Environmental Performance Report 2016
Offshore Operations

Contents

Section 1 Introduction

Ithaca Energy (UK) Ltd. is a subsidiary of Ithaca Energy Inc., an oil and gas exploration and development company (www.ithacaenergy.com). The company's principal focus is the exploration and development of oil and gas reserves in the North Sea on the United Kingdom's Continental Shelf (UKCS).

This is the eleventh annual environmental performance report for offshore operations. Section 2 of the report provides a general description of the company and its activities; Section 3 provides an overview of Ithaca Energy's environmental management system, environmental policy and high level environmental objectives; and the final section presents 2016 environmental performance data together with performance against environmental targets.

Section 2 Overview of Operations and Activities in 2016

2.1 Overview

Ithaca has a solid and diversified producing asset portfolio, mainly producing oil. The producing fields, which are a mix of operated and non-operated assets, are located across the Northern, Central and Southern North Sea and Moray Firth areas of the UK Continental Shelf.

The company also has an interest in the Wytch Farm Field located in Southern England (on/offshore oil field).

2016 was Ithaca Energy's eighth full year as a production operator in the North Sea.

In addition to existing production operations at the Athena Field, operations in 2016 saw the continuation of the installation of subsea infrastructure at the Stella Field.

2.2 Inner Moray Firth

The Inner Moray Firth contains the Greater Beatrice Area consisting of the Beatrice and Jacky Fields. Ownership of the Beatrice Field was transferred from Ithaca in early 2015, although Ithaca retain ownership of Jacky. The Jacky Field was produced in 2009 via an unmanned wellhead platform tied back by subsea flow lines to the Beatrice Alpha platform. Production ceased in Q1 2015.

2.3 Outer Moray Firth

The Athena field is situated in Block 14/18b in the Outer Moray Firth area. 2015 was the third year of production from the Athena field since the completion of start-up and commissioning operations in mid-2012. Athena ceased production in Q1 2016.

2.4 Northern North Sea

The Causeway Area consists of the Causeway and Fionn oil fields, approximately 150km northeast of the Shetland Islands. It consists of two production wells which are tied back to the TAQA operated North Cormorant platform. TAQA holds and reports on the relevant environmental permits.

2.5 Central North Sea

The Greater Stella Area covers four Blocks, 29/10a, 29/10b, 29/10d and 30/6a, and includes the Stella, Harrier, Hurricane and Helios Fields. In 2016 most of the remainder of the subsea infrastructure was installed. The remainder of the operations, including the installation of an oil export pipeline and delivery of the *FPF-1* production installation, is expected to be completed, and production to begin, in 2017.

2.6 Southern North Sea

In the Southern North Sea, Ithaca Energy is operator of the Anglia field (Blocks 48/18b, 48/19b and 48/19e), comprising of a normally unmanned wellhead platform and subsea wells which are tied back to the Lincolnshire Offshore Gas Gathering System (LOGGS) complex for process and export. LOGGS is operated by ConocoPhillips who hold and report on the relevant environmental permits. Anglia ceased production in Q4 2015.

Section 3 Environmental Management System

3.1 Policy

A copy of Ithaca Energy's current Health Safety and Environmental (HS&E) Policy Statement is included overleaf. The policy is endorsed by the Chief Executive Officer of Ithaca (Energy) UK Ltd on behalf of the Board of Directors. It acknowledges Ithaca Energy's HS&E responsibilities in relation to its business activities and includes commitments to continual improvement, assessment and management of the risks and impacts associated with operations, to meet legislative requirements and accepted best practice and a willingness to openly communicate these principles to company personnel and the general public.

The HS&E Policy is implemented thorough the company's Integrated Management System (IMS) of which the Environmental Management System (EMS) is part.

ITHACA ENERGY (UK) LTD.

HEALTH, SAFETYAND ENVIRONMENTAL POLICY

ITHACA ENERGY (UK) LTD. is committed to proactively achieving excellence in Health, Safety and Environmental (HS&E) performance across all of our operations. We consider our HS&E performance and the health, safety and security of those who work for, with and alongside us as central to our business success.

ITHACA will comply with applicable legislation and guidance.

In order to meet our commitment ITHACA will:

- Provide competent resource to implement this policy and to develop and maintain our HS&E systems.
- Provide effective leadership, training and mentoring to sustain and develop workforce HS&E competency and skills and maintain a positive HS&E culture.
- Define clear responsibilities and accountabilities for HS&E issues within the company.
- Set realistic HS&E objectives and tagets and develop action plans to measure these as a contribution towards continual improvement of our HS&E performance.
- Ensure HS&E performance is prominent in the selection of our contractors
- Assess and manage operations through all stages to minimise risk of harm to people, the environment and facilities
- Communicate and consult with stakeholders and the public and have regard for their interests when planning activities.
- Ensure that appropriate plans and resources are in place to respond to incidents and emergencies.
- Investigate incidents, implement recommendations to prevent re-occurrence and share lessons learned.

To support our commitment to HS&E performance ITHACA will develop and maintain effective HS&E systems which will be independently verified against relevant ISO and other recognised standards. HS&E systems will be subject to periodic and management review to ensure ongoing compliance and improvement.

This policy applies to all company activities and ITHACA employees, and contractors and other associates engaged in work on our behalf, have a responsibility to comply with it and prevent harm to themselves and others and damage to the environment.

Les Thomas, CEO ITHACA ENERGY (UK) LTD
On behalf of the Board of Directors

12th March 2016

3.2 Environmental Management System

Ithaca Energy recognises its obligations to identify, assess and mitigate environmental risks and actively manage environmental performance of its field operations.

The Ithaca Energy Integrated Management System incorporates the elements of an Environmental Management System and was verified in May 2016 as meeting DECC's Guidance for Environmental Management System Requirements in relation to OSPAR Recommendation 2003/5.

The scope of the EMS covers upstream, offshore and operated assets for which Ithaca Energy is the Licensed Operator. It encompasses oil and gas exploration and appraisal (E&P), development and production operation activities carried out by Ithaca Energy in UKCS blocks for which it is the Licensed Operator, including those third party activities conducted on their behalf or over which they have influence, and for which they are ultimately responsible for the environmental performance.

The EMS comprises the following major elements:

- **HSEQ Policy and Planning** – policy and principles are set, with links to relevant legislation and management of activities through efficient and systematic planning, with objectives and processes established to deliver the company policy.
- **HSEQ Implementation and Operations** – management of activities through implementation of the processes
- **Checking & Corrective Actions** - monitoring and measurement of activities against environmental policy, objectives, targets, legal and other requirements, and reporting of the results
- **Management Review** – review of performance and taking actions to continually improve performance of the environmental management system

In order to ensure that the commitments made in the IMS are fulfilled, responsibilities are assigned for initiating, executing and checking. Environmental responsibilities are assigned through line management and specific personnel are assigned objectives, targets and actions relevant to their particular function. Ithaca Energy has access to specialist advice and support on environmental issues.

Ithaca Energy undertakes its operations by selecting specialist contractors for key activities such as production operations management and drilling management. The EMS formally describes the environmental responsibilities of Ithaca Energy staff and contractors in complying with Ithaca Energy's HS&E policy.

Section 4 Environmental Performance

Ithaca Energy's 2016 environmental performance from drilling, installation and other subsea activities is presented in Section 4.1 and that from operational activities are in Section 4.2.

4.1 Drilling, Installation and Decommissioning Activity

There was no drilling activity undertaken by Ithaca in 2016. Atmospheric emissions, chemical discharges and waste from subsea installation and pipeline disconnection and decommissioning activities, as carried out at the Stella and Athena Fields, are presented in this section. Data was derived from the returns to the UK offshore Environmental Emissions Monitoring System (EEMS).

4.1.1 Atmospheric Emissions

Atmospheric emissions were generated from diesel consumption engines on vessels used in subsea installation at the Stella Field and pipeline disconnection at Athena. Overall, CO_2 emissions from operations undertaken or concluding in 2016 were estimated in applications to be 2,445 tonnes, with all other gas emissions considered minor.

4.1.2 Chemical Discharges

In 2016, the subsea installation of pipelines within the Stella Field and pipeline isolation and disconnection at Athena resulted in 22.8 tonnes of chemicals discharged to sea. Over 99% of chemical discharges were listed by OSPAR as posing little or no hazard to the marine environment (PLONOR) and/or belonged to the offshore chemical notification scheme (OCNS) Band Gold or Band E (the least harmful categories). A very small quantity of an OCNS Band Silver biocide used to minimise bio-fouling during subsea pipeline installation was discharged. None of the chemicals discharged were on the list of chemicals for priority action or on the list of substances for potential concern and none were allocated substitution warnings under the UK national plan.

Ithaca Energy continues to seek to minimise the use of chemicals with SUB labels, and together with its contractors are exploring alternatives to these chemicals for future operations.

There were no well test operations carried out in 2016.

4.1.3 Waste Disposal

In 2016, approximately 2kg of dispersed oil was discharged during pipeline installation and disconnection activities at Stella and Athena. Decommissioning activity at Athena began in 2016, generating 2,570 tonnes of scrap metal and 86 tonnes of segregated recyclables, all of which was sent for recycling.

4.1.4 Oil and Chemical Spills

There were no accidental oil or chemical spills during subsea installation and disconnection activities.

4.2 Offshore Production Operations

This section reports on emissions, discharges and waste arising from production of the Athena and Stella Fields for which Ithaca Energy is licensed operator. Ithaca Energy is the licensed operator of the tie-back Anglia Field and the Causeway Area Fields and for which the operators of the host facilities (Conoco-Phillips and TAQA respectively) hold the responsibility for reporting against environmental permits.

Production at Athena ceased in February 2016. Hydrocarbons produced by this field were processed on board the *BW Athena* FPSO. Production at Stella was not underway by the end of 2016, although some preliminary work was carried out in Q4 – this was reported on against the production permit and so has been included in this section.

Data was derived from the returns to the UK offshore Environmental Emissions Monitoring System (EEMS), with EEMS standard emissions factors used to calculate atmospheric emissions from fuel use (Atmospheric Emissions Calculations (Issue 1.810a)).

4.2.1 Atmospheric Emissions

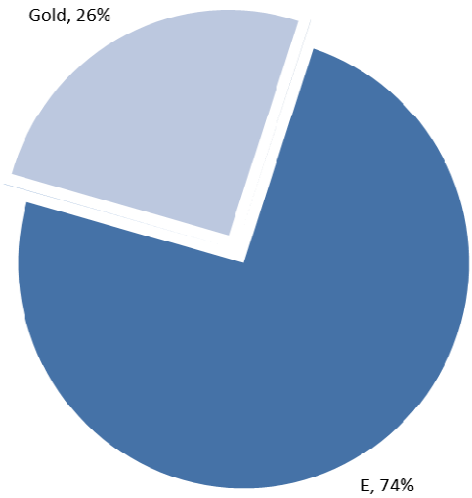
Ithaca Energy generated 2,713 tonnes of CO_2 emissions in 2016 from preliminary operations at Stella. The entirety of the emitted CO_2 was generated by diesel engines.

4.2.2 Chemical Discharges

In 2016, Ithaca Energy discharged 20.0 tonnes of chemicals from production operations, 5.3 tonnes from the final months of production at Athena and 14.7 tonnes from preparation for start-up at Stella. All of the discharged chemicals from Athena and Beatrice were either OCNS Band E or Gold. Approximately 4% of the discharged chemicals from production operations had SUB warning labels.

Ithaca Energy regularly reviews its chemical usage, and the chemicals noted above and with SUB warning labels are prioritised for replacement where technical alternatives exist.

2016 Chemical Discharges from Production



KEY DATA

Athena	Tonnes
Band A	0.0
Band E	4.5
OCNS Gold	0.8
Chemicals with SUBs	0.8

Stella	Tonnes
Band A	0.0
Band E	10.4
OCNS Gold	4.3
Chemical with SUBs	0.0

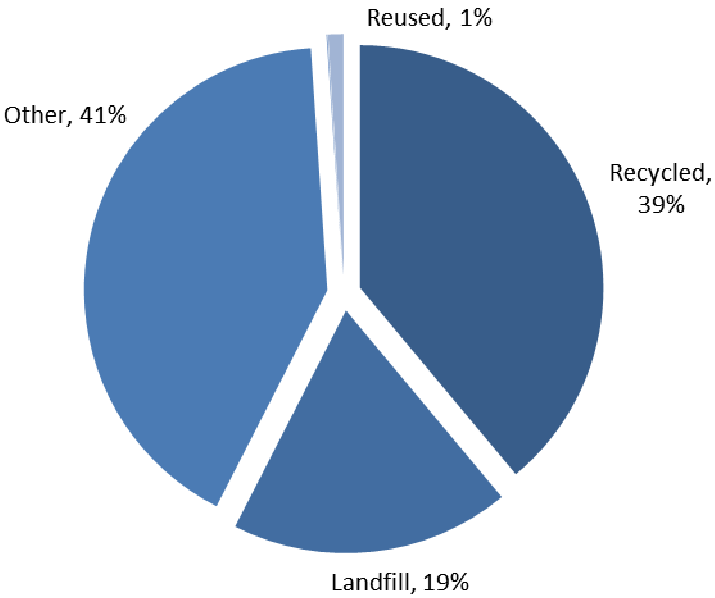
Total Discharges	Tonnes
Chemicals	20.0
SUB chemicals	0.8

Note: figures rounded to 1 decimal place

4.2.3 Waste Disposal

In 2016, Ithaca Energy generated 109.2 tonnes of operational waste material (Groups I, II and III). Of the total operational waste produced by Ithaca Energy, 40% was reused or recycled, 19% was sent to landfill and 41% (other) were liquids and water removed from sludges/liquids/tank washings and subsequently treated onshore and discharged under consent.

2016 Operational Waste from Production



KEY DATA

Athena & Anglia	Tonnes
Waste Reused	0.1
Waste Recycled	3.3
Waste to Energy	0.1
Waste Incinerated	0.0
Waste to Landfill	3.7
Other	0.0

Stella	Tonnes
Waste Reused	1.0
Waste Recycled	39.2
Waste to Energy	0.0
Waste Incinerated	0.0
Waste to Landfill	16.6
Other	45.2

Note: figures rounded to 1 decimal place

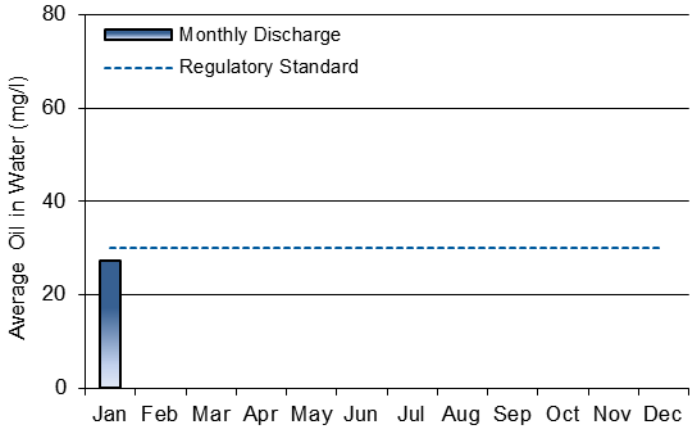
4.2.4 Oil and Chemical Spills

There were no accidental oil or chemical spills during production activities in 2016.

4.2.5 Produced Water Discharges

Produced water discharges in 2016 were only reported from *BW Athena* in the first month of the year, before cease of production. The Athena field generated a total of 1,428m^3 of produced water. 21% (302m^3) of this produced water was fed into the produced water re-injection system. The remaining 1,126m^3 of produced water was discharged with average oil in water (OIW) content of 27.3mg/l over the month.

2016 Athena Complex Produced Water Discharges



KEY DATA

na	
er discharged	1,126.0
n OIW entration (mg/l)	27.3
ischarged ies)	<0.1

: figures rounded to 1 decimal place

4.3 Performance against Environmental Targets

Ithaca Energy senior management along with the Health, Safety and Environment Manager set and review corporate targets annually, taking account of all planned exploration, development and production activities for the coming year. The 2016 corporate targets relate to all of Ithaca Energy's offshore operations. The targets and associated performance are detailed in the tables that follow.

2016 CORPORATE PERFORMANCE TARGETS

The table below summarises Ithaca Energy's performance against corporate environmental targets.

Target	Performance
Establish HSE improvement plans with FPF1 Duty Holder and track to completion	Extended commissioning activities resulted in a delay to sail-away and commencement of production on the Stella FPF1, this target was extended into 2017
Re-verification of Ithaca Energy (UK) Environmental Management System (EMS)	Achieved in May 2016
Finalise and implement Corporate Major Accident Prevention Policy as required by Offshore Safety Directive and associated Regulations	Completed as planned
Develop HSE Critical Responsibilities Training and Competency System	Completed as planned
Complete Management Emergency Response training schedule, including exercises	Completed as planned.
Quarterly HSE performance management review	Completed as planned.

Abbreviations

BWO	BW Offshore
CO_2	Carbon dioxide
DECC	Department of Energy and Climate Change
EEMS	Environmental emissions monitoring system
EIP	Environmental Improvement Plans
EMS	Environmental management system
E-Rep	Environmental-Representatives
FPSO	Floating Production, Storage and Offloading
HS&E	Health, safety and environmental
IMS	Integrated Management System
ISO 14001:2004	International standard for environmental management systems
KPI	Key performance indicator
LOGGS	Lincolnshire Offshore Gas Gathering System
LTOBM	Low toxicity oil based mud
mg/l	Milligrammes per litre
OCNS	Offshore Chemical Notification Scheme
OCR	Offshore Chemical Regulations
OIW	Oil in water
OPPC	Oil pollution prevention and control
OSPAR	Oslo and Paris conventions
PLC	Programmable logic controller
PON 1	Petroleum operations notice number 1 – format for reporting oil and chemical spills
Q1 Q2 Q3 Q4	Quarter of the year
SUB	Candidate for substitution
UKCS	United Kingdom Continental Shelf
WGPSN	Wood Group PSN