Plug and Abandonment

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- July 2015 – 3576 temporarily sealed wells in GOM
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§ 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.

The industry standard for the plugging & abandoning of a subsea well is $33m, but some major operators, are spending upwards of $100m per subsea well.
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- Specific regulations may differ depending on country.
- The “intent” of P&A:
  - Prevent leaks from or into the well;
  - Remove surface equipment and cut and plug pipe below ground level or fishing net level or, depending on requirements, mark the surface location so identification can be made at any time after abandonment.
- P&A responsibility does not usually end with the P&A activities and not even with sale of the property. If it leaks, you will likely be held responsible for damage and to repair and remediate the well and the site.
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Requirements

- At least 2 barriers for active reservoirs
- At least 1 barrier between reservoirs
- Control cables and lines shall be removed
- Barriers to seal the cross section of the well
- Verify location of barriers
- Shall be possible to test barriers
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- Rather than show a brochure of what we offer here is a real example
- Project that had the potential to be messier than a monkey’s breakfast
- Politically unstable country
- Poor logistics / communication
- Potential for non payment
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- Project Management Fundamentals
  - Clear, Defined and Agreed Scope of Work (to be sure, to be sure)
    - Nail everything down
    - Get the right people in the meetings
      - Engineers ☺ Accountants / Supply Chain / Lawyers ☹
    - Consider every possibility of things that can go wrong
    - Have contingencies
  - Right People Doing the Right Job
    - Responsibility
    - Accountability
    - Deadlines
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- Scope of work
  - Remove existing Tree
  - Plug and Abandon well
  - Install Tree on new well
  - 1300ft water depth

Like many things in life we are never fully in control of our own destiny. We rely on other people. Sometimes those people can let you down.

- Major time implications
  - People, equipment, vessel

- Major cost implications
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Best job ever!!!
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Problems

- Poor communication / interaction with other contractors
- Distrust
- Insufficient data / information
- Vessel and BOP very old, poor condition, couldn’t pass pressure test
- AC on boat failed for 2 days. Incredibly hot
- Cabins flooded
- Problems latching the BOP
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- Problems
  - Wireline stuck at Subsea valve
  - Coms with SCM failed
  - E-Line stuck at safety valve
  - Problem cutting production tubing
  - Unable to pull out tubing hanger (180,000 lbs overpull wouldn’t shift it)
  - “Creeping” shear rams on BOP bit into the sides of the Subsea Safety Tree
  - The pin for the split bowl slips was dropped in the hole but managed to recover it when the SST came out of hole.
  - Ultimately couldn’t use BOP
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- Problems
  - Couldn’t land the Umbilical Running Frame
  - Poor communication from client regarding whether the umbilical running frame could be mounted on the Lower Marine Riser Package
    - It kept rotating due to
      - Current
      - Weight imbalance
      - Stress on cable
  - Time running out
  - Great pressure to get this done
    - Eventually had to use an anchor
    - Took hours
    - Teamwork - Success
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■ Problems

■ Nothing quite what it seems
  ■ ROV Flyby to check tree

■ Hybrid penetrator shows fully extended
■ Tried to retract. Kept sticking half way

■ Eventually used ROV to fly to side to check mechanism
■ Was actually fully retracted
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- Solutions
  - Switch operations to a Semi Sub
  - Do the P&A without the BOP
  - Proposed to cement the well through the production side of the Tree.
    - This rendered the Tree unusable so couldn’t use on new well
  - Convert spare Water Injection Tree to make into a Production Tree
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- In water cementing through tree
  - Brought its own set of problems.

- Damage to Goose Neck (GN) locking thread

- Unable to lock down Goose Neck

- Needed complete refurbishment of Goose Neck and Vertical Connection Module (VCM)
  - weld 2” pipe to a Grayloc hub so that the connection to the VCM with GN could be made
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- Modification from Injection to Production Tree
  - Needed to change isolation sleeve as going to install on new wellhead
  - Took less than a month
  - Ultimately the job was a success
    - It came in on time
    - Within budget (saved approx 10%)
    - Happy client
  - We learned a lot
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