

FPSO Bacalhau - World First New Built FPSO with DNV Abate Notation

Tokyo, July 18, 2024 – MODEC, Inc. (“MODEC”) is pleased to announce that FPSO Bacalhau has received the Approval in Principle (AiP) for Abate Notation from classification society DNV, making it the first new built FPSO in the world to achieve this prestigious recognition.

In this project, a comprehensive assessment of greenhouse gas emissions abatement on FPSO Bacalhau was conducted according to DNV guidelines*¹. The Abate notation requires stringent management of emission systems (similar to ISO 50001 Energy Management requirements) and the implementation of substantial abatement measures onboard to prevent non-emergency flaring and optimize the efficiency of power/heat generation. These measures have positioned FPSO Bacalhau at the forefront of the industry for the lowest carbon emissions per barrel of oil produced.

The overview of the measures is shown below. MODEC obtained AiP of Abate Notation (P+, F, Pr, S) for FPSO Bacalhau.



World First New Built FPSO with DNV Abate Notation

- New built Hull - M350™
- Ultra-high pressure for Gas Injection (750 bar)
- Oil production: 220,000 bpd
- Gas production: 530 MMscfd

Abate(F) Flare Emission Abatement	Abate(Pr) Process System Vent and Fugitive Emission Abatement	Abate(P+) Enhanced Power System Emission Abatement	Abate(S) Storage Tank Emission Abatement
<ul style="list-style-type: none"> LP and HP closed flare system is implemented. Designed to recover any leaks that maybe expected through control valves and PSVs No routine flare policy 	<ul style="list-style-type: none"> 'Closed Loop' design is implemented into all the process by recovering the waste gases and recycle back to the main process. Minimizing the number of flanges and ensure hydrocarbon service valves are in accordance with ISO 15848-2 to reduce fugitive emission. 	<ul style="list-style-type: none"> GTG/STG Combined Cycle generates around 100 MW power supply & 45 MW heat duty in total. ~20% Improved thermal energy efficiency reduces fuel consumption and emission. 	<ul style="list-style-type: none"> Utilize conditioned LP fuel gas as the primary means of cargo tank blanketing. Paired with Vapor Recovery Unit with redundancy to recover gas evolved during tank loading without venting to atmosphere Maintained Inert Gas Generator as back-up means

The overview of the abatement measures of FPSO Bacalhau

MODEC especially acknowledges Equinor ASA, the ultimate customer for the FPSO Bacalhau project, for having the foresight and willingness to initiate many of the technical requirements incorporated into the FPSO Bacalhau, which has resulted in her being an environmentally friendly FPSO.

The award was presented to Mr. Eric Powell, Vice President & COO of MODEC Singapore, by Mr. Torgeir Sterri, Director of Offshore Classification at DNV, during the DNV Regional Offshore Committee (ROC) meeting held on May 30, 2024.



The DNV ROC meeting serves as a platform for senior executives in the region to engage in strategic discussions on common industry challenges, share knowledge and insights into various business-critical issues, and explore opportunities arising from technological developments to shape the future of the offshore industry. The event was widely attended by experts and senior management from oil majors, EPC contractors and fleet owners.

“Receiving the DNV Abate notation is an affirmation of our commitment towards the development of a sustainable future. We play our part in climate change mitigation by minimizing greenhouse gases and other emissions across our business operations and supply chain, and by developing clean energy solutions to achieve global goals,” says Eric Powell.

This milestone represents a significant step towards MODEC’s ambitious decarbonization targets. MODEC aspires to continue our contributions to a stable and sustainable energy supply through its business activities, including Project engineering, procurement, construction, and installation (EPCI), Supply Chain relationships, and ultimately, the operation phase.

*1: DNV guidelines : DNV-RU-0102, Ch. 2, Sec. 6, 27

Abate requirements and qualifier

<p>Abate (Ready)</p> <p>Management system review performed, and baseline abatement measures established. Best Available Technology (BAT) assessment carried out.</p>	<p>Energy Management System, ISO 50001 or equivalent</p> <ul style="list-style-type: none"> •Systematic assessment of emission reduction potential •Emission monitoring system •Baseline including significant energy users •Continues improvement •In procurement energy consumption shall be considered as a parameter. •Assessment and prioritizing opportunities for energy performance. •Estimate future energy consumption
<p>Abate (P+)</p> <p>Power plant designed to substantially limit emissions</p>	<p>Vessel specific energy assessment and operational modes. Opportunities made into measures and development of implementation plan. Best available technology (BAT) review for new systems.</p>
<p>Abate (F)</p> <p>Flare system designed to limit flaring emissions</p>	<p>Enhanced power system emission abatement e.g. battery, closed bus, heat recovery, alternative fuel. A system to monitor power consumption shall be put in place, shall cover specific consumers.</p>
<p>Abate (Pr)</p> <p>HC processing plant designed to limit emissions</p>	<p>Flare emission abatement with flare gas recovery, closed flare and zero routine flaring.</p>
<p>Abate (S)</p> <p>Oil storage system designed to limit emissions</p>	<p>Process system designed to optimize capture of vented emissions.</p>
	<p>Emissions from Storage minimised by VOC recovery, or similar, and VOC management plan.</p>

About MODEC

MODEC is a leading provider of floating production solutions such as Floating Production Storage and Offloading (FPSO) vessels to the offshore oil & gas industry. MODEC performs Engineering, Procurement, Construction and Installation (EPCI) activities for FPSOs, and further by owning and operating its own FPSOs, it provides oil companies around the world with comprehensive and competitive solutions for oil & gas production services.

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The information contained in this news release is true and accurate at the time of publication; however, it may be subject to change without prior notice.