



**NORTH SEA PRODUCTION
COMPANY LIMITED**

Document No: 1500-NSP-05-RP-0001-001

Issued: A1

Installation: North Sea Producer

Document Title: North Sea Producer FPSO Environmental Statement 2014

Issue Rev	Issue Description	Originator	Date	Reviewed By	Date	Approved By	Date
A1	Approved	DB	18/06/15	JF <i>J.F.</i>	23/06/15	<i>J.F.</i> JF	23/06/15

Document Circulation List	
NSP	Onshore –



North Sea Producer FPSO Annual Environmental Statement 2014



**North Sea Production Company Limited
City Wharf
Shiprow
Aberdeen
AB11 5BY**

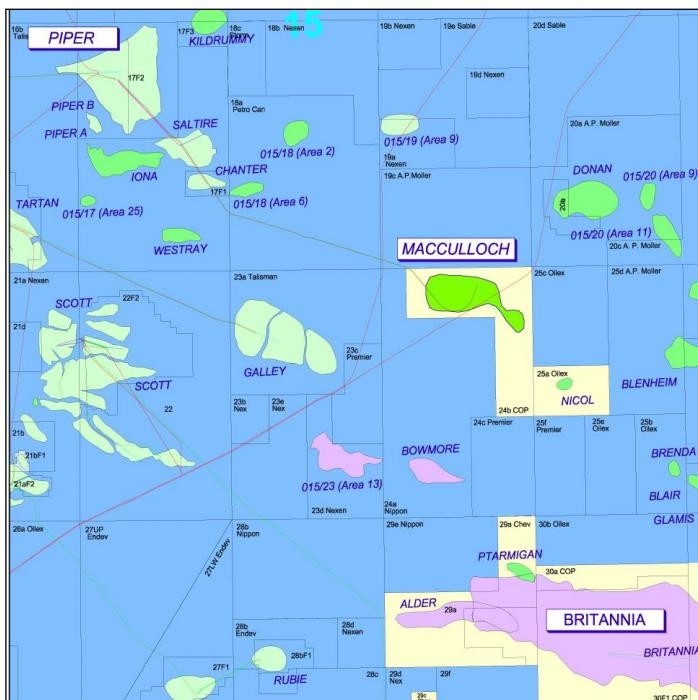
Introduction

This document represents the Annual Environmental Statement for the North Sea Producer (NSP) Floating Production, Storage and Offloading (FPSO) facility owned by Maersk FPSOs and operated through North Sea Production Company Limited (NSPCL) in joint venture with Odebrecht. The purpose of this statement is to demonstrate the continual improvement in environmental performance and goals in operating our facility during 2014 in line with the requirements set out in OSPAR Recommendation 2003/5.

NSPCL is a subsidiary of Maersk FPSOs who provide operational support, personnel, maintenance, logistical services and management systems. Our environmental commitments stated in our Environmental Policy are implemented through Maersk FPSOs' Environmental Management System (EMS). Maersk FPSOs' EMS is compliant with the ISO 14001:2004 Standard and through audits and reviews we strive to continually improve it.

About NSPCL

NSPCL is a joint venture between A.P.Møller-Maersk Group and Odebrecht Óleo e Gás S.A. and was awarded the contract by the licence holders for the exploitation of the MacCulloch field. NSPCL is also the pipeline operator and holder of the Pipeline Works Authorisation.



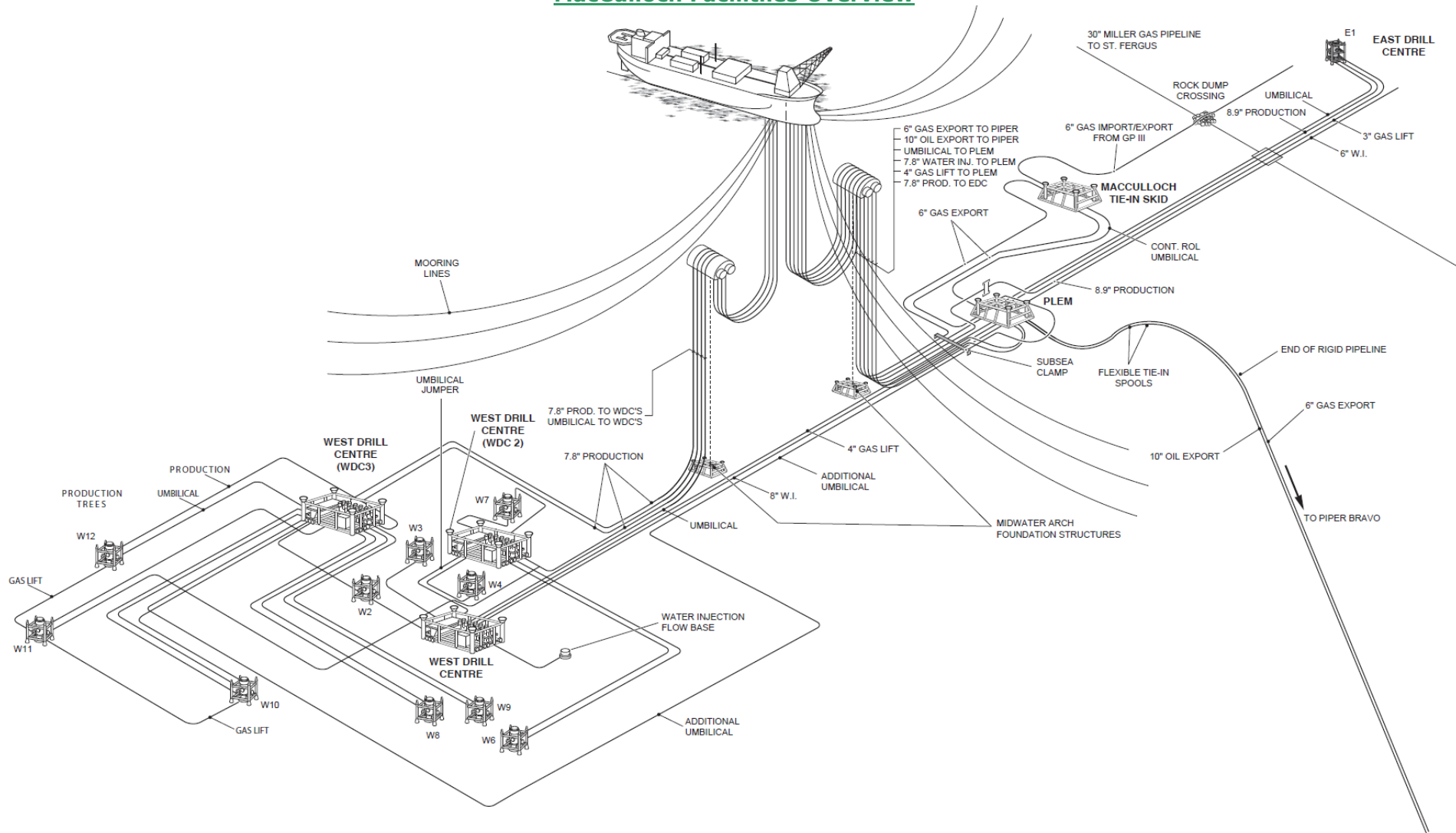
The NSP FPSO is moored in the MacCulloch Field, 250 km northeast of Aberdeen, Scotland. This unit is 236 metres long, 40 metres wide with a draught of 15 metres and operates in a water depth of 150 metres.

The export pipelines are approximately 35 km long and transport oil and gas via the third party owned Piper B facility. The NSP FPSO was fabricated in early 1997 with the conversion of the Dagmar Maersk petroleum tanker into a fully integrated FPSO facility. Production from the MacCulloch field started in August 1997.

As illustrated in the schematics below, a forward-mounted internal turret moors the FPSO with a mooring spread connected to a chain table. The well fluids from both East and West Drill Centre are transferred through a swivel stack in the turret.

In 2014, the annual oil production from the MacCulloch Field was 1.33 million barrels (bbls), with average daily production being 5,831 bbls, while online. Limited gas was exported in 2014, to enable re-pressurisation of the gas export pipeline. Production was shutdown between 24th May and 20th September 2014, for scheduled maintenance work on the NSP FPSO, and outages at third Piper B and Flotta facilities, this was extended by 50 days as a result of lift gas deficiency following the depressurisation of the Piper gas export pipeline. A further unplanned plant shutdown occurred between 10th and 20th November 2014, due to a compression outage.

MacCulloch Facilities Overview





NSPCL Environmental Policy

NSPCL is committed to the protection of the environment. Our level of ambition is reflected in the emphasis we place on all environmental aspects of managing our operations both offshore and onshore. This commitment is stated in NSPCL's Environmental Policy, which governs the EMS.



ENVIRONMENTAL POLICY

The North Sea Production Company Ltd is committed to protecting the environment and to minimising the environmental impact of our operations. We aim to conduct our activities in a manner which meets or exceeds the environmental standards required of us. We recognise that this goal is only met through the involvement and empowerment of all of our employees and contractors.

To achieve our environmental goals, we will continue to:

- Comply with all regulations, class requirements and industry best practice affecting our environmental performance.
- Through compliance with the principles of ISO 14001, operate an Environmental Management System that allows us to control, monitor and reduce the environmental impact of our operations.
- Verify the effectiveness of our Environmental Management System by conducting regular inspections, audits and reviews to help us identify areas where we can improve.
- Reduce the environmental impacts of operations through emphasising pollution prevention and implementing measures for mitigating consequences of accidental pollution.
- Ensure that all our employees and contracted staff are aware of their duty to act responsibly on environmental issues and are sufficiently trained and competent to meet the requirements of their post and of the environmental management system.
- Ensure that all employees and contractors are aware of their moral obligation to intervene when potentially environmentally unsafe acts or omissions are observed.

David Cannon
General Manager
North Sea Production Company Ltd
March 2011

Environmental Management System and ISO 14001:2004 standard

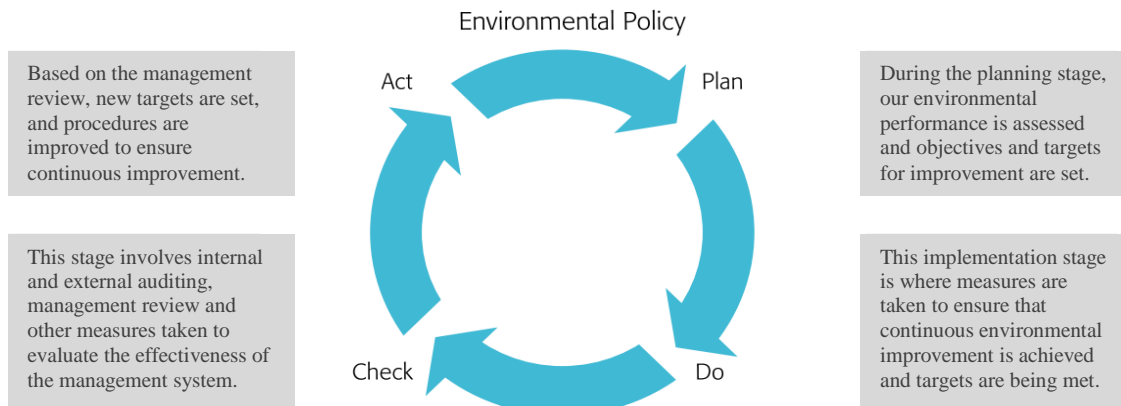
The NSPCL Environmental Policy Statement is implemented through Maersk FPSOs' EMS, which is an integral part of Maersk FPSOs' Global Business Management System (GBMS).

Maersk FPSOs has developed and implemented an EMS for its operations, which is certified to the ISO 14001:2004 standard. Initially Maersk FPSOs were certified with ISO 14001 in August 2006 by Lloyd's Register Quality Assurance Ltd (LRQA), and re-certified in January 2015. Representatives of NSPCL and external environmental advisors have undertaken numerous visits to the NSP FPSO and the shore base to conduct training sessions and internal environmental audits. During these visits we witnessed strong commitment and a positive attitude from all of the employees.



The Environmental Management Principles

The overall purpose of our EMS is to ensure a systematic approach to environmental improvements and compliance, which is achieved through the PDCA (Plan, Do, Check, Act) cycle.



The Plan-Do-Check-Act cycle

As part of the management system, we set objectives and targets for environmental improvements on a continuous basis, and we implement best available technology/best environmental practice where technically and economically feasible. We measure environmental performance through various means, including local and corporate metrics, which help to implement operational procedures to ensure our targets are met. In addition, Maersk FPSOs has established voluntary Green Teams offshore which helps to improve environmental awareness and ensure that activities are conducted with a high regard to the marine environment.

Key Elements of NSPCL's EMS

NSPCL uses established procedures for ensuring compliance and improving



environmental performance through a number of key elements of the EMS including:

- Development and maintenance of the Environmental Aspects and Impacts Register to address the risks posed to the environment by operations on the NSP FPSO.
- The Environmental Management Manual which defines responsibilities and directs personnel to key procedures which form part of the overall Management System, as well as supporting procedures contained within other management manuals.
- Monitoring, internal monthly and annual review of environmental performance.
- Implementation of corrective actions to facilitate the overall goal of continuous improvement. All emissions and discharges, including incident reports and near misses, are systematically recorded through use of local and corporate metrics and corrective actions are tracked.
- Periodic management reviews to define, set and assess environmental objectives and ensure their continued relevance in the light of changing circumstances. The Annual Management Review ensures that these objectives are translated into plans and programmes to ensure successful implementation.
- Our objectives and targets for improving environmental performance are also facilitated via voluntary led offshore Green Teams.

To support continuous and effective improvement, Maersk FPSOs has developed web systems that incorporate these procedures into the governance and management of its activities. These are:

SIRIUS – this is a graphical web-based integrated QM/HSE management system which provides links between processes, organisation, compliance and technical manuals. This web based management system affords a facility for providing visibility of process flows, procedural documents and roles and responsibilities. It ensures that all employees have access to safe and efficient work processes that are in compliance with relevant quality and legal requirements.

Compliance standards are linked to the process where relevant, demonstrating how Maersk FPSOs complies with the requirements of the standards. All EMS procedures are systematically managed to ensure that they are up-to-date, accurate and traceable.

SYNERGI - this database is used for tracking all incidents, accidents and near misses, including environmental incidents, and it is used as a management tool for control and analysis of corrective actions. It also provides a transparent and auditable trail of environmental indicators used as part of performance reporting and monitoring.

Sustainability Reporting

NSPCL, through Maersk FPSOs, reports its resource and energy consumption and emissions on an annual basis to the A.P.Møller-Maersk Group. Maersk FPSOs also publishes its own Sustainability Report, which states, "We support a precautionary approach to environmental changes; undertake initiatives to promote greater environmental responsibility; and encourage development and diffusion of environmentally friendly technologies. We manage environmental aspects

systematically and continuously improve our performance by setting objectives, training personnel and monitoring environmental impacts.”

Environmental Aspects

Environmental aspects are those elements of our activities that can interact with the environment, i.e. the definite or potential causes of environmental impact. Although the actual impacts on the environment cannot be controlled, the aspects of the activities can be. Maersk FPSOs has implemented and maintained a process flow to identify the environmental aspects of its activities, products and services that it can control or influence.

The most significant environmental aspects from our activities at the NSP FPSO have been identified and listed below:

- **Discharge of water** originating from the reservoir, produced when extracting the oil (produced water discharge).
- **Chemical use and discharges** during process and utilities operation.
- **Air emissions** generated during combustion of fuel gas and diesel for the power generation, gas compression, pumping oil onshore and the flaring of excess gas.
- **Waste generation** disposal from operational and domestic activities.

The performance of the NSP FPSO's operation with respect to the significant aspects of our activities is summarised in the sections below. These data have been reported to the Regulator via the UK Environmental Emissions Monitoring System (EEMS).

Managing emissions and discharges

Oil in Produced Water discharges

Discharges of oil in produced water are regulated under the Offshore Petroleum Activities (Oil Pollution Prevention and Control) Regulations 2005 (as amended) (OPPC Regulations). The conditions of the NSP OPPC permit require that the concentration of dispersed oil in produced water (OIW) discharged shall not exceed 30 mg/l averaged over a calendar month and 100 mg/l at any time.

NSPCL aims to maintain the total quantity of oil discharged in produced water and the average concentration of oil (mg/l) discharged to sea at 10% below the permit limits. In 2014, the concentration of oil discharged in produced water was in compliance with the monthly limit (Figure 1), while overall produced water discharged were slightly higher than in 2013, but lower than in 2012 (Figure 2). Oil in water discharges in 2014 were lower than in 2013 despite there being greater production uptime.

During normal operations on the NSP FPSO, slops tanks with oil skimming capabilities are utilised as a final stage of treatment for produced routinely resulting in low concentrations of oil in water.

There was no produced water discharge during the above referenced shutdown between 24th May 2014 and to 20th September 2014 (Figure 1). In addition, the unplanned plant shutdown between 10th and 20th November 2014 resulted in reduced produced water discharges in November.

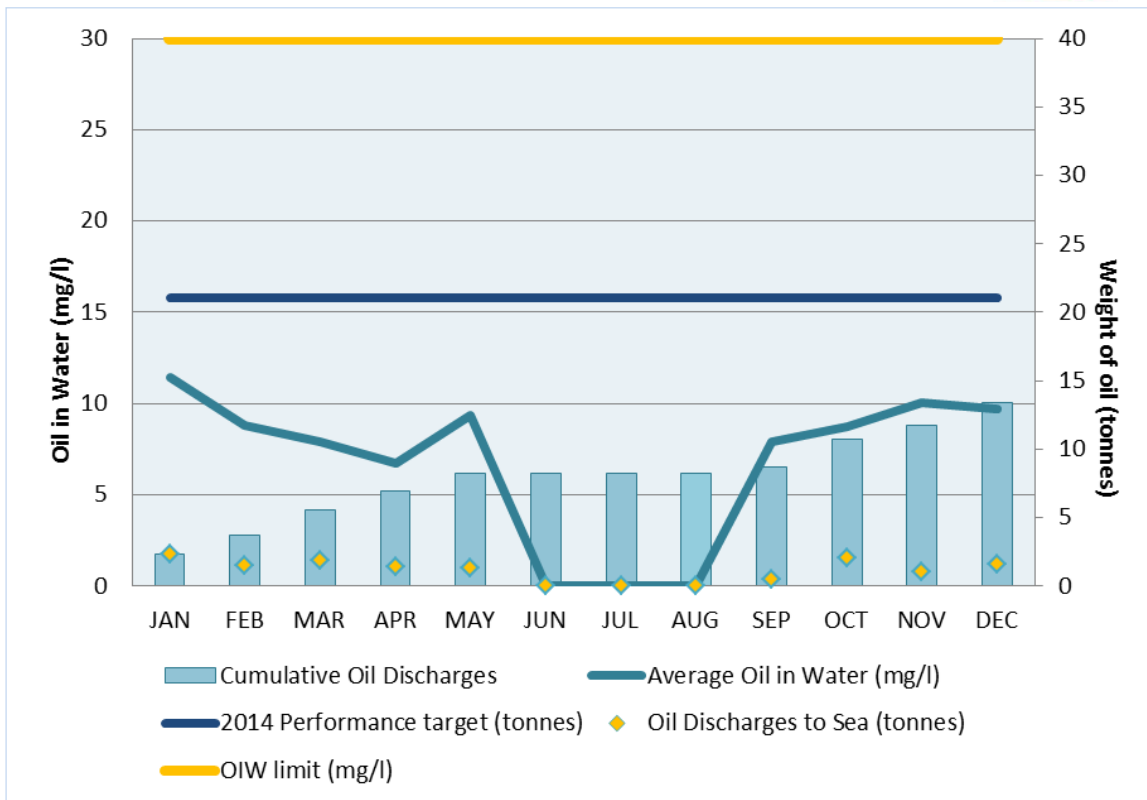


Figure 1 – Total Oil in produced water and mass of oil discharged to sea from the NSP FPSO in 2014 against the performance target.

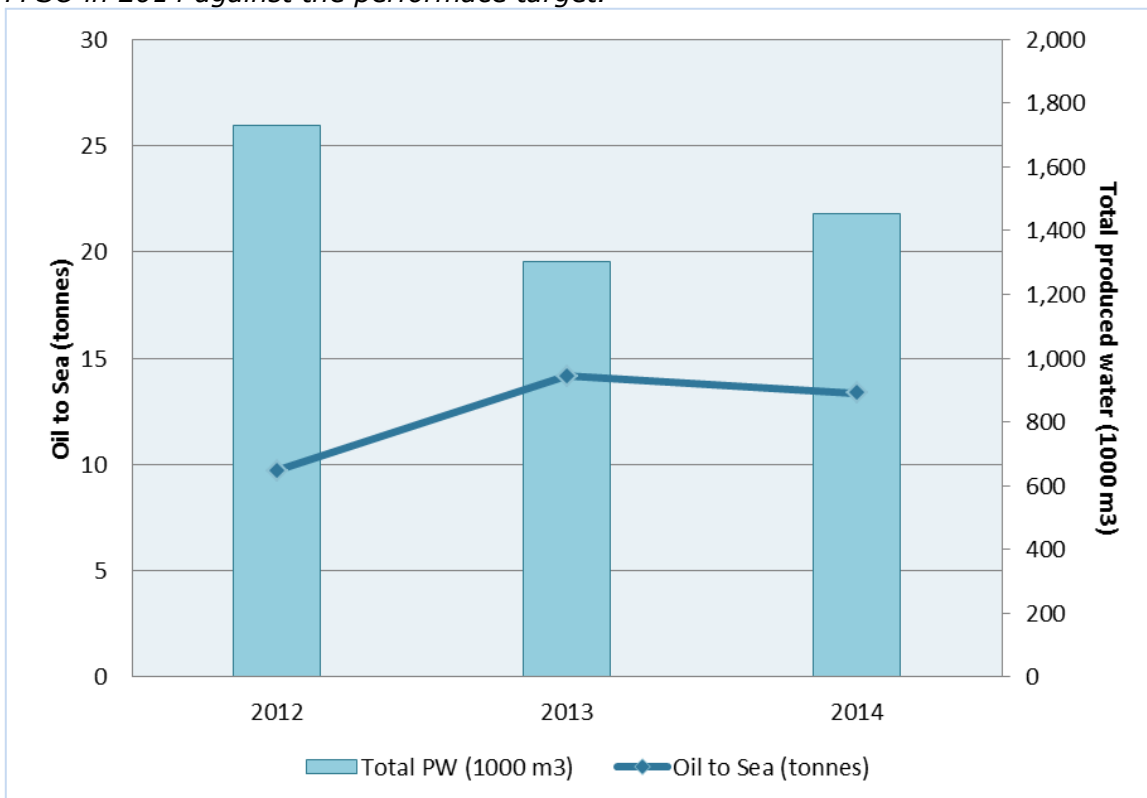


Figure 2 - Annual comparison of total oil to sea and produced water discharges for the last three years.

Chemical management

Many chemical products are used onboard the NSP FPSO for cleaning and maintenance purposes, and throughout work processes. They serve to improve production processes, for corrosion inhibition, scale formation inhibition and aiding the separation of oil and water.

NSPCL as part of Maersk FPSOs has a unique and strong focus on the safe use of chemicals. Our chemical management system is a key element of our approach and the offshore employees are regularly trained in safe handling of chemicals and correct use of the system. We perform chemical inspections as part of our chemical audit programme.

The use and discharge of chemicals at NSP operations are governed by the Offshore Chemicals Regulations 2002 (as amended) (OCR). In 2014, 175.61 tonnes of offshore chemicals were utilised for production, 22% of which were discharged to sea in line with the NSP's OCR permit. There were no non-conformances during 2014.

Classification and risk ranking of chemicals is undertaken under the Offshore Chemical Notification Scheme (OCNS). This scheme assigns a substance a risk/hazard category, using the Chemical Hazard and Risk Management (CHARM) model, based on the varying levels of hazard/risk and assigns a colour bands to the products, Gold (lowest hazard quotient) to Purple (highest hazard quotient). Other products not applicable to the CHARM model (i.e. inorganic substances, hydraulic fluids or chemicals used only in pipelines) are assigned an OCNS grouping, A - E.

Chemical Ranking	Total Use (kg)	Total Discharge (kg)
D	23,445	23,445
E	97,641	7,690
Silver	180	180
Gold	54,341	7,241
Total	175,607	38,557
	Proportion Discharge	22%

Table 1 Chemical usage and discharge from the NSP FPSO during 2014 according to Offshore Chemical Notification Scheme (OCNS) Categories

It should be noted that, most of the chemicals used and discharged during 2014 were at the lowest risk, being CHARM (Gold) and non-CHARM chemical categories (E) (Table 1).

In 2014, the NSP FPSO utilised three chemicals that carry substitution warnings, namely a corrosion inhibitor and two cleaning detergents. In total 16,602 tonnes of these chemicals were used and 4,980 tonnes were discharged during 2014. Offshore field trials were undertaken during 2013 and 2014 to replace these chemicals. Trials that were carried out in 2013 were unsuccessful. In 2014 successful topside trials of corrosion inhibitor RX-2099 as a suitable replacement for RX-2037 were completed. Corrosion inhibitor RX-2099 was due to replace RX-2037 in February 2015, when the existing stocks of RX-2037 had been utilised. However, due to confirmed permission to remove the North Sea Producer from the MacCulloch field in 2015, a decision was made to continue to use RX-2037, with approval from DECC. The cleaning detergent Cleenol OD Offshore Heavy Duty was tested in 2014 as the replacement product for Aqueous Degreaser 2000 RU. However, as the North Sea Producer is due to be removed from the field by September 2015, existing cleaning chemical stocks on board the vessel will be used until departure.



Hydrocarbon and Chemical Spills to Sea

All unplanned releases of chemicals or hydrocarbons to sea must be notified to DECC via the UK Oil Portal PON1 system. NSP have robust procedures for investigating and reporting spills no matter what the size.

On 14th March 2014, a PON1 Notification of a release of approximately 0.05 tonnes of hydraulic fluid was submitted; the uncontrolled release was due to a failure of a pressurised hydraulic hose on the Starboard main pedestal crane. A further PON1 notification was submitted on 22nd September 2014; During operations to a transfer process sludge from tanks located on NSP FPSO to tanks located on an attendant platform supply vessel (PSV), a vent hose became detached from a mudskip being used to capture vent fluids. As a result approximately 0.006 tonnes of sludge was split onto the back of the PSV with a minor spill overboard from the PSV. No one was hurt during these incidents and investigations were completed to determine their respective root causes.

Air emissions

Atmospheric emissions from our offshore activities arise mostly from power generation and flaring of associated gas, which is an integral part of the FPSO safety procedure.

The main composition of these emissions is carbon dioxide (CO₂) with proportionately smaller emissions of nitrogen oxide (NO_x), nitrous oxide (N₂O), sulphur dioxide (SO₂), carbon monoxide (CO), methane (CH₄) and volatile organic compounds (VOCs).

CO₂ Emissions

In response to the Kyoto Protocol and in an attempt to lower carbon emissions throughout the EU, the Greenhouse Gas Emissions Trading Scheme 2005 has implemented a cap on the amount of CO₂ any given industry can emit on an annual basis. The annual free allocation granted to the NSP FPSO for 2014 was 50,552 tonnes of CO₂. Any emissions above this would require the purchase of carbon credits.

The 2014 verified full amount of CO₂ emissions totalled 56,920 tonnes (see Figure 3 below). These emissions were from the combustion of diesel imported to site and natural gas produced on site (Figure 3). The proportion of gas that cannot be utilised as fuel or exported must be flared in order to maintain a safe environment on the NSP FPSO.

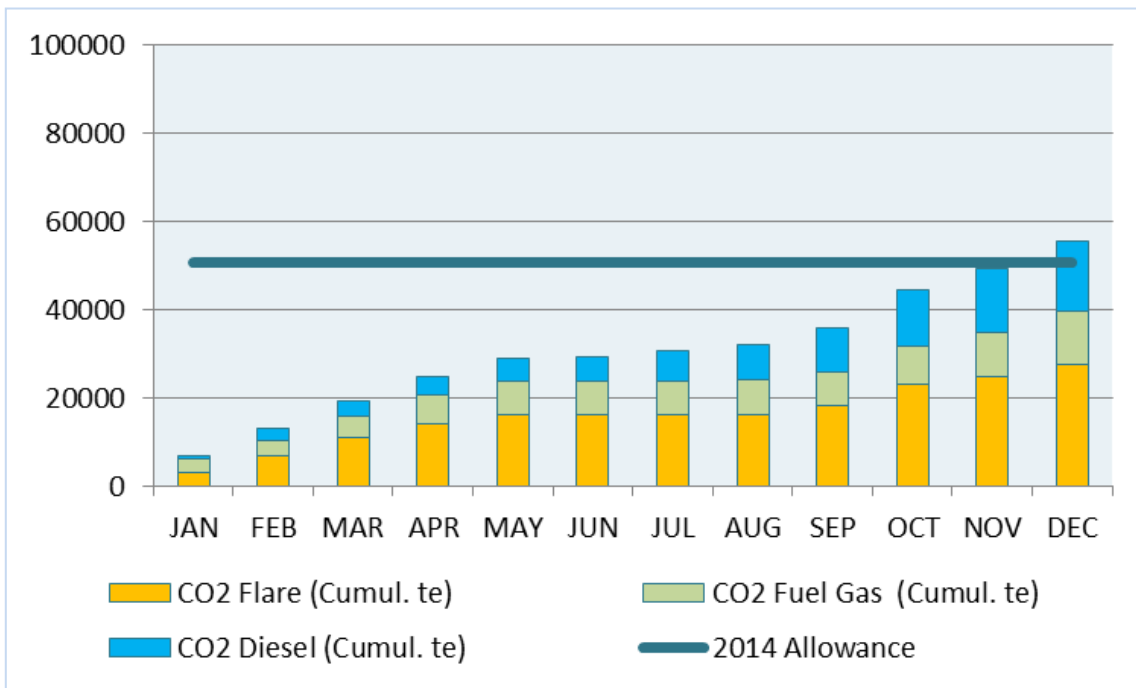


Figure 3 – Cumulative CO₂ emissions by fuel type (as proportion of 56,920 tonnes emitted), NSP, 2014.

Flaring

For 2014 the *Consent to Flare Gas* issued by DECC required that the daily average flare rate did not exceed 30.99 tonnes, a reduction on previous years. Flare emissions between January and June slightly exceeded cumulative allowance but over a year were within limits for 2014.

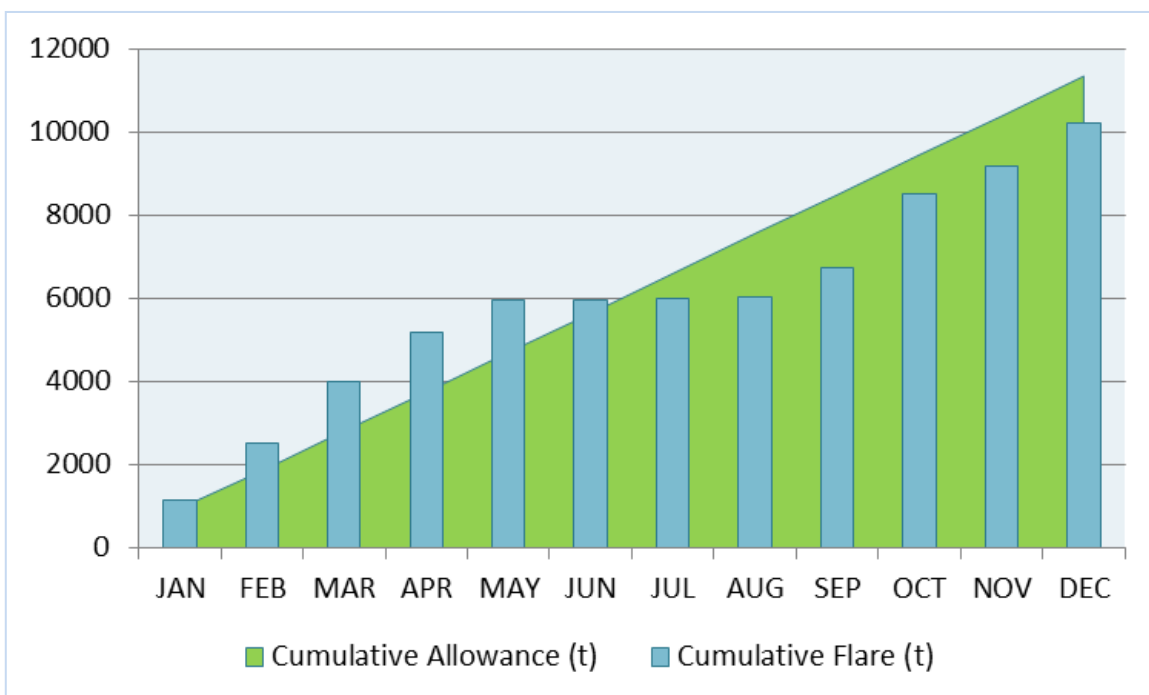


Figure 4 - Cumulative Flared Gas Mass (tonnes) for NSP, 2014.

Waste Generation and Disposal

NSPCL uses a well-established waste management hierarchy of maximising the reduction, reuse, recycle and recover of waste, before its disposal. The amount of waste sent to landfill must be therefore lowered in order to reduce overall environmental impacts.

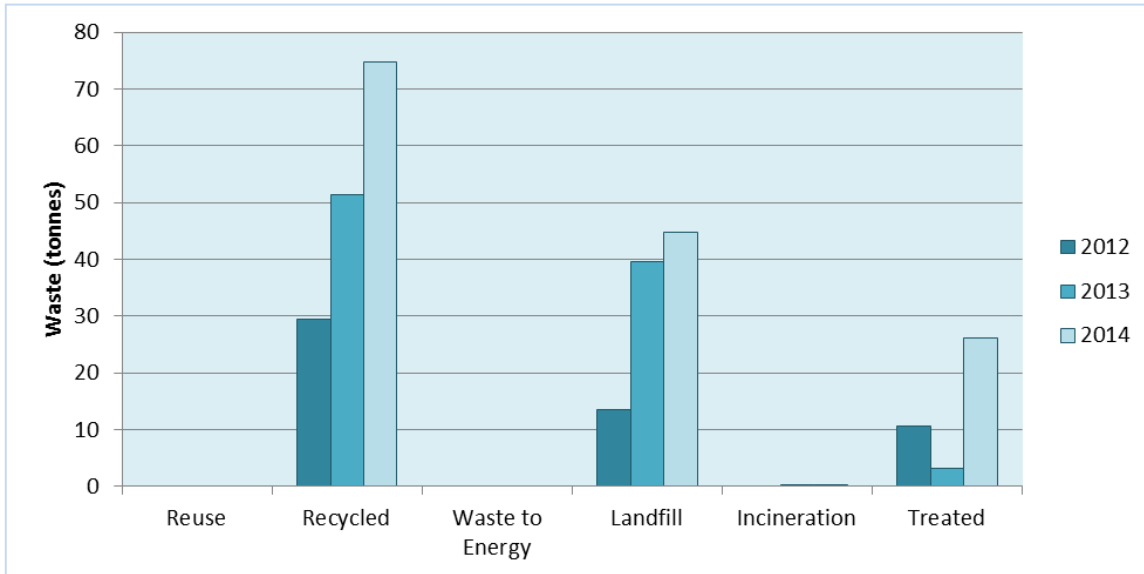


Figure 5 - Yearly comparison of waste quantities (tonnes) by disposal method for NSP, 2012-2014.

Figure 5 compares the quantities of waste disposed of by different methods from 2012 to 2014. Overall in 2014, 51% of waste was recycled and 30% went to landfill. There was a decrease of waste sent to landfill of 12% compared to the previous year.

Waste recycling is implemented as part of our waste management plan also in our onshore base in Aberdeen. The total recycled waste for 2014 is 51% with 49% being landfilled. General waste has generated 0.01006 KWh of electricity in 2014.



Environmental Performance 2014

A number of objectives and targets are set each year to achieve and demonstrate continual improvement in the environmental performance of the NSP FPSO. An overview of the status of our goals and objectives during 2014 is given in the table below.

Although a number of improvements were made in certain areas, not all goals and objectives were achieved during 2014. This was mainly due to the announcement that the North Sea Producer would be removed from the MacCulloch field in 2015. This influenced several decisions on the replacement of chemicals with substitution warnings, and while the Green Teams were reinvigorated in 2014, future initiatives and activities will cease on removal of the NSP FPSO from the MacCulloch field.



Issue	NSPCL 2014 Objective	2014 Internal Target	Status
Environmental performance	Ensure compliance with relevant environmental legislative requirements	Full compliance with permits and consents.	Completed/achieved
	Continue to take all reasonable and practical steps to prevent pollution	Ensure implementation of Hose Management Plan to minimise the risk of spills.	Completed/achieved
		Identify Environmentally Critical Equipment (ECE) on installation and create and maintain ECE register.	Work procedure underway, target not achieved
	Systematically identify and manage environmental risks through fully functioning EMS which aims to drive continual environmental improvement	Continued maintenance of the certified EMS to ISO 14001:2004 across both onshore and offshore units and within scope.	Completed/achieved
		Ensure any required environmental training is progressed.	Completed/achieved
	Deliver robust environmental audit programme	Conduct environmental audits of the offshore and onshore unit in accordance with the NSP annual audit plan.	Completed/achieved
Atmospheric emissions	Greenhouse gas (GHG) emissions in line with permit conditions and operational demands	Flaring shall not exceed average daily rate above 26.17 tonnes.	Completed/achieved
		Annual allowance of 25,276 CO ₂ tonne equivalents (tonnes) from flaring.	Completed/achieved
Discharges to sea - produced water	Continue to monitor, evaluate and prioritise measures to improve the management of oil in produced water discharges and where possible reduce oil discharges in line with permit conditions and operational demands	OPPC target of oil discharged to sea 21.021 tonnes.	Completed/achieved
		Oil in water (OIW) shall be managed closely with internal target of 11 mg/l.	Completed/achieved
Discharges to sea - chemical management	Reduce the use and discharge of chemicals with substitution (SUB) warnings	Target replacement of the one remaining chemical with SUB warnings by the end of the year.	Work procedure underway, target not achieved
Waste management	Continue to promote waste management practices in line with the top principles of the waste management hierarchy	Continue to maintain >50% recycling rate for the offshore unit. Conduct a review of the increased waste production and ways of reducing it.	Completed/achieved
		Reinvigorate the activity of Green Teams.	Work procedure underway, target not achieved

Key:



- Completed/achieved
- Work procedure underway, target not achieved
- Incomplete/not achieved