



FPSO SERVICES



**BUREAU
VERITAS**

SOLUTIONS
Marine & Offshore

SERVICES

UPGRADES AND LIFE EXTENSION

We support your asset throughout its useful life, providing effective solutions to ensure it continues operating safely and efficiently, often beyond the original design life. When upgrades are required, our multidisciplinary team provides a holistic approach to the problem, minimising downtime, cost, and unforeseen complications.

- Structural Engineering and Design
- Stability and Hydrodynamics
- Moorings and Risers
- Power Plant
- Dynamic Positioning
- Critical Safety Systems

OPERATIONAL

Our master mariners with decades of experiences, are closely supported by our desk-based technical team, enabling us to be available around the world 365 days per year, to assist with all your FPSO operations.

- Vessel Lay-Up
- Decommissioning
- Transportation and Installation
- Operational Planning and Simulation
- Downtime Assessment
- Marine Coordination
- Client Representation
- Tow Masters
- Riser Heading Control and Pull In

SAFETY AND COMPLIANCE

Our consultants can provide a comprehensive view of the risk and regulatory challenges for your FPSO, offering solutions to maintain all risks as low as reasonably practical, and ensuring continuous compliance with evolving regulation and standards.

- Compliance Advisory Support
- Risk Assessments
- Stakeholder Engagement
- Health, Safety & Environment Consultancy
- Gap Analyses
- Engineering of Compliant Solutions
- Marine Warranty Surveying

LEGAL AND ARBITRATION

Providing technically sound, impartial evidence, BV Solutions M&O's team of reputable experts are available to support you with all your legal cases.

- Expert Witnesses
- Loss Adjustment
- Third Party Arbitration

VESSELS WORKED ON



ENQUEST PRODUCER
CENTRAL NORTH SEA



HUMMINGBIRD
CENTRAL NORTH SEA



BAOBAB
COTE D'IVOIRE, WEST-AFRICA



GRYPHON ALPHA
NORTHERN NORTH SEA



ARMADA KRAKEN
NORTHERN NORTH SEA



TRITON
CENTRAL NORTH SEA



PETROJARL FOINAVEN
WEST OF SHETLAND



KAOMBO NORTE/SUL
ANGOLA

EXAMPLES OF CHALLENGES WE CAN HELP WITH



Cargo Offtake Risk Assessment

Electrical System Upgrades for Higher Power Demands

Marine Utilities Systems Failure Modes, Effects and Criticality Analysis

Structural Verification and Design for Equipment Upgrades

Decommissioning Turnkey Solutions, including:

- Risk Assessment
- Vessel suitability
- Mooring Studies
- Procedures
- Tow Masters
- Client Representation
- Marine Assurance

Damaged Stability Verifications

Hull Structural Fatigue Assessment

Tank Inspections and Loading Conditions

Riser Pull-in Analysis and Procedures

Mooring System Fatigue Analysis and Upgrades

Heading Analysis and Motion Response

KEY NUMBERS

OUR TEAM HAS OVER

80

STAFF MEMBERS

INCLUDING

30

MASTER MARINERS

STAFF AVERAGE EXPERIENCE

15 Years

WORKING IN THE OFFSHORE INDUSTRY

CASE STUDY

THE CHALLENGE

The Health and Safety Executive challenged a major operator in the United Kingdom Continental Shelf to prove the safety of their aging FPSO, against the flooding hazard associated with ship side valves.

OUR APPROACH

BV Solutions M&O's multidisciplinary team collaborated to:

Define the **Response Road Map** against the incoming challenge.

Produce a risk based Inspection and Maintenance Scheme for the FPSO's ship side valves.

Model the **Flood Scenarios** and FPSO's **Hydrostatic Stability** behaviour during a flood induced by a ship side valve failure.

Consider a **Machinery Space Flood** scenario, and define the response time frames, safety margins and operability windows.

Perform a **Quantitative Risk Analysis**, ranking the valves in terms of the severity of the consequences in the event of a failure.

Compile field data on similar failures and determine the failure **Occurrence Rates** for each type of valve.

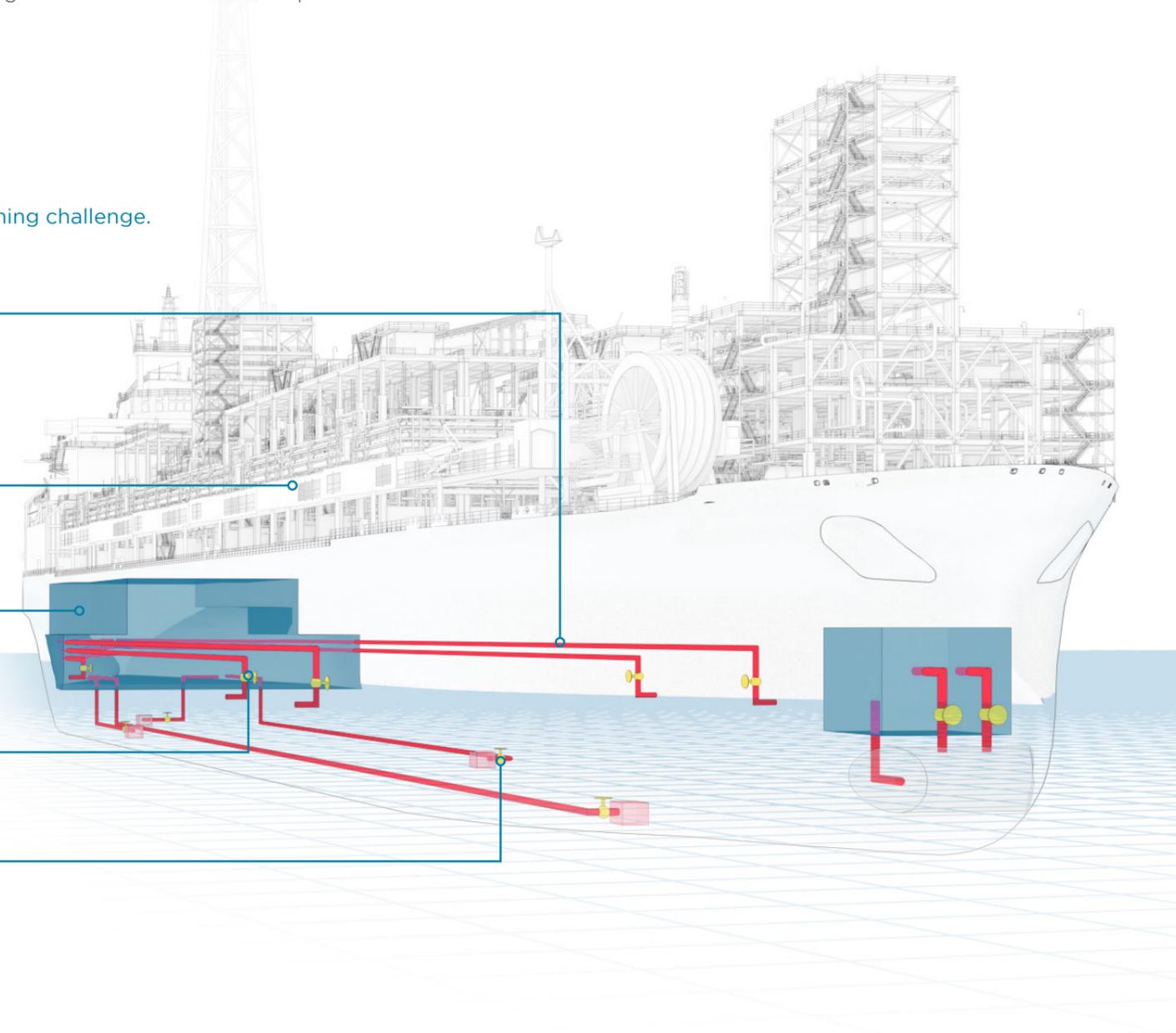
Provide consultancy to our client with the **Health and Safety Executive Liaison**

THE OUTCOME

Within a short time frame and a sensible budget, the client was able to satisfy the Health and Safety Executive that the risk of flooding from ship side valves was adequately understood and mitigated.

An Inspection and Maintenance Scheme was implemented to ensure the integrity of each valve, based on its risk.

The FPSO remains in full operation, delivering a daily and important part of the operator's production.





FORWARD- **THINKING** FORWARD- **ACTING**

For our clients' assets, processes, people and data management in the shipping and offshore energy markets, BV Solutions M&O is the technical advisory, asset management and assurance solutions partner.

Our strong culture of service and quality allows us to resolve new or complex client issues and deliver well-packaged, top-tier solutions that de-risk projects and optimize cost.





HIGH-PERFORMANCE SOLUTIONS

FOR FAST-CHANGING MARINE & OFFSHORE ENERGY MARKETS

BV Solutions M&O is an entrepreneurial, collaborative solutions provider, building on 190 years of experience.

We provide technical advisory, asset management and assurance solutions for the Marine and Offshore energy markets. Our top-tier, added-value solutions enable clients to resolve new and complex issues, de-risk projects and optimize costs.

By listening to our clients and gaining an in-depth understanding of their challenges, our experts can deliver tangible improvements to asset and business performance, safely and responsibly. In an increasingly digital world, we partner with clients to go beyond compliance, enabling their assets to perform reliably, efficiently and with a significantly reduced level of risk and cost.

Together we build on what we know today to change how things are done tomorrow... for good.

www.bvsolutions-m-o.com



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