

Application PPC/113/0 (Version 4)

Offshore Combustion Installations Permit Application

Please provide all relevant data pertaining for the Offshore Combustion Installations Permit under the Offshore Combustion Installations (Pollution Prevention and Control) Regulations 2013

Licence / Well / Installation Operator Information

Licence / Well / Installation Operator	SHELL U.K. LIMITED
Primary Contact Name	[REDACTED]
Primary Contact Position	ENVIRONMENTAL SPECIALIST
Primary Contact Address	THE SILVERFIN BUILDING 455 UNION STREET ABERDEEN AB11 6DB
Primary Contact Telephone Number	[REDACTED]
Primary Contact Email Address	[REDACTED]

Offshore Installation (Platform) Information

Name or identifier of the offshore installation (platform)	Penguins FPSO
Offshore installation (platform) type	FPSO - Floating - Process, Storage & Offloading
Earliest permit, permit variation or substantial change commencement date	27th May 2024

Offshore Installation (Platform) Location

Please enter the quadrant and block information for the offshore installation (platform)	Quadrant	Block	Suffix
	211	13	
If this project relates to a field or prospect, please enter the name of the field or prospect	PENGUIN WEST		
Latitude and Longitude Coordinates	Datum:	ED50	
	Coordinates:	61 35 1.02 N 1 32 54.06 E	

Type of Application

Is this an application for a substantial change assesment (Please note the application may be subject to public notice)	No
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Non-Technical Summary of Application

Please provide a non-technical summary (NTS) of the information included in the application, including details of the combustion installation equipment and the management of the combustion activities covered by this application, highlighting any changes relating to a permit variation and/or a substantial change assessment. Further information in relation to the content of the NTS can be found in the regulations and associated guidance.

File Uploaded: 204226C-004-RT-6200-0036-Non-Technical Summary-Rev 5 (for issue)Signed (1).pdf

Offshore Combustion Installation Details

Please provide details of the installation you are applying for.

Large Combustion Installation means a platform equipped with combustion plant that has a total (aggregated) rated thermal input capacity which is equal to or greater than 50 megawatts.

Medium Combustion Installation means a platform equipped with combustion plant that has a total (aggregated) rated thermal input capacity which is equal to or greater than 1 megawatt and less than 50 megawatts.

Is this application relating to an Large or Medium Combustion Installation?	Large Combustion Installation (LCI)
What is the Primary NACE Code for the Installation?	06.10 - Extraction of crude petroleum
Select any other NACE codes which apply to this Installation:	06.20 - Extraction of natural gas

Best Available Technique (BAT) Assessment

Please provide a BAT assessment for the combustion installation equipment on the offshore installation (platform) that is the subject of the permit application and the combustion equipment management regime, for all permit applications, permit variations and/or substantial change assessments.

For new combustion installations, or new items of equipment, the assessment should include details of the option selection process, to demonstrate that the proposed equipment and its management regime represent BAT.

For existing combustion installations, the assessment need only briefly address the nature of the combustion installation equipment, but should demonstrate that the management regime represents BAT. Where the existing combustion installation equipment cannot meet strict Emission Limit Values (ELVs), the assessment must also include details of the geographical location, environmental conditions and technical characteristics of the combustion installation equipment to justify the application of less stringent control measures (e.g. annual emission loads).

In all cases, the assessment should address energy efficiency, and include details of any relevant energy audit and cost benefit studies undertaken in relation to current or proposed energy efficiency improvement or emissions reduction strategies, both at the offshore installation (platform) level and for individual items of combustion installation equipment. Where independent energy assessments have been undertaken, copies of relevant reports that support the BAT assessment should also be provided. Where energy assessments are repeated, or

SAT Reference PPC/113/0 (Version 4)
Approval Type Offshore Combustion
Installation Permit

MAT Reference PRA/282
MAT Type Production/Storage
Operations

Status Submitted
Date Submitted 17th May 2024
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Host Penguins FPSO
Discharging/Other PENGUIN WEST
Installation
Field

Operator SHELL U.K. LIMITED

Folder Ref 01.01.01.01-6133U
Authoriser [REDACTED]



new studies undertaken, copies of the new reports should be provided and the BAT assessment amended accordingly, and the new information submitted as an application for a permit variation.

Uploaded Files:
204226C-004-RT-6200-0037-BAT Assessment Rev 5 (for issue)Signed (1).pdf

Large Combustion Plant (LCP) Derogation Assessment

Please provide details of all the LCP on the offshore installation (platform) that is the subject of the derogation application in the LCP derogation request proforma and provide the supporting documentation including LCP BAT assessment, Cost Benefit Analysis and any other additional information.

Derogation under Article 15(4) of Industrial Emissions Directive (2010/75/EU)

Best Available Technique Associated Emission Levels (BAT-AEL) range in the Large Combustion Plant Best Available Techniques Conclusions (C(2017) 5225)

Please confirm if LCP derogation from BAT-AEL is the subject of the permit application?	No
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Emissions Modelling

Please provide a copy of the report(s) of the modelling studies undertaken to determine the dispersion of emissions from the offshore installation (platform) that is the subject of the permit application, and their potential effects on air quality on adjacent offshore installations (platforms) or land masses.

Uploaded Files:
204226C-004-RT-6200-0043-Penguins AQIA Rev 2 (for issue).pdf

Monitoring Plan and Monitoring Reports

Please provide an outline of any proposed measures to monitor emissions from the combustion installation equipment on the offshore installation (platform) that is the subject of the permit application, or from individual items of combustion installation equipment on the offshore installation (platform), for all permit applications, permit variations and/or substantial change assessments. Where there are no proposed measures, any subsequent permit issued in response to this application will include a requirement to undertake a monitoring programme.

Uploaded Files:
204226C-004-RT-6200-0039-Emissions Monitoring Plan Rev 5 (for issue).pdf

Combustion Installation Equipment Details

Description of Equipment

Please enter details of all the combustion installation equipment on the offshore installation (platform) that is the subject of the permit application, the permit variation and/or the substantial change assessment.

Item No.	Equipment Name and Model(1)	Plant Type (2)	Existing Plant (3)	TAG / Facility No. (4)	Fuel Type (5)	Type of Equipment and Primary Purpose (6)	Start of Operation Date	Maximum Rated Output (MW) (7)	Maximum Thermal Input (MW(th)) (8)	Rated Thermal Efficiency (9)	Annual Running Hours (10)	Limited Hours Plant (11)
1	Solar Taurus 70-10301S	Other	Yes	EG8001A	Dual Fuel	power Generation	1st May 2024	7.3	23.84	32	8760	No
2	Solar Taurus 70-10301S	Other	Yes	EG8001B	Dual Fuel	power Generation	1st May 2024	7.3	23.84	32	8760	No
3	Solar Taurus 70-10301S	Other	Yes	EG8001C	Dual Fuel	power Generation	1st May 2024	7.3	23.84	32	Stand-by	No
4	Solar Titan 130-2020502S	Other	Yes	KG-2601	Fuel gas	Compression	1st May 2024	15.9	42.2	36	8760	No
5	Emergency Generator 16V4000 P833A	Other	Yes	A-8401	Diesel	Emergency Power	1st May 2024	1.95	5.14	38	150	No
6	Firewater Pump 16V4000 P83 3B	Other	Yes	A-7101A	Diesel	Firepump operation	1st May 2024	2.32	5.6	41	56	No

7	Firewater Pump 16V4000 P83 3B	Other	Yes	A-7101B	Diesel	Firepump operation	1st May 2024	2.32	5.6	41	56	No
8	Firewater Pump 16V4000 P83 3B	Other	Yes	A-7101C	Diesel	Firepump operation	1st May 2024	2.32	5.6	41	56	No
9	Inert Gas Generator	Other	Yes	A-6402	Diesel	Inert gas generator	1st May 2024	N/A	2.42	N/A	1500	No
10	Generic Emissions Source -Temp Equipment	Other		Varies	Diesel	Various pieces of temporary equipment		N/A	N/A	N/A	N/A	

1. Please enter the name of the combustion installation equipment (e.g. Ruston Gas Turbine) and the model reference number (e.g. TA 1750)
2. If this is an LCI please indicate for each item of combustion plant whether it is LCP, MCP, or other plant. If this is an MCI only indicate where combustion plant is an MCP. Include MCP that qualify only from their relevant date's.
3. For MCP 'existing medium combustion plant' means a medium combustion plant; (a) put into operation before 20 December 2018; or (b) for which a permit was granted before 19 December 2017, provided that the plant is put into operation no later than 20 December 2018 and 'new combustion plant' means a medium combustion plant other than an existing medium combustion plant
4. Please enter the combustion equipment identification number
5. Please enter the fuel type (e.g. 'Gaseous Fuels' , 'Gas Oil - Diesel' , 'Liquid Fuels other than Gas Oil'). If 'Dual Fuel';, please enter both fuel types
6. Please enter the type of equipment (e.g. Turbine, Generator etc.) and its primary purpose (e.g. Compressor Drive, Power Generation etc.)
7. Please enter the manufacturer's maximum rated output of the equipment
8. Please enter the manufacturer's maximum thermal input of the equipment
9. Please enter the thermal efficiency of the equipment (if not provided by manufacturer, enter maximum rated output / maximum thermal input x 100%)
10. Please enter the estimated maximum running hours per year
11. Where either of the options of exemption under Regulation 11C (existing MCP) or Regulation 11D (new MCP) is used, the operator must sign a declaration that the MCP will not be operated more than the number of hours referred to in regulation 11C or 11D. This signed declaration is required to be submitted at time of application for a permit for the MCP.

Emission Profiles

Please enter the emission profiles (milligrammes of determinand per Normal cubic metre of exhaust) for the combustion equipment on the offshore installation (platform) that is the subject of the permit application, the permit variation and/or the substantial change assessment. The information provided can be based on manufacturers' specifications or the results of emissions monitoring, or estimated based on the performance of similar equipment. The level of sulphur oxides should be based on the sulphur content of the fuel(s) used on the facility, and the level of dust is only required for equipment using liquid fuels other than gas oil. Wherever possible, the source of the data should be confirmed. It is unnecessary to provide profiles for equipment that is not material to the total emissions, e.g. if the equipment has a thermal capacity of <1 MW(th); or if the equipment is run for less than 500 hours per annum. Where information is not required, not material or not available, please enter N/A, and provide further information in the BAT assessment.

Item No.	Nitrogen Oxides (NOx) mg/Nm3 (1)	Sulphur Oxides (SOx) mg/Nm3	Carbon Monoxide (CO) mg/Nm3	Methane (CH4) mg/Nm3 (2)	Non-methane VOCs mg/Nm3 (2)	Dust (PM) mg/Nm3	Source of Data
1	51/179/197	0/49	31/10918/62	18/5974/18	N/A	N/A	Gas Turbine Performance Curves, P3NG-4-0306-01-F29-00001 API 616 Turbine Equipment Data Sheet, P3NG-4-0304-01-C08-00003-1
2	51/179/197	0/49	31/10918/62	18/5974/18	N/A	N/A	Gas Turbine Performance Curves, P3NG-4-0306-01-F29-00001 API 616 Turbine Equipment Data Sheet, P3NG-4-0304-01-C08-00003-1
3	51/179/197	0/49	31/10918/62	18/5974/18	N/A	N/A	Gas Turbine Performance Curves, P3NG-4-0306-01-F29-00001 API 616 Turbine Equipment Data Sheet, P3NG-4-0304-01-C08-00003-1

4	86	0	125	36	N/A	N/A	https://imorules.com/ https://assets.publishing.service.gov.uk/
5	N/A	N/A	N/A	N/A	N/A	N/A	Profiles not determined – units operated < 500 hours per year or <1 MWth
6	N/A	N/A	N/A	N/A	N/A	N/A	Profiles not determined – units operated < 500 hours per year or <1 MWth
7	N/A	N/A	N/A	N/A	N/A	N/A	Profiles not determined – units operated < 500 hours per year or <1 MWth
8	N/A	N/A	N/A	N/A	N/A	N/A	Profiles not determined – units operated < 500 hours per year or <1 MWth
9	N/A	N/A	N/A	N/A	N/A	N/A	Profiles not determined – units operated < 500 hours per year or <1 MWth
10	N/A	N/A	N/A	N/A	N/A	N/A	Profiles not determined – units operated < 500 hours per year or <1 MWth

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1. Please report NOx levels as NO2 equivalents
2. Manufacturers' specifications often refer to the levels of Unburnt Hydrocarbons (UHC). When the base data is quoted as levels of UHC, operators should estimate and report the relative proportions of methane and non-methane Volatile Organic Compounds, based on the fuel composition. For oil facilities it is normally assumed that the ratio of methane to non-methane VOCs is 50:50, and for gas facilities it is normally assumed that the ratio is 90:10

Emission Loads

Please enter the estimated maximum aggregated annual emission loads (tonnes per annum) for all the combustion installation equipment on the offshore installation (platform) that is the subject of the permit application, the permit variation and/or the substantial change assessment, for at least three calendar years. The information should be based on the emission profiles and the estimated running time and fuel use for all the qualifying equipment. The sulphur oxides loads should be based on the sulphur content of the fuel(s) used on the facility, and the total estimated fuel use. Dust loads estimates should only be provided if data are specifically requested by the Department, and guidance will be provided to accompany such a request. If the information is not requested, operators should enter N/A.

Year No.	Nitrogen Oxides (NOx) tonnes (1)	Sulphur Oxides (SOx) tonnes	Carbon Monoxide (CO) tonnes	Methane (CH4) tonnes (2)	Non- methane VOCs tonnes (2)	Carbon Dioxide (CO2) tonnes (3)	Dust (PM) tonnes	Comments
2024	137	13	2134	1165	3	58377	N/A	These numbers are based on estimated Emission loads for hook-up and commission.
2025	278	7	5858	3239	3	139994	N/A	These numbers are based on estimated Forecasted Emission loads
2026	279	3	6750	3729	3	140526	N/A	These numbers are based on estimated Forecasted Emission loads

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2. Manufacturers' specifications often refer to the levels of Unburnt Hydrocarbons (UHC). When the base data is quoted as levels of UHC, operators should estimate and report the relative proportions of methane and non-methane Volatile Organic Compounds, based on the fuel composition. For oil facilities it is normally assumed that the ratio of methane to non-methane VOCs is 50:50, and for gas facilities it is normally assumed that the ratio is 90:10
3. Carbon dioxide levels are not included in the permit conditions, but they are requested as an approximate guide to the overall level of activity

Uploaded Files:
204226C-004-CN-6200-0035 - PPC and GHGE Permit Applications Supporting Calc Rev 0.pdf

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Host Penguins FPSO
Discharging/Other PENGUIN WEST
Installation
Field

Operator SHELL U.K. LIMITED

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Authoriser [REDACTED]



SAT Change History	
There have been 3 change(s) to this SAT.	
Variation 0 , Version 4	17th May 2024 16:54:35
Update to address OPRED's comments and to upload new air quality modelling. This update also has the supporting calculations attached.	
Variation 0 , Version 3	17th May 2024 14:42:02
As Per OPRED comments, the EAJ Section 4.3.2 Cumulative and Transboundary Impacts has been updated to clarify that Norwegian receptors have been considered in the assessment of air quality impacts and whether the operation of the combustion plant will not result in a significant negative effect on the Norwegian environment.	
Variation 0 , Version 2	17th May 2024 14:00:25
OPRED's request to resolve pdf generating error.	