

# one dyas

2019

## Annual Environmental Report





# Document Control

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## 2019 Statement Introduction from the COO

Peter Nieuwenhuijze

Chief Operating Officer - ONE-Dyas BV

**“2019 has been a year of changes for both our operated and non-operated activities”.**

In April the merger of Oranje-Nassau Energie B.V. (ONE) and Dyas businesses was finalised. Our first year of ONE-Dyas operations was a busy one, with our teams across the UK, Norway, the Netherlands producing nearly 11.5 million barrels of oil equivalent. During 2019 we have successfully and safely integrated operations and personnel.

In the UKCS we successfully completed the Darach Central exploration well and side track with a positive outcome. In the Netherlands the onshore Maasmond-01 development well was drilled with gas and oil expected in 2020.

We have made significant effort to minimise our impact on the environment. This includes the minimization of NOx emissions by use of sustainable marine biofuels, the installation of a low NOx burner and use of three-way catalyst. In the UK we made positive steps to improve the accuracy and quality of our emissions monitoring. This includes the use of more accurate meters to reduce the uncertainty of measuring our Carbon Dioxide emissions for EU-Emissions Trading Scheme reporting. Alongside this we completed a wider scope energy-use audit including the fuel used for transport, vessel and helicopter movements. A number of energy saving opportunities were identified and are going forward for assessment.

Also in the UK we have brought down the oil content of our Re-injected Produced Water (PWRI). This has been improved through a number of co-ordinated initiatives including improvements in the sand management.

Managing our Methane emissions has been a high priority with improvements in measurement accuracy in the UK in the Sean field and in The Netherlands ONE-Dyas has pledged to halve our total offshore methane emissions under the NOGEPa Methane covenant.

In the Netherlands the N-05A development has been moving forward with the preparation of the Environmental Impact Assessment (EIA). On the development project ONE-Dyas has been proactively engaging in dialogue with all our stakeholders, aiming to be a reliable partner and a good neighbour. The project is incorporating all possible Best Available Technologies to increase the efficiency of gas production and limit emissions. Including electrification of the production platform via wind farm electricity supply.

**“Natural gas will continue to play a role in all scenarios towards the EU goal of a CO2-neutral energy supply by 2050”.**

Our local natural gas is considered as one of the transition energy sources with a lesser CO<sub>2</sub> footprint than importing natural gas from abroad. It is economically beneficial and maintains independency in energy supply in near future.

Looking forward to our 2020 environmental objectives we remain committed to managing our methane emissions in our current production. In the UK we have been involved in the formation of the imminent UK Oil and Gas Methane action plan and will start implementing it during 2020. This will be challenging for our ageing assets, especially in the current economic and social climate. However, ONE-Dyas are acutely aware that it is essential that our North Sea gas remains the cleanest option to supply the local energy demands during the transition to more sustainable long term energy options.

## 2 Introduction and Scope

This Annual Environmental Report (AER) describes the ONE-Dyas UK Limited 2019 environmental performance for its UK offshore oil and gas operations. It has been prepared to satisfy the requirements of OSPAR Recommendation 2003/5 and the associated OPRED guidance (OSPAR 2003/5 DECC Guidance: Rev 5 May 2014).

This report provides:

- A description of the UK assets and activities
- An overview of the ONE-Dyas Environmental Management System
- An overview of the main 2019 activities
- Details on key environmental aspects
- A summary of the 2019 performance in relation to legislative requirements and environmental objectives and targets

ONE-Dyas has operated and non-operated assets in the UK, Dutch, Danish and Norwegian sectors in the North Sea and also in Gabon. In the UK it has non operated shares in Buzzard and Gead assets (with Nexen), Catcher (with Premier) Cladhan (with Taqa), Breagh (with INEOS), Mariner (with Equinor) Elgin Franklin (with Total) and Arran and Jackdaw (with Shell)

ONE-Dyas continues to be the operating company for the Sean field in partnership with SSE. This report provides an overview of the environmental performance from the Sean Papa and Romeo platforms and also the UKCS drilling during 2019 as operated by ONE-Dyas.

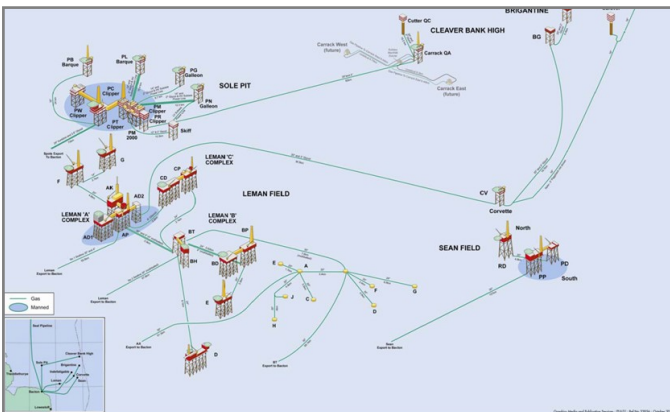


Figure 1:  
Location of Sean Assets

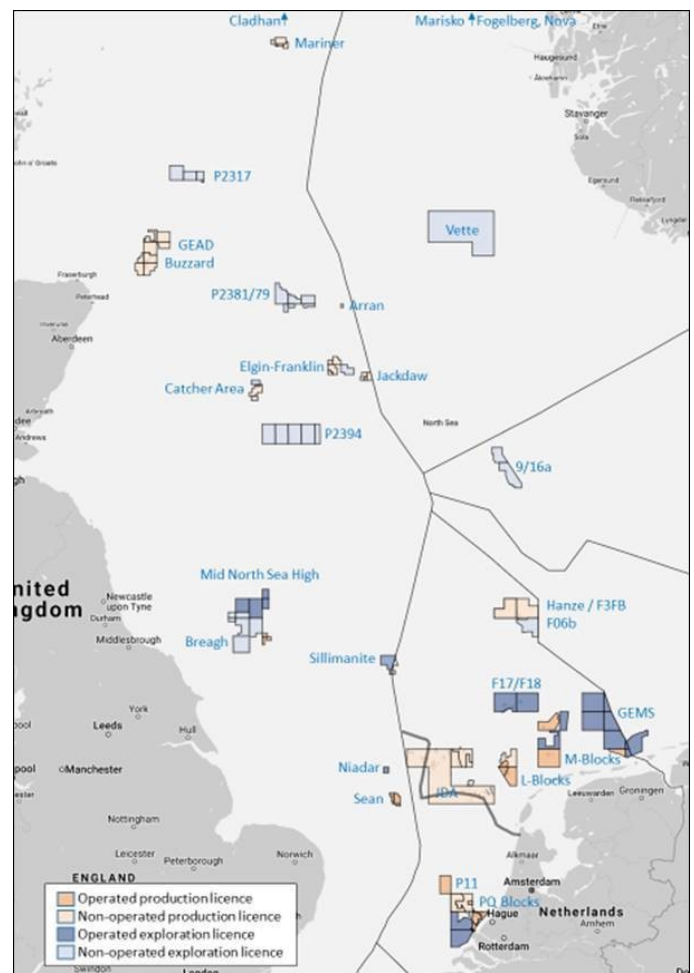


Figure 2:  
Over view of ONE Dyas assets  
in the Dutch and UK North Sea

### 3 ONE-Dyas UK 2019 Production and Drilling Activities

The **Sean Papa (PP & PD)** installation is located in the southern part of the UK sector of the North Sea in block 49/25a at approximately 94 km from the nearest point on the Norfolk coast. It is a Normally Manned Installation (NMI) comprising two fixed bridge linked platforms; a wellhead platform (PD) and a production and accommodation platform (PP). Gas from Sean Papa is exported to the Bacton terminal in Norfolk via a dedicated 30" pipeline.



Figure 3:  
Sean Papa (PP & PD)



Figure 4:  
Sean Romeo (RD)

The **Sean Romeo (RD)** is approximately located at 4.5 km of the Sean PP & PD in block 49/25a and is connected with the Sean PP & PD through a 20" duplex pipeline. The installation stands in approximately 30 metres of water and is situated 94 km from the Norfolk coast. The Sean Romeo has been converted to a Not Normally Manned installation (NNMI). The gas from Sean East wells was transported to Sean Papa for processing before export to Bacton.

During 2019 UK **Drilling** campaign ONE-Dyas completed the successful Darach exploration well in Block 42/04. This was drilled using the Valaris (ENSCO) 121 jack-up drilling rig. Drilling was completed between May and July 2019. After the well clean up a well test was completed and the well was then plugged and abandoned.



Figures 4 & 5:  
Darach exploration  
well activities

The ONE-Dyas Environmental Management System (EMS) comprises of strategic corporate documents cascading down to UK and Sean specific documents and procedures. In the UK management system was successfully certified to the new ISO14001:2015 standard in December 2017 and was re-certified in 2019.

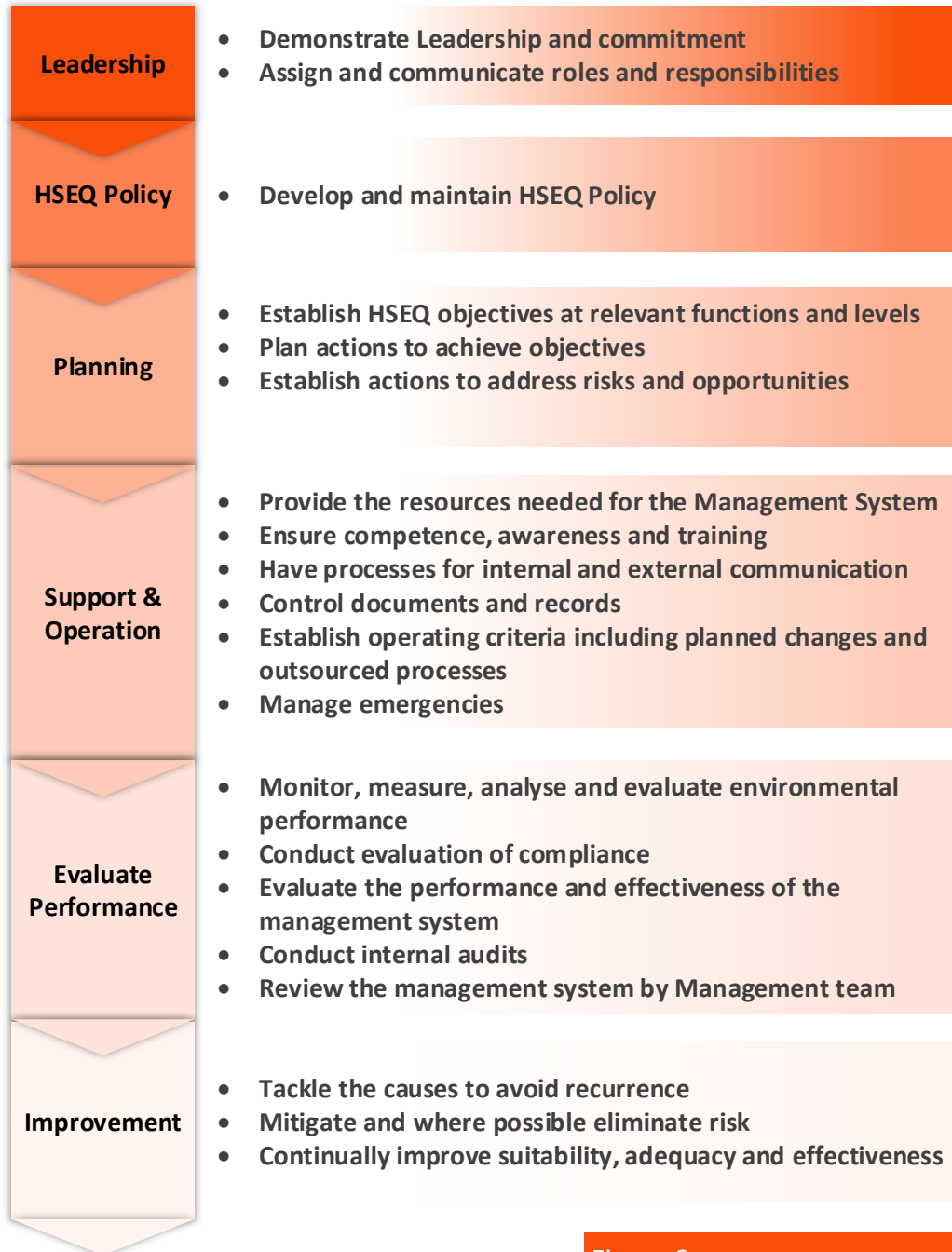


Figure 6:  
Structure of ONE-Dyas Environmental Management System

The ONE-Dyas EMS provides a framework to protect the environment and respond to changing environmental conditions in balance with socio-economic needs. It specifies the systematic approach that enables ONE-Dyas to operate, explore and develop oil and gas production assets in compliance with all relevant legal and stakeholder requirements.

The Corporate ONE-Dyas HSEQ policy covers all ONE-Dyas activities in the UK, The Netherlands and in Norway and reflects the commitment of the owners and the management team to develop and operate oil and gas production in a sustainable way. To protect the health and safety of all persons involved and to prevent pollution and minimize impact on the environment. ONE-Dyas believe that a responsible and Pro-active management is a key factor in ensuring business success.



## ONE-Dyas Health, Safety, Environmental & Quality (HSEQ) Policy

### Commitment

ONE-Dyas B.V. and its subsidiaries are committed to conduct operations in a safe and sustainable way, to minimise the impact on the environment and to protect the health, safety and wellbeing of employees, contractors and the public.

All employees, consultants and/or contractors working for ONE-Dyas are responsible for achieving our HSEQ goals, through compliance with our HSEQ standards, requirements and ambitions.

Personnel is authorised and expected to take action and stop unsafe work and to report incidents, near-misses and sub-standard conditions.

Pro-active HSEQ and risk management is an integrated part of all our activities and is considered a key factor in our licence to operate.

### Implementation

To implement our commitments we will:

- Maintain a systematic HSEQ Management System, developed to ensure compliance with applicable laws and regulations;
- Develop an annual HSEQ program, with tangible goals and measurable targets, to assure continuous improvement of our HSEQ performance;
- Conduct twice a year a compliance and effectiveness review of our HSEQ Management System;
- Perform risk assessments for all operated and non-operated assets and ensure effective controls and mitigations are in place, to minimise the risk of harming people, the environment, our assets and company reputation;
- Perform internal and external risk-based audit and verification activities;
- Investigate incidents in order to identify direct and indirect causes. Results of investigations will be shared openly;
- Actively co-operate with the industry and authorities, to further enhance HSEQ standards and performance.

Robert Baurdoux  
CEO

17 July 2019

Figure 7:

ONE-Dyas Health, Safety, Environmental and Quality Policy



As part of the process of establishing, implementing and maintaining the EMS, ONE-Dyas has identified the significant environmental aspects of its onshore and offshore production and drilling activities and the environmental performance associated with these has been reported.

### 6.1 Spills to sea

Non permitted releases of oil or chemicals to the sea must be reported using a Petroleum Operations Notice 1 (PON1) which is submitted to Offshore Petroleum Regulator for Environment and Decommissioning (OPRED) on an electronic Portal. This notice provides details of the spill and actions taken to prevent a reoccurrence. ONE-Dyas reports and investigates all spills to sea and tracks and manages the actions on the Synergi system.

### 6.2 Oil in Water

Produced water from wells associated with gas production is regulated by OPRED. ONE-Dyas has a permit to re-inject produced water to the A-2002 well on the Sean PD installation. Volumes of water and concentrations of oil are monitored and reported on the Environmental and Emissions Monitoring System (EEMS) system. Drainage water from the skimmer tank is also tested and reported.

### 6.3 Offshore Chemicals

ONE-Dyas holds a chemical permit for chemicals associated with oil and gas production activities on the Papa and Romeo. This is regulated under the Offshore Chemicals (Amendment) Regulations 2011. The annual use and discharge of these chemicals for production operations and drilling activities is reported to OPRED via EEMS.

### 6.4 Waste

ONE-Dyas manages waste in line with the waste management plan and waste hierarchy. Waste is segregated on the installations to help minimize the quantity of waste shipped and disposed of to landfill, and to identify reuse and cost saving opportunities. During 2019 ONE-Dyas continued to focus on the plastic waste on and offshore.



### 6.5 Atmospheric Emissions

Sean Papa atmospheric emissions are highly regulated and reported under several pieces of associated legislation. This includes venting, Carbon Dioxide (under European Union-Emissions Trading Scheme legislation) and other combustion gases including Nitrous Oxides, Sulphur Dioxide, Carbon Monoxide, Methane and Volatile Organic Compounds. In addition, refrigeration gases are regulated, monitored and reported annually.

## 7 Environmental Objectives and Targets

Extent to which ONE-Dyas Environmental Objectives and Targets have been met.

2019 Environmental Objective	Achievement
Identify methane emissions reduction opportunities	<ul style="list-style-type: none"> <li>✓ Meters brought into operation to allow venting mass balance to be more accurately calculated</li> <li>- Fugitive emission monitoring scheduled for 2020</li> </ul>
Implement Environmentally Important Elements (EIE) into the Maintenance Management System (MMS)	<ul style="list-style-type: none"> <li>✓ Workshop identified EIE for higher risk systems</li> <li>✓ Identified EIEs included in the Maintenance Management System</li> </ul>
Assess and implement cost effective energy savings opportunities for the Sean field	<ul style="list-style-type: none"> <li>✓ Full energy use audit completed</li> <li>✓ Energy savings from installing improved TEG pump design of 25%</li> </ul>
Zero environmental incidents and NCRs for UK drilling activities	<ul style="list-style-type: none"> <li>✓ No environmental incidents or NCRs during Darach well activities</li> </ul>

## 8 Spills to Sea

Two new minor spills to sea occurred during 2019 from the Sean Papa platform for which a PON1 was issued to OPRED. The third incident is ongoing and the quantity of fluid lost is updated on a monthly basis. Actions for the incidents have been instigated and tracked on the Synergi system.

Date	Type	Quantity	Description
From 17/02/2017	Oceanic subsea hydraulic fluid	1113 kg during 2019	This minor leak originates from a subsea hydraulic connection to the Bacton export pipeline SSIV. This has been monitored and the PON1 updated on a monthly basis. There has been progress on reducing the leak and sourcing a technical solution.
01/06/2019	HPU hydraulic Oil	0.2 Litres	Leak from Small Bore tubing on an hydraulic supply line. Tubing was replaced and metallurgist examination was completed.
17/10/2019	Water condensate mixture	0.012 Litres	This leak originated from the overfilling of the Low Pressure buffer vessel when the condensate pump locked. The faulty logic control has been removed and replaced.

All produced water originating from the Sean Papa and Romeo wells is treated and re-injected. There are no re-injection limits applied to the oil in water content. No produced water was discharged during 2019, volumes of water and oil re-injected during 2019 (as reported monthly on EEMS) are shown in the chart below. A project was started in August 2019 to remove solids and sand from the production train. Extensive cleaning of the vessels during the shutdown has improved the Oil in Water content of the produced water and resulted in less oil being re-injected.

The skimmer installed to replace the lost caisson from the PD platform, has the facility to sample the drainage water discharged. The results are all below the 40 mg/L discharge limit.

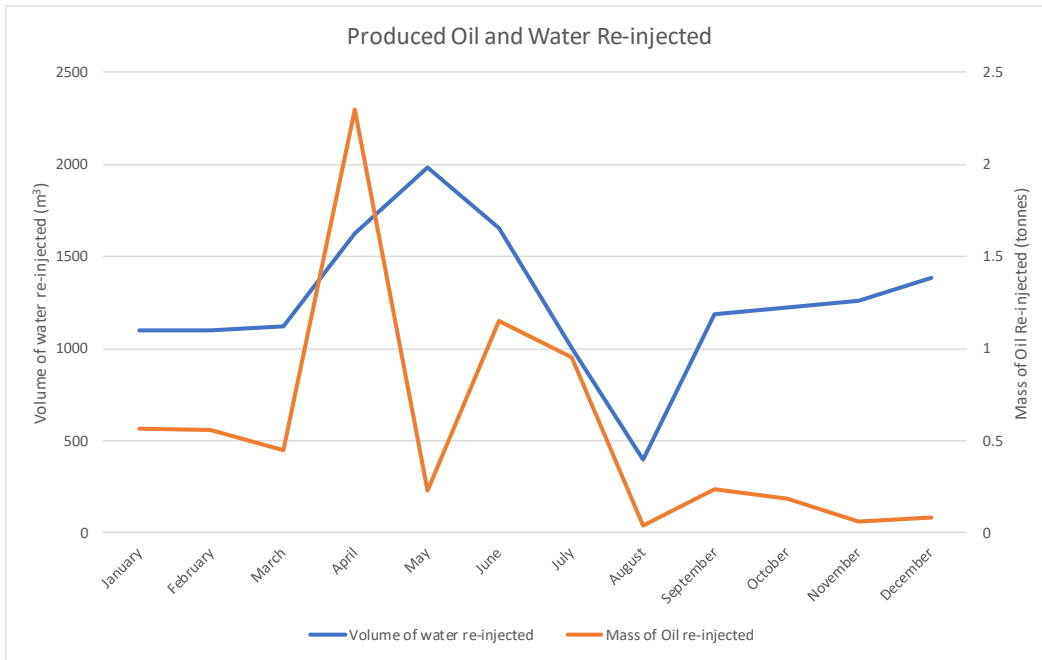


Figure 8: Volume of produced water and mass of oil re-injected

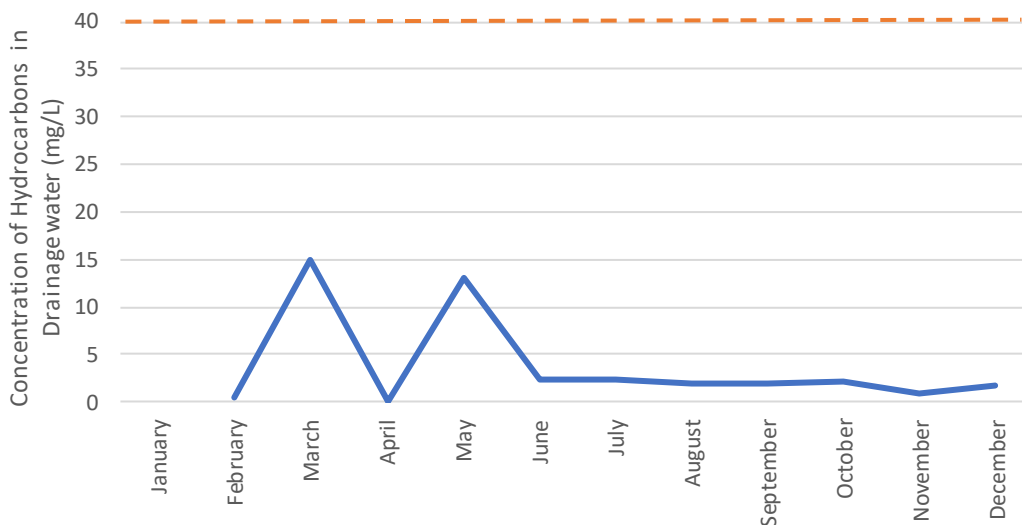


Figure 9: Oil in water concentration in drainage water

## 10 Production Chemicals

Total use and discharge of chemicals (as reported in EEMS for 2019) is reported according to the label and ranking categories in the chart below. Overall chemical use decreased from 2018 (from 45,900 kg to 23,700 kg).

There was an increase in Gold chemicals through the loss and top up of the subsea Oceanic hydraulic fluid. However, there was a substantial decrease in the use of Tri-ethylene Glycol (E ranking) in the reboiler with a number of maintenance improvements.

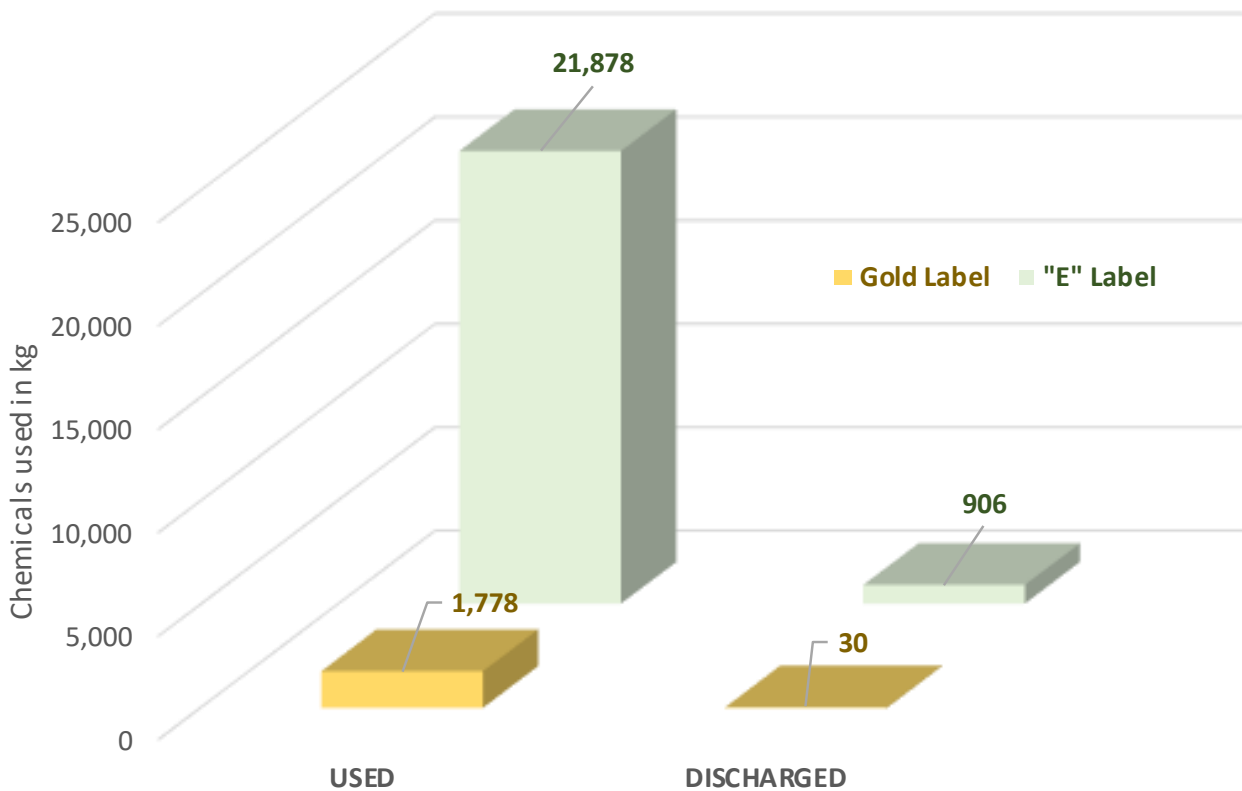
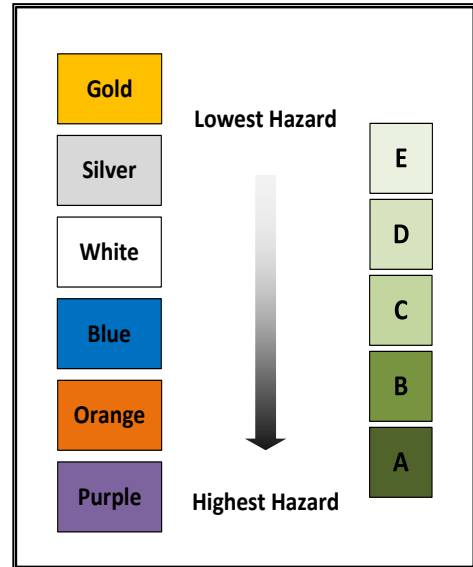


Figure 10:  
Production Chemicals used and discharged from the Sean Platform

## 11 Production Waste

The Sean Papa and Romeo platforms shipped a total 142 tonnes of waste in 2019, which is almost the same as 2018. This was shipped to Den Helder in the Netherlands for treatment. Tonnes of waste has been charted according to type and disposal route. The types and quantities of waste remained similar to last year, except wastes from vessel entry associated with shut-down activities which has increased due to the cleaning of more vessels. Waste to landfill has reduced slightly and recycling has increased.

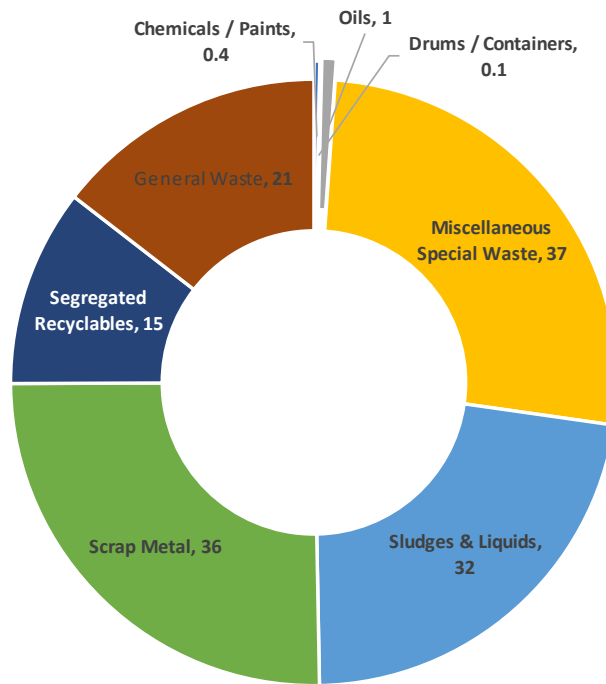


Figure 11:  
2019 Sean production waste in tonnes categorised by waste type

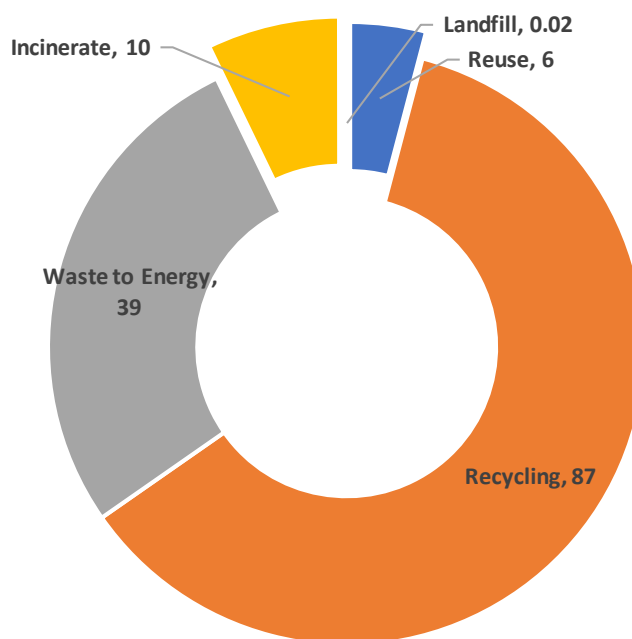


Figure 12:  
2019 Sean production waste in tonnes categorised by disposal route

## 12 Carbon Dioxide

Carbon Dioxide emissions are highly monitored and reported for EU-ETS purposes. On the Sean Papa, 64 thousand tonnes of Carbon Dioxide was emitted from fuel gas and diesel use in 2019. This was an increase from the previous year due to a period of shutdown during 2018 for a lodged sphere.

The monthly accumulated Carbon Dioxide emissions from all combustion equipment from diesel and fuel gas on the platform are presented in the chart below.

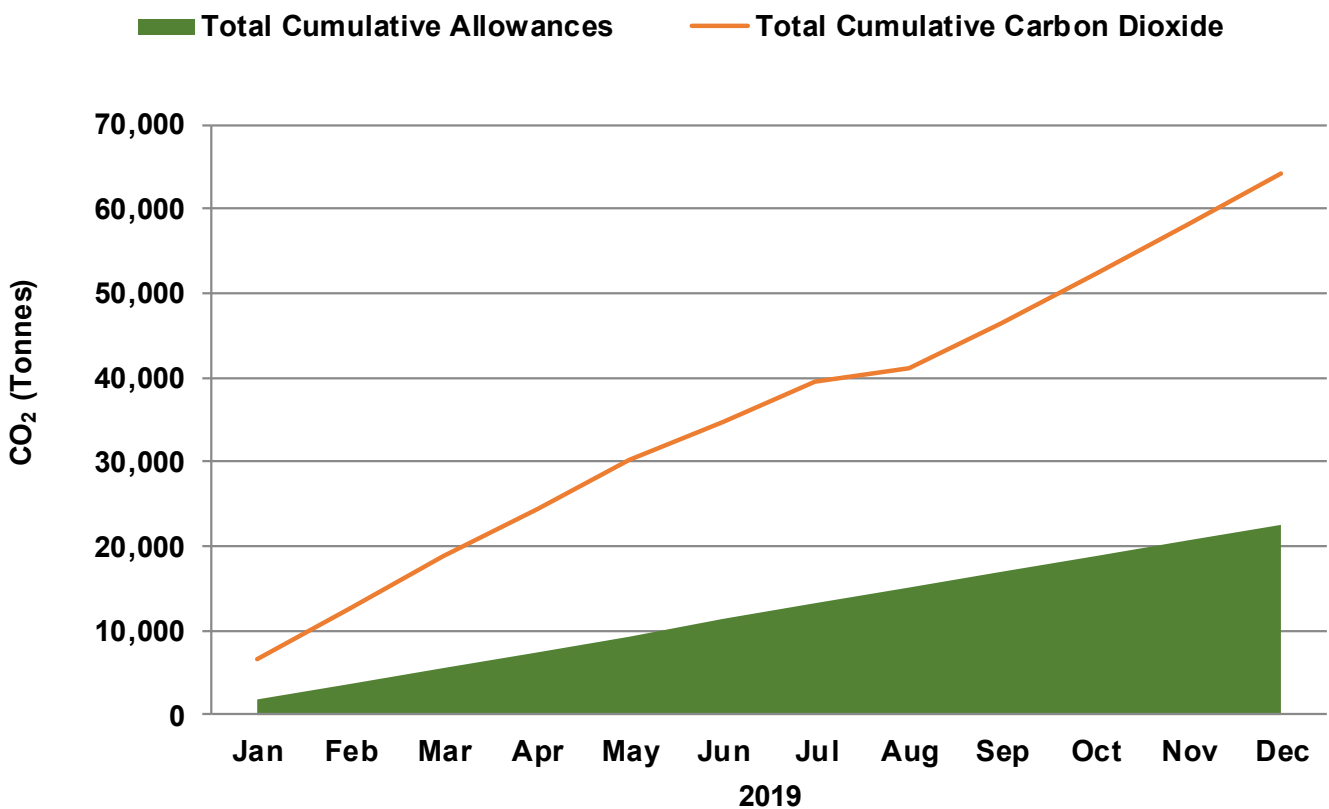


Figure 13

2019 Sean Carbon Dioxide emissions and allowances in tonnes

## 13 Air Emissions

Emissions reported on EEMS under permit issued under the Offshore Combustion Installations (Pollution Prevention and Control) Regulations 2013 are displayed in the chart below. These are broken down into emissions from diesel combustion and Fuel gas combustion.

The largest proportion of emissions are for Nitrous Oxides (NO<sub>x</sub>) emitted from the combustion of fuel gas and diesel. Emissions vented under the Energy Act 1976 are included, which show the highest contribution from Methane (CH<sub>4</sub>) emissions. Methane emissions decreased from 2018 levels due to elevated 2018 venting associated with the pipeline hydrate removal and sphere incident.

Emissions of refrigeration gases were similar to 2018 levels and associated with losses from HVAC systems.

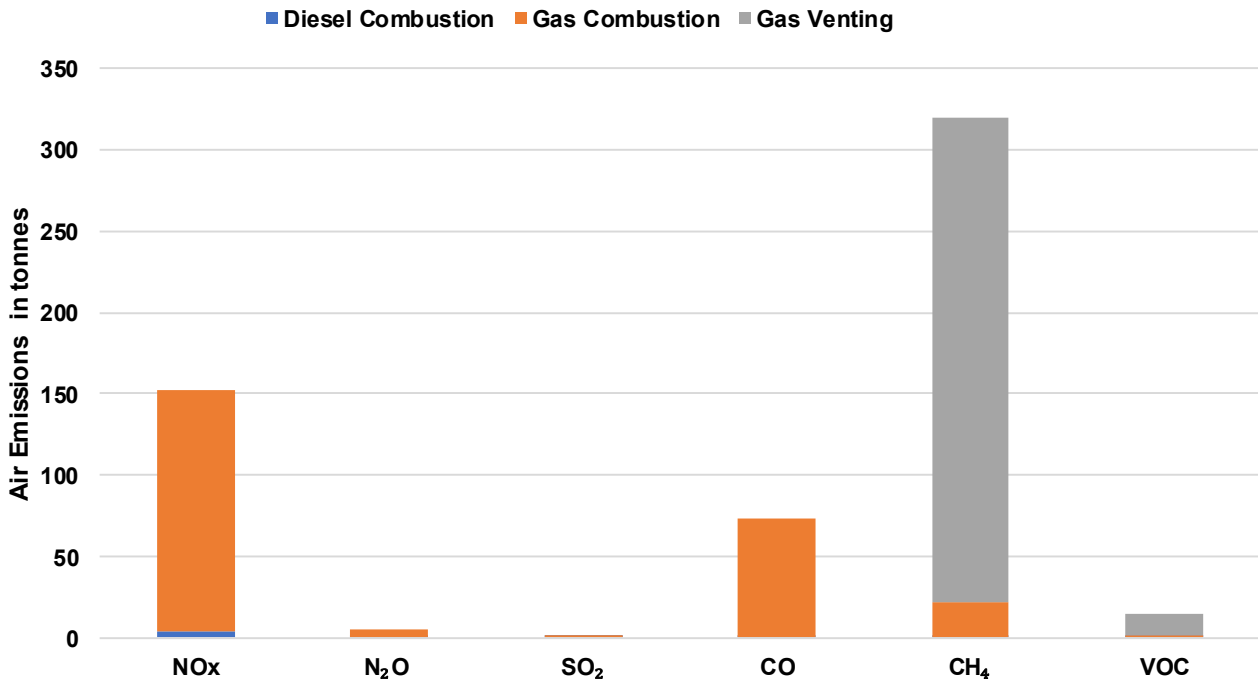


Figure 14

2019 Emissions from Sean combustion and venting

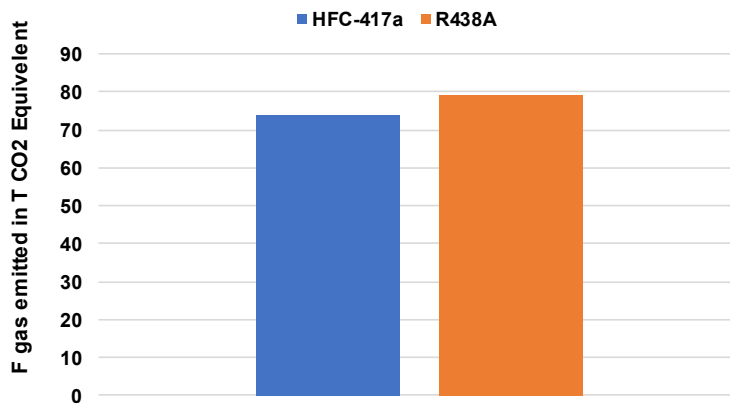


Figure 15

2019 Emissions from Sean refrigeration equipment

## 14 Emissions from Drilling Activities

The drilling chemicals used for the drilling process including drilling muds and Loss Control Materials were all water based and so were all either categorised as lowest hazard chemicals "E" or "gold" rated (see Section 8). One chemical used (subsea hydraulic fluid) was on the substitution list this was not discharged.

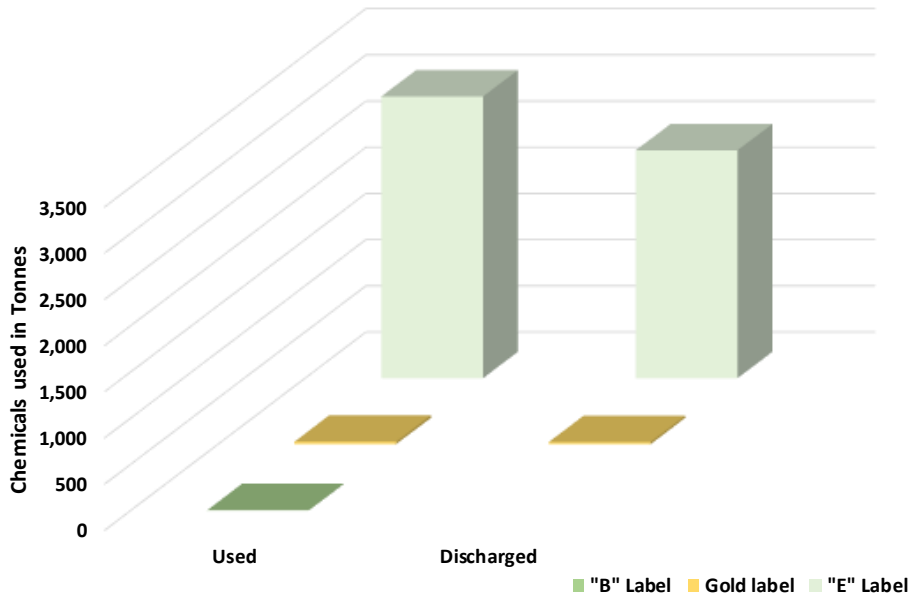


Figure 16

### 2019 Chemical Use and discharge from Drilling Activities

Atmospheric emissions from the Darach drilling activities came from the use of diesel for energy on the drilling rig and from the flaring of gas during the well test. The largest proportion was CO<sub>2</sub> emissions from combustion for energy production.

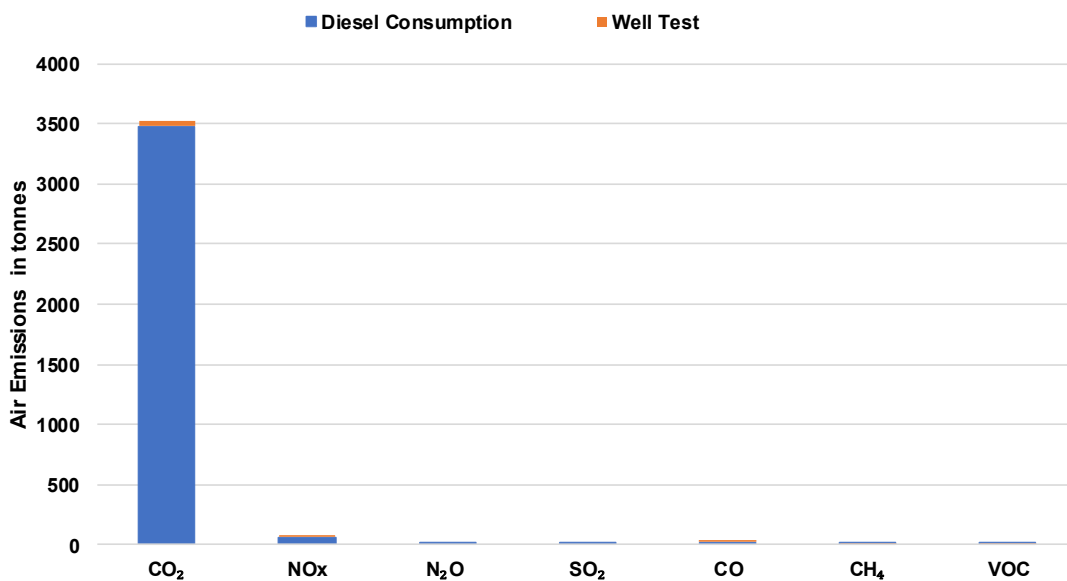


Figure 17

### 2019 Atmospheric emissions from drilling activities



## 15 Waste from Drilling Activities

The largest type of waste from the drilling activities was from the well clean up activities. This waste was shipped to shore to be treated and the tank washing was associated with this. Water based mud and drill cuttings were low toxicity and so were discharged to sea. Other waste including general waste, segregated recyclables and scrap metal formed a relatively small fraction in comparison.

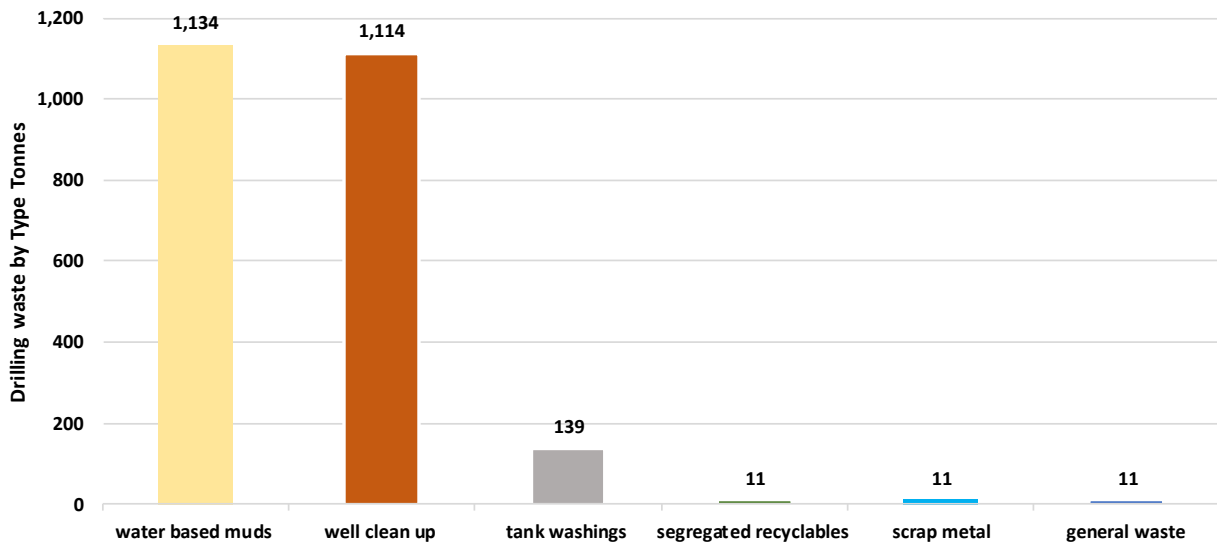


Figure 18

### Waste by type from drilling activities

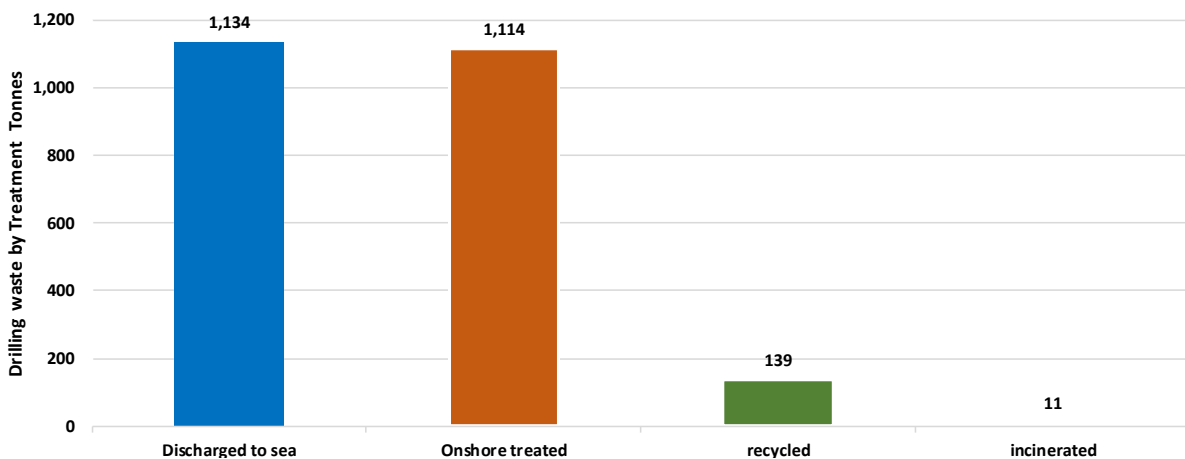


Figure 19

### Waste

ONE-Dyas has developed the environmental objectives below for 2020

**2020 Environmental Objectives**

Identify fugitive methane emission reduction opportunities

Improve methane emission measurement accuracy

Benchmark methane emission and increase transparency

Identify and Implement feasible energy saving opportunities

Reduce spills to sea from 2019

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