



Subsea Decommissioning

Casey Kavanaugh
Workover/Decommissioning Coordinator
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Overview



- Idle Iron Statistics
- Subsea Well Intervention Units and What BSEE is requiring



Idle Iron

Current Regulations



§ 250.1703 What are the general requirements for decommissioning?

When your facilities are no longer useful for operations, you must:

- (a) Remove all platforms and other facilities;

§ 250.1711 - When will BSEE order me to permanently plug a well?

BSEE will order you to permanently plug a well if that well:

- (a) Poses a hazard to safety or the environment; or
- (b) Is not useful for lease operations and is not capable of oil, gas, or sulphur production in paying quantities.

NTL 2010-G05



The NTL Defines “No longer useful for operations” which is used in the regulations for:

Wells

- No production 5 years
- No plans for future operations

Platforms

- Toppled
- Has not been used in past 5 years for operations associated with exploration, development or production of oil/gas

NTL Requirements



- Idle Wells must perform one of the following within 3 years:
 - PA the well in accordance 250.1712 - .1717; or
 - TA the well in accordance 250.1721; or
 - Provide the well with downhole isolation. Within 2 years of setting downhole plugs, they must either PA/TA the well
- Idle platforms must be removed as soon as possible, but not longer than 5 years after it became no longer useful.

Stats



- BSEE is tracking companies' compliance with their submitted idle iron abandonment plans
- Inventory of idle iron at time of NTL
 - 3,233 total idle wells
 - 617 total idle platforms
- Current Inventory of idle iron (as of 2/9/2015)
 - 1,010 total idle wells (261 Newly idle since NTL)
 - 270 total idle platforms (82 Newly idle since NTL)



Subsea Well Intervention Units

Subsea Well Intervention



- Well Intervention Units – any non-rig BOP subsea operation that uses riser or riserless technology to conduct well work.
- Three types:
 - Intervention Riser System (IRS)
 - Subsea Intervention Lubricator (SIL)
 - Well Stimulation Tool (WST)

Subsea Well Intervention



Intervention Riser System (IRS)

- This type of intervention unit has a surface BOP with a subsea emergency disconnect package (EDP) on top of the tree/wellhead connected via a riser.
- The EDP is a system of valves or rams that will shear and seal the wellbore in case of a well control issue or drive/drift off of the vessel.

Subsea Intervention Lubricator (SIL)

- This type of intervention unit contains a workover package and wireline lubricator located on top the subsea tree/wellhead.
- The workover package is a system of valves or rams utilized for well control purposes, but the package will shear and seal the wellbore in case of a well control issue or drive/drift off of the vessel.

Subsea Well Intervention (cont.)



• Well Stimulation Tool (WST)

- This type of intervention unit is used for subsea pumping operations (i.e. acid jobs). It is usually connected to the top of the tree or through the choke.
- The well stimulation tool is a system of valves (with at least 2 barriers) used for well control purposes.
- BSEE has slightly different requirements on this system due to no pipe passing through the unit.

Subsea Intervention Units



BSEE Requirements for Subsea Intervention Units

- Subsea Intervention Units are in retrospect considered BOPs per 250.1706(e).
- These units are being reviewed in accordance with the subsea BOP regulations as much as possible.
- The following documentations are currently being requested and reviewed by BSEE:
 - Control system drawings
 - Stump Test Procedures
 - On-Bottom Procedures
 - Third Party Shearing Verification
 - Third Party Compatibility

Control System Drawings

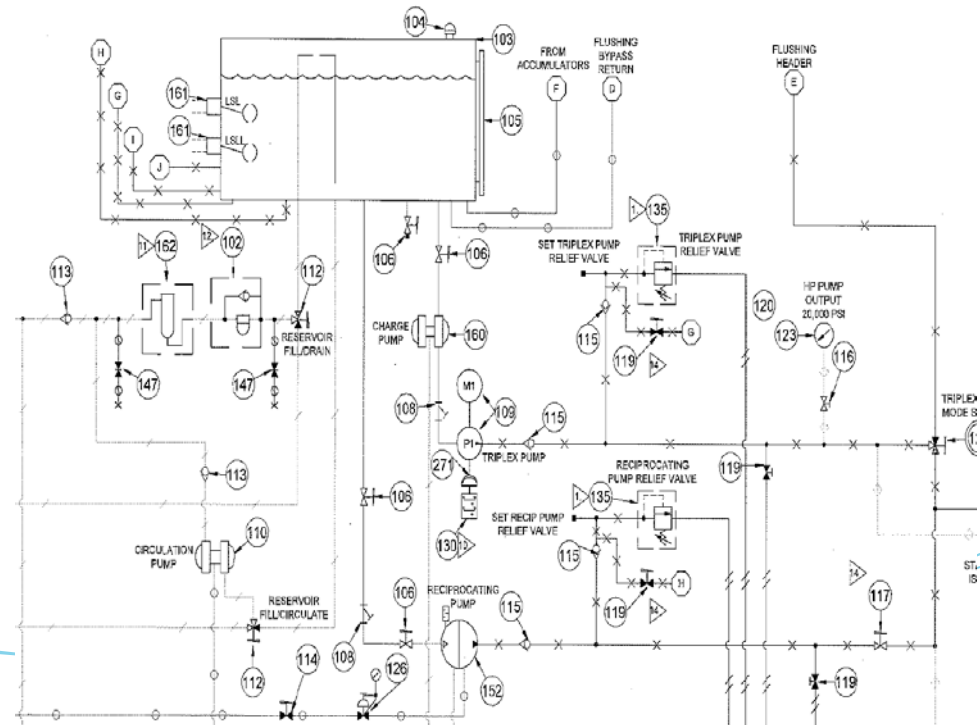


BSEE is requesting the following drawings:

- HPU Hydraulic Drawings
- Intervention Unit Hydraulic Drawings
- Pod Drawings (if applicable)

From these drawings BSEE will review the following:

- Make sure the drawings correctly depict how the intervention system will operate.
- *Deadman system circuitry*
- *Autoshear system circuitry (DP vessels only)*
- *Valving Types*
 - *(Gate Valve versus BSR)*
 - *2 barrier rule*



Third Party Shearing Verification



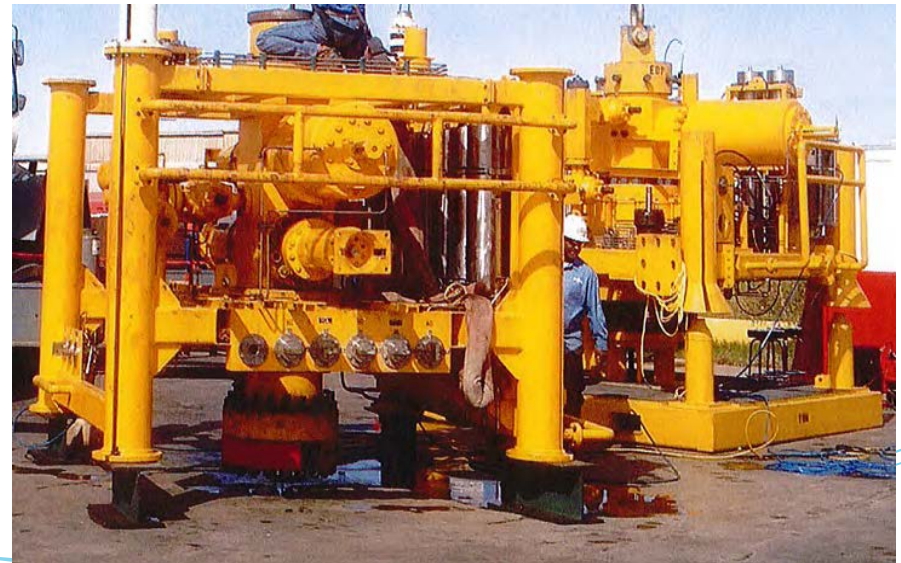
- Shearing Data that is being requested by BSEE:
 - Actual shearing data showing that the valves or rams located on the intervention unit can shear an equal or more ridged workstring/wire than what will be across the stack during the operation you intend to perform with subsequent pressure tests. This shearing test must be third party verified.
 - Third party verified theoretical calculations for each size pipe/wire that will be across the intervention stack calculated with a pressure equal or greater than the maximum anticipated surface pressure (MASP) must be submitted.
- This is to show that the valving or shear rams installed are capable of shearing any size workstring/wire across the stack under MASP.
- Not required for WSTs.



Third Party Compatibility



- Third Party must certify that the Intervention Unit:
 - is designed for specific equipment on the rig and for the specific well design.
 - has not been compromised or damaged from previous service.
 - will operate in the conditions in which it will be used.
- This must be submitted and approved by BSEE before any well work can begin.
- Not Required for WSTs



Stump Test and On-Bottom Procedures



- A stump and on-bottom test must be reviewed and approved by BSEE.
- Stump Test Procedures
 - A full pressure test is required.
 - All ROV hot stab functions must be tested.
 - Must function test deadman and autoshear systems.
- On-Bottom Test Requirements
 - A full pressure test is required.
 - Must function test and verify closure at least one valve or set of rams with a ROV hot stab with a subsequent pressure test.
 - Must function test the deadman system and verify closure at least one valve or set of rams with a subsequent pressure test.





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