



Industry Response - Post Macondo

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**CSIS Energy and National Security Program - future of
offshore oil & gas developments in the United States**

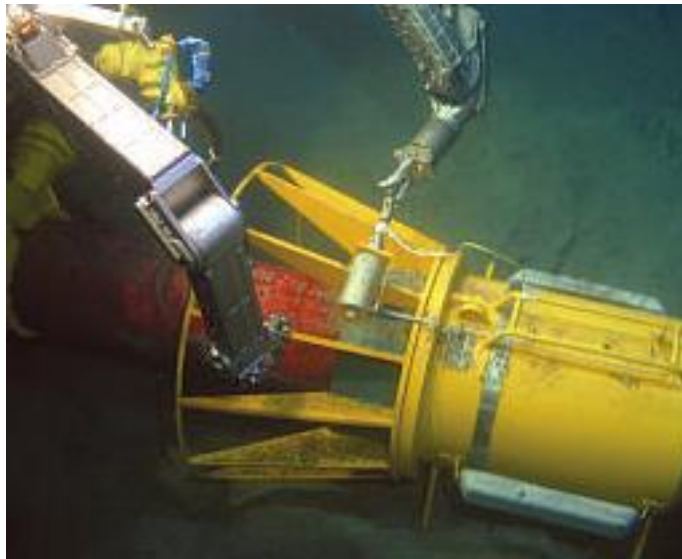
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Presentation Outline

- **Industry Task Forces & Industry Standards**
- **Subsea Containment**
- **Well Design**
- **Center for Offshore Safety**

What is Different ???

EVERYTHING



An industry constantly evolving thru new technologies & approaches to:

- **access deeper waters & more remote locations**
- **explore & develop more challenging reservoirs**
- **enhance environmental protection,**
- **improve the safety of our people & operations**

Restoring Confidence in Deepwater Drilling Operations



Joint Industry Task Forces

- **Offshore Equipment**
- **Offshore Procedures**
- **Subsea Well Control & Containment**
- **Oil Spill Preparedness & Response**



Joint Industry Task Forces

Joint Industry Task Forces were formed to:

- Identify any gaps in operations or practices that could affect safety
- Seek options to address gaps via recommended practices, procedures, and R&D
- Improve Industry's capabilities in safety, environmental performance and spill prevention & response.

Offshore Equipment Task Force

Working:

- BOP shearing capabilities
- BOP acoustics systems
- BOP ROV interface

- Performance based maintenance option
- Competency in training, procedures & operations.
- Clarification on guidelines between Owner & OEM

Working 4th edition of API RP 53 *Recommended Practices for Blowout Prevention Equipment Systems for Drilling Wells* - will be updated to a Standard

BOP Changes

Proactive

- two shear RAMS
- ROV's fitted with additional Hydraulic Fluid reservoir
- SSBOP's ROV Panels are equipped with API 17H stab receptacles

New Regulatory

- Third party certification of the BOP components and functionality of stack
- Dead-man/auto-shear circuit function tested on the stump
- ROV function test of Stack on the Stump
- Shear data for drill pipe submitted with permit
- BOEM witnesses the Stump Test.

Offshore Procedures Task Force

API RP 96 Deepwater Well Design Considerations

API RP 65-Part 2 Isolating Potential Flow Zones During Well Construction 2nd Edition

RP 96 Document Sections

- **Deepwater Activities and Rig Systems Overview**
- **Well Design Considerations**
 - **Architecture**
 - **Barrier Philosophy**
 - **Load Cases**
 - **Internal and External Loads**
 - **Survival Load Examples**
 - **Operations (displacements, etc)**
 - **Completion Operations**
 - **Management of Change**

Well Design Changes

Proactive

- Heavy emphasis on Cap & Shut In

New Regulatory

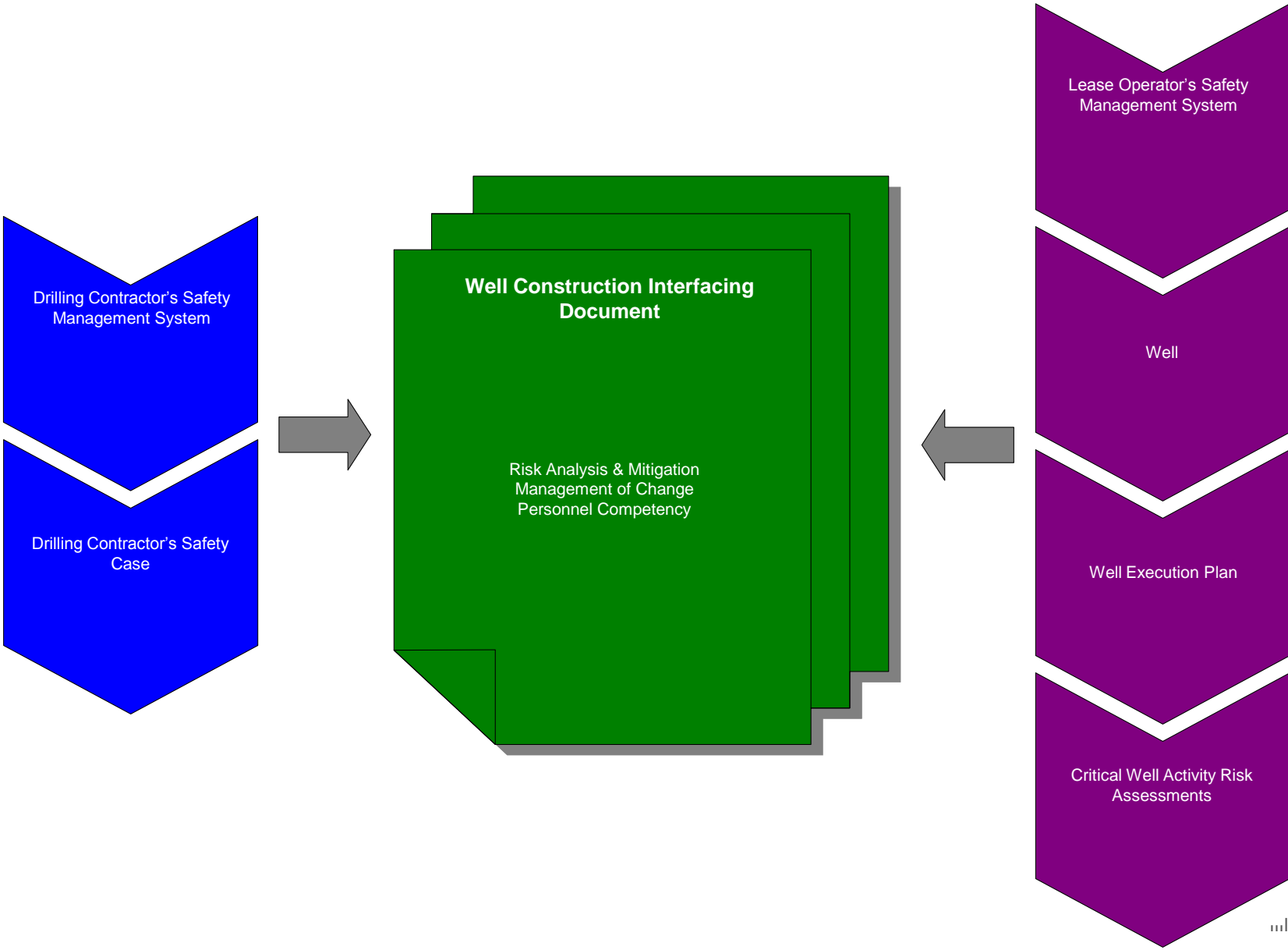
- NTL-10 requirements— level 1 or 2 uni-axial screening for the protective casing.
- PE certification that
 - Two independent tested barrier , including one mechanical barrier, across each flow path during completion activities
 - Casing & cementing design is appropriate for the purpose which it is intended under expected wellbore conditions
- Documentation of consideration for RP65, RP65-2, RP53 Accumulator Volume

Bridging document between:

- **Drilling contractor's HSE safety case**
- **Operator's safety & environmental management system**

Will address safety & risk management on a well by well basis.

WCID – Bridging Document - API Bul 97



Subsea Well Control and Containment Task Force

Identified five key areas of focus:

- well containment at the seafloor**
- intervention within the subsea well**
- subsea collection**
- surface processing & storage**
- relief wells**

Plus R&D recommendations

Developed 29 recommendations to enhance the industry's well control & containment capability

Oil Spill Response

More than 20 individual workgroups

Each groups has addressed an individual component of spill response,

Identified:

- participants,
- objectives,
- timelines,
- budgets

JITF now shifting attention to long-tem items

Oil Spill Response

- **Industry is proactively moving forward with technical & capacity improvements**
- **Combined mechanical recovery capabilities are significantly increasing**
- **Concurrently, progressing JITF recommendations through API Oil Spill Preparedness & Response Subcommittee**

Oil Spill Response

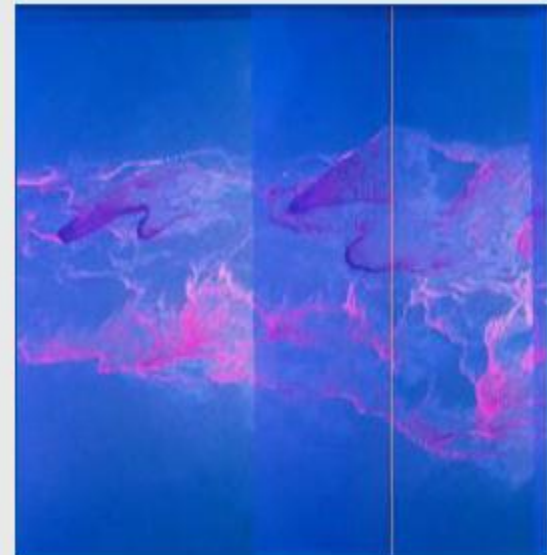
- Key response tools will be expanded/enhanced
- Mechanical Recovery – increase capability:
 - Off-shore capability, including:
 - Deepwater vessels (from 7 to 18, including five PSVs)
 - Sustainability (night spill detection, adverse weather)
 - Newer technology skimmers (efficiency of oil vs. water recovery)
 - Increase floating inventory of boom for containment and enhanced encounter rate (65,000 ft.)
 - Increase Vessel of Opportunity (VOO) skimming systems (50%)
 - Near-shore skimming capacity (100%)
 - Full-time response personnel (30%)
 - Dispersants – increase in aircraft capacity and inventory for subsea use (with MWCC)
 - Burning – increase in fire boom inventory

Oil Spill Response

Oil Spill Detection & Surveillance Post DWH

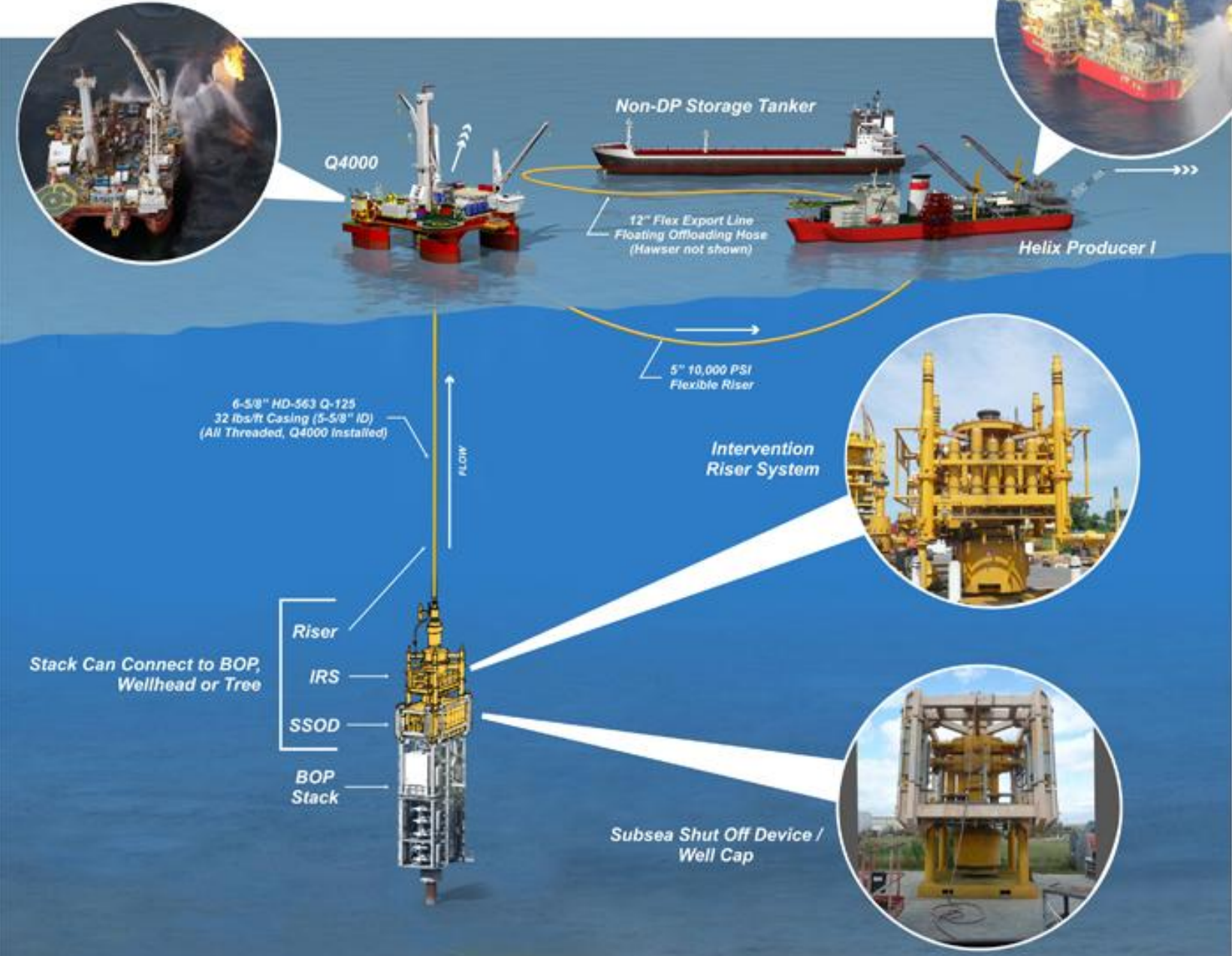


- X-Band Radar
- Slick location detection

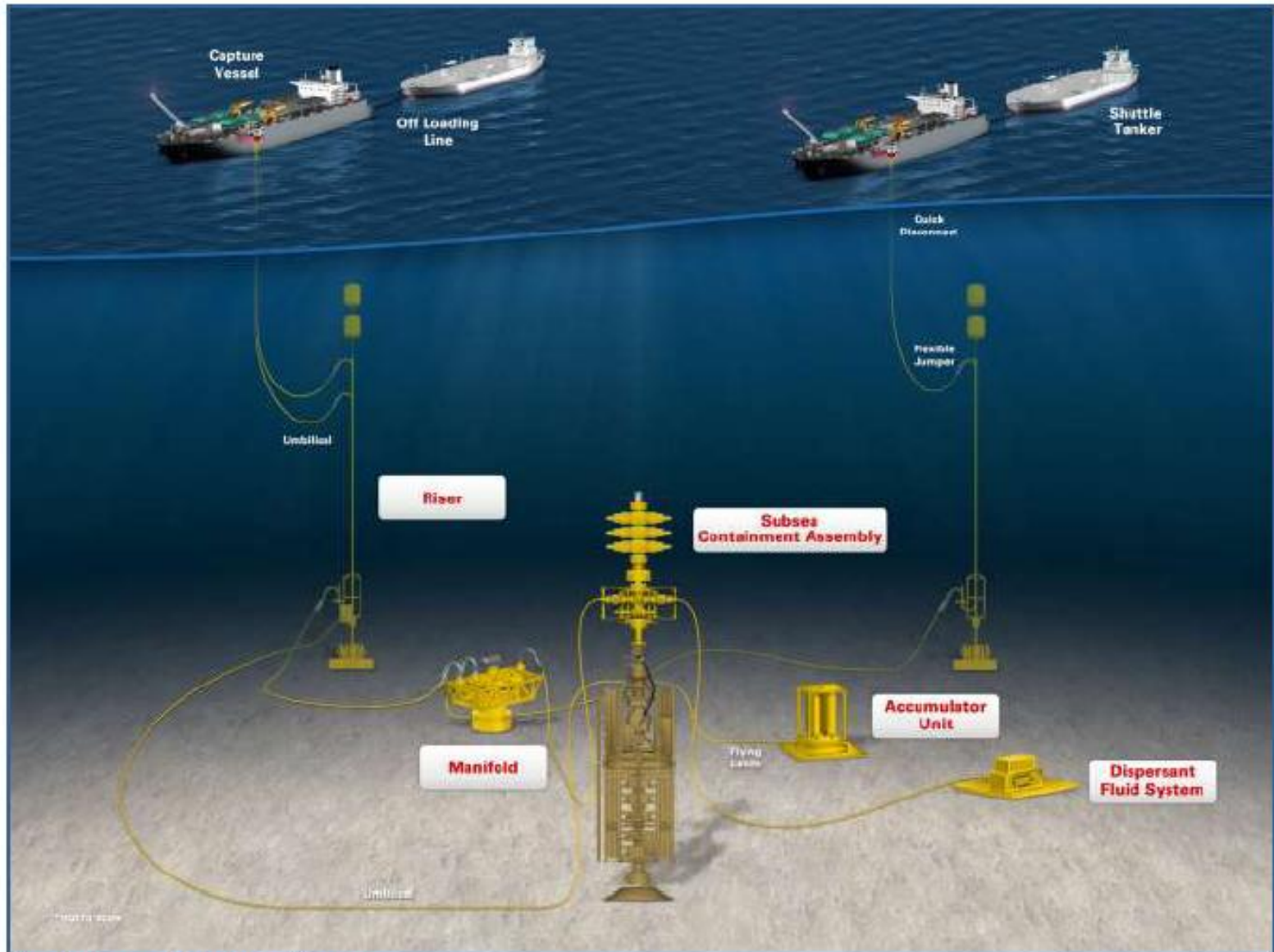


- Infrared Camera
- Slick thickness detection

Helix Containment System



MWCC Expanded System: In Development



Containment System diagram

Level 1 & Level 2 Casing Design

- **BOEMRE – demonstrate ability to “shut-in the well with a capping stack with full displacement of the mud while maintaining wellbore integrity”**
- **Wells that pass (Level 1) have sufficient integrity for shut-in as the primary containment plan**
- **Proposed Level 1 screening requirements are:**
 - **Collapse design factor >1 with unrestricted flow at seafloor**
 - **Burst design factor >1 shut-in at seafloor**
 - **Maximum shut in pressure in open hole $<$ formation integrity**
- **Key inputs:**
 - **Reservoir data (pressure/fluid gradient) from WCD analysis**
 - **API or manufacturers burst / collapse ratings**
 - **Fracture gradient as submitted with APD**
- **Wells that do not pass are (Level 2) & require additional analysis**
 - **Cap & Flow**
 - **Cap with subsurface pressure relief**



- **Industry-led organization to promote the highest level of safety for offshore drilling, completions, & operations by:**
 - **effective leadership,**
 - **communication,**
 - **teamwork,**
 - **utilization of disciplined safety management systems**
 - **independent third-party auditing & certification.**

- **The center will achieve operational excellence by:**
 - **Enhancing & continuously improving industry's safety & environmental performance,**
 - **Building public confidence & trust thru demonstrated performance**
 - **Increasing public awareness of industry's safety & environmental performance & processes**
 - **Stimulating cooperation to share best practices & learn from each other,**
 - **Providing a platform for collaboration between industry, the government, & other stakeholders.**