# HEALTH, SAFETY AND ENVIRONMENT REPORT 2020



### HEALTH, SAFETY AND Environment report 2020

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Our vision is to ensure the UK Continental Shelf becomes the most attractive mature oil and gas province in the world with which to do business.

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#### Foreword

Welcome to OGUK's new-look *Health, Safety & Environment Report* for 2020. Following the combined HSE Conference in 2019, this report brings together for the first time, data on health, safety and environmental performance across the UKCS in one document. The report examines findings from full-year 2019, as well as key priorities for the sector during 2020 and beyond.

As witnessed in most industry sectors across the UK and the world, the COVID-19 pandemic has had a significant impact on oil and gas operations in the North Sea. This year's report also provides some information about how industry has been working together with public health bodies, regulators and other stakeholders to manage and mitigate the impact of COVID-19. However, this virus should not and will not distract industry from focusing on its key goal of maintaining safe operations while continuing to provide the energy society needs – however challenging that might be.

With COVID dominating much of the news headlines, we hope that our report into industry's 2019 HSE performance provides insight and an opportunity to pause and reflect on the measures taken in controlling the health, safety and environmental risks associated with offshore oil and gas production and to focus on areas that continue to present a risk to our operations.

The health of the offshore workforce remains an area of focus. There were 301 emergency medevacs last year, compared with 241 in 2018, with cardiac incidents identified as the main cause - a rise of 42 per cent compared with those in 2018. Medevacs due to injury also rose, from 43 to 56, aligning with the slight increase in significant injuries reported, but medevacs associated with altered mental state decreased from 8 to 6 in number.

Although the planned review of OGUK's *Medical Aspects of Fitness for Offshore Work: Guidance for Examining Physicians* has been delayed, once completed, the revised

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guidance will further assist examining doctors in their assessments of fitness to work offshore. This has the potential to restrict the ability of those with the highest health risks to work offshore, but will provide an important incentive to improve the overall health of the workforce - a goal that industry is committed to.

On the safety front, it is encouraging to see that dangerous occurrences and the nonfatal injury rate both fell to their lowest levels in 2019 and, while a single one is too many, it is a testament to industry that continued focus in these areas has resulted in improvement.

When looking at the number of hydrocarbon releases, it is still too early to see an impact from the initiatives that have been introduced. The number of these considered reportable under RIDDOR requirements is down year on year, but there are signs of an increase in the three-year rolling average of these. As in previous reports, all releases are shown, including EU reportable releases, and there is a significant rise in the total but to enable a consistent comparison, the focus is better placed on the former. There is no room for complacency, and hydrocarbon release prevention is a key focus area for industry.

In aviation safety, 2019 recorded a third consecutive year of accident-free flying in the UKCS, and for the second year running, the five-year fatal accident rate per 100, 000 flying hours remained at zero.

As mentioned in our 2019 report, the last fatal helicopter accident occurred off the coast of Shetland on approach to Sumburgh Airport in 2013. The Fatal Accident Inquiry report has been published and noted the significant efforts by regulator and industry to prevent a similar incident in the future. The impact of such a tragic loss of life amongst this close-knit industry community will remain with our colleagues across industry as we continue efforts to improve offshore aviation safety.

#### Foreword continued

Looking now at the environmental performance, the report provides environmental data covering discharges to sea, accidental oil and chemical releases, and waste disposal. This provides the industry an opportunity to review environmental performance indicators and reflect on opportunities to drive further improvement.

The UKCS is a mature and complex basin, and the challenges that accompany the production of hydrocarbons mean that the data outlined in this report is equally complex, as the examples demonstrate. Overall, 2019 saw stabilised performance with no significant changes in performance, underlining that good environmental management remains a priority for operators.

During 2019, there was a small increase in the volume of produced water discharged to sea, and a larger increase in the concentration and the mass of dispersed oil discharged with produced water, continuing a trend apparent over the preceding three years, but remained well below the 30 mg/l threshold set by OSPAR. An increase in reinjection of produced water of 33 per cent was also seen, with the water being injected into suitable subsurface strata or the reservoir itself to aid enhanced oil recovery.

The number of unintended releases from offshore installations has decreased; the total number of incidents was 235 compared to 480 last year. The total mass of oil released has increased slightly in 2019 compared to 2018. The number of chemical releases has also decreased from 2018, as has the total mass released, with 95 per cent of these classified as posing little or no risk (PLONOR) or from the lower risk categories.

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There was a year-on-year increase of chemicals discharged to sea under permit in 2019, related to an increase in drilling activity. 75 per cent of these chemicals were PLONOR, and the number of discharged chemicals labelled with substitution warnings decreased from 2018, constituting less than 5 per cent of the total by mass.

The industry takes its responsibilities for environmental management and compliance seriously, as is demonstrated by the performance captured in this report. OGUK continues to work with members to deliver continuous reduction of environmental risk.

In November 2019, OGUK held its first ever combined HSE conference with the overarching theme 'Solving Tomorrow's Challenges, Today'. Martin Temple gave the keynote speech in which he highlighted the fact that industry leaders from OGUK, IADC, Step Change, together with HSE and OPRED had signed up to the Principles of Process Safety Leadership. These are designed to prevent repeats of events such as Piper Alpha or the 2005 Buncefield Terminal explosion in Hertfordshire. The event concluded with a call for action and the points raised at the conference have formed the basis for OGUK's HSE future strategic objectives.

We hope you find the new format and combination of HSE performance and related issues into one report, both easy to read and informative. Any queries should be directed to OGUK HSE Director Trevor Stapleton at tstapleton@oilandgasuk.co.uk.

Trevor Stapleton

Trevor Stapleton Health, Safety & Environment Director, OGUK

# Focused on four key strategic themes the group supported and led the immediate industry response to the crisis, ensuring the risk of offshore transmission of COVID-19 was minimised, that helicopter transport for personnel and suspected COVID-19 cases were maintained, existing health, safety and environmental risks were managed,

**COVID-19** Response

and the movement of essential personnel and equipment was maintained, even during the strictest phase of lockdown.

The group continues its work to ensure safe operations, security of supply and workforce health and safety are maintained throughout.

In response to the extraordinary challenges posed to industry by COVID-19, OGUK's Pandemic Steering Group (PSG) was formed to ensure effective and coherent action by industry and key stakeholders including OGUK member companies, regulators, Governments, workforce representatives and public health agencies.



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#### Offshore Oil and Gas – Regulatory Context

As a high hazard industry, offshore oil and gas is subject to specific industrial legislation that helps manage the health, safety and environmental risks associated with offshore operations, as well as the general suite of HSE legislation applicable to wider industrial activity.

Energy Division of the Health & Safety Executive (HSE) has responsibility for regulating all issues affecting safety and health; the Offshore Petroleum Regulator for the Environment and Decommissioning (OPRED) regulates emissions to air and discharges to sea, as well as prevention and control of pollution. The Offshore Safety Directive Regulations 2015, saw the creation of a single Competent Authority (CA) requiring both organisations to work in partnership. Whilst OPRED and HSE still have their separate functions outside the scope of the Directive, the functions of the CA are delivered under a set of common operational arrangements.

Safety Cases must be developed and approved for every installation to cover the whole life cycle from design to decommissioning, identifying and quantifying the major accident risks and detailing the measures the installation operator will put in place to manage them to As Low As Reasonably Practicable (ALARP). These are continuously reviewed and updated on a five-yearly cycle ensuring that the arrangements in place remain fit for purpose.

Offshore operations and the associated emissions and discharges can only take place once operations have been assessed and a permit or other authorisation is in place setting out the conditions associated with the activity. These emissions and discharges include produced water, chemicals, drill cuttings, greenhouse gas emissions and other atmospheric pollutants, gas flared and vented. Waste generated by upstream oil and gas operations is transferred back to shore for processing.

The Civil Aviation Authority regulates offshore helicopter operations, and the Environment Agency (EA) and Scottish Environmental Protection Agency (SEPA) regulate activities involving radioactive materials. The Maritime and Coastguard Agency (MCA) produces legislation and guidance on maritime matters as well as providing the UK's Search and Rescue services and as such, has an involvement in offshore oil and gas operations.

Regulation

#### Offshore Oil and Gas – Regulatory Context continued

Requirements relating to reportable incidents are defined by the RIDDOR regulations and the EU Offshore Safety Directive (OSD) Implementing Regulation No 1112/2014. Under this legislation, defined incident types with high potential to cause significant injuries - termed dangerous occurrences and other defined incidents such as failure of a safety critical element must be reported to the HSE.

The reporting requirements in the European regulations are broadly aligned with RIDDOR categories, but additional reportable incident categories have been introduced, and the category names are different. The report includes information on both RIDDOR and EU reportable offshore incidents.

Environmental emissions and discharges are reported through the EEMS online system, on a monthly, quarterly, bi-annual and annual basis, while any accidental release of materials to sea is reported through the PON1 system.

Industry must also manage the health and well-being of the offshore workforce effectively, given the remoteness of the worksite and the oftendemanding nature of the work they perform. A suite of occupational healthrelated legislation regulates the offshore working environment to ensure that risks to health are controlled. In addition, it is industry policy that all persons working offshore are examined regularly by a medical professional and deemed medically fit before travelling offshore. The OGUK medical standard and the registered examining doctors who conduct assessments in line with this standard help to ensure that the workforce is medically fit for work offshore.

Regulation

Health

#### Search and Rescue Medical Evacuations



#### Figure 1: Emergency Medical Evacuations by Cause

October saw peak demand for the second year running with 40 emergency medevacs. followed by May and December with 31 in each month

## 20 10 0 20-29 301

emergency medevacs occurred in 2019 (up from 241 in 2018). from a total population of **49,252** 



The age group with the most emergency medevacs overall was 50-59, although the 60+ group had the most proportionally

#### Figure 2: Proportion of Emergency Medical Evacuations by Age Group

Total Number of Medevacs in Age Group 90 1.2% — Percentage of Personnel in Age Group Medevaced 80 1.0% 70 60 0.8% 50 0.6% 40 30 0.4% 0.2% 0.0% 30-39 40-49 50-59 60 + Source: OGUK, Vantage

> The main cause of emergency medevac in 2019 was due to cardiac issues, followed by injury. This is consistent with the past 3 years

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Source: OGUK, 2020



The offshore medical fitness standards are being reviewed by the Occupational Health and Hygiene Technical Group to ensure assessments remain relevant and robust, including improved guidelines relating to cardiac risk.

Regular Doctors workshops and the annual Doctors conference ensures skills and knowledge are kept up to date, leading to a consistent and high quality of medical assessment.





#### Fitness to Work Offshore Assessment

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#### Figure 3: Fitness to Work Offshore Assessment Results





Source: OGUK, 2020

#### Fitness to Work Offshore Assessment



#### Figure 4: Fitness to Work Offshore Assessment - Most Common Reasons for Failure

Source: OGUK, 2020



Weight / BMI

Cardiac issues remained the third highest cause of failure for the third year running, and were most prominent in the **50-59** age bracket

Diabetes has overtaken blood pressure as the main cause of medical failures for the first time

Failures because of blood pressure have reduced from 22 per cent to 15 per cent

Health







# Number of Accidents / Accident Rate per 100,000 hours



**Figure 7: Fatal and All Aviation Accidents** 

2019 was another accident-free year for offshore helicopter operations with the fatal accident rate at **zero** for the second year running

Flying hours were down slightly from 2018 from **77,286** to **72,227** 

There was a significant reduction in the number of sectors flown (i.e. fewer multiple stop flights) from **124,468** in 2018 to **84,537** in 2019

Source: OGUK

Number of Flying Hours



The UKCS offshore fleet decreased by three airframes, and by one aircraft type when the last H155 was removed from the fleet completely in 2019. Over **60** per cent of passenger movements were conducted using S92s.

Safet

The Aviation Safety Technical Group is comprised of operators, helicopter operators, regulators and associations, resulting in a collaborative approach to the improvement of operational and technical safety, and the development and improvement of common industry standards. The group will be addressing improvements in areas including helideck safety, inbound operating procedures and wrong deck landings.

Туре	Weight Class	First Introduced	In Fleet	Pax Movements
AW139	Medium	2005	18	154,519
AS365 N3	Medium	1979	2	15,229
H175	Medium	2016	16	113,311
AW189	Heavy	2014	2	14,749
S92	Неаvy	2005	33	484,107

Safety Process Safety – Dangerous Occurrences



Dangerous occurrences were

24 per cent lower than in 2018, with a

drop from 289 to 218, and 70 per cent

lower than 2000-01.

This is the lowest

total recorded.



#### **Figure 8: Dangerous Occurrences**

\*Period of reporting changed from fiscal to calendar year

**Dangerous Occurrences by Type** 



00 The largest category was dropped objects,

followed by hydrocarbon releases and damage to or failure of a pipe. Together, these three categories make up more than two-thirds of all dangerous occurrences

#### Process Safety – Hydrocarbon Releases



Figure 9: Total Hydrocarbon Releases

Source: Health and Safety Executive, 2020



There were **three** confirmed major releases in 2019



49 per cent (62) of all releases were classed as minor, with 10 per cent still to be classified

> RIDDOR-reportable HCR releases, i.e. those which could pose a danger to workers, **decreased** year on year, to **67** from **85** in 2018

The majority of releases were of gas, followed by **43** releases of nonprocess hydrocarbons such as hydraulic or lube oil

Safety

Safety

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OGUK's H&S Operators Technical Group share lessons learned in real time. The Process Safety Forum enables industry to learn across high hazard industries. A common repository for alerts and learning can now be found on the SCiS website.

Industry and regulators continue to work together to embed the Principles of Process Safety.

The Hydrocarbon Release prevention strategy is being refined for 2021.



#### Process Safety – Safety Critical Maintenance





#### Figure 10: Installation Average Safety Critical Backlog

The average safety critical maintenance in backlog increased in 2019, up by **44** per cent to **1,638** manhours in Q4, compared to 916 in Q4 2018 The number of reporting installations was significantly lower in 2019, which means the dataset

may not reflect the wider basin



Most of the increase came from deferrals, potentially linked to the halt of production linked to the shutdown of the Forties Pipeline planned for Q2 2020

Source: OGUK, 2020



Work groups are tasked with improving assurance and isolation practices with similar work being planned for Management of Change in 2021.

The OGUK Board and Operator Council continue to monitor the safety critical maintenance backlog.

Reinvigorating reporting improves understanding and visibility within and across organisations, bringing renewed focus on the delivery of asset integrity.



#### Unintentional Releases – Totals and Averages



The largest single chemical release totalled **126** tonnes which was a water-based hydraulic fluid



Unintentional chemical releases decreased in 2019 with **309** tonnes compared to **469** tonnes



Figure 12: Mass of Unintentional Releases

Source: OPRED, 2020

Total number of releases is 462 releases in 2019 compared to 563 in 2011





#### Unintentional Releases - Oil



#### Figure 13: Unintentional Oil Releases by Mass and Type



Source: OPRED, 2020



OGUK maintains an Operator focus on Environmental issues, developing strategies and work groups to address emerging trends and support best practice. OGUK facilitates the development of a swift and efficient response in the event of a major unintentional release, minimising the environmental impact, through collaboration between operators, regulators and other stakeholders.

The next five-year cycle of risk-based approach (RBA) starts in 2021, assisting operators to improve understanding of and mitigate potential environmental risk associated with discharges.

The Chemicals Technical Group continues to share best practice and engage with regulators and suppliers to ensure the least hazardous chemicals are used.





#### Unintentional Releases – Chemicals by Type and Mass



fell by 34 per cent compared with 2018.

Of that total, **1.37** per cent were chemicals with substitution warnings (SUB) under OSPAR

34%

#### Figure 14: Unintentional Chemical Releases by Hazard



Figure 15: Unintentional Chemical Releases by Hazard, 2019

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#### **Discharges – Produced Water**

#### Figure 16: Produced Water Discharged





The UKCS industry reinjected more produced water than in previous years, with 33 per cent of the total produced going back to the reservoir

Figure 17: Dispersed Oil Discharged with Produced Water



The concentration and the mass of dispersed oil discharged with produced water in 2019 increased compared to 2018, continuing a trend apparent over the preceding three years. The total mass increased by **5** per cent, from **2,182** tonnes to **2,296** tonnes and the concentration increased to **16.9** from **16.1** mg/l, remaining below the **30** mg/l threshold set by OSPAR

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Oil and gas producers strive to minimise the proportion of their product that isn't exported to market, using technical and chemical expertise to improve the separation of hydrocarbons from the produced water streams. The Chemicals Technical Group is working to implement the OSPAR Risk Based Approach to produced water management, identifying risk drivers and looking for mitigation measures.

New installations or reworked production systems are designed to reduce or eliminate produced water discharges entirely.



#### Discharges – Chemicals

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Figure 18: Chemical Discharge by Label



\*Other includes those chemicals reported in EEMS that are not classified as PLONOR or SUB but contain hazardous materials listed under OSPAR Annex A

Source: EEMS May 2020

There was a 17 per cent increase in chemicals discharged to sea under permit in 2019. This rise primarily related to chemicals discharged during drilling operations, which increased from **66,614** tonnes to **82,936** tonnes



Figure 19: Chemical Discharge by Activity



Source: EEMS May 2020; OGA

**75** per cent of all chemicals discharged under permit were PLONOR, equivalent to **91,799** tonnes of the total discharged



211 different SUB chemicals were discharged from all activities in 2019, constituting less than 5 per cent of the total, down by 290 tonnes on the previous year to 5,650 tonnes



#### Other Discharges – NORM and Drill Cuttings



Figure 20: Discharged Fluids from Drill Cuttings





Discharged fluids increased, as did activity. This is reflected in the number of wells spudded, up to **158** from **101** in 2018

There was a **140** per cent increase in discharged cuttings in 2019, to **52,147** tonnes, up from **21,451** tonnes in from 47,195 tonnes discharged, suggesting 2018 was out of step with longer-term trends



#### Other Discharges – NORM and Drill Cuttings

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Figure 21: Radioactivity Discharged to Sea



Naturally occurring radioactive materials (NORM) including isotopes of lead and radium are discharged to sea in produced water. The total activity discharged to sea in 2019 increased by 1 per cent, attributable to an increase in Ra226 to sea



The concentration of NORM in discharged water remained steady, at **0.0037** Bq/ml, well below the notifiable threshold of **0.1** Bq/ml





#### 200.000 Reuse 180.000 Recycle 160,000 Waste To Energy 140.000 Incinerate ■ Landfill Other Route E 100,000 ≥ S 80.000 60.000 40,000 20.000 0 Oper Ope å ã 2010 2016 2017 2018 2019 2011 2012 2013 2014 2015

Figure 22: Waste by Activity and Disposal Route

Source: EEMS May 2020



Waste from offshore installations increased by **51** per cent in 2019 to **183,082** tonnes, largely driven by an increase in decommissioning activity



Figure 23: All Waste by Disposal Route



**39** per cent of waste was re-used or recycled The proportion of waste going to landfill was 24 per cent, the lowest proportion in the last decade

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24%



#### Net-Zero Basin – Our Commitment

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Greenhouse gas emissions to atmosphere by industry are now reported separately in Pathway to a Net Zero Basin – Production Emissions Targets, and will be monitored in future reports from OGUK's Sustainability team utilising fully verified data.





#### OGUK Strategic Objective – Leading HSE Performance

Part of OGUK's role is to deliver industry's strategic objectives, which are set by our members based on industry and society's requirements.

Strategy

The detailed objectives within the Leading HSE Performance stream are led by and monitored through the health, safety and environmental performance in this report.

These objectives broadly translate into four priority areas: ensuring assessment of workforce health takes due account of current medical thinking; elimination or reduction in major accident risks; seeking improvements in all areas of aviation safety, and addressing ongoing environmental issues including supporting the net zero agenda. Driving improvement in these areas demonstrates a clear and ongoing commitment to protect the health and safety of all those working in the oil and gas sector while minimising impact on our environment.

- To enhance HSE performance, identify risks and opportunities and encourage shared learning
- To actively drive industry response to the HSE's challenge on preventing hydrocarbon releases
- To develop enhanced medical health standards and share health promotion activities to improve the health of the workforce
- To support the aviation safety agenda by facilitating relevant discussions through the Aviation Safety Technical Group and project managing UKCS aviation safety initiatives as directed by the CAA led Offshore Helicopter Safety Leadership Group
- To ensure industry responds to a potential long-term spill scenario, including a delivery model for resource sharing
- To develop approach to environmental management (including post-Brexit regulation) that facilitates focus on actions, providing greatest benefit to the environment and enhanced efficiency





#### HSE Strategy – Looking Forward



Strategy

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