financiers*;
- to deliver shares in the scope of securities giving access, immediately or in the future, to shares by redemption, conversion, exchange, presentation of a warrant or by any other means;
- to deliver, immediately or in the future, shares in exchange in the scope of external growth within the limit of 5% of the share capital;
- to allocate shares to employees and officers of the Company or affiliated companies within the meaning of Article L. 225-180 of the French Commercial Code, including but not limited to options to purchase shares of the Company;
- to deliver shares for no consideration to executive officers and employees, including but not limited to the scope of articles L. 225-197-1 and *seq.* of the French Commercial Code; and
- to cancel the shares through a capital reduction, subject to a decision of, or an authorization by the extraordinary General Meeting.

In accordance with these objectives (save for liquidity contracts), the treasury shares so acquired may be either cancelled, sold or otherwise transferred. The shares may be acquired, sold or transferred, on one or several occasions, by any means, including by individual agreement or market purchase, by an offer to buy, or in a block of shares and at any moment, but not during a take-over bid. The maximum amount of share capital that can be purchased or transferred as block of shares can be up to the total authorized amount under this program.

The General Meeting approved a maximum purchase price of €3.12 per share.

The maximum number of shares that we are entitled to hold is 10% of our share capital as at the time of the purchase, less any shares acquired under previous authorizations. Notwithstanding the above, pursuant to Article L. 225-209, paragraph 6 of the French Commercial Code, the number of shares that may be acquired and retained for possible use for payment or exchange in the context of a merger, demerger or contribution may not exceed 5% of the share capital.

This authorization was granted for an 18-month period from the date of the General Meeting approving the program, *i.e.* until October 25, 2019.

This share buyback program was not implemented.

As of December 31, 2019, we held 24,996 of our own shares, acquired in the course of 2010.

b) Share buyback program proposed to the General Meeting to be held on June 16, 2020

A share buyback program will be submitted to the General Meeting to be held on June 16, 2020 in order to acquire up to 10% of our share capital through purchases of shares and to resell shares so acquired for the 18 months following the date of such meeting, with the following objectives:

- to support liquidity of our shares through a liquidity contract entered into with an investment service provider in compliance with the Code of Practice of the French *Autorité des Marchés Financiers*;
- to deliver shares in the scope of securities giving access, immediately or in the future, to shares by redemption, conversion, exchange, presentation of a warrant or by any other means;
- to deliver, immediately or in the future, shares in exchange in the scope of external growth within the limit of 5% of the share capital;
- to allocate shares to employees and officers of the Company or affiliated companies within the meaning of Article L. 225-180 of the French Commercial Code, including but not limited to options to purchase shares of the Company;
- to deliver shares for no consideration to executive officers and employees, including but not limited to the scope of articles L. 225-197-1 and *seq.* of the French Commercial Code; and
- to cancel the shares through a capital reduction, subject to a decision of, or an authorization by the extraordinary General Meeting.

In accordance with these objectives (save for liquidity contracts), the treasury shares so acquired may be either cancelled, sold or otherwise transferred. The shares may be acquired, sold or transferred, on one or several occasions, by any means, including by individual agreement or market purchase, by an offer to buy, or in a block of shares and at any moment, but not during a take-over bid. The maximum amount of share capital that can be purchased or transferred as block of shares can be up to the total authorized amount under this program.

The maximum purchase price proposed to the General Meeting is set at €4.02 per share.

The maximum number of shares that we are entitled to hold is 10% of our share capital as at the time of the purchase, less any shares acquired under previous authorizations. Notwithstanding the above, pursuant to Article L. 225-209, paragraph 6 of the French Commercial Code, the number of shares that may be acquired and retained for possible use for payment or exchange in the context of a merger, demerger or contribution may not exceed 5% of the share capital.

This authorization would be granted for an 18-month period from the date of the General Meeting approving the program, *i.e.* until December 15, 2021.

7.5.4 Authorized capital

The tables below summarize the financial delegations granted by the General Meeting to the Board of Directors, which are currently in force.

SHARE CAPITAL INCREASES

	Authorizations in force in 2019			
	Resolution number – General Meeting	Period	Maximum authorized amount	Use of the authorization in 2019
Delegation of authority to the Board of Directors to increase the share capital by issuing shares and/or equity securities granting access to other equity securities and/or granting the right to the allotment of debt securities and/or securities granting access to equity securities to be issued, with preferential subscription right in favor of holders of existing shares	18th – GM 05.15.2019	26 months	€3,549,737 (a), *i.e.* 50% of the Company's share capital as of the date of convening of the General Meeting	None
Delegation of authority to the Board of Directors to increase the share capital by issuing shares and/or equity securities granting access to other equity securities and/or granting the right to the allotment of debt securities and/or securities granting access to equity to be issued, without preferential subscription right, within the scope of public offerings	19th – GM 05.15.2019	26 months	€709,947 (b), *i.e.* 10% of the Company's share capital as of the date of convening of the General Meeting	None
Delegation of authority to the Board of Directors to increase the share capital by issuing shares, and/or equity securities granting access to other equity securities and/or granting right to the allotment of debt securities and/or securities granting access to equity securities to be issued, within the scope of private placements referred to in Article L. 411-2-II of the French Monetary and Financial Code, without preferential subscription right	20th – GM 11.13.2017	26 months	€709,947 (b), *i.e.* 10% of the Company's share capital as of the date of convening of the General Meeting	None
Authorization granted to the Board of Directors in order to increase the number of securities to be issued by the Company in the event of a share capital increase with or without preferential subscription right pursuant to its 18th, 19th and 20th resolutions	22nd – GM 05.15.2019	26 months	15% of the initial issue	None
Delegation of authority to the Board of Directors to increase the share capital by issuing shares, and/or equity securities granting access to other equity securities and/or granting right to the allotment of debt securities and/or securities granting access to equity securities to be issued; in consideration of contributions in kind within a limit of 10% of the share capital	24th – GM 05.15.2019	26 months	€709,947 (b), *i.e.* 10% of the Company's share capital as of the date of convening of the General Meeting	None
Increase of capital, reserving the subscription of the shares to be issued to members of a Company Savings Plan (*Plan d'Epargne Entreprise*) (c)	23rd – GM 15.05.2019*	26 months	€141,990 (b) *i.e.* 2% of the Company's share capital as of the date of convening of the General Meeting	None
	19th – GM 04.26.2018	26 months	€115,800 (d)	None

(a) Aggregate ceiling for share capital increases, any operations considered, with the exception of stock-options and performance shares allocations.
(b) To be deducted from the aggregate ceiling of €3,549,737 set forth in the 18th resolution of the General Meeting held on May 15, 2019.
(c) Category of persons under Article L. 225-138 of the French Commercial Code.
(d) Within the limit of the aggregate ceiling of €355,000 mentioned in the 20th resolution of the General Meeting held on April 26, 2018.
** Cancels and replaces, for the non-used portion, the resolutions voted in this respect during the previous General Meetings.*

STOCK-OPTIONS AND PERFORMANCE SHARES

	Authorizations in force in 2019			
	Resolution number – General Meeting	Period	Maximum authorized amount	Use of the authorization in 2019
Stock-options	17th – GM 04.26.2018: Allocation to the employees and Corporate Officers	26 months	Maximum number of 15,746,813 stock-options over the period of the authorization No discount	06.27.2019: allocation of 2,273,520 stock options
Performance shares	18th – GM 04.26.2018: Allocation to the employees and Corporate Officers	26 months	Maximum number of 6,928,598 performance shares stock-options over the period of the authorization	06.27.2019: allocation of 2,007,720 performance shares

SHARE BUYBACK PROGRAM

	Authorizations in force in 2019			
	Resolution number – General Meeting	Period	Maximum authorized amount	Use of the authorization in 2019
Share repurchase	7th – GM 04.26.2018	18 months	10% of the share capital Maximum amount: €3.12 per share	None

CAPITAL REDUCTION

	Authorizations in force in 2019			
	Resolution number – General Meeting	Period	Maximum authorized amount	Use of the authorization in 2019
Share cancellation	25th – GM 05.15.2019*	18 months	10% of the share capital	None
	15th – GM 04.26.2018	18 months	10% of the share capital	None

* *Cancels and replaces, for the non-used portion, the resolutions voted in this respect during the previous General Meetings.*

7.5.5 Securities not giving access to the share capital

First lien notes due 2023

On April 24, 2018, CGG Holding (US) Inc. (an indirect fully owned subsidiary of CGG SA) issued new first lien senior secured notes due 2023 (refinancing in whole its senior secured first lien notes issued on February 21, 2018 as part of the financial restructuring, see 1.2 "History and significant events in the development of the Company's activities – Financial restructuring process – Description of the Safeguard Plan" of the 2018 Reference Document, for more details), including a dollar tranche for a total nominal amount of US$300 million bearing interest at 9.00% and a euro tranche for a total nominal amount €280 million bearing interest at 7.875%. In connection with the issuance of the new first lien notes, CGG Holding (U.S.) Inc. as Issuer, the Company and certain of its subsidiaries as Guarantors and The Bank of New York Mellon, London Branch as Trustee, among others, executed an indenture dated April 24, 2018.

Second lien notes due 2024

As part of the financial restructuring, on February 21, 2018, the Company issued US$355.1 million and €80.4 million in principal amounts of second lien notes due 2024, bearing interest at a rate including a variable component indexed on the LIBOR (for the tranche denominated in US dollars) and EURIBOR (for the tranche denominated in euros), in each case, with a floor of 1%, plus a margin of 4.0% per annum, and PIK interest of 8.5% per annum. In connection with the issuance of the second lien notes, CGG SA as Issuer, certain of its subsidiaries as Guarantors, and The Bank of New York Mellon, London Branch as Trustee, among others, executed an indenture dated February 21, 2018. The net proceeds from the issuance of the new money portion of the second lien notes were used as set forth in 1.2 "History and significant events in the development of the Company's activities – Financial restructuring process – Description of the Safeguard Plan" of the 2018 Reference Document, for more details.

7.6 General information on the Company's General Meetings

7.6.1 Convening (articles 14.2 and 14.3 of our articles of association)

The General Meeting is convened and takes decision under the conditions set forth by law. The General Meeting meets at the head office or at any other place as may be indicated in the notice of convening.

7.6.2 Conditions to attend and vote at General Meetings (article 14.6 of our articles of association)

Subject to the provisions of Article L. 225-104 and *seq.* of the French Commercial Code, the conditions for shareholders to attend the General Meetings of the Company are described in articles 14, 15 and 16 of our articles of association.

The General Meeting is composed of all the shareholders, either personally or represented by another person, whatever the number of shares they hold.

Any shareholder shall have the right to attend the General Meetings and to vote on the resolutions, either personally or by agent, regardless of the number of shares held, on simple justification of his/her identity, provided that, (i) in the case of a registered shareholder or financial intermediary referred to in Article L. 228-1 of the Commercial code, the registered shareholder or financial intermediary referred to in Article L. 228-1 of the Commercial code is registered in the securities accounts of the Company on the second business day prior to the date of the General Meeting at 12 a.m., Paris time, or, (ii) in the case of a holder of shares in bearer form, within the same period, a certificate delivered by an authorized financial intermediary, evidencing the recording of the shares in the book up to the date of the General Meeting, was sent to the place indicated in the convening notice. Such a certificate is also delivered to the holder of shares in bearer form willing to attend the General Meeting in a person but who has not received its admission card two business days prior to the date of the General Meeting at 12 a.m., Paris time.

7.6.3 Double voting rights (article 14.6 of our articles of association)

As from May 22 1997, a double voting right is allocated to all registered and fully paid-up shares registered in the name of the same holder for at least two years.

In the event of an increase in capital by incorporation of reserves, profits or paid in capital, this double voting right is granted to registered shares allocated free to a shareholder as soon as they are issued, at the rate of the former shares for which he benefits from this right.

The double voting right ceases ipso jure for any share having been subject to a conversion to bearer form or a transfer of ownership subject to exceptions provided for by law.

In accordance with Article L. 225-99, paragraph 2, of the French Commercial Code, the Extraordinary General Meeting cannot withdraw the double voting rights without a prior authorization granted by a special meeting of the holders of these double voting rights.

7.6.4 Threshold crossings to be notified to the Company (article 7.2 of our articles of association)

Any shareholder who directly or indirectly (as per the provisions of Article L. 233-7 of the French Commercial Code) acquires ownership or control of shares representing 1% or any multiple thereof of our share capital or voting rights, or whose shareholding falls below any such limit, must inform us within five trading days of the crossing of the relevant threshold, of the number of shares then owned by such shareholder.

Failure to comply with these notification requirements may result, at the request, recorded in the minutes of the General Meeting, of one or several shareholders holding at least 1% of the capital, in the shares in excess of the relevant threshold being deprived of voting rights for all Shareholder Meetings until the end of a two-year period following the date on which the owner thereof has complied with such notification requirements.

LEGAL THRESHOLD CROSSINGS NOTIFIED TO THE COMPANY IN THE COURSE OF 2019 AND UNTIL MARCH 31, 2020

Date of the notification	Above/Below	Threshold crossed
By Norges Bank Investment Management		
February 15, 2019	Above	5% of the share capital and voting rights
February 18, 2019	Below	5% of the share capital and voting rights
February 20, 2019	Above	5% of the share capital and voting rights
February 26, 2019	Below	5% of the share capital and voting rights
March 1, 2019	Above	5% of the share capital and voting rights
April 1, 2019	Below	5% of the share capital and voting rights
April 8, 2019	Above	5% of the share capital and voting rights
April 12, 2019	Below	5% of the share capital and voting rights
June 4, 2019	Above	5% of the share capital and voting rights
June 12, 2019	Below	5% of the share capital and voting rights
June 19, 2019	Above	5% of the share capital and voting rights
June 24, 2019	Below	5% of the share capital and voting rights
July 3, 2019	Above	5% of the share capital and voting rights
July 4, 2019	Below	5% of the share capital and voting rights
August 8, 2019	Above	5% of the share capital and voting rights
August 8, 2019	Below	5% of the share capital and voting rights
September 17, 2019	Above	5% of the share capital and voting rights
September 20, 2019	Below	5% of the share capital and voting rights
October 8, 2019	Above	5% of the share capital and voting rights
October 9, 2019	Below	5% of the share capital and voting rights
November 13, 2019	Above	5% of the share capital and voting rights
November 14, 2019	Below	5% of the share capital and voting rights
November 19, 2019	Above	5% of the share capital and voting rights
November 20, 2019	Below	5% of the share capital and voting rights
November 21, 2019	Above	5% of the share capital and voting rights
December 3, 2019	Below	5% of the share capital and voting rights
December 5, 2019	Above	5% of the share capital and voting rights
December 9, 2019	Below	5% of the share capital and voting rights
December 9, 2019	Above	5% of the share capital and voting rights
January 14, 2020	Below	5% of the share capital and voting rights

Date of the notification	Above/Below	Threshold crossed
January 22, 2020	Above	5% of the share capital and voting rights
February 3, 2020	Below	5% of the share capital and voting rights
February 4, 2020	Above	5% of the share capital and voting rights
March 24, 2020	Below	5% of the share capital and voting rights
By Boussard & Gavaudan Partners Limited		
May 17, 2019	Above	5% of the share capital and voting rights
By Morgan Stanley and its affiliates		
February 13, 2019	Below	5% of the share capital and voting rights
February 22, 2019	Above	5% of the share capital and voting rights
March 26, 2019	Below	5% of the share capital and voting rights
March 29, 2019	Above	5% of the share capital and voting rights
April 3, 2019	Below	5% of the share capital and voting rights
April 4, 2019	Above	5% of the share capital and voting rights
April 30, 2019	Below	5% of the share capital and voting rights
April 30, 2019	Above	5% of the share capital and voting rights
May 2, 2019	Below	5% of the share capital and voting rights
May 27, 2019	Above	5% of the share capital and voting rights
May 29, 2019	Below	5% of the share capital and voting rights
August 1, 2019	Above	5% of the share capital and voting rights
August 5, 2019	Below	5% of the share capital and voting rights
August 14, 2019	Below	5% of the share capital and voting rights
August 30, 2019	Above	5% of the share capital and voting rights
September 4, 2019	Above	5% of the share capital and voting rights
September 6, 2019	Below	5% of the share capital and voting rights
September 10, 2019	Above	5% of the share capital and voting rights
September 24, 2019	Below	5% of the share capital and voting rights
October 24, 2019	Above	5% of the share capital and voting rights
October 25, 2019	Above	5% of the share capital and voting rights
November 8, 2019	Above	5% of the share capital and voting rights
November 12, 2019	Above	5% of the share capital and voting rights
November 14, 2019	Below	5% of the share capital and voting rights
November 18, 2019	Above	5% of the share capital and voting rights
January 23, 2020	Below	5% of the share capital and voting rights
January 27, 2020	Above	5% of the share capital and voting rights
January 31, 2020	Below	5% of the share capital and voting rights
February 4, 2020	Above	5% of the share capita land voting rights
February 13, 2020	Below	5% of the share capital and voting rights
February 17, 2020	Above	5% of the share capital and voting rights
February 20, 2020	Below	5% of the share capital and voting rights
February 21, 2020	Above	5% of the share capital and voting rights
February 25, 2020	Below	5% of the share capital and voting rights
Februaru 26, 2020	Above	5% of the share capital and voting rights
March 3, 2020	Below	5% of the share capital and voting rights
March 9, 2020	Above	5% of the share capital and voting rights
March 10, 2020	Below	5% of the share capital and voting rights
March 30, 2020	Above	5% of the share capital and voting rights
By River and Mercantile Asset Management LLP		
December 18, 2019	Below	5% of the share capital and voting rights
March 24, 2020	Above	5% of the share capital and voting rights
By Goldman Sachs Group, Inc.		
March 9, 2020	Below	5% of the share capital and voting rights

Date of the notification	Above/Below	Threshold crossed
By UBS Group AG		
October 8, 2019	Above	5% of the share capital and voting rights
October 11, 2019	Above	5% of the share capital and voting rights
October 16, 2019	Above	5% of the share capital and voting rights
October 31, 2019	Below	5% of the share capital and voting rights
October 31, 2019	Above	5% of the share capital and voting rights
November 4, 2019	Below	5% of the share capital and voting rights
November 6, 2019	Above	5% of the share capital and voting rights
November 7, 2019	Below	5% of the share capital and voting rights
November 26, 2019	Above	5% of the share capital and voting rights
March 13, 2020	Below	5% of the share capital and voting rights

7.6.5 *Titres au porteur identifiables* (article 7.1 of our articles of association)

We may avail ourselves of the legal procedure known as *titres au porteur identifiables*, according to which we are entitled to request Euroclear France to disclose the name, nationality, address and the number of shares held by holders of those securities of ours which have, or which may in the future acquire, voting rights.

7.6.6 Legal entity or natural person which/who may control the Company

As of the date of this Document, no natural person nor any legal entity has control over the Company. As of the date of this document, there is no specific measure in place to prevent a potential attempt to take over the Company. Aside from the legal and regulatory threshold crossing notification requirements, the only existing control over the interest owned by each of our shareholders in our share capital is the notification imposed by our articles of association when crossing the threshold of 1% of the share capital or the voting rights.

7.6.7 Changes in the share capital and voting rights

There are no specific rules in the Company's articles of association relating to the change in the share capital or the rights attached to the securities constituting the share capital. As a consequence, these changes shall be carried out in accordance with legal requirements.

7.6.8 Items likely to have an influence in the event of a take-over bid

Pursuant to Article L. 225-37-5 of the French Commercial Code, you will find below the elements which are likely to have an influence in case of a take-over bid.

Capital structure of the Company

Notice of crossing of a statutory threshold

Pursuant to article 7.2 of the by-laws of the Company, any shareholder holding directly or indirectly a portion amounting to 1% of the stock capital or of the voting rights or a multiple of this percentage, within the meaning of Article L. 233-7 of the French Commercial Code, shall give notice to the Company of the number of shares or voting rights he holds, within five trading days from the date on which one of these thresholds was exceeded.

In the event of failure to comply with this notification requirement, and upon request of one or several shareholders holding at least 1 percent of the capital, such request being recorded in the minutes of the General Meeting, those shares in excess of the fraction that should have been declared shall be deprived of their voting rights from the date of said General Meeting and for any other subsequent General Meeting to be held until the expiry of a two-year period following the date on which the required notification of the passing of the threshold will have been regularized.

Similarly, any shareholder whose shareholding is reduced below one of these thresholds shall give notice thereof to the Company within the same five-day period.

Double voting right

As from May 22, 1997, a double voting right has been allocated to all registered and fully paid-up shares registered in the name of the same holder for at least two years.

Statutory restrictions concerning the exercise of voting rights and share transfers or clauses of agreements which the Company is aware of, in compliance with Article L. 233-11 of the French Commercial Code

There is no statutory restriction to the exercise of voting right and share transfers. The Company is not aware of any agreement in compliance with Article L. 233-11 of the French Commercial Code.

Direct or indirect shareholding in the share capital of the Company notified pursuant to sections L.233-7 and L.233-12 of the French Commercial Code

See section 7.6.4 of this Document.

List of holders of any security with special control rights and related description

There is no holder of securities with special rights.

Control mechanism included in a potential system of employees share ownership, when control rights are not exercised by them

Not applicable

Agreements between shareholders which the Company is aware of and which are likely to restrict share transfers and the exercise of voting rights

As of December 31, 2019, no agreements between shareholders were notified to the Company.

Rules applicable to the appointment and replacement of members of the Board of Directors as well as the modification of by-laws

The rules applicable to the appointment and replacement of Board of Directors' members are described in article 14 of the by-laws. The rules applicable to the modification of by-laws are described in Article L. 225-96 of the French Commercial Code.

None of these rules is likely to have an influence in case of a take-over bid.

Powers of the Board of Directors, in particular the issuance or re-purchase of shares

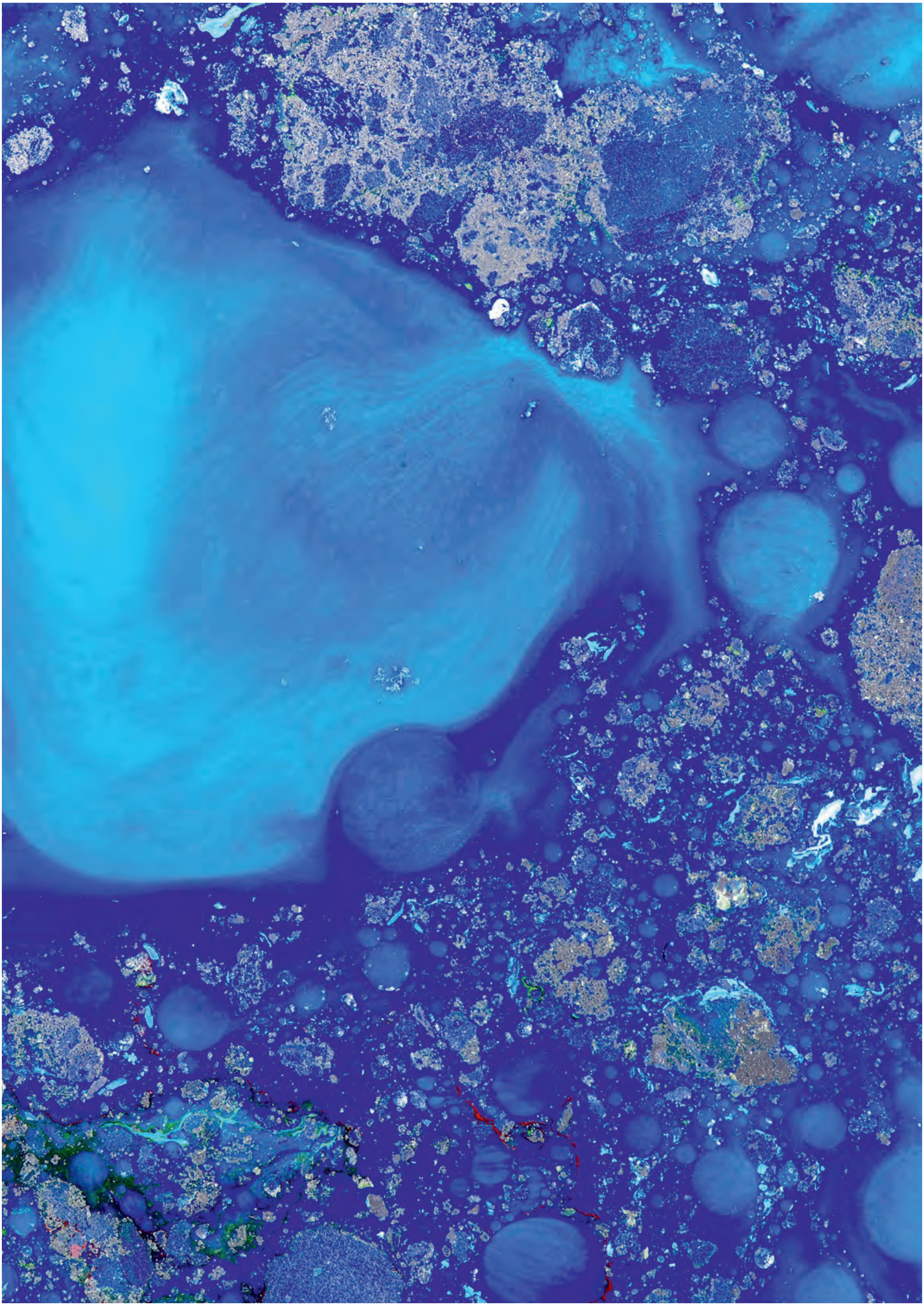
The Board of Directors does not have any specific power likely to have an influence in case of a take-over bid. The delegations of competence currently in force cannot be used by the Board of Directors in case of a take-over bid.

Agreements entered into by the Company and modified or terminated in the event of change of control over the Company

The indentures governing our outstanding senior notes and certain of our credit facilities provide for an early redemption of the loans, at the option of the lenders, in the event of a change of control, pursuant to the terms specified in each agreement.

Agreements providing for severance payments to employees who resign or who are dismissed without cause or employees whose employment is terminated in the event of a take-over bid

In addition to the agreements referred to section 4.2.1.2.B.xi) of this Document, with respect to the Company's Executive Officers, we inform you that certain executives of the Group benefit from a protection letter providing for the payment of a severance payment in the event of dismissal or change of control. The amount of such severance payment depends upon the positions and classifications of each concerned persons.



8

Additional information

8.1 Information on the Company

8.1.1 Registered name

Registered name: CGG

8.1.2 Place and number of registration / APE Code

The Company is registered with the Évry Commercial court registry under registration number "969202241 RCS Évry".

APE Code: 7010 Z

8.1.3 Date of registration and duration of the Company (article 5 of the articles of association)

The Company was incorporated in on March 27, 1931 for a 99-year duration, *i.e.* until March 26, 2030 – unless earlier dissolution or extension approved by the General Meeting.

8.1.4 Registered address and phone number – Legal form – Applicable law – Country of origin

On December 11, 2018 and in accordance with article 4 of the articles of association, the Board of Directors approved the change of registered address of the Company to 27 avenue Carnot, 91300, Massy, France, effective as from May 31, 2019. This was ratified by the General Meeting held on May 15, 2019.

Therefore, as of the date of this document, the registered address of the Company is located at 27 avenue Carnot, 91300 Massy, France (telephone: +33 (0)1 64 47 45 00).

The Company is a French *société anonyme* (article 1 of the articles of association). The Company is governed by the French Commercial Code and, more generally, by French laws and regulations.

8.1.5 Corporate object (article 2 of the articles of association)

The corporate object of the Company is as follows:

- development and operation in any form and under any conditions whatsoever, of all and any business relating to the geophysical survey of the soil and subsoil in any all countries, on behalf of third parties or on its own behalf;
- direct or indirect participation in any business, firm or Company whose object would be likely to promote the corporate object;
- and, generally, any business, industrial, mining, financial, personal or real property operations relating directly or indirectly to the above object without limitation or reserve.

8.1.6 Fiscal year (article 18 of the articles of association)

The Company's fiscal year starts on January 1st and ends on December 31st.

8.1.7 Legal Entity identifier ("LEI")

The Company's Legal Entity Identifier is 969500FCVQ5SLAAUJV59.

8.1.8 Website

The Company's website is cgg.com

8.2 Material contracts

The material contracts conclude in the course of the past two years, to be reported, are the following ones:

- **First lien notes due 2023/Second lien notes due 2024, respectively issued by CGG Holding (US) Inc. and by the Company:** Please refer to section 7.5.5 "Securities not giving access to the share capital" of this Document for more details;
- **Agreements entered into between CGG and Shearwater** in the context of the Group's exit from the Contractual Data Acquisition segment: Please refer to section 1.1.4.1 "Exit of Contractual Data Acquisition business" of this Document for more details; and
- **Warrants** issued by the Company in the context of its financial restructuring that was completed on February 21, 2018: Please refer to sections 7.5.1 "Recent major events affecting the share capital – 2018" and 7.5.2 "Dilutive instruments – Warrants" of this Document for more details. It shall be noted that Warrants #1 and Warrants #2 are the only ones in force as of the date of this document. Warrants #3, Coordination Warrants and Backstop Warrants expired on August 21, 2018.

8.3 Related party transactions

Please refer to note 28 to our 2019 consolidated financial statements in section 6.1 of this Document for more details.

8.4 Auditors

Ernst & Young et autres

Member of the *Compagnie nationale des Commissaires aux Comptes de Versailles*

Tour First, 1, place des Saisons, TSA 14444, 92037 Paris – La Défense Cedex

Represented by Mr. Nicolas PFEUTY

Date of the last renewal: May 15, 2019

Duration: until the end of the Ordinary General Meeting convened to approve the 2024 financial statements

Mazars

Member of the *Compagnie nationale des Commissaires aux Comptes de Versailles*

Tour Exaltis, 61, rue Henri-Régnault, 92400 Courbevoie

Represented by Mr. Jean-Louis SIMON

Date of the last renewal: May 15, 2019

Duration: until the end of the Ordinary General Meeting convened to approve the 2024 financial statements

8.5 Publicly available documents

The articles of association, reports, mail and other documents of the Company, as well as its historical financial data and those of its subsidiaries for the last two years prior to the disclosure of this document, may be consulted directly at the Company's registered office.

8.6 Persons responsible for the present Universal Registration Document

8.6.1 Name and function of persons responsible

Mrs. Sophie ZURQUIYAH, Chief Executive Officer.

Mr. Yuri BAIDOUKOV, Chief Financial Officer.

8.6.2 Statement of the persons responsible

"We hereby testify that, based on all reasonable care taken in this respect, the information contained in this Universal Registration Document is, to our knowledge, consistent with the facts and does not omit anything likely to affect its significance.

We declare that, to the best of our knowledge, the financial statements have been prepared in accordance with applicable accounting standards and give a true and fair view of the assets and liabilities, financial position and results of the Company and all the companies included in the consolidation, and that the management report referred to in the concordance table presented in chapter 8.7 of this Universal Registration Document presents a true and fair view of changes in the business, the results and financial position of the Company and all the companies included in the consolidation together with a description of the main risks and uncertainties the companies face."

Made in Massy, on April 14, 2020.

Mrs. Sophie ZURQUIYAH	Mr. Yuri BAIDOUKOV
Chief Executive Officer	Chief Financial Officer

8.7 Concordance tables

Concordance table for the Universal Registration Document

The table below lists the references to the information required by Annexes 1 and 2 of Commission Delegated Regulation (EU) 2019/980 of March 14, 2019, in accordance with the format of the URD.

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1- Persons responsible, third party information, experts' reports and competent authority approval	
1-1 Identity of persons responsible	8.6.1
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1-3 Name, address, qualifications of persons acting as experts	N/A
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5-3 Important events	1.1.4 1.2.3 6.1.5 Note 2 6.2.4 Note 2 (in French only)
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5-6 Statement regarding competitive position	1.2.1 1.2.2 1.2.3
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5-7-1 Material investments	1.4 6.1.5 Note 8
5-7-2 Material investments in progress or pending	1.4 6.1.5 Note 8
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7-1 Financial condition	1.5 Chapter 5 Chapter 6
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7-1-2 Indication of future development and activities in the field of research and development	1.3 3.4.3 6.1.5 Note 21 6.2.4 Note 1 (in French only)
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8-1 Information concerning the capital resources	5.1.4 6.1.2 6.1.4 6.2.1 (in French only)
8-2 Cash flows	5.1.4 6.1.3 6.1.5 Note 29 6.2.3 (in French only)
8-3 Borrowing requirements and funding structure	2.1.3.4 5.1.2 5.1.4 6.1.5 Note 13 6.2.4 Note 9 (in French only)
8-4 Restrictions on the use of capital resources	2.1.3.3
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9- Regulatory environment	
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10-1 Description of the most significant trends and any significant change in the financial performance of the group since the end of the last fiscal year	1.1.6 1.8 6.1.5 Note 31 6.2.4 (in French only)
10-2 Events likely to have a material effect on prospects	1.1.6 1.8 2.1.2.1 6.1.5 Note 31 6.2.4 Note 24 (in French only)

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11-2 Statement setting out the principal forecast assumptions	1.1.6
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14-5 Potential future changes in corporate governance	N/A
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18-1-1 Audited historical financial information covering the latest three financial years and audit report	6.1 6.2 (in French only with the exception of 6.2.5 and 6.2.6)
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18-1-4 Change of accounting framework	N/A
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19-1-6 Option or conditional or unconditional agreement of any member of the group	4.2 6.1.5 Note 15 6.2.4 Note 7 (in French only) 7.5.1
19-1-7 History of share capital	7.1.1.1 7.1.1.3 7.5.1
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19-2-2 Rights, preferences and restrictions attaching to each share class	7.6.3 7.6.8
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Concordance table for the Management Report

The table below lists the references to sections of the Universal Registration Document corresponding to the required disclosures in the Board of Directors' management report and particularly those set out in Articles L. 225-100 et *seq.*, L. 232-1 II and R.225-102 et *seq.* of the French Commercial Code, as well as those disclosures required in the corporate governance report (information referred to in Article L. 225-37 et *seq.* of the French Commercial Code and contained in the specific section of the management report on corporate governance).

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• Control procedure provided in the event of potential employee shareholdings with control rights not exercised by the latter	7.6.8
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• Rules governing the appointment and replacement of board members and the amendment of the articles of association	7.6.8
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	Section of the Universal Registration Document
• Accords conclus par la Société qui sont modifiés ou prennent fin en cas de changement de contrôle de la Société, sauf si cette divulgation, hors les cas d'obligation légale de divulgation, porterait gravement atteinte à ses intérêts	7.6.8
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Terms of office of Statutory Auditors	8.4

Concordance table for the Annual Financial Report

The table below lists the references to sections of the Universal Registration Document corresponding to the information which constitutes the Annual Financial Report that must be published by listed companies in accordance with Articles L. 451-1-2 of the French Monetary and Financial Code and Article 222-3 of General regulations of the French *Autorité des marchés financiers*.

	Section of the Universal Registration Document
Annual financial statements	6.2 (in French only) 6.2.6
Statutory Auditors' Report on the Company's annual financial statements	6.2.7 (in French only)
Consolidated financial statements	6.1
Statutory Auditors' Report on the Company's consolidated financial statements	6.1.6
Management Report	See Concordance table above
Report on Corporate Governance	See Concordance table above
Statement of the persons assuming responsibility for the annual financial report	8.6.2
Auditors' fees	6.1.5 Note 33

French Monetary and Financial Code and Article 222-3 of General regulations of the French *Autorité des marchés financiers.*

8

URD - Universal Registration Document / Cross-reference table Non-Financial Performance Statement

The table below refers to the aspects of the DPEF to be found in the DPEF Chapter that are required by Article L. 225-102-1 of the French Commercial Code.

Thèmes	Document d'enregistrement universel
Business model	Pages 12-13
Description of the main non-financial risks related to the Group's business	3.1 and 3.7
Respect for Human Rights	3.2.2 and 3.3.2
Fight against corruption and tax evasion	3.3
Consequences of the Company's business on climate change	Given the nature of our business, this subject was not considered as material and does not justify being developed in this chapter
Circular economy	Given the nature of our business, this subject was not considered as material and does not justify being developed in this report
Food waste	Given the nature of our business, this subject was not considered as material and does not justify being developed in this report
Collective agreements	3.1
Fight against discrimination and promotion of diversity	3.2.1
Societal commitments	3.3.3
Fight against food waste, food insecurity, respect for animal well-being, fair and sustainable responsible nutrition	Given the nature of our business, these subjects were not considered as material and do not justify being developed in this report

Cross-reference table Global Compact, SDG, GRI, OECD

Table of contents	Global Compact	SDG	GRI/G4	OECD principles
Overview of the Group			102 103	1.6
CSR Strategy			102 103	1.10.15
Respecting Ethical Principles	1-2-4-5-6-10	10 12	200	2.5
Innovating for Society	8-9	9 12	200 400	3.7.12.13.14
Managing Talent	1-2-3-4-5-6	5-8-10	400 200	4.5.8.9
Protecting the environnement	7-8-9	6-6-11-12-1314-15	100 300	5.12

APPENDIX

Board of Directors

Charter of the periodic assessment process of agreements relating to usual operations and entered into under normal conditions

Date: March 5, 2020

Preamble

This procedure for assessing agreements relating to usual operations and entered into under normal conditions with the interested parties as defined in Article L. 225-38 of the French Commercial Code, was agreed at the Board of Directors meeting held on March 5, 2020, in accordance with the second paragraph of Article L. 225-39 of the French Commercial Code, resulting from French Law no. 2019-486 of May 22, 2019 ("PACTE" law) which states:

"In companies whose shares are traded on a regulated market, a procedure must be implemented by the Board of Directors in order to assess, on a regular basis, whether the agreements relating to usual operations and entered into under normal conditions fulfil those conditions."

This procedure is different from and supplements the measures for identifying agreements with related parties, within the meaning of accounting standard IAS 24.

1 Purpose

The purpose of this procedure, implemented by the Board of Directors, is to periodically assess the relevance of the classification of "agreements relating to usual operations and entered into under normal conditions" for agreements falling within the scope of Article L. 225-38 of the French Commercial Code, but whose application of the latter was ruled out by application of Article L. 225-39 of the French Commercial Code, and which therefore, have not been subject to the prior approval of the Board of Directors.

It is stated that this procedure only applies to agreements which fall within the scope of the above mentioned articles of the French Commercial Code, from the viewpoint of CGG SA (the "**Company**") only, and not that of its subsidiaries.

Notwithstanding the foregoing, it is specified that the "usual" nature of the operations referred to in the agreement and the "normal conditions" of said agreements must be assessed specifically with respect to the Group's activity, and not with respect to merely the Company's activities.

2 References

- Articles L. 225-38 and L.225-39 of the French Commercial Code;
- the *Compagnie Nationale des Commissaires aux Comptes*' guidelines of February 2014 on regulated and standard agreements;
- the French Market Authority ("AMF") recommendation 2012-05 amended on October 5, 2018 (the "**AMF Recommendation**").

3 Description of the procedure

The diligences relating to this procedure are taken, under the authority of the top management, by the legal department and, where applicable, the relevant financial or operational departments. The parties who have a direct or indirect interest in one of these agreements do not take part in its assessment.

Every year, as part of the preparation of the annual accounts and the annual General Meeting, the legal department shall submit to the Board of Directors a report summarizing the regulated agreements within the meaning of Article L. 225-38 of the French Commercial Code entered into during the past financial year and which were deemed to relate to "usual operations and to be entered into under normal conditions". This report shall indicate, for each of these agreements, the reasons why this classification was used, particularly with respect to the criteria presented below.

This report shall also present those agreements entered into during previous financial years which received the same classification, the performance of which continued during the financial year in question but which were amended during that same financial year.

Finally, with regard to pre-existing agreements, the performance of which continued during the financial year in question, but which either did not fall within the scope of Article L. 225-38 of the French Commercial Code at the time, or had been classified at the time as agreements relating to usual operations and entered into under normal conditions, the legal department shall explain, if it deems it necessary, how a change of circumstances would have the effect of calling such a classification into question.

When examining this report, the Board of Directors may also bring up and consider any agreement not mentioned in it.

In the light of the assessment report, the Board of Directors shall consider whether the change in the Group's activities and in the type of agreements involved justify these assessment criteria to be clarified, added to or amended, in which case, it shall amend this Charter.

Furthermore, if it appears that an agreement, when this assessment was carried out before it was signed (and only in that case), was wrongly classified as an agreement relating to usual operations and entered into under normal conditions, the Board of Directors shall submit a resolution to the General Meeting of Shareholders for ratification, in accordance with Article L. 225-42 of the French Commercial Code.

With regard to agreements which met the criteria leading to the qualification as "agreement relating to usual operations and entered into under normal conditions", but which subsequently no longer meet them, they are not automatically reconsidered, since the usual nature of the operations involved and the normal nature of the conditions of the agreement are assessed when the agreement is signed. The Board of Directors is responsible for assessing, where applicable, if a revision of the relevant agreements is necessary. In any event, such a situation may lead the Board to amend the assessment criteria as indicated above.

4 Assessment criteria

4.1 Assessment of the usual nature of the operations referred to in the agreement

To assess the usual nature of the operations referred to in an agreement, all of the information should be gathered to allow the following to be assessed:

- whether the agreement relates to the group's current activity;
- whether the agreement is in line with the standard practice for other companies placed in a similar situation;
- whether the agreement is entered into repeatedly;
- whether the agreement binds the Company over the long term;
- the circumstances in which the agreement was entered into;
- the financial implication of the agreement;
- the economic consequences of the agreement.

Examples, for information purpose, and on a non-exclusive basis:

Agreements relating to current operations	Agreements relating to non-recurring operations
• standard purchase, sale or service falling within the usual corporate purpose; • repair or routine renewal of equipment and/or service; • operation similar to that normally carried out by the Company as part of its activity with a company director or officer.	• leasing agreements; • disposal of property or major equipment; • transfer of assets; • signature or renewal of a real estate lease agreement; • assignment of a patent by a company director or officer.

4.2 Assessment of the normal nature of the conditions of the agreement

To assess the normal nature of the conditions of an agreement, the following should be assessed:

- whether it was entered into under the same conditions as those normally practised by the Group in its relations with third parties;
- whether it was entered into under the same conditions or under conditions comparable to those normally practised in the industry;
- whether the interested party (1) derives a benefit therefrom that he/she/it would not have had if he/she/it had been any supplier or client of the company.

(1) *As a reminder:*
"Interested party" *means:*
Any person/entity that is or was on the date of signing an agreement entered into directly or through a third party, or when said person/entity has an indirect interest in an agreement (which may be the case especially when one of his/her/its Related Parties is a party thereto),
(i) the Managing Director of the Company,
(ii) a Corporate Officer of the Company,
(iii) a Member of the Company's Board of Directors,
(v) the person/entity controlling, within the meaning of Article L. 233-3 of the French Commercial Code, a shareholder of the Company who is a legal entity with a share of voting rights exceeding 10%;
Any undertaking whose owner, partner with unlimited liability, manager, director, member of the Supervisory Board or, generally, executive, is also or was also at the time that the relevant agreement was signed,
(i) the Managing Director of the Company,
(ii) a Corporate Officer of the Company, or
(iii) a Member of the Company's Board of Directors.
"Related Party" *means, in relation to an Interested Party:*
Any natural person representing him/her/it on the Company's Board of Directors or within the governing body of another company, on a regular or ad hoc basis;
Any member of the immediate family of any of the aforementioned persons, i.e. any child, stepson or stepdaughter, parent, step-parent, partner, brother or sister, mother-in-law, father-in-law, son-in-law, daughter-in-law, brother-in-law or sister-in-law of that person and any person (other than a tenant or employee) who shares the household of that person; and
Any undertaking, company or other entity in which any of the aforementioned persons is an executive, a partner or holds a position of primary control or similar (an "Affiliated Company").

A French société anonyme with a share capital of €7,099,617

Registered office: 27 avenue Carnot, 91300 Massy

France

969 202 241 RCS Évry

This Universal Registration Document, prepared in accordance with article 212-13 of the *Autorité des Marchés Financiers* General Regulations, constitutes the 2019 annual report of CGG.

It may be used in support of a financial transaction only if supplemented by a prospectus which received approval from the *Autorité des Marchés Financiers*.

Conception & réalisation LABRADOR INFORMATION DESIGN +33 (0)1 53 06 30 80

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