Emergency Disconnects in the Gulf of Mexico

Jarvis Outlaw, Petroleum Engineer
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“To promote safety, protect the environment and conserve resources offshore through vigorous regulatory oversight and enforcement.”
Emergency Disconnect Sequence

API Standard 53

- Available on all subsea BOP stacks that are DP vessels
- Not required on moored vessels
- Functions to leave stack and controls in a desired state and disconnect LMRP from lower stack
- Two minimum locations from which it can be activated
- Must function in 90 seconds or less
Emergency Disconnect Sequence

API Standard 16D

Requirement to rapidly disconnect riser in event of inability to maintain station keeping (within watch circle)

List of functions at a minimum shall include release of LMRP connector and closure of at least one blind/shear ram

Shear ram closure may be initiated upon disconnect of LMRP

Other functions may include retraction of pod stingers, choke and kill stabs/valves, riser-fill valves, acoustic stabs and ram BOP/annular BOP (block)
Dynamic Position Vessels

- Computer controlled system which automatically maintains a vessel’s position and heading using its own propellers and thrusters
- Examples are drillships, semi-submersibles, mobile offshore drilling units (MODU), and floating production, storage and offloading (FPSO)
Types of Vessels Operating in the GOM

- Drillships
- Semi-Submersibles
- MODUs
- FPSO
Causes of Disconnect

- Weather
  - Hurricanes, Tropical Storms
- Loop Currents
  - Present in the GOM 95% of the time
  - Current is 125-190 miles wide and 2600 feet deep
  - Worse during the summer and fall months
- Human Error
- Loss of Rig Power
- Equipment Failure
## Gulf of Mexico Areas of Disconnect

<table>
<thead>
<tr>
<th>Area Block</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Walker Ridge (WR)</td>
<td>2</td>
</tr>
<tr>
<td>Mississippi Canyon (MC)</td>
<td>3</td>
</tr>
<tr>
<td>Eugene Island</td>
<td>1</td>
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<tr>
<td>East Breaks</td>
<td>1</td>
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<tr>
<td>Green Canyon</td>
<td>10</td>
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</table>
### Gulf of Mexico Disconnects by Year

<table>
<thead>
<tr>
<th>Year</th>
<th>Disconnect</th>
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<tbody>
<tr>
<td>2005</td>
<td>2</td>
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<tr>
<td>2006</td>
<td>3</td>
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<tr>
<td>2007</td>
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<table>
<thead>
<tr>
<th>Year</th>
<th>Disconnect</th>
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<td>2011</td>
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<td>2012</td>
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<td>2013</td>
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<td>2014</td>
<td>3</td>
</tr>
<tr>
<td>2015</td>
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</tr>
</tbody>
</table>

**Total** | **17**
GOM Areas of Disconnects

- Stat only relates to those performing permitted work in GOM
- Incidents reported to MMS/BSEE
- Methods of Reporting and Requirements
  - [https://ewell.mms.doi.net/ewell/](https://ewell.mms.doi.net/ewell/)
Weather Disturbance in GOM during disconnects

- 2005
  - Hurricane Cindy, Katrina and Rita
- 2007
  - Hurricane Humberto
- 2008
  - Hurricane Dolly, Gustav, Ike
  - Tropical Storm Edouard
- 2010
  - Tropical Storm Bonnie
- 2011
  - Tropical Storm Lee
Weather Disturbance vs Disconnects

<table>
<thead>
<tr>
<th>Year</th>
<th>Disturbance #</th>
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</thead>
<tbody>
<tr>
<td>2005</td>
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<td>2010</td>
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<tr>
<td>2011</td>
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API Documents Incorporated by Reference

API Standard 53, Blowout Prevention Equipment Systems for Drilling Wells
API Spec. 11D1 for packers and bridge plugs
ANSI/API Spec 16A, Specification for Drill-through Equipment
API Spec. 16C, Specification for Choke and Kill Systems
API Spec. 16D, Specification for Control Systems for Drilling Well-control Equipment and Control Systems for Diverter Equipment
ANSI/API Spec. 17D, Design and Operation of Subsea Production Systems—Subsea Wellhead and Tree Equipment
API RP 17H for remotely operated vehicle interfaces
BSEE Safety Alerts

- BSEE Safety Alert #315; February 24, 2015
- BSEE Safety Alert #312; May 20, 2014
- BSEE Safety Alert #303; January 29, 2013
- BSEE Safety Alert #300; March 9, 2012

Recommendations

- Addition of regulations into 30 CFR 250 relating to emergency disconnects
- ISO documents incorporated into API relating to emergency disconnects
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Bureau of Safety and Environmental Enforcement

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