

# EEMS Data Requirements

**A1 The data and reporting requirements are defined below.**

<b>Report</b>	<b>Frequency</b>
Aromatic	bi-annual
Atmospheric Consumption Installation	annual
Atmospheric Consumption Terminal	annual
Atmospheric Direct Installation	annual
Atmospheric Direct Terminal	annual
Atmospheric Drilling	annual
Atmospheric Export Installation	annual
Atmospheric Export Terminal	annual
Atmospheric Halogen Installation	annual
Atmospheric Halogen Terminal	annual
Atmospheric Turbine Gas	Annual
Atmospheric Turbine Oil	Annual
Decommissioning Chemicals	End of year activity
DrillFluids	1 month after well completion
Drilling permit chemicals	1 month after well completion
EP RTR	Annual
Oil in Water (Produced and Displaced Water)	Monthly
PermProd (Production Chemicals)	Quarterly
Pipeline permit chemicals	End of year activity
Radioactivity	Annual
Radioactivity pt 2	Quarterly
Waste Decommissioning	Annual
Waste Drilling	Annual
Waste Norm	Annual
Waste Operational	Annual

**A2 Not used**

**A. 3 Data Items per Report**

**A.3.1 OPPC new name (previously named Oil in Water (Produced and Displaced Water)) (Monthly)**

There additionally new data items as recorded in section A4.4.

Summary Level 1

Operator

Installation Name

HC Type Oil or Gas

Report Date

OPPC permit Number New field free text

*Plus for each and every sample point*

*Note that the addition and removal of sample points at any point in the reporting year must be simple and take into account the cross validation with the Aromatic reporting.*

Summary Level 2

*Produced Water (Oil in Water)*  
*Each and every reported sample point*  
*Average oil in water*  
*Oil in Water unit*  
*Days on Stream*  
*Total volume discharged (m3)*  
*Weight of oil discharged (tonnes)*

*Condensate in Water (Displaced)*  
*Each and every reported sample point*  
*Average Condensate in Water*  
*Condensate in Water Unit*  
*Days on Stream*  
*Total Volume Water Discharged (m3)*  
*Weight of Condensate Discharged (tonnes)*

### **A.3.2 Aromatic Report (Bi-annual)**

*Summary Level 1*  
*Operator*  
*Installation Name*  
*Reporting Half*  
*Year*

*Summary Level 2*  
*Sample Point Type*  
*Produced or Displaced Water Sample Point Name*  
*Sample Date*  
*Sample by*  
*Water Discharged (cubic metres) \**

*\* Current system has a cross check between the summed monthly report A.3.1 and the figure in Water Discharged and they must match or the return cannot be submitted. This needs to be maintained in the revised system, however must be simple to change for two possible instances:-*

- a) Addition or removal of sample point during the six month period*
- b) Asset transfer during the six month period*

<i>Summary Level 3</i>		
<i>PAH (name of each compound analysed)</i>	<i>Concentration (ug/l)</i>	<i>Discharged (kg)</i>
<i>BTEX (name of each compound analysed)</i>	<i>Concentration (mg/l)</i>	<i>Discharged (kg)</i>
<i>Heavy Metals 1 (name of each compound analysed)</i>	<i>Concentration (ng/l)</i>	<i>Discharged (kg)</i>
<i>Heavy Metals 2 (name of each compound analysed)</i>	<i>Concentration (ug/l)</i>	<i>Discharged (kg)</i>
<i>Alkyl Phenols (name of each compound analysed)</i>	<i>Concentration (ug/l)</i>	<i>Discharged (kg)</i>
<i>Organic Acids (name of each compound analysed)</i>	<i>Concentration (mg/l)</i>	<i>Discharged (kg)</i>
<i>OIW (name of each compound analysed)</i>	<i>Concentration (mg/l)</i>	<i>Discharged (kg)</i>
<i>NPD (name of each compound analysed)</i>	<i>Concentration (ug/l)</i>	<i>Discharged (kg)</i>

Copies of current reports below for Oil in Water and Aromatics

## OIW current screenshot

http://appservy-p.learn-it.net - Display Report TR09-Z11-OilInWater-2006-07.xml - Microsoft Internet Explorer

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### Environmental Emissions Monitoring System

#### Oil In Water Discharge Summary

<b>Operator</b>	TrainOpIndia	Oil production installations need to report oil in water discharge summaries monthly by the 16th of the succeeding month. Gas production installations need to report annually by the 31st Jan of the succeeding year. A separate entry is required for each produced and displacement water sample point on the installation.
<b>Installation</b>	Zebra India 1	
<b>Type</b>	Oil	
<b>Period</b>	07/2006	

#### Produced Water

Discharge Sample Point	Total Vol Water (m3)	Days On Stream	Ave Rate (m3/day)	Ave Oil In Water (mg/l)	Calc Weight of Oil (tonnes)	Entered Weight of Oil (tonnes)	Comments
Overboard Discharge	1,234	12.00	103	12.000	0.015		

#### Displacement Water

Discharge Sample Point	Total Vol Water (m3)	Days On Stream	Ave Rate (m3/day)	Ave Oil In Water (mg/l)	Calc Weight of Oil (tonnes)	Entered Weight of Oil (tonnes)	Comments
Sample Pump	100	22.00	5	12.00	0.001		

#### Re-Injection

Water Re-Injected ( cubic metres )

Done Internet

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## Aromatic current screenshot

http://appserv-p.learn-it.net - Display Report TR09-Z11-Aromatic-2006-H1.xml - Microsoft Internet Explorer

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### Environmental Emissions Monitoring System

Aromatics Bi-Annual Analysis

<b>Operator</b>	TrainOplIndia
<b>Installation</b>	Zebra India 1
<b>Half Year</b>	2006-H1

This form summarizes the aromatics in water discharge details from a lab analysis for a single produced or displacement water sample point. An aromatics in water discharge summary is required bi-annually for all oil and gas producing installations. Only one sample point is required from each installation. Which sample point is left to the discretion of the submitter.

<b>Produced Water Sample Point</b>	Overboard Discharge
<b>or Displacement Water Sample Point</b>	
<b>Sample Date</b>	2006-06-06
<b>Sample By</b>	Me
<b>Water Discharged ( cubic metres )</b>	2,222

PAH	Conc. (ug/l)	Discharged (kg)
Acenaphthylene	1.00	0.002
Acenaphthene	2.00	0.004
Fluorene	3.00	0.007
Anthracene	4.00	0.009
Fluoranthene	5.00	0.011
Pyrene	0.00	0
Benz(a)anthracene	1.00	0.002

Organic Acids	Conc. (mg/l)	Discharged (kg)
Formic Acid	0.00	0
Acetic Acid	0.00	0
Propionic Acid	0.00	0
Butanoic Acid	0.00	0
Pentanoic Acid	0.00	0
Hexanoic Acid	0.00	0

OW	Conc.	Discharged

Done

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Dibenz(a,h)anthracene	Conc. (ug/l)	Discharged (kg)
	2.00	0.004

BTEX	Conc. (mg/l)	Discharged (kg)
Benzene	1.00	2.222
Toluene	2.00	4.444
m-Xylene and p-Xylene	3.00	6.666
Ethyl Benzene	4.00	8.888
o-Xylene	5.00	11.109999999999999

Heavy Metals (1)	Conc. (ng/l)	Discharged (kg)
Mercury (Hg)	0.00	0

Heavy Metals (2)	Conc. (ug/l)	Discharged (kg)
Arsenic (As)	1.00	0.002
Cadmium (Ca)	2.00	0.004
Chromium (Cr)	3.00	0.007
Copper (Cu)	4.00	0.009
Nickel (Ni)	5.00	0.011
Lead (Pb)	0.00	0
Zinc (Zn)	1.00	0.002

Alkyl Phenols	Conc. (ug/l)	Discharged (kg)
C1-C3 Alkyl Phenols	2.00	0.004
Other C1-C3 Alkyl Phenols	3.00	0.007
C4-C5 Alkyl Phenols	4.00	0.009

	Conc. (ug/l)	Discharged (kg)
Napthalene	0.00	0
Phenanthrene	0.00	0
Dibenzothiophene	0.00	0
1-Methylnapthalene	0.00	0
2-Methylnapthalene	0.00	0
3-Methylphenanthrene	0.00	0
Other Methylphenanthrenes	0.00	0
4-Methyldibenzothiophene	0.00	0
Other Methylidibenzothiophenes	0.00	0
2,6-Dimethylnapthalene	0.00	0
Other C2 Napthalenes	0.00	0
9-Ethylphenanthrene	0.00	0
Other C2-Phenanthrenes	0.00	0
4-Ethyldibenzothiophene	0.00	0
Other C2-Dibenzothiophenes	0.00	0
2-Isopropylnapthalene	0.00	0
Other C3-Napthalenes	0.00	0
1,2,6-Trimethylphenanthrene	0.00	0
Other C3 Phenanthrenes	0.00	0
4-Propyldibenzothiophene	0.00	0
Other C3 dibenzothiophenes	0.00	0

Done

start

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### A.3.3 Production Chemicals *Report (PON15D) (Quarterly)*

*Summary Level 1*

*Operator*

*Installation Name*

*Permit*

*Pulled from Oil Portal*

*Reporting Quarter/Year*

*Summary Level 2*

*DTI ID*

*Pulled from Oil Portal*

*Manufacturer*

*Pulled from Oil Portal*

*Chemical Name*

*Pulled from Oil Portal*

*Function Group*

*Pulled from Oil Portal*

*Chemical Label*

*Pulled from Oil Portal*

*HQ/CNS Ranking*

*Pulled from Oil Portal*

*Used*

*Amount used (kg)*

*Discharged*

*Amount used (kg)*

*Comments*

Additionally want the substation or priority

Chemicals current screenshot

http://appserv-p.learn-it.net - Display Report TR09-Z11-PermProd-2006-Q3.xml - Microsoft Internet Explorer

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### Environmental Emissions Monitoring System

Production Permit Chemicals

<b>Operator</b>	TrainOpIndia	This form reports all chemicals used against applied production permits. These include production, well service and utilities chemical usage. This form must be submitted quarterly within 1 month of quarter end for all oil production and gas production installations.
<b>Installation</b>	Zebra India 1	
<b>Permit</b>	TRUPON15D/01/1	
<b>Quarter</b>	2006-Q3	

### Chemicals

DTI ID	Manufacturer	Chemical Name	Function Group	Chemical Label	HQ/CNS Ranking	Used (kg)	Discharged (kg)	Comments
3262	Clariant Oil Services Ltd	Ammonium Bisulphite 65%	Oxygen Scavenger		E	140.00	140.00	
2647	ONDEO Nalco Ltd	EC9021A	Hydrogen Sulphide Scavenger		Gold	38,000.00	38,000.00	
3418	Clariant Oil Services Ltd	METHANOL	Fluid Loss Control Chemical		E	20,200.00	20,200.00	
3451	Clariant Oil Services Ltd	PHASETREAT 1508	Demulsifier		Gold	760.00	760.00	
2820	Oil Technics	SOBO S	Detergent / Cleaning Fluid		Gold	1,500.00	1,500.00	
2750	Operator generated in situ	SODIUM HYPOCHLORITE	Biocide		E	100.00	100.00	

**General Notes:**

1. Mandatory fields have a white background
2. Optional fields have a light blue background
3. Read only fields have a light grey background
4. To add optional numeric values click the 'add value' hyperlink
5. To remove an optional numeric value right click the value and select 'remove - value'
6. Optional character values can be left blank

**Specific Notes:**

1. The report will be automatically populated with all the chemicals on the specified permit known to EEMS
2. Zero used and discharged quantities must be reported
3. If duplicate rows are required they should be distinguished by a comment
4. Duplicate rows should only be added using the duplicate row button right of centre on the toolbar

Done Internet

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### A.3.4 Atmospheric (Annually)

There are underlying factors in EEMS as shown:

Table A

Emission Source	Emission Category	CO2	NOX	N2O	SO2	CO	CH4	VOC
Diesel Consumption	Engines	3.2	0.0594	0.00022	0.004	0.0157	0.00018	0.002
Diesel Consumption	Heaters	3.2	0.0028	0.00022	0.004	0.00071	0.00000705	0.0000282
Diesel Consumption	Turbines	3.2	0.0135	0.00022	0.004	0.00092	0.0000328	0.000295
Fuel Oil Consumption	Engines	3.2	0.0594	0.00022	0.004	0.0157	0.00018	0.002
Fuel Oil Consumption	Heaters	3.2	0.0028	0.00022	0.004	0.00071	0.00000705	0.0000282
Fuel Oil Consumption	Turbines	3.2	0.0135	0.00022	0.004	0.00092	0.0000328	0.000295
Well Testing	OIL	3.2	0.0037	0.000081	0.0000128	0.018	0.025	0.025
Gas Consumption	Engines	2.86	0.0576	0.00022	0.0000128	0.0076	0.0198	0.0032
Gas Consumption	Heaters	2.86	0.0024	0.00022	0.0000128	0.0006	0.000089	0.0000099
Gas Consumption	Others	2.86	0.0061	0.00022	0.0000128	0.003	0.00092	0.000036
Gas Consumption	Turbines	2.86	0.0061	0.00022	0.0000128	0.003	0.00092	0.000036
Gas Flaring	GAS	2.8	0.0012	0.000081	0.0000128	0.0067	0.018	0.002
Gas Flaring	OIL	2.8	0.0012	0.000081	0.0000128	0.0067	0.01	0.01
Gas Venting	GAS	0	0	0	0	0	0.9	0.1
Gas Venting	OIL	0	0	0	0	0	0.5	0.5
Oil Loading	Rail/Truck	0	0	0	0	0	0.0001	0.00059
Oil Loading	Ship (Offshore)	0	0	0	0	0	0.000017	0.002
Storage Tanks	Fixed Roof	0	0	0	0	0	0.000035	0.000035
Storage Tanks	Floating Roof (External)	0	0	0	0	0	0.00000009	0.00000081
Storage Tanks	Floating Roof (Internal)	0	0	0	0	0	0.000000067500	0.000000607
Well Testing	GAS	2.8	0.0012	0.000081	0.0000128	0.0067	0.045	0.005
Oil Loading	Ship (Onshore)	0	0	0	0	0	0.000017	0.001

Table B

Location	Type	HC Type	Equipment Type	Emission Weight KG
OFFSHORE	Oil and Gas	Pumps		1.72
OFFSHORE	Oil and Gas	Valves		4.52
OFFSHORE	Oil and Gas	Open-ended Pipes		8.94
OFFSHORE	Oil and Gas	Other		60.9
ONSHORE	Light Crude	Connections		1.44
ONSHORE	Light Crude	Valves		11.7
ONSHORE	Light Crude	Open-ended Pipes		10.6
ONSHORE	Light Crude	Pumps		2.79
ONSHORE	Light Crude	Other		66
ONSHORE	Heavy Crude	Connections		0.0701
ONSHORE	Heavy Crude	Valves		0.114
ONSHORE	Heavy Crude	Open-ended Pipes		1.36
ONSHORE	Heavy Crude	Pumps		0.0263
ONSHORE	Heavy Crude	Other		0.613
ONSHORE	Gas	Connections		2.4
ONSHORE	Gas	Valves		33.9
ONSHORE	Gas	Open-ended Pipes		9.11
ONSHORE	Gas	Pumps		101
ONSHORE	Gas	Other		42.7
OFFSHORE	Oil and Gas	Connections		0.946

Table C

<b>Turbine ID</b>	<b>UKOOA Ref</b>	<b>Turbine Type</b>	<b>A Factor</b>	<b>B Factor</b>	<b>C Factor</b>
1885	RR - RB211-24C	GAS	0.0010522	0.00012786	0.00000039
1886	RR - Avon	GAS	0.00068645	0.00008706	0.00000005
1887	RR - MaxiAvon	GAS	0.0007913	0.00010372	0.00000032
1888	RR - Olympus	GAS	0.0009542	0.00002028	0.00000029
1889	RR - RB211-24G	GAS	0.00077481	0.00015447	0.00000137
1890	Solar - Mars	GAS	0.00057563	0.00032588	0
1891	Solar - Saturn	GAS	0.00016566	0.00083434	0
1892	Solar - Centaur	GAS	0.00053441	0.00046559	0
1893	Solar - Taurus	GAS	0.00002012	0.00040077	0
1894	GE - LM6000	GAS	0.01341005	-0.00028893	0.00000434
1895	GE - LM5000	GAS	0.00060108	0.00019871	-0.00000063
1896	GE - LM1500	GAS	0.00038019	0.00009252	0.00000006
1897	GE - Frame5	GAS	0.00084577	0.00007711	0
1898	GE - Frame6	GAS	0.00084248	0.00007876	0
1899	Allison - 501	GAS	0.00003478	0.00048261	0
1900	Alstom - GT40	GAS	0.00085095	0.00007453	0
1901	Alstom - GT10_low_NOx	GAS	0.00099087	0.00000457	0
1902	Alstom - Tornado	GAS	0.00044161	0.0002792	0
1903	Aeroderivative	GAS	0	0.000161	0
1904	Industrial - LESS THAN 35MW	GAS	0.000908	0.000323	0
1905	Industrial - more THAN 35MW	GAS	0.000813	0.000078	0
1906	RR - MaxiAvon	OIL	0.00077766	0.0001067	0.00000224
1907	GE - LM6000	OIL	0.00602494	0.00018944	0
1908	Aeroderivative	OIL	0.01724	0	0
1909	Industrial	OIL	0.01724	0	0

Table D

<b>Gas</b>	<b>Composition %</b>	<b>MW</b>	<b>GMOL</b>
CH4	94	16	15.04
VOC	3	40	1.2
N2	2	28	0.56
CO2	1	44	0.44
H2S	0	34	0
H2O	0	18	0

### A.3.4.1 Atmospheric Export Return

*Summary Level 1*

*Operator*

*Type*                      *Installation or Terminal*

*Installation Name*

*Terminal Name*

*Reporting Year*

*EP-ETS*

*PPC*

Both permit numbers are to be non-mandatory fields (additional information compared to currently) and should not be a field that fails validation

## Summary Level 2

Calculated, Estimated or Measured

Carbon Dioxide (CO<sub>2</sub>)

Carbon Monoxide (CO)

Nitrogen Oxides (NO<sub>x</sub>)

Sulphur Oxides (SO<sub>x</sub>)

Methane (CH<sub>4</sub>)

VOC

## Summary Level 3a

Export Data

Gas Export Mass

tonnes

Condensate Export Mass

tonnes

Density

kilogram's per std cubic metre

Oil Export Mass

tonnes

Density

kilogram's per std cubic metre

## Summary Level 3b

Gas	CH <sub>4</sub>	VOC	CO <sub>2</sub>	N <sub>2</sub>	H <sub>2</sub> S	Total	VOC
-----	-----------------	-----	-----------------	----------------	------------------	-------	-----

Composition

Fuel Gas	mol %	mol %	mol %	mol %	mol %	mol %	mwt
----------	-------	-------	-------	-------	-------	-------	-----

Flare Gas	mol %	mol %	mol %	mol %	mol %	mol %	mwt
-----------	-------	-------	-------	-------	-------	-------	-----

Vent Gas	mol %	mol %	mol %	mol %	mol %	mol %	mwt
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## Export Screen shot of current report

The screenshot displays a web application interface within a Microsoft Internet Explorer browser window. The address bar shows the URL: <http://appserv-p.learn-it.net - Display Report TR09-Z11-AtmosExportInst-2007.xml>. The page content is organized into three main sections: Data Source, Export Data, and Gas Composition.

**Data Source**

Carbon Dioxide (CO <sub>2</sub> )	Calculated
Carbon Monoxide (CO)	Calculated
Nitrogen Oxides (NO <sub>x</sub> )	Calculated
Sulphur Oxides (SO <sub>x</sub> )	Calculated
Methane (CH <sub>4</sub> )	Calculated
VOC	Calculated

**Export Data**

	Mass (tonnes)	Density (kg/sm <sup>3</sup> )
Gas	8,775	
Condensate	24,815	731.955
Oil	3,279,281	831.955

**Gas Composition**

	CH <sub>4</sub> (mol%)	VOC (mol%)	CO <sub>2</sub> (mol%)	N <sub>2</sub> (mol%)	H <sub>2</sub> S (mol%)	Total (mol%)	VOC (mwt)
Fuel Gas	85.74	11.37	2.20	0.51	0.00	99.820000000000007	40.011
Flare Gas	85.50	11.50	1.90	0.50	0.20	99.600000000000009	40.750



### A.3.4.2 Atmospheric Halogen Return

Summary Level 1

Operator

Installation Name

Reporting Year

Summary Level 2

Compound

Per compound

On Facility  
kg

Emitted  
kg

CO2 equivalent factor  
Kg/kg

CO2 equivalent factor  
tonnes

Addition of compounds must be simple.

Halogen Screenshot of current screens

http://appserv.p.learn-it.net - Display Report TR09-Z11-AtmosHalogenInst-2006.xml - Microsoft Internet Explorer

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**Environmental Emissions Monitoring System**  
Atmospheric Emissions - Halogens (Installation)

<b>Operator</b>	TrainOpIndia	A summary of the use of halogenated compounds on the facility. All halogenated compounds usage must be reported in terms of their CO2 equivalent weight. Each halogenated compound has a specific CO2 equivalent factor. The use of each halogenated compound must therefore be recorded individually and its CO2 equivalent calculated. This form should be submitted annually for all operated installations by 7th February of the year following the reporting year.
<b>Installation</b>	Zebra India 1	
<b>Year</b>	2006	

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**Halogens Used**

Compound	On Facility (kg)	Emitted (kg)	CO2 Equivalent Factor (kg/kg)	CO2 Equivalent (tonnes)
CFC	1.00	0.00		
HCFC	2.00	1.00		
Halon	3.00	0.00		
HFC-125	1.00	0.00	2800000	0
HFC-134	2.00	1.00	1000000	1000
HFC-134a	3.00	0.00	1300	0
HFC-143	4.00	1.00	300000	300
HFC-143a	5.00	0.00	3800000	0
HFC-152a	6.00	1.00	140000	140
HFC-227ea	7.00	0.00	2900000	0
HFC-23	8.00	1.00	9800000	9800
HFC-236fa	0.00	0.00	6300000	0
HFC-245ca	0.00	0.00	560000	0
HFC-32	0.00	0.00	650000	0

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Gas Name	CO2 Equivalent	Other Metrics
HFC-129	1.00	2000000
HFC-134	2.00	1000000
HFC-134a	3.00	1300
HFC-143	4.00	300000
HFC-143a	5.00	3800000
HFC-152a	6.00	140000
HFC-227ea	7.00	2900000
HFC-23	8.00	9800000
HFC-236fa	0.00	6300000
HFC-245ca	0.00	560000
HFC-32	0.00	650000
HFC-404a		3260
HFC-407c		3260
HFC-409a		3260
HFC-41	0.00	150000
HFC-413a		3260
HFC-417a		3260
HFC-43-10mee	0.00	1300000
Total HFC	NaN	NaN
Perfluorobutane	0.00	7000000
Perfluoromethane	0.00	4800000
Perfluoropropane	0.00	7000000
Perfluoropentane	0.00	7500000
Perfluorocyclobutane	0.00	8700000
Perfluoroethane	0.00	9200000
Perfluorohexane	0.00	7400000
Total PFC	0	NaN

### A.3.4.3 Atmospheric Consumption Return

*Summary Level 1*

*Operator*

*Installation Name*

*Reporting Year*

Summary Level 2 (a to c)

Gas Consumption - Plant Operations (table a)

Diesel Consumption – Plant Operations (table b)

Fuel Oil Consumption - Plant Operations (table c)

Total Use for	CO2	NOx	N2O	SO2	CO	CH4	VOC
Turbines	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes
Engines	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes
Heaters	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes

For Gas Consumption – If gas consumed through other process details must be provided

For Diesel Consumption – Sulphur Content at default value 0.2% must have option to change

Current system the NOx gas and diesel turbines value is taken directly from the Oil and Gas Turbine report submissions. This can be overwritten.

As for Diesel consumption, Fuel Oil Consumption Sulphur Content at default value 0.2% must have option to change.

## Summary Level 2d

### Gas Flaring

Total Use for	CO2	NOx	N2O	SO2	CO	CH4	VOC
Routine	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes
Operations							
Maintenance	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes
Upsets/Others	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes

OR

Gross	CO2	NOx	N2O	SO2	CO	CH4	VOC
	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes

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### Environmental Emissions Monitoring System

Atmospheric Emission - Consumption (Installation)

Operator	TrainOpIndia	A summary of the atmospheric emissions related to consumption of fuel gas, diesel and fuel oil by process equipment and gas flaring activities. This form should be submitted annually for all operated installations by 7th February of the year following the reporting year.
Installation	Zebra India 1	
Year	2007	

#### Gas Consumption - Plant Operations

Type	Total Use (tonnes)	CO2 (tonnes)	NOx (tonnes)	N2O (tonnes)	SO2 (tonnes)	CO (tonnes)	CH4 (tonnes)	VOC (tonnes)
Turbines	32,375.17		360.36					
Engines	317.01							
Heaters	12.35							

If gas is consumed through other process operations, please provide details

Other*	Total Use (tonnes)	CO2 (tonnes)	NOx (tonnes)	N2O (tonnes)	SO2 (tonnes)	CO (tonnes)	CH4 (tonnes)	VOC (tonnes)
Hot Air Balloon	2.50							

\* Please supply a brief label for other plant operations consuming gas

#### Diesel Consumption - Plant Operations

Type	Total Use (tonnes)	CO2 (tonnes)	NOx (tonnes)	N2O (tonnes)	SO2 (tonnes)	CO (tonnes)	CH4 (tonnes)	VOC (tonnes)
------	-----------------------	-----------------	-----------------	-----------------	-----------------	----------------	-----------------	-----------------

Done

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Engines	22.22							
Heaters	0.00							

Sulphur ( %) 0.25

Fuel Oil Consumption - Plant Operations

Type	Total Use (tonnes)	CO2 (tonnes)	NOx (tonnes)	H2O (tonnes)	SO2 (tonnes)	CO (tonnes)	CH4 (tonnes)	VOC (tonnes)
Turbines	0.00							
Engines	11,057.31							
Heaters	0.00							

Sulphur ( %) 0.25

Gas Flaring

Or

	Total Use (tonnes)	CO2 (tonnes)	NOx (tonnes)	H2O (tonnes)	SO2 (tonnes)	CO (tonnes)	CH4 (tonnes)	VOC (tonnes)
Gross	9,037.81							

Done

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#### A.3.4.4 Atmospheric Gas Turbine Return

*Summary Level 1*

*Operator*

*Installation Name*

*Reporting Year*

*Summary Level 2*

Turbine Ref	Make and Model	UKOOA Ref	Fuel Gas Tonnes	Op Hours Hours	Fuel Rate Tonnes/hour	Calorific Value MJ/tonne	Thermal Rating MW
-------------	----------------	-----------	-----------------	----------------	-----------------------	--------------------------	-------------------

Note that turbines etc are manually loaded into the system if additions required – this must be a simple process in the enhancement. There is no permit for this data to be pulled from currently.

## Gas Turbine screen shot

http://appserv.learn-it.net - Display Report TR01-ZA1-AtmosTurbGas-2008.xml - Microsoft Internet Explorer

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### Environmental Emissions Monitoring System

Atmospheric Emission - Gas Turbines

<b>Operator</b>	TrainOpAlpha
<b>Installation</b>	Zebra Alpha 1
<b>Year</b>	2008

A summary of the atmospheric emissions related to consumption of fuel gas by gas turbines. This form should be submitted annually for all operated installations by 7th February of the year following the reporting year.

#### Gas Turbine Emissions

Turbine Ref	Make and Model	UKOOA Ref	Fuel Gas (tonnes)	Op Hours (hours)	Fuel Rate (tonnes/hour)	Calorific Value (MJ/tonne)	Thermal Rating (MW)
Avon 1-1	RR Avon	RR - Avon	30,000	8,000	4	43,000	45
Avon 1-2	RR Avon	RR - Avon	25,000	7,000	4	43,000	43
Solar 1-3	Solar	Solar - Centaur	10,000	2,600	4	43,000	46
Solar 1-4	Solar	Solar - Centaur	18,000	5,000	4	43,000	43

**General Notes:**

1. Mandatory fields have a white background
2. Optional fields have a light blue background
3. Read only fields have a light grey background
4. To add optional numeric values click the 'add value' hyperlink
5. To remove an optional numeric value right click the value and select 'remove - value'
6. Optional character values can be left blank

**Specific Notes:**

1. To append, insert, duplicate, remove or delete turbines use the 'Row' buttons right of centre of the toolbar
2. Fuel Rate = Fuel Gas / Op Hours
3. Thermal Rating = Fuel Rate \* Calorific Value / 3,600

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### A.3.4.5 Atmospheric Oil Turbine Return

#### Summary Level 1

Operator

Installation Name

Reporting Year

#### Summary Level 2

Turbine Ref	Make and Model	UKOOA Ref	Fuel Gas Tonnes	Op Hours Hours	Fuel Rate Tonnes/hour	Calorific Value MJ/tonne	Thermal Rating MW
-------------	----------------	-----------	--------------------	-------------------	--------------------------	-----------------------------	----------------------

As for Gas Turbines, note that turbines etc are manually loaded into the system if additions required – this must be a simple process in the enhancement.

Oil Turbine Emissions Monitoring System

Atmospheric Emission - Oil Turbines

Operator	TrainOpAlpha	A summary of the atmospheric emissions related to consumption of diesel/fuel oil by turbines. This form should be submitted annually for all operated installations by 7th February of the year following the reporting year.
Installation	Zebra Alpha 1	
Year	2008	

**Oil Turbine Emissions**

Turbine Ref	Make and Model	UKOOA Ref	Fuel Gas (tonnes)	Op Hours (hours)	Fuel Rate (tonnes/hour)	Calorific Value (MJ/tonne)	Thermal Rating (MW)
Ruston 1-1	Ruston	Industrial	10	100	0	42,480	1
Ruston 1-2	Ruston	Industrial	10	100	0	42,480	1
Solar 1-1	Solar	Industrial	0	0	NaN	42,480	NaN
Solar 1-2	Solar	Industrial	0	0	NaN	42,480	NaN

**General Notes:**

1. Mandatory fields have a white background
2. Optional fields have a light blue background
3. Read only fields have a light grey background
4. To add optional numeric values click the 'add value' hyperlink
5. To remove an optional numeric value right click the value and select 'remove - value'
6. Optional character values can be left blank

**Specific Notes:**

1. To append, insert, duplicate, remove or delete turbines use the 'Row' buttons right of centre of the toolbar
2. Fuel Rate = Fuel Gas / Op Hours
3. Thermal Rating = Fuel Rate \* Calorific Value / 3,600

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### Summary Level 1

*Installation Name*

Reporting Year

## Summary Level 2a

## Gas Flaring

[illegible]

OR

	Total Use	CO <sub>2</sub>	NO <sub>x</sub>	N <sub>2</sub> O	SO <sub>2</sub>	CO	CH <sub>4</sub>	VOC
Gross	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes
Production								
Gross								
Net								
Total								
Gross								
Net								
Total								
Transportation								
Gross								
Net								
Total								
Use								
Gross								
Net								
Total								
Other								
Gross								
Net								
Total								
Grand Total								
Gross								
Net								
Total								

## Summary Level 2b

## Direct Process Emissions

Separate Entry for each active plant	CO2 tonnes	NOx tonnes	N2O tonnes	SO2 tonnes	CO tonnes	CH4 tonnes	VOC tonnes
--------------------------------------	------------	------------	------------	------------	-----------	------------	------------

Summary Level 2c  
Oil Loading

	Total Use	CO2	NOx	N2O	SO2	CO	CH4	VOC
Ship	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes
Rail/Trucks *	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes

\* Terminal only

Summary Level 2d  
Storage Tanks (Terminals only)

	Total Use	CO2	NOx	N2O	SO2	CO	CH4	VOC
Floating	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes
Roof - Internal								
Floating	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes
Roof - External								
Fixed Roof	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes

Summary Level 2e  
Fugitive Emissions pt 1

Connections	The total number of connections on the facility
Valves	The total number of valves on the facility
Open Ended Pipes	The total number of open ended pipes on the facility
Pumps	The total number of open ended pipes on the facility
Other	The total number of other types of components on the facility

Fugitive Emissions pt 2

Carbon Dioxide (CO2)	tonnes
Methane (CH4)	tonnes
VOC	tonnes

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### Environmental Emissions Monitoring System

Atmospheric Emission - Direct (Installation)

Operator	TrainOpIndia	A summary of the direct atmospheric emissions from the facility during the reporting period. This form should be submitted annually for all operated installations by 7th February of the year following the reporting year.
Installation	Zebra India 1	
Year	2007	

#### Gas Venting

Type	Total (tonnes)	CO2 (tonnes)	NOx (tonnes)	H2O (tonnes)	SO2 (tonnes)	CO (tonnes)	CH4 (tonnes)	VOC (tonnes)
Operational	54.32							
Maintenance	22.22							
Emergency	0.00							

Or

#### Direct Process Emissions

Plant	CO2 (tonnes)	NOx (tonnes)	H2O (tonnes)	SO2 (tonnes)	CO (tonnes)	CH4 (tonnes)	VOC (tonnes)
Plant	0.12	0.65	0.00	0.00	5.57	0.43	0.02

#### Oil Loading Emissions

Done

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#### Direct Process Emissions

Plant	CO2 (tonnes)	NOx (tonnes)	H2O (tonnes)	SO2 (tonnes)	CO (tonnes)	CH4 (tonnes)	VOC (tonnes)
Plant	0.12	0.65	0.00	0.00	5.57	0.43	0.02

#### Oil Loading Emissions

	Total (tonnes)	CO2 (tonnes)	NOx (tonnes)	H2O (tonnes)	SO2 (tonnes)	CO (tonnes)	CH4 (tonnes)	VOC (tonnes)
Ship	3,279,280.91							

#### Fugitive Emissions

Connections	10	If component counts are unavailable default component counts for generic platform types may be submitted. Where available total CO2, CH4 and VOC fugitive emissions masses should be reported. If unavailable EEMS will estimate the CO2, CH4 and VOC fugitive emissions based on the reported component counts, the age of the facility and published default factors.
Valves	5	
Open Ended Pipes	20	
Pumps	10	
Other	14	
CO2 ( tonnes )		
CH4 ( tonnes )		
VOC ( tonnes )		

Done

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Summary Level 1  
Operator  
Installation Name  
Reporting Year

Well No./Permit Number	HC Type Oil or Gas	Weight tonnes
------------------------	-----------------------	------------------

[illegible]

### A.3.5 Waste (Annually)

Summary Level 1  
Summary Level 1  
Operator  
Installation  
Year  
Ave POB  
UK Port  
Export Port

[illegible]

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### Environmental Emissions Monitoring System

#### Operational Waste

Operator	TrainOpIndia
Installation	Zebra India 1
Year	2006
Ave POB ( persons )	123
Port	Aberdeen

A summary of all waste generated by normal operations and returned to shore for disposal. This form should be submitted annually for all operated installations by 1st March of the year succeeding the reporting year.

Category	Reuse (tonnes)	Recycling (tonnes)	Waste to Energy (tonnes)	Incinerate (tonnes)	Landfill (tonnes)	Other (tonnes)	Totals (tonnes)	Comments
<b>Group I - Special</b>								
Chemicals / Paints	1.000	0.000	0.000	0.000	0.000	0.000	1	
Drums / Containers	2.000	0.000	0.000	0.000	0.000	0.000	2	
Oils	3.000	0.000	0.000	0.000	0.000	0.000	3	
Miscellaneous Special Waste	4.000	0.000	0.000	0.000	0.000	0.000	4	
Sludges / Liquids / Tank Washings	5.000	0.000	0.000	0.000	0.000	0.000	5	
Totals	15	0	0	0	0	0	15	
<b>Group II - General</b>								
Chemicals / Paints	0.000	0.000	0.000	0.000	0.000	0.000	0	
Drums / Containers	0.000	0.000	0.000	0.000	0.000	0.000	0	
Scrap Metal	0.000	0.000	0.000	0.000	0.000	0.000	0	
Segregated Recyclables	0.000	0.000	0.000	0.000	0.000	0.000	0	
General Waste	0.000	0.000	0.000	0.000	0.000	0.000	0	
Sludges / Liquids / Tank Washings	0.000	0.000	0.000	0.000	0.000	0.000	0	
<b>Group III - Other</b>								
Asbestos	0.000	0.000	0.000	0.000	0.000	0.000	0	
Radioactive materials (exc. NORM)	0.000	0.000	0.000	0.000	0.000	0.000	0	
Clinical	0.000	0.000	0.000	0.000	0.000	0.000	0	
Explosives	0.000	0.000	0.000	0.000	0.000	0.000	0	
Totals	0	0	0	0	0	0	0	
Grand Totals	15	0	0	0	0	0	15	

**General Notes:**

1. Mandatory fields have a white background

**Specific Notes:**

1. Comments are optional unless "other" disposal route is non-zero in which case an explanation

### A.3.5.2 Waste Back Loaded Drill Cuttings Return

Summary Level 1

Operator

Installation

Year

Ave POB *persons*

UK Port

Export Port **Free text**

Summary Level 2a

Category	Reuse	Recycling	Waste to Energy	Incinerate	Landfill	Other (please define)	Totals	Comments
Group IV Backloaded cuttings	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes
Hazardous Sub Totals								
Group IV Non Hazardous Totals	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes

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### Environmental Emissions Monitoring System

#### Backloaded Drill Cuttings

<b>Operator</b>	TrainOpIndia	A summary of all waste from backloaded drill cuttings. This form should be submitted annually for all drilling installations by 1st March of the year following the reporting year.
<b>Installation</b>	Zebra India 1	
<b>Year</b>	2006	
<b>Port</b>	Aberdeen/Peterhead	

Category	Reuse (tonnes)	Recycle (tonnes)	Waste to Energy (tonnes)	Inciner. (tonnes)	Landfill (tonnes)	Other (tonnes)	Totals (tonnes)	Comments
<b>Group IV - Backloaded Cuttings</b>								
<b>Hazardous</b>								
a - Solids	1.000	0.000	0.000	0.000	0.000	0.000	1	
b - Oil	2.000	0.000	0.000	0.000	0.000	0.000	2	
c - Water	3.000	0.000	0.000	0.000	0.000	0.000	3	
<b>Sub Totals</b>	6	0	0	0	0	0	6	
<b>Non-Hazardous</b>	4.000	0.000	0.000	0.000	0.000	0.000	4	
<b>Totals</b>	10	0	0	0	0	0	10	

**General Notes:**

1. Mandatory fields have a white background
2. Optional fields have a light blue background
3. Read only fields have a light grey background
4. To add optional numeric values click the 'add value' hyperlink
5. To remove an optional numeric value right click the value and select 'remove - value'
6. Optional character values can be left blank

**Specific Notes:**

1. Comments are optional unless "other" disposal route is non-zero in which case an explanation of the "other" disposal route weight must be supplied
2. All other fields are mandatory. Zero masses must be reported.

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### A.3.5.4 Decommissioning Return

Summary Level 1

Operator

Installation

Year

Ave POB *persons*

UK Port

Export Port **Free text**

Summary Level 2

Category	Reuse	Recycling	Waste to Energy	Incinerate	Landfill	Other	Totals	Comments
Group I	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	
Specials								
Sub Totals								
Group II	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	
General								
Sub Totals								
Group III	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	
Other								
Sub Totals								
Totals	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	

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### Environmental Emissions Monitoring System

Decommissioning Waste

**Operator** TrainOpAlpha

**Installation** Zebra Alpha 1

**Year** 2008

**Port** Aberdeen

A summary of all waste generated by DTI authorised decommissioning programme and returned to shore for disposal. This form should be submitted within 31 days of completion of the decommissioning programme.

Category	Reuse (tonnes)	Recycling (tonnes)	Waste to Energy (tonnes)	Incinerate (tonnes)	Landfill (tonnes)	Other (tonnes)	Totals (tonnes)	Comments
<b>Group I - Special</b>								
Chemicals / Paints	1.000	2.000	0.000	0.000	0.000	0.000	3	
Drums / Containers	0.000	0.000	0.000	0.000	0.000	0.000	0	
Oils	0.000	0.000	0.000	0.000	0.000	0.000	0	
Miscellaneous Special Waste	0.000	0.000	0.000	0.000	0.000	0.000	0	
Sludges / Liquids / Tank Washings	0.000	0.000	0.000	0.000	0.000	0.000	0	
<b>Totals</b>	<b>1</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>	
<b>Group II - General</b>								
Chemicals / Paints	0.000	0.000	0.000	0.000	0.000	0.000	0	
Drums / Containers	0.000	0.000	0.000	0.000	0.000	0.000	0	
Scrap Metal	0.000	0.000	0.000	0.000	0.000	0.000	0	
Segregated Recyclables	0.000	0.000	0.000	0.000	0.000	0.000	0	
General Waste	0.000	0.000	0.000	0.000	0.000	0.000	0	
Sludges / Liquids / Tank Washings	0.000	0.000	0.000	0.000	0.000	0.000	0	
Construction	0.000	0.000	0.000	0.000	0.000	0.000	0	

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Special							
Chemicals / Paints	1.000	2.000	0.000	0.000	0.000	0.000	3
Drums / Containers	0.000	0.000	0.000	0.000	0.000	0.000	0
Oils	0.000	0.000	0.000	0.000	0.000	0.000	0
Miscellaneous Special Waste	0.000	0.000	0.000	0.000	0.000	0.000	0
Sludges / Liquids / Tank Washings	0.000	0.000	0.000	0.000	0.000	0.000	0
Totals	1	2	0	0	0	0	3
Group II - General							
Chemicals / Paints	0.000	0.000	0.000	0.000	0.000	0.000	0
Drums / Containers	0.000	0.000	0.000	0.000	0.000	0.000	0
Scrap Metal	0.000	0.000	0.000	0.000	0.000	0.000	0
Segregated Recyclables	0.000	0.000	0.000	0.000	0.000	0.000	0
General Waste	0.000	0.000	0.000	0.000	0.000	0.000	0
Sludges / Liquids / Tank Washings	0.000	0.000	0.000	0.000	0.000	0.000	0
Construction	0.000	0.000	0.000	0.000	0.000	0.000	0
Marine Growth (e.g. Algae)	0.000	0.000	0.000	0.000	0.000	0.000	0
Totals	0	0	0	0	0	0	0
Group III - Other							
Asbestos	0.000	0.000	0.000	0.000	0.000	0.000	0
Radioactive materials (exc. NORM)	0.000	0.000	0.000	0.000	0.000	0.000	0
Clinical	0.000	0.000	0.000	0.000	0.000	0.000	0
Explosives	0.000	0.000	0.000	0.000	0.000	0.000	0
Totals	0	0	0	0	0	0	0
Grand Totals	1	2	0	0	0	0	3

Done

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### A.3.6 Drilling, Pipeline and Decommissioning Chemicals

Summary Level 1

Well Chemicals

Operator

Installation

Well No

Permit From Oil Portal

Type

Started

Completed

Summary Level 1

Pipeline Chemicals

Operator

Pipeline From Oil Portal

Permit From Oil Portal

Type

Started

Completed

Latitude

Longitude

Depth

Summary Level 1  
 Decommissioning Chemicals  
 Operator  
 Installation  
 Permit From Oil Portal  
 Type  
 Started  
 Completed

Summary Level 2  
 Well, Pipeline and Decommissioning Chemicals  
 DTI ID  
 Manufacturer  
 Chemical Name  
 Function Group  
 Chemical Label  
 HQ/CNS Ranking  
 Used  
 Discharged  
 Comments

*Pulled from Oil Portal*  
*Pulled from Oil Portal*  
*Pulled from Oil Portal*  
*Pulled from Oil Portal*  
*Pulled from Oil Portal*  
*Pulled from Oil Portal*

*Amount used (kg)*  
*Amount used (kg)*

As per Production chemicals screenshot.

#### **A4. New Requirements**

##### **A4.1 Radioactivity Report**

The enhancement of EEMS will contain an expansion of radioactivity reporting from previous report. However final consultation with the Operators to be completed and the data set is subject to change until that point in time. The final decisions are imminent. The data set shown below is likely to be similar in most aspects after the final consultation.

**Please take the following data tables as indicative and subject to change.**

##### **A.4.1.1 Summary Table**

Summary with no data entry.

##### **A.4.1.2 Total Naturally Occurring Radioactive Material (NORM) Discharges to Sea and/or Discharged by Re-Injection and by Onshore Disposal (yearly)**

Summary Level 1  
 Operator  
 Installation  
 MODU / Vessel  
 Reporting year

### Summary Level 2

OFFSHORE	NORM (LSA) SCALE	Discharge to sea		Discharge by re-injection		Comments
		Mass disposed (kg)	Activity disposed (MBq)	Mass disposed (kg)	Activity disposed (MBq)	
		Offshore <14.8 Bq/g *	0.000000	0.000000	0.000000	
	Offshore >14.8 Bq/g **	0.000000	0.000000	0.000000	0.000000	

ONSHORE SITE 1 DETAILS	NORM (LSA) SCALE	Disposed of onshore		Comments
		Mass disposed (kg)	Activity disposed (MBq)	
		Offshore <14.8 Bq/g *	0.000000	
	Offshore >14.8 Bq/g **	0.000000	0.000000	

ONSHORE SITE 2 DETAILS	NORM (LSA) SCALE	Disposed of onshore		Comments
		Mass disposed (kg)	Activity disposed (MBq)	
		Offshore <14.8 Bq/g *	0.000000	
	Offshore >14.8 Bq/g **	0.000000	0.000000	

ONSHORE SITE 3 DETAILS	NORM (LSA) SCALE	Disposed of onshore		Comments
		Mass disposed (kg)	Activity disposed (MBq)	
		Offshore <14.8 Bq/g *	0.000000	
	Offshore >14.8 Bq/g **	0.000000	0.000000	

\* Deemed radioactive, but exempt under the Radioactive Substances Act, 1993 (RSA'93)

\*\* Deemed radioactive under RSA '93

### A.4.1.3 Naturally Occurring Radioactive Material (NORM) Discharged in Produced Water (yearly)

For each and EVERY sample point.

#### Summary Level 1

Operator

Installation

Reporting year

Life OPPC Permit Number

### Summary Level 2

Sample type	
Produced water (PW) sample point	
Displaced water sample point	
Injection water sample point	
Reporting year	
Sample by	
Total volume of water discharged	0 cu.m

ANALYTICAL RESULTS	Period 1	Period 2	Period 3	Period 4	Units
Mass of sample analysed					g
Mass of particulates in sample					g
Activity of Pb-210 in particulate					Bq/g
Activity of Pb-210 in soluble					Bq/g
Activity of Ra-226 in particulate					Bq/g
Activity of Ra-226 in soluble					Bq/g
Activity of Ra-228 in particulate					Bq/g
Activity of Ra-228 in soluble					Bq/g

Produced water sample period	Sample date	Total volume of PW discharged during each sample period	Pb-210	Pb-210 Total activity	Ra-226	Ra-226 Total activity	Ra-228	Ra-228 Total activity	Comments
		cu. m	Bq/l	MBq	Bq/l	MBq	Bq/l	MBq	
Period 1			0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
Period 2			0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
Period 3			0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
Period 4			0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	

### A.4.1.4 PRODUCTION – Total Naturally Occurring Radioactive Material (NORM) Arising during Descaling Operations Offshore (yearly)

DESCALING USING HIGH PRESSURE WATER JETTING WITH DIRECT DISCHARGE OF WATER AND THE SCALE TO THE SEA (without settlement and separation of the scale)

#### Summary Level 1

Operator

Installation

Reporting year

*Summary Level 2*

Description of unit descaled	Total mass of discharge	Pb-210 Activity concentration	Pb-210 Total activity	Ra-226 Activity concentration	Ra-226 Total activity	Ra-228 Activity concentration	Ra-228 Total activity	Thorium-228 Activity concentration	Thorium-228 Total activity	Comments
e.g. tubulars, valves etc	kg	Bq/g	MBq	Bq/g	MBq	Bq/g	MBq	Bq/g	MBq	
			0.000000		0.000000		0.000000		0.000000	
			0.000000		0.000000		0.000000		0.000000	
			0.000000		0.000000		0.000000		0.000000	
			0.000000		0.000000		0.000000		0.000000	
			0.000000		0.000000		0.000000		0.000000	
			0.000000		0.000000		0.000000		0.000000	
			0.000000		0.000000		0.000000		0.000000	
			0.000000		0.000000		0.000000		0.000000	
			0.000000		0.000000		0.000000		0.000000	
			0.000000		0.000000		0.000000		0.000000	

**A.4.1.4a PRODUCTION – Total Naturally Occurring Radioactive Material (NORM) Arising during Descaling Operations Onshore (yearly)**

DESCALING USING HIGH PRESSURE WATER JETTING ONSHORE

*Summary Level 1*

Operator

Installation

Reporting year

*Summary Level 2*

Description of unit descaled	Total mass of discharge	Pb-210 Activity concentration	Pb-210 Total activity	Ra-226 Activity concentration	Ra-226 Total activity	Ra-228 Activity concentration	Ra-228 Total activity	Thorium-228 Activity concentration	Thorium-228 Total activity	Comments
e.g. tubulars, valves etc	kg	Bq/g	MBq	Bq/g	MBq	Bq/g	MBq	Bq/g	MBq	
			0.000000		0.000000		0.000000		0.000000	
			0.000000		0.000000		0.000000		0.000000	
			0.000000		0.000000		0.000000		0.000000	
			0.000000		0.000000		0.000000		0.000000	
			0.000000		0.000000		0.000000		0.000000	
			0.000000		0.000000		0.000000		0.000000	
			0.000000		0.000000		0.000000		0.000000	
			0.000000		0.000000		0.000000		0.000000	
			0.000000		0.000000		0.000000		0.000000	
			0.000000		0.000000		0.000000		0.000000	

**A.4.1.5 PRODUCTION – Total Naturally Occurring Radioactive Material (NORM) Arising during Descaling Operations Offshore (yearly)**

*DESCALING USING ACIDS / DISSOLVERS WITH DIRECT DISCHARGE OF WATER AND THE SCALE TO THE SEA (without settlement and separation of the scale)*

This has to be agreed and updated.

**A.4.1.6 DECOMMISSIONING – Total Naturally Occurring Radioactive Material (NORM) Arising during Descaling Operations Offshore (yearly)**

DESCALING USING HIGH PRESSURE WATER JETTING WITH DIRECT DISCHARGE OF WATER AND THE SCALE TO THE SEA (without settlement and separation of the scale)

*Summary Level 1*

Operator		0
Installation		0
Reporting year		0

Operator of Subsea Installation	
Subsea Field Name	
Subsea Installation Name	
Subsea Installation Location	

*Summary Level 2*



Description of unit descaled	Total mass of discharge	Pb-210 Activity concentration	Pb-210 Total activity	Ra-226 Activity concentration	Ra-226 Total activity	Ra-228 Activity concentration	Ra-228 Total activity	Thorium-228 Activity concentration	Thorium-228 Total activity	Comments
e.g. tubulars, valves etc	kg	Bq/g	MBq	Bq/g	MBq	Bq/g	MBq	Bq/g	MBq	
			0.000000		0.000000		0.000000		0.000000	
			0.000000		0.000000		0.000000		0.000000	
			0.000000		0.000000		0.000000		0.000000	
			0.000000		0.000000		0.000000		0.000000	
			0.000000		0.000000		0.000000		0.000000	
			0.000000		0.000000		0.000000		0.000000	
			0.000000		0.000000		0.000000		0.000000	
			0.000000		0.000000		0.000000		0.000000	
			0.000000		0.000000		0.000000		0.000000	
			0.000000		0.000000		0.000000		0.000000	

#### GENERAL NOTES:

Samples should be taken of the total effluent as it is discharged to the sea during each separate descaling operation. Where a descaling operation lasts several days, the activity may be regarded as a single operation. The sample should be taken while the descaling discharge is fully under way; not at the beginning or the end of the process or immediately prior to or after any pause in the operation.

The amount of Pb-210, Ra-226, Ra-228 and Th-228 discharged should be estimated on the basis of measurements of the **quantity and activity of the solids in the samples**. There is no need to analyse the liquid component, as more than 95% of the radioactivity in a sample is likely to be concentrated in the solids. The solids should be analysed using high-resolution gamma-spectrometry (or other more precise and more accurate methods). Estimates of total discharges of the radionuclides should be calculated by multiplying the activity concentrations in Bq/litre by the total volume of the effluent discharged (prior to any post-treatment dilution).

Th-228 activity can be derived directly from Pb-212.

### A.4.1.6a DECOMMISSIONING – Total Naturally Occurring Radioactive Material (NORM) Arising during Descaling Operations Onshore (yearly)

#### DESCALING USING HIGH PRESSURE WATER JETTING ONSHORE

##### Summary level 1

Operator	0
Installation	0
Reporting year	0

Operator of Subsea Installation	
Subsea Field Name	
Subsea Installation Name	
Subsea Installation Location	

##### Summary Level 2

Description of unit descaled	Total mass of discharge	Pb-210 Activity concentration	Pb-210 Total activity	Ra-226 Activity concentration	Ra-226 Total activity	Ra-228 Activity concentration	Ra-228 Total activity	Thorium-228 Activity concentration	Thorium-228 Total activity	Comments
e.g. tubulars, valves etc	kg	Bq/g	MBq	Bq/g	MBq	Bq/g	MBq	Bq/g	MBq	
			0.000000		0.000000		0.000000		0.000000	
			0.000000		0.000000		0.000000		0.000000	
			0.000000		0.000000		0.000000		0.000000	
			0.000000		0.000000		0.000000		0.000000	
			0.000000		0.000000		0.000000		0.000000	
			0.000000		0.000000		0.000000		0.000000	
			0.000000		0.000000		0.000000		0.000000	
			0.000000		0.000000		0.000000		0.000000	
			0.000000		0.000000		0.000000		0.000000	
			0.000000		0.000000		0.000000		0.000000	

#### GENERAL NOTES:

Samples should be taken of the total effluent as it is discharged to the sea during each separate descaling operation. Where a descaling operation lasts several days, the activity may be regarded as a single operation. The sample should be taken while the descaling discharge is fully under way; not at the beginning or the end of the process or immediately prior to or after any pause in the operation.

The amount of Pb-210, Ra-226, Ra-228 and Th-228 discharged should be estimated on the basis of measurements of the **quantity and activity of the solids in the samples**. There is no need to analyse the liquid component, as more than 95% of the radioactivity in a sample is likely to be concentrated in the solids. The solids should be analysed using high-resolution gamma-spectrometry (or other more precise and more accurate methods). Estimates of total discharges of the radionuclides should be calculated by multiplying the activity concentrations in Bq/litre by the total volume of the effluent discharged (prior to any post-treatment dilution).

Th-228 activity can be derived directly from Pb-212.

Individual disposal sites will be captured in Table 2, therefore only provide total mass and activity concentration for each specific unit descaled.

### A.4.1.7 PRODUCTION or is this DECOMMISSIONING??? – Total Naturally Occurring Radioactive Material (NORM) Arising during Descaling Operations Offshore (yearly)

#### DESCALING USING ACIDS / DISSOLVERS WITH DIRECT DISCHARGE OF WATER AND THE SCALE TO THE SEA (without settlement and separation of the scale)

This has to be agreed and updated.

#### A.4.1.8 Radioactivity Discharged as a result of Tracer Experiments (yearly)

Summary Level 1

Operator

Installation

Reporting year

	Source description	Isotope	Activity used *	β or γ emitter	Comments
			MBq		
Reservoir Studies	e.g. Near well bore - solids (sand)	e.g. Scandium-46, Iridium-192			
	e.g. Near well bore - liquids (flow profiling)	e.g. Scandium-46, Silver-			
	e.g. Interwell - water flood	e.g. Tritium (H-3), Carbon-14			
Process Studies	e.g. Various (separator studies)	e.g. Bromine-82			
	e.g. Various - organic (oil tracing)				
	e.g. Various - aqueous (water tracing)				

\*Activity of tracer used for measurement purposes

#### GENERAL NOTES:

Tracer companies supply the Operator with reports detailing the quantity of tracer(s) used. The Operator should therefore complete the EEMS Form.

Activity is to be reported in MBq although it is appreciated that some tracers will be applied in doses significantly higher than this and could be in the TBq range. In such cases, please convert to MBq (x103).

For short half-life tracers such as Br-82 (half life 36h) the contractor will have greater activity on the registration than is likely to be used to take account of decay. In such cases, the contractor should state the actual activity used.

Information on H-3 and β or γ emitters required by OSPAR.

#### A4.2 Drill Fluids

The enhancement of EEMS will contain as a simplification and fit for purpose reporting, un updated version of the Drill Fluids report. However final consultation with the Operators to be completes and the data set is subject to change until that point in time. The final decisions are imminent. The data set shown below is likely to be similar in most aspects after the final consultation.

**Please take the following data tables as indicative and subject to change.**

Summary Level 1

#### Administrative Details

Permit Holder	
Chemical Permit Number	
Well Number	
Spud Date	
Completion Date	

## Summary level 2

### Well Information

Well Section Diameter (inches)	Start Depth (metres)	End Depth (metres)	Section Length (metres)	Fluid Type (WBM / OBM / SBM)	OBM / SBM Fluid System (Name)	Weight of Cuttings (tonnes)

## Summary level 3a

### Cuttings Mass Balance

#### WBM Cuttings

Well Section Diameter	Weight of Cuttings (tonnes)	Weight of Cuttings Discharged (tonnes)	Weight of Cuttings Injected (tonnes)	Weight of Cuttings Shipped to Shore (tonnes)	Weight of Any Cuttings Discharged Accidentally or Force Majeure (tonnes)

## Summary level 3b

### OBM / SBM Cuttings

Well Section Diameter	Weight of Cuttings	Cuttings Discharged		Weight of Cuttings Injected (tonnes)	Weight of Cuttings Shipped to Shore (tonnes)	Weight of Any Cuttings Discharged Accidentally or Force Majeure (tonnes)
		Weight (tonnes)	Base Oil or Base Synthetic Concentration (g/kg)			

## Summary level 3c

### OBM / SBM Mass Balance

Well Section Diameter	OBM / SBM Fluid System (Name)	Weight Fluid Used (tonnes)	Fluid SG	Water / Fluid Ratio	Base Oil or Base Synthetic Concentration (g/kg)	Weight of Base Oil or Base Synthetic Used (kg)	Weight of Base Oil or Base Synthetic Left in Well (kg)

3c cont'd

Weight of Base Oil or Base Synthetic Discharged with Cuttings (kg)	Weight of Base Oil or Base Synthetic Injected with Cuttings (kg)	Weight Of Base Oil or Base Synthetic Recovered Offshore and Shipped to Shore (kg)	Weight of Base Oil or Base Synthetic Shipped to Shore with Cuttings for Recycling (kg)	Weight of Base Oil or Base Synthetic Shipped to Shore with Cuttings for Disposal (kg)	Weight of Any Base Oil or Base Synthetic Discharged Accidentally or Force Majeure (kg)	Weight of Any Base Oil or Base Synthetic Not Accounted for, e.g. Weight Evaporated (kg)

## A4.3 EP RTR

There may at some point be the need to add in additional data due to legislation, however currently that has not been defined by the EU, and ease of change will be the key area to allow for these types of updates.

## A4.4 Additions to OPPC Reporting

Please take the following data tables as indicative and subject to change.

(Reference section A3.1)

### A.4.4.1 Schedule 1e

The Offshore Petroleum Activities (Oil Pollution Prevention & Control) Regulations 2005  
Schedule 1E Produced Water Discharges to Sea as a Result of Well Testing

Summary Level 1

Operator  
Installation  
Date Activities Completed

OPPC Permit Number                      alpha numeric i.e. T00623.12

Summary Level 2

Total Volume of Produced Water Discharged ( <b>m3</b> )	
Weight of Dispersed Oil Discharged ( <b>tonnes</b> )	
Average Dispersed Oil Concentration ( <b>mg/l</b> )	<i>calculated field</i>

*returns within 28 days of completion of the  
operation*

**A.4.4.2 Schedule 6a**

The Offshore Petroleum Activities (Oil Pollution Prevention & Control) Regulations 2005  
Schedule 6a Online Backwashing of Produced Sand/Scale -Discharge of Produced Sand/Scale to Sea

Summary Level 1

Operator  
Installation  
Period

OPPC Permit Number                      alpha numeric i.e. T00623.12

Summary Level 2

Annual Quantity of Sand/ Scale Discharged ( <b>tonnes</b> )	
Quantity of Oil on Sand/ Scale discharged ( <b>tonnes</b> )	
Average Concentration ( <b>mg/kg</b> )	<i>calculated</i>

Returns on an annual basis by 1 March of following year

**A.4.4.3 Schedule 6b**

The Offshore Petroleum Activities (Oil Pollution Prevention & Control) Regulations 2005  
Schedule 6b Offline Backwashing of Produced Sand/Scale -Discharge of Produced Sand/Scale to Sea

Summary Level 1

Operator	
Installation	
OPPC Permit Number	alpha numeric - ie T00623.12
Period - Life Permits only	annual - ie 2008
For Term Permits only - date of completion of activities	

#### Summary Level 2

Permit Requirements: Maximum mg/ kg	
Quantity of Sand/ Scale Discharged ( <b>tonnes</b> )	
Quantity of Oil on Sand/ Scale discharged ( <b>tonnes</b> )	
Average Concentration ( <b>mg/kg</b> )	calculated

Life returns on an annual basis by 1 March of following year  
Term Returns within 28 days of completion of permit

#### A.4.4.4 Schedule 7a

The Offshore Petroleum Activities (Oil Pollution Prevention & Control) Regulations 2005  
Schedule 7a Drill Cuttings and Associated Drilling Fluid Discharges - Discharge of Drill Cuttings  
contaminated with reservoir hydrocarbons  
Return of Required Information\*

#### Summary Level 1

Operator  
Installation  
Well Number

OPPC Permit Number                      alpha numeric i.e. T00623.12

#### Summary Level 2

Sample Number**	
Depth of Well Section (metres)	
Length of Well Section (metres)	
Diameter of well section (inches)	
Approx well location of samples	Lat and Long

Total Quantity of cuttings discharged (tonnes)	
Total Quantity of oil discharged (tonnes)	
Average % of oil on oil bearing reservoir cuttings discharged (mg/ kg)	calculated
Analysis method/ calibration used	text

may be a large text box

\*Returns must be completed for all permits, including operations where a zero oil discharge has been measured.

\*\*A minimum of 5 sample data points - maximum of 10.

\*\*\* - returns to be made 28 days after each well - separate returns for each well

### Minimum of 5 samples - upper limit 10

#### Sample 1

Date and time of sample	
Concentration of oil on cuttings concentration (mg/ kg)	

#### Sample 2

Date and time of sample	
Concentration of oil on cuttings concentration (mg/ kg)	

### A.4.4.5 Schedule 7b

The Offshore Petroleum Activities (Oil Pollution Prevention & Control) Regulations 2005  
Schedule 7b Well Intervention Discharges to Sea

Summary Level 1

Operator

Installation

OPPC Permit Number                      alpha numeric i.e. T00623.12

Period - OPPC Life Permit only        annual - ie 2008

Date Operations Completed –  
term permits only

Summary Level 2

Total Volume of well intervention fluids discharged (m <sup>3</sup> )	
Total weight of dispersed oil in fluids discharged (tonnes)	
Average concentration of oil in well intervention fluid (mg/ l)	calculated

\*Returns must be completed for all permits, including operations where a zero oil discharge has been measured.

\*\* - Life permit returns made on an annual basis by 1 March of following year

\*\*\* - Term permit returns to be made within 28 days of on completion of permit

#### A.4.4.6 Schedule 7d

The Offshore Petroleum Activities (Oil Pollution Prevention & Control) Regulations 2005  
Schedule 7d Well Clean Up Operations

Summary Level 1

Operator

Installation

OPPC Permit Number                      alpha numeric - i.e. T00623.12  
Period – OPPC Life permit only        Annual - i.e. 2008  
Date of Completion of permit –        Date  
Term Permits only

Summary Level 2

Total Volume of well clean-up fluid discharged (m <sup>3</sup> )	
Total weight of dispersed oil in well clean up fluid discharged (tonnes)	
Average concentration of oil in the well clean up fluids discharged (mg/l)	calculated

\*Returns must be completed for all permits, including operations where a zero oil discharge has been measured.

\*\* - Life permit returns made on an annual basis by 1 March of following year

\*\*\* - Term permit returns to be made within 28 days of on completion of permit

#### A.4.4.7 Schedule 7e

The Offshore Petroleum Activities (Oil Pollution Prevention & Control) Regulations 2005  
Schedule 7e Pipeline Discharges to Sea

Summary Level 1

Operator

Pipeline Number

if more than one pipeline only enter one

OPPC Permit Number                      alpha numeric - ie T00623.12  
Date of Completion of discharge  
activities

Summary Level 2

Total Volume of fluid discharged (m <sup>3</sup> )	
Total weight of oil discharged (tonnes)	
Average concentration of oil in fluids discharged (mg/l)	calculated

\*Returns must be completed for all permits, including operations where a zero oil discharge has been measured.

Returns to be made within 28 days of completion of permit

#### A.4.4.8 Schedule 7f

The Offshore Petroleum Activities (Oil Pollution Prevention & Control) Regulations 2005  
Schedule 7f Maintenance and Cleaning Discharges

Summary Level 1

Operator

Installation

OPPC Permit Number                      alpha numeric - ie T00623.12  
Date of Completion of the permit

## Summary Level 2

Total Volume of maintenance and cleaning fluid discharged (m <sup>3</sup> )	
Total weight of dispersed oil in maintenance and cleaning fluids (tonnes)	
Average concentration of oil in maintenance and cleaning fluids discharged	calculated

\*Returns must be completed for all permits, including operations where a zero oil discharge has been measured.

Returns to be made within 28 days of completion of permit

### A.4.4.9 Schedule 7g

The Offshore Petroleum Activities (Oil Pollution Prevention & Control) Regulations 2005  
Schedule 7g Decommissioning Activities

#### Summary Level 1

Operator

Installation

OPPC Permit Number                      alpha numeric - ie T00623.12

Date of Completion of the  
Permit

#### Summary Level 2

Quantity of Oil discharged (tonnes)	
Learnings for Future Decommissioning activities	text

probably a large box

\*Returns must be completed for all permits, including operations where a zero oil discharge has been measured.

\*\*\* - Volumes of oil discharged should be estimated using calculations or BONN Codes as applicable

Returns to be made within 28 days of completion of permit

### A.4.4.10 Schedule 7h

The Offshore Petroleum Activities (Oil Pollution Prevention & Control) Regulations 2005  
Schedule 7h Miscellaneous Oil Discharged to Sea

#### Summary Level 1

Operator

Installation

OPPC Permit Number                      alpha numeric - ie T00623.12

Date of Completion of the  
Permit

#### Summary Level 2

Discharge Fluid Type	text
Total volume of Fluids discharged (m <sup>3</sup> )	
The total weight of dispersed oil in the fluids discharged (tonnes)	
Average concentration of oil within the fluids discharged (mg/l)	calculated

\*Returns must be completed for all permits, including operations where a zero oil discharge has been measured.

\*\* - Returns to be submitted 28 days after completion of the permit