


# Floating Production Installations

The Preferred  
Choice for Class





# Production Installation Industry Firsts



In 1975, ABS took the lead in offshore asset classification when it provided services for the industry's inaugural floating production system. Over the decades, ABS classed the first floating production, storage and offloading (FPSO) vessel in US waters, classed the industry's first semisubmersible production unit, verified the first tension-leg platform (TLP) in the Gulf of Mexico, and classed the first production spar. Today, ABS is the global market leader in floating production installation (FPI) classification, and classes more than 40 percent of the world's FPSOs.

*The ABS Rules for Building and Classing Offshore Installations, Rules for Building and Classing Floating Production Installations and Rules for Building and Classing Facilities on Offshore Installations* collectively address the requirements for fixed and floating hydrocarbon production units and include specific requirements for FPSOs, production semisubmersibles, TLPs and spars. ABS also provides technical assessments for novel hull concepts and non-ship-shaped production units, and has provided approval in principle or AIP to numerous floating production concepts.

In US waters, working closely with the US Coast Guard (USCG) and Bureau of Safety and Environmental Enforcement (BSEE), ABS has certified or been involved in the certification of more than 90 percent of the floating production installations in the Gulf of Mexico. ABS is the only classification society authorized to act on behalf of the USCG to certify FPI design and equipment on the US Outer Continental Shelf.



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## Practical and Technical Experience

ABS has a strong presence worldwide classing the following:

- **Converted & Newbuild FPSOs**

ABS classed the first FPSO in US waters in 1978 and continues to develop proprietary tools for the site-specific evaluation of dynamic load components, hull strength and fatigue assessments.

- **Semisubmersibles**

ABS has decades of experience classing purpose-built production semisubmersible platforms for deployment in deepwater fields.

- **TLPs**

ABS has been involved with TLP technology from the outset and has been instrumental in developing appropriate class standards. ABS has classed the full range of TLP designs.

- **Spars**

ABS has been involved with classing three generations of spar design improvements, from classic or deep-draft caisson to truss and cell spars.

- **Pipelines & Risers**

ABS verifies that pipelines and risers supporting FPIs are fabricated and installed according to approved designs and sound industry practice.



# Supporting Deepwater Growth

The global ramp-up in construction to allow the move to deeper waters has created opportunities for ABS, which provides Rules and technical standards for units capable of producing from greater water depths, and in diverse operating conditions. Among the units on its long list of active ABS-classed FPIs and newbuilds are many of the FPSOs that will produce from the presalt fields offshore Brazil.

ABS engineers and surveyors have the practical work experience and technical know-how to handle deepwater and ultra-deepwater projects, from offering risk and probabilistic analyses of the safety, viability and practicality of an FPI design, approval of risk-based inspection programs and verification of complex designs for subsea pipelines and risers supporting FPIs.



# Asset Performance Management

ABS' Asset Performance Management group combines traditional classification services with innovative concepts, tools and practices aimed at improving life cycle services in the areas of asset performance and management. This dedicated team delivers:

- Assistance with improving operational performance, energy efficiency and environmental performance
- Asset management solutions for the marine and offshore industries through its proprietary NS5 Enterprise software suite
- Help in developing life cycle management programs that encompass reliability, technical integrity and safety

## Managing Asset Integrity

ABS offers maintenance procedures and asset integrity management (AIM) programs to assist operators throughout the life cycle of an FPI, from conceptual design through decommissioning or life extension. The AIM programs address:

- The entire asset
- The three key areas of AIM: people and culture, technical tools and techniques and management systems
- Key management systems



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# Extending Service Life



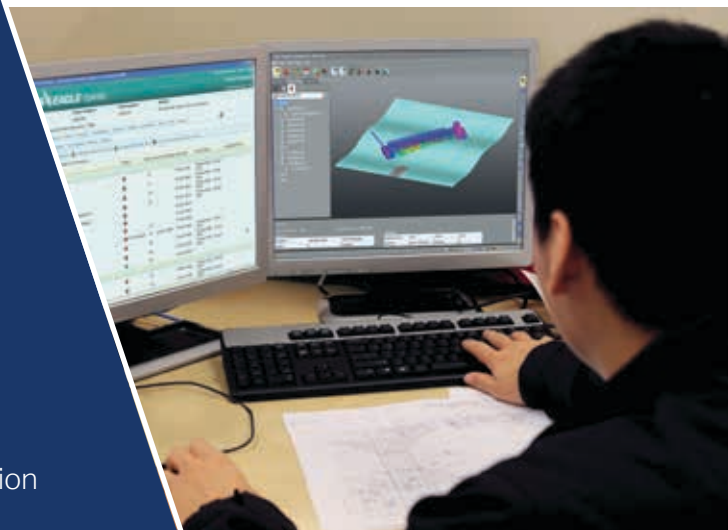
Some FPIs are approaching the end of their design life expectancy, and operators are looking for ways to safely extend the field life of these assets. Through its international research and technology centers, ABS is partnering with academia and industry to set processes and criteria that address these and other key aspects of FPI and FPSO life extension.

For example, through its Brazil Offshore Technology Center (BOTC), ABS is studying the impact that modifying structural design parameters will have on an existing FPSO. The goal is to catalogue these findings to better define for asset owners the critical points of the structure according to surveys and Rule requirements.

Part of the BOTC project targets improving the ability to gauge the remaining service life of an asset by developing methodologies for considering the nonlinear behavior of FPSO structures (including wastage and coating conditions). This also includes the fracture mechanics modeling that can be used as part of this structural investigation, and recent real-time hull monitoring as an alternative to close-up surveys and its consequences for engineering considerations.

## Steps in Achieving Life Extension

- Determine a baseline for the unit's current conditions taking into account historical operational data
- Assess the status of the unit and the actual usage using analytical tools and engineering software
- Ascertain the remaining life of the unit and any necessary remedial action
- Establish the path forward with regard to conservation and integrity management



# The Classification Leader for FPIs

ABS has moved with the offshore industry from issuing the first classification guidance for building and classing FPIs to classing the ultra-deepwater production hubs that will support tomorrow's energy needs.

From its Energy Corridor location in Houston and specialized offshore offices around the globe, ABS continues to monitor production units worldwide, working with industry to anticipate needs as operating environments become even more demanding.

As the leading provider of classification services to the global offshore industry, ABS is in a unique position to support the expanding FPI market sector. ABS is in a unique position to offer guidance, Rules and technical standards for FPI delivery projects during the initial design concept, through the plan approval process, during construction and throughout the entire service life of the asset and into the next.



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#### **For more information:**

Contact an ABS technical advisor today to discuss the unique aspects of your next project, and access ABS Rules and Guides online at [www.eagle.org](http://www.eagle.org) under the Resources tab.

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