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GP 65-12

DRAFT -Integrity Management of FPS Hull Structures

Group Practice

**BP GROUP
ENGINEERING TECHNICAL PRACTICES**

Foreword

This is the first draft issue for discussion of Engineering Technical Practice (ETP) GP 65-12.

The Group Practice (GP) covers all types of floating production systems worldwide.

The objective is to use this GP as the basis for preparing integrity management plans for BP floating production systems worldwide. The goal is that, in addition to meeting regulatory requirements, all facility-specific integrity management plans prepared using this GP will meet all minimum BP requirements while ensuring consistency in approach and format.

This GP is part of a suite of ETPs and Group Instruction for Supply (GISs) that defines BP's integrity management philosophy for floating production facilities worldwide. These ETPs and GISs should be used together to prepare a complete overall facility-specific, long-term integrity management plan.

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Introduction

Background

Integrity management (IM) of hull structure of floating production systems (FPS) is of key importance to the overall integrity, safety, and economic performance of an asset.

The consequences of a major hull structure failure would probably be a loss of life, a major pollution incident, loss of production until the system is replaced, and major damage to BP's reputation. The consequences of more minor hull failures would be partial or total loss of production, with high economic impact until repairs are performed.

The important requirement for hull structure integrity management is that there is a strong economic incentive to keep the FPS continuously on location for the field life without removal for dry-docking or inshore repair. Therefore all hull inspection, maintenance, and repair should be capable of being performed offshore.

There is also a strong health, safety, and environmental (HSE) incentive to maintain an FPS on location rather than disconnect for tow to dry dock. Disconnection of risers or moorings can lead to significant personnel safety hazards and high potential for component damage.

The field life of an FPS may be 25 yr or more, and this imposes major demands on the corrosion protection systems and on the fatigue design, particularly in a harsh environment. These requirements are substantially more onerous than those for conventional ship design, the economic consequences of failure are much higher, and the difficulty of repair on location much greater.

Objective

This GP provides guidance for preparation of long-term, facility-specific IM plans for FPS hull structures. The document covers the BP guidance framework, the requirement for using a risk-based structural integrity management (SIM) approach, evaluation and guidance documents on structural integrity (fatigue, corrosion), strength reserve requirements, and remedial action strategy.

The goal is that, in addition to meeting regulatory requirements, all facility specific IM plans prepared using this GP will meet all minimum BP requirements and comply with BP's Group Functional IM Standard.

BP guidance framework and document hierarchy

This GP is part of a suite of ETPs comprising GPs and GISs that defines BP's IM philosophy for floating production facilities worldwide. These GPs and GISs should be used together to prepare a complete overall facility-specific, long-term IM plan. The documents should be used together with GP 65-02.

The hierarchy of BP IM documents is as follows:

- a. Segment IM Implementation Guide.
- b. GP 65-02.
- c. GISs and GPs
- d. Site Technical Practices (STPs)
- e. Facility-specific IM plan



1. Scope

- a. This GP provides requirements for hull structure IM for all types of FPS.
- b. This GP is applicable to:
 - 1. New-build or converted units
 - 2. Harsh and benign environments
 - 3. Long term and short term field lives
- c. This GP does not cover integrity management of hull marine systems, mooring systems or hydrostatics and stability management. These topics are covered in other integrity management documents referenced in section 2.

2. Normative references

BP

The primary BP guidance documents connected with this GP are as follows:

GIS 65-241	Structural design of monohulls, semi-submersibles and spars (ISO 19904-1)
GP 65-02	Integrity Management of Floating Production Facilities
GP 65-42	Conversion of Trading Tankers to FPSOs
GP 65-32	Integrity Management for FPS Marine Systems
GP 65-61	Integrity Management of FPS Station Keeping Systems
UKCS TI-007	Structural Integrity Delivery Requirements (BP North Sea)

American Bureau of Shipping (ABS)

Guide for Building and Classing Floating Production Installations.

Bureau Veritas (BV)

Rules for the Classification of Offshore Units

Det Norske Veritas (DNV)

DNV-OSS-102	Rules for Classification of Floating Production, Storage and Loading Units.
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International Association of Classification Societies (IACS)

Guidelines for coatings maintenance and repairs (ISBN 1 85609 308 5)

International Organization for Standardization (ISO)

ISO 19904-1	Petroleum and natural gas industries - Floating offshore structures - Part 1: Monohulls, semi-submersibles and spars.
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Lloyds Register of Shipping

Rules and Regulations for the Classification of a Floating Structure at a Fixed Location



Oil Companies International Marine Forum (OCIMF)/International Chamber of Shipping (ICS)/ International Association of Ports and Harbours (IAPH)

International Safety Guide for Oil Tankers and Terminals (ISGOTT)

Swedish Standard

SA 2 1/2

Near-White Blast Cleaning

Tanker Structure Co-operative Forum (TSCF)Guidelines for ballast tank coating systems and surface preparation
(ISBN 1 85609 214 3)Guidelines for the inspection and maintenance of double hull tanker
structures (ISBN 1 85609 080 3)**Other Industry Documents**

Witherby

Guidance Manual for Tanker Structures (ISBN 1 85609 093 0)

Witherby

Inspection, Repair and Maintenance of Ships Structures-Caridis
(ISBN 1 85609 191 0)**3. Terms and definitions**

For the purposes of this GP, the following terms and definitions apply:

Close-up survey

Survey where details of structural components are within close visual inspection range of surveyor (i.e., normally within reach of hand, either in air or underwater by diver).

Critical structural areas

Locations that have been identified either from calculations to require monitoring or from service history to be sensitive to fatigue cracking, buckling, or corrosion that could impair vessel structural integrity.

Service life

Expected time that FPS will be in field

Caisson

Vertical pipe a) conducting seawater from below surface level to users at deck level and containing a submersible pump at its lower end or b) an overboard discharge pipe

4. Symbols and abbreviations

BU	Business unit.
CP	Corrosion protection.
FPS	Floating production system
FPSO	Floating production, storage, offtake
HSE	Health, safety, and environmental
HTS	High tensile steel

