



Full Riserless Plug and Abandonment from an RLWI vessel - Case Study

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SPE Aberdeen Well Decommissioning 2022

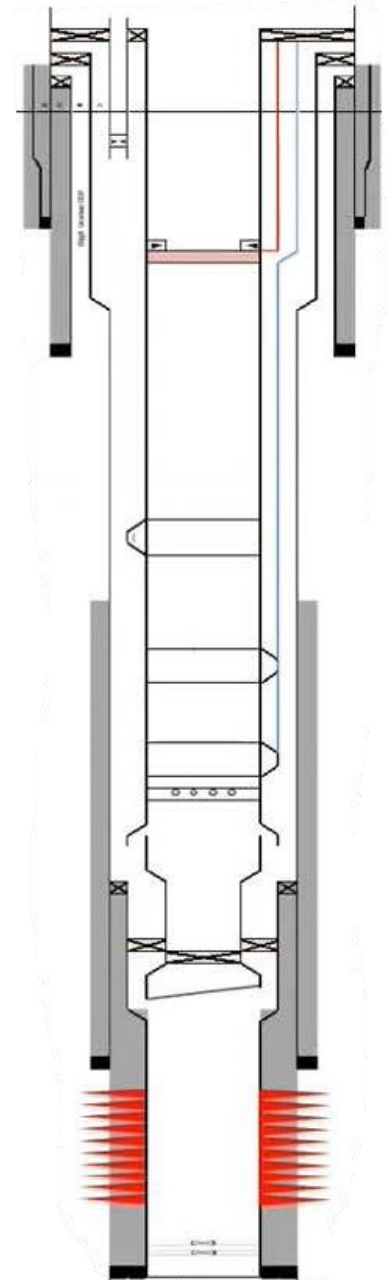


Well History

Well located 250 km East of Aberdeen in the Central North Sea area, with a water-depth around 85 meters.

Shut-in in June 2017 due to a small base-oil leak found during a yearly ROV-inspection, B to C annulus communication indicated expected via a failed 20" casing.

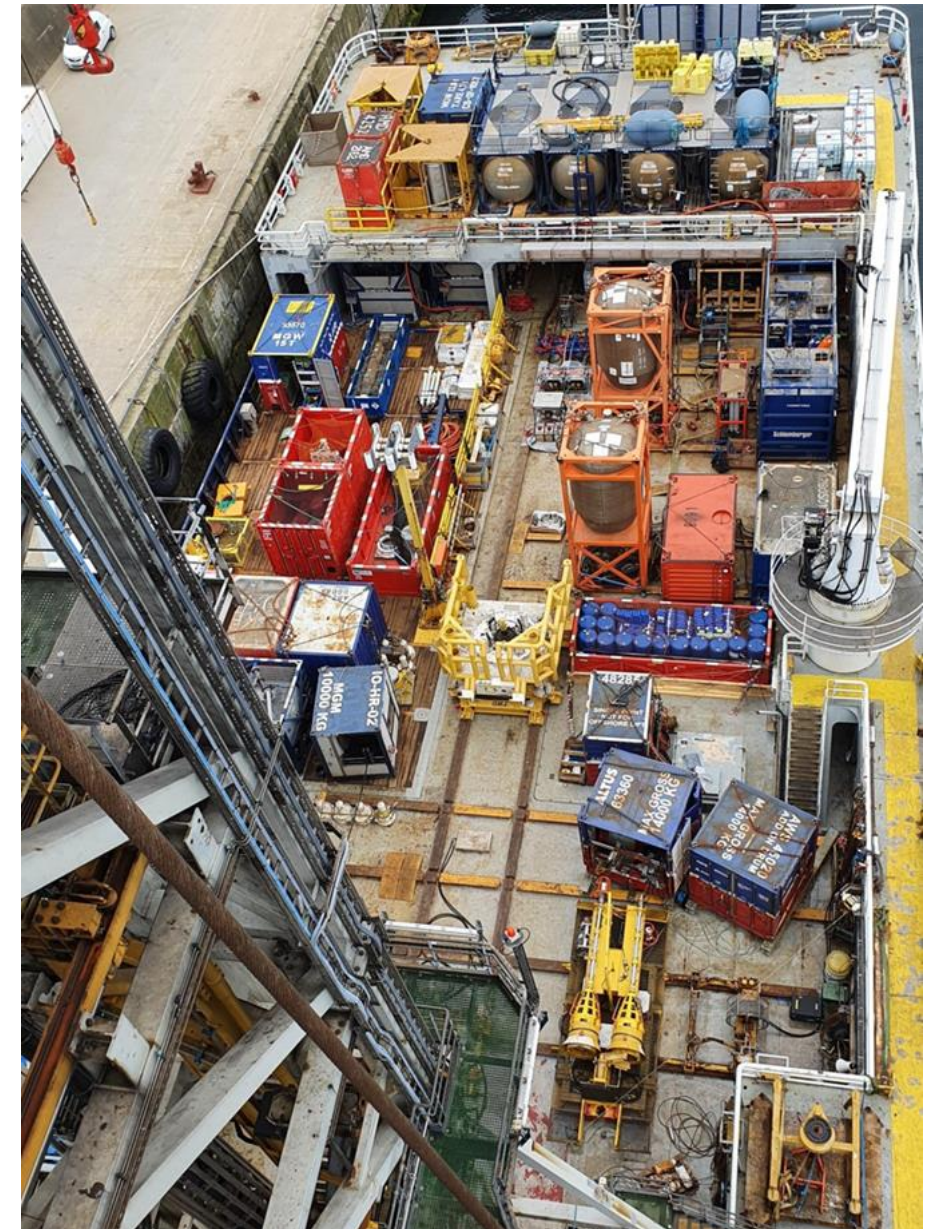
The well was temporarily abandoned in 2018 by bullheading and setting and testing a mechanical plug in the tubing at production-packer depth



Mobilisation

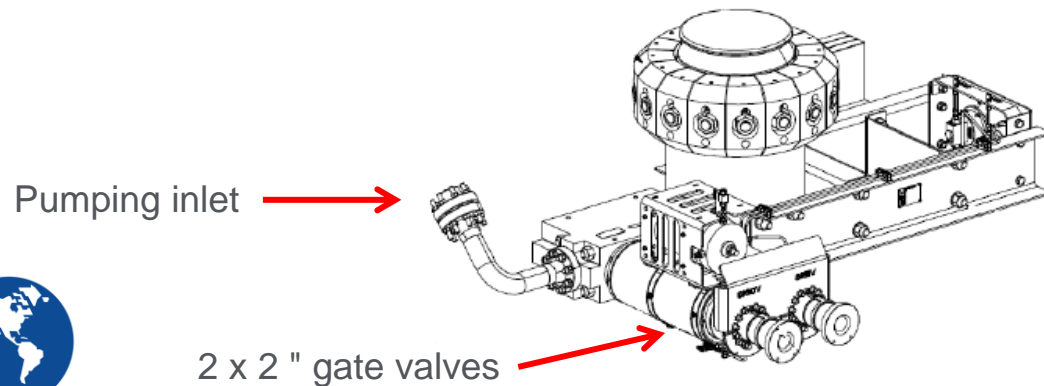
Mobilization of equipment for the operation took place in Peterhead;

- Standard LWI equipment: Island Constructor
- A complete cement-unit, bulk-tanks and chemicals
- Fluid for displacing/cleaning tubing and A-annulus
- Tubular handling equipment



Operations

- TCRT deployed, establish barriers and recover TC
- The LS/WCP including the Subsea Injection Spool (SIS) and 2" hoses run and connected to the XT and tested
- Tested and confirmed A-annulus, plug and production-packer integrity
- Drift to Deepset plug and deploy Hold Open Sleeve in TRSSSV
- Perforated A-annulus above production packer



Lower Lubricator Section, (LLS)

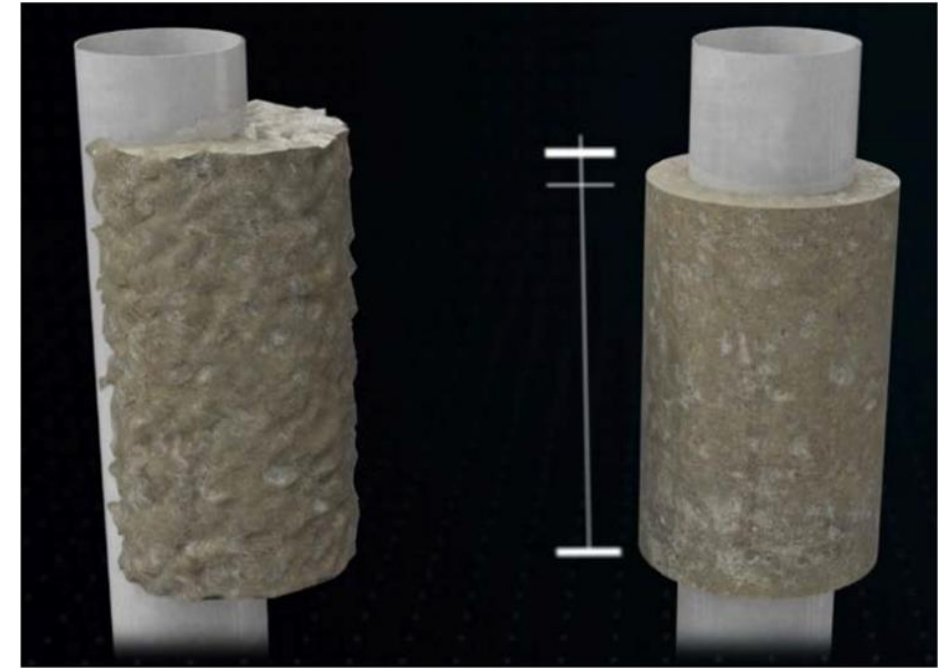
Well Control Package, (WCP)

Subsea Injection Spool (SIS)



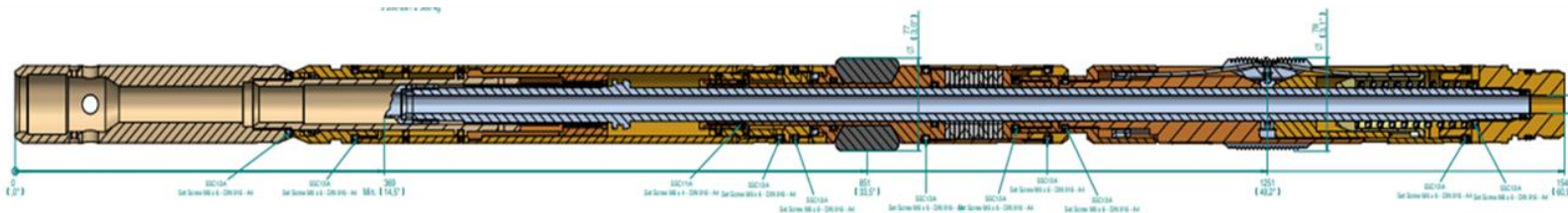
Cementing

- Circulated 1.5 x well volume down tubing, took returns through A-annulus back to vessel
- Cut tubing at 9450 ft
- Installed a Agitator-tool on a ME-packer just above the tubing cut, (see below). Better distribution and quality of cement, (see picture on right)
- Mixed cement and pumped 59 bbl cement down tubing using vessel's service-pumps
- WOC and pressure tested cement plug



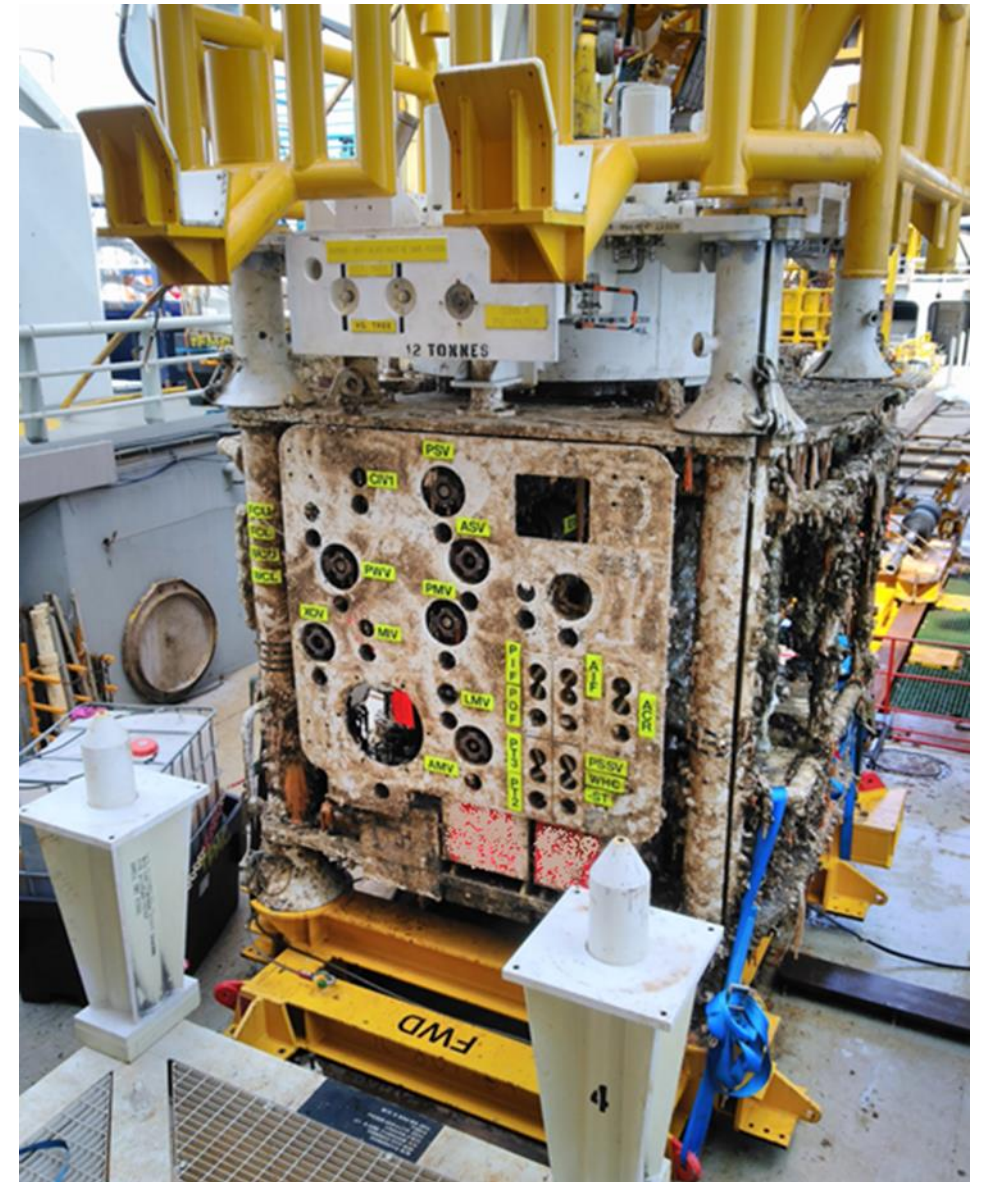
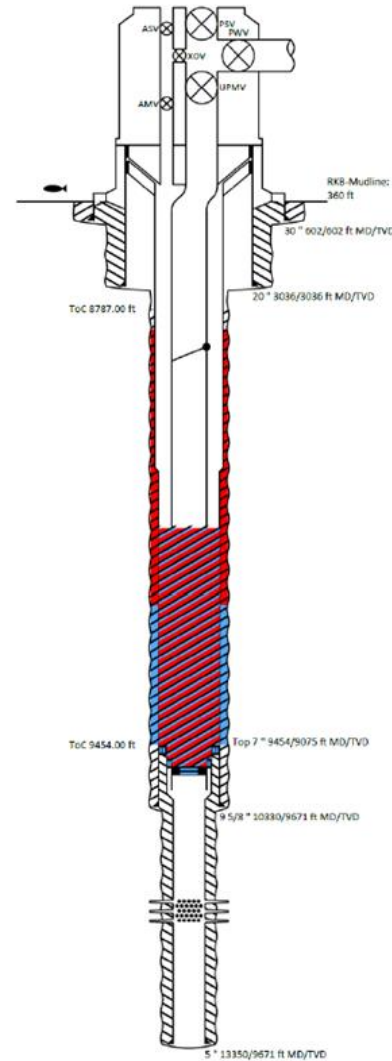
Traditional Method

Valkyrie Method



Tree Retrieval

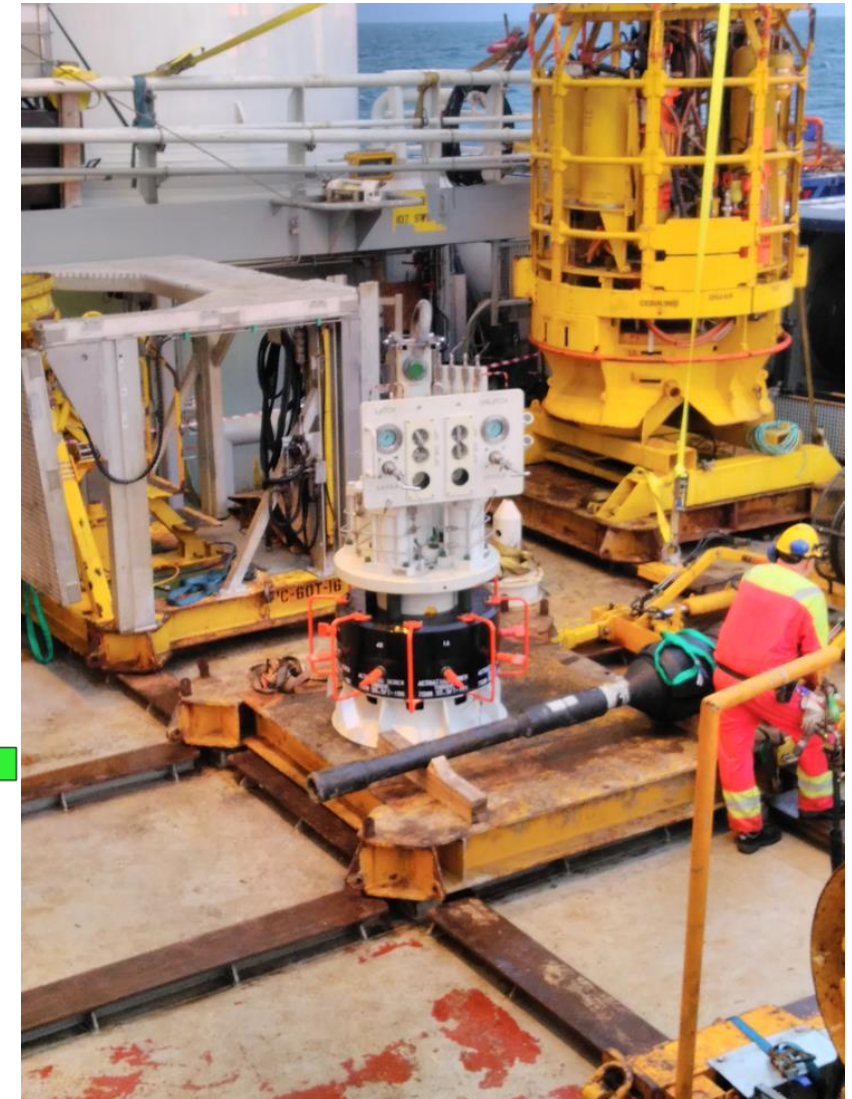
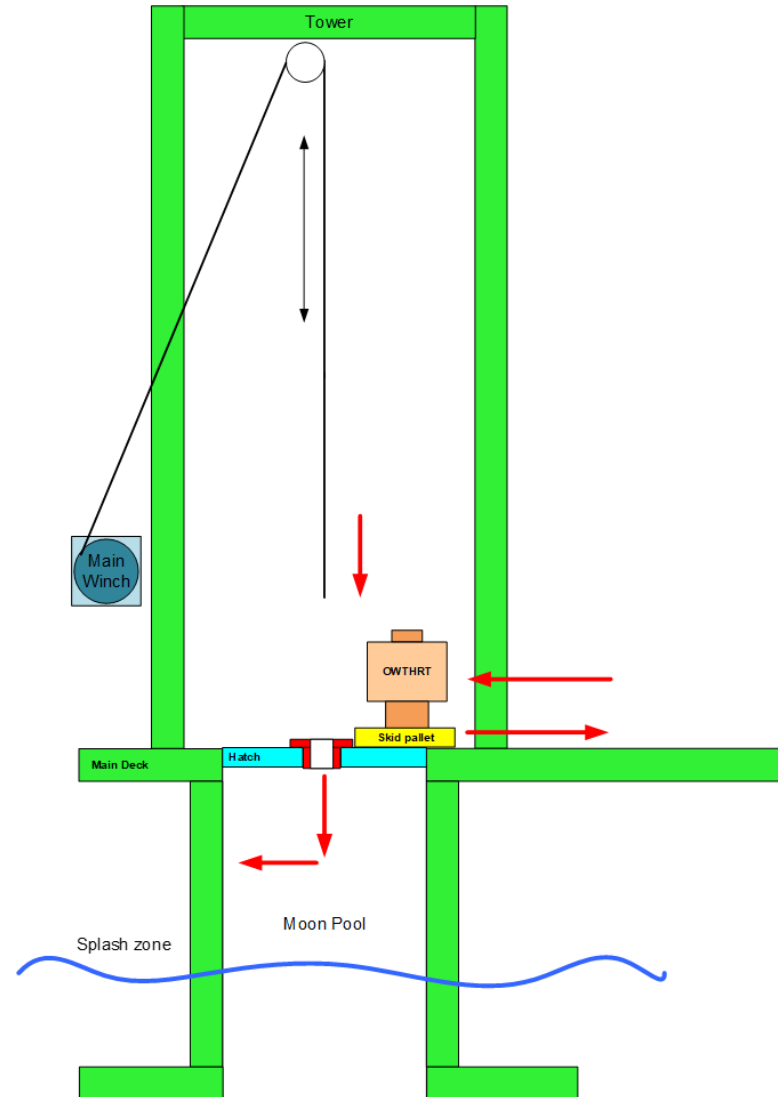
- Cut tubing at +/- 1000ft below tubing-hanger below TRSSSV
- Recovered LS/WCP back to vessel
- Deployed TRT and retrieved XT back to vessel



Tubing Retrieval

Step 1

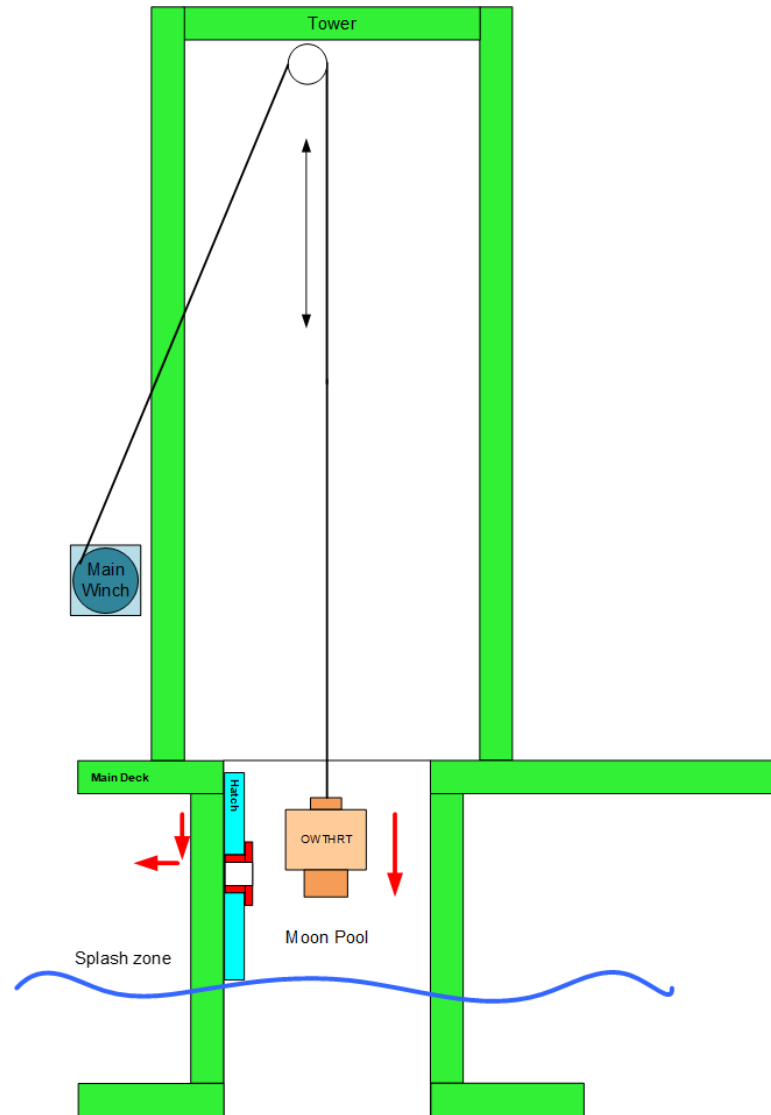
- False rotary installed (after completion RLWI operations)
- Skid OWTHT in to moonpool
- Hook up main winch
- Lift up OWTHT
- Skid out pallet



Tubing Retrieval

Step 2

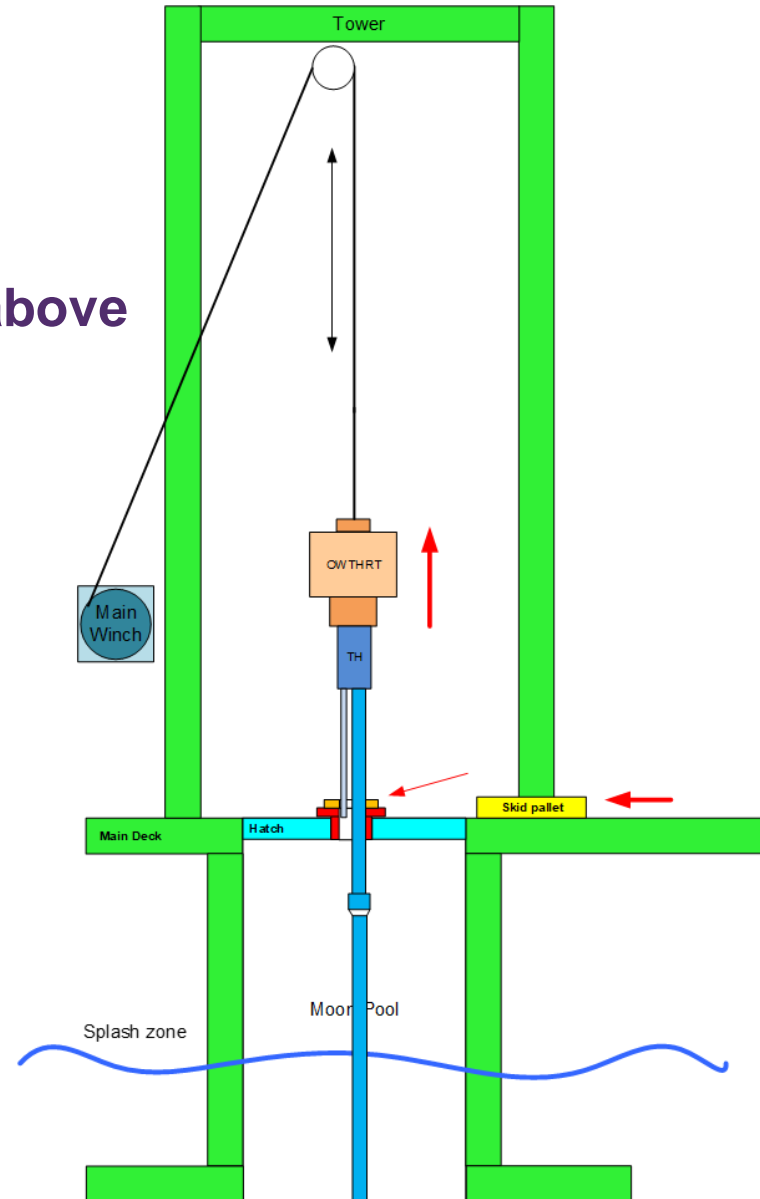
- Open moonpool hatch
- Deploy OWTHT
- Set main winch in AHC when above WH
- Lock OWTHT on TH
- Verify connection
- Release TH from WH with OWTHT
- Retrieve TH and tubing



Tubing Retrieval

Step 3

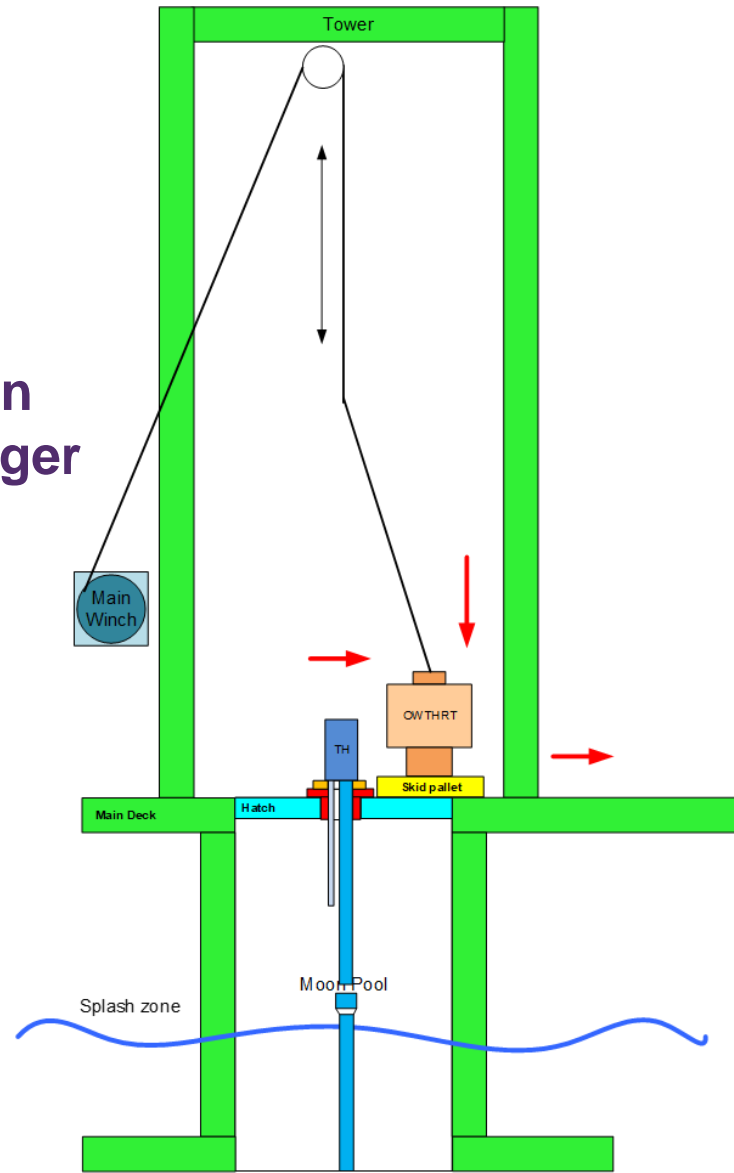
- Retrieve TH and tubing above hatch
- Close moonpool hatch
- Install TH C-Plate
- Land off TH string and OWTHT
- Unlock OWTHT
- Skid in pallet



Tubing Retrieval

Step 4

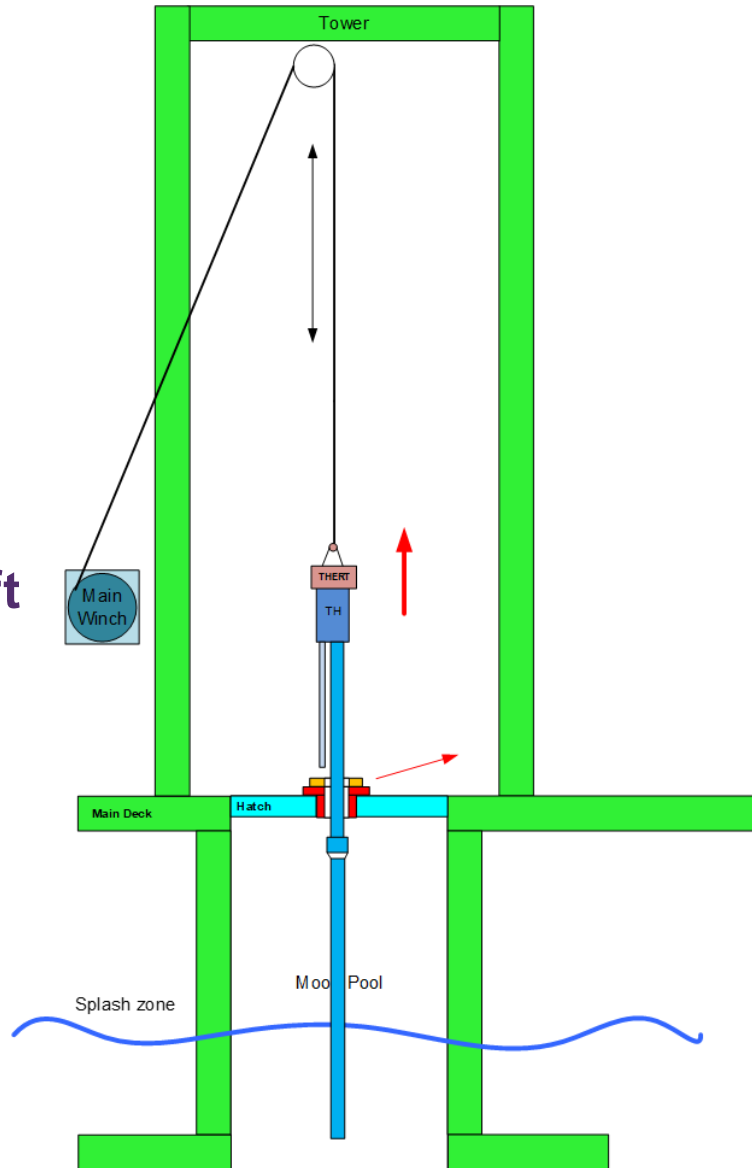
- Install tugger winch to OWTHRT
- Lift up OWTHRT with main winch and guide with tugger winch
- Land OWTHRT on skid pallet and secure
- Release OWTHRT from winches
- Skid OWTHRT out of moonpool



Tubing Retrieval

Step 5

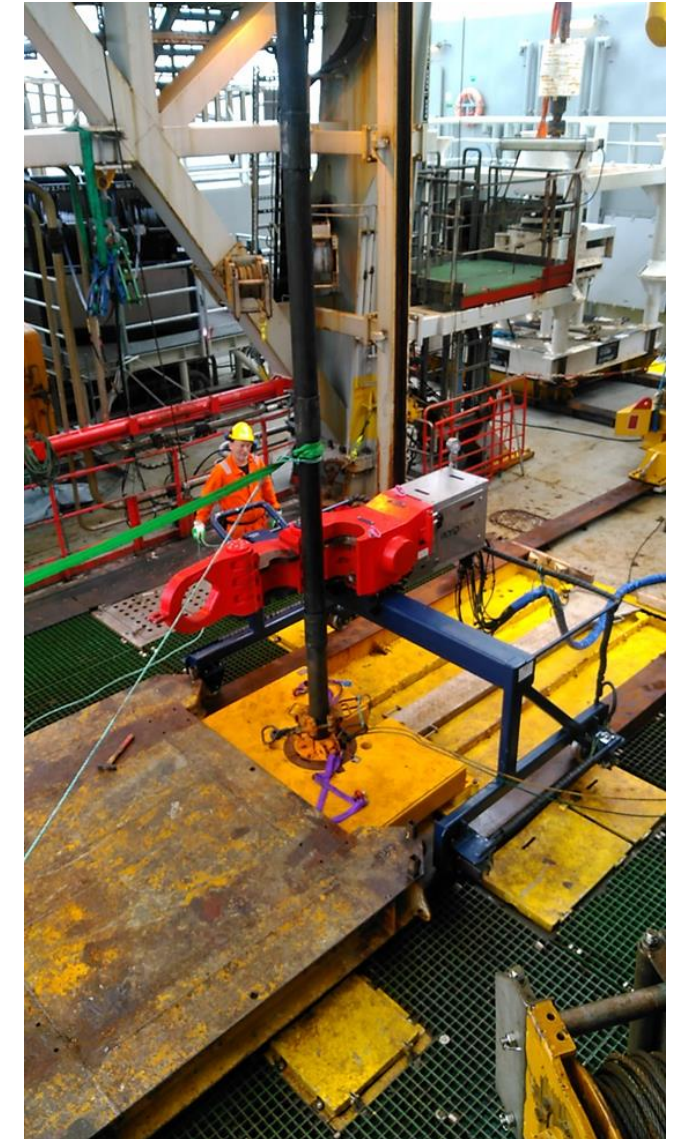
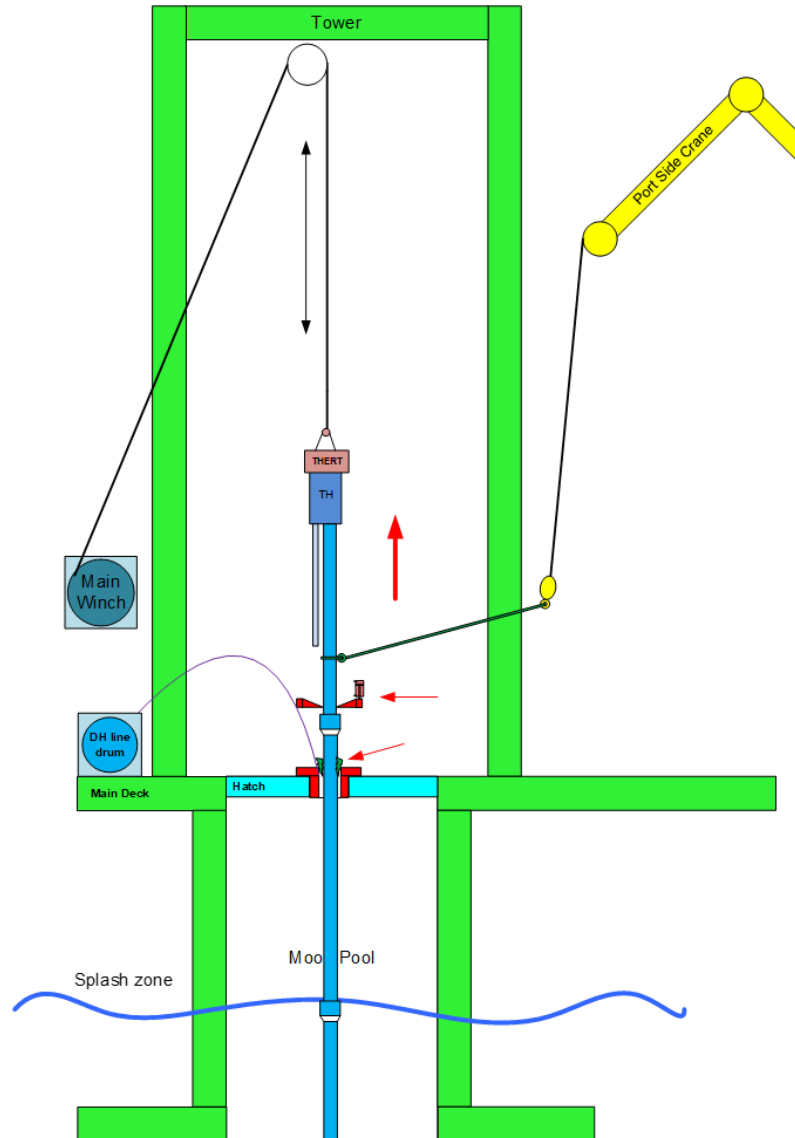
- Pick up THERT with elevator
- Install THERT to TH
- Pick up TH string and lift string above tubing joint
- Remove TH C-plate
- Hang off string in slips
- Remove DH line clamp



Tubing Retrieval

Step 6

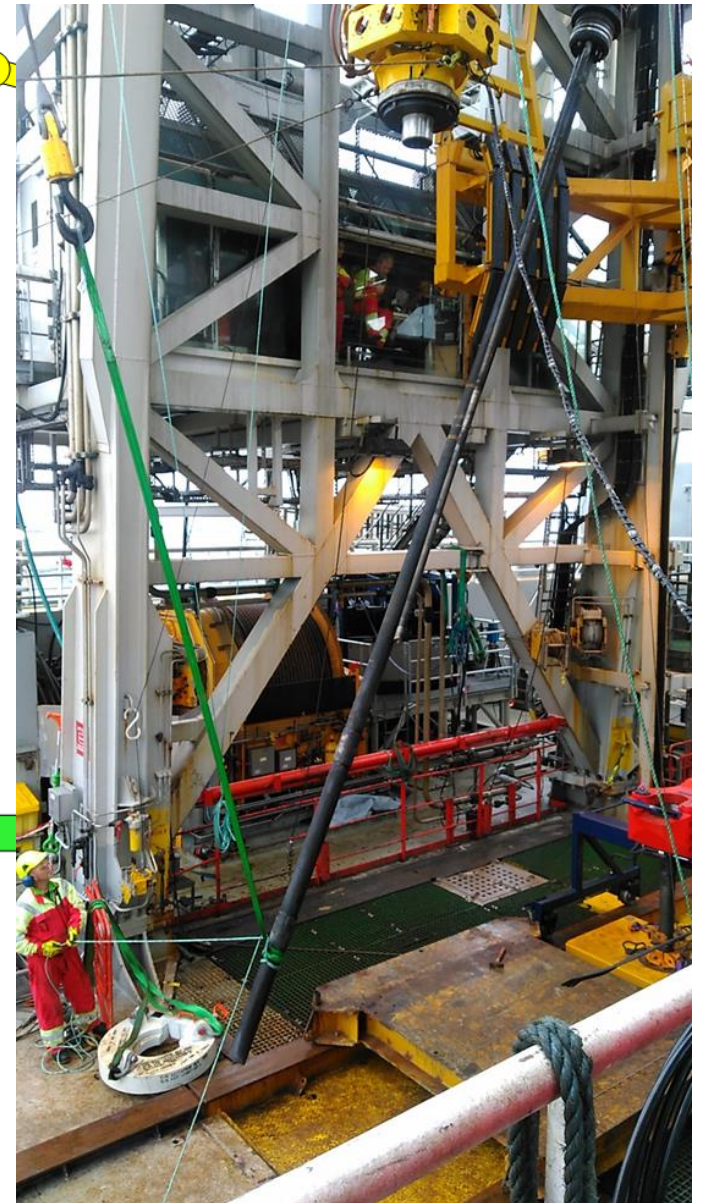
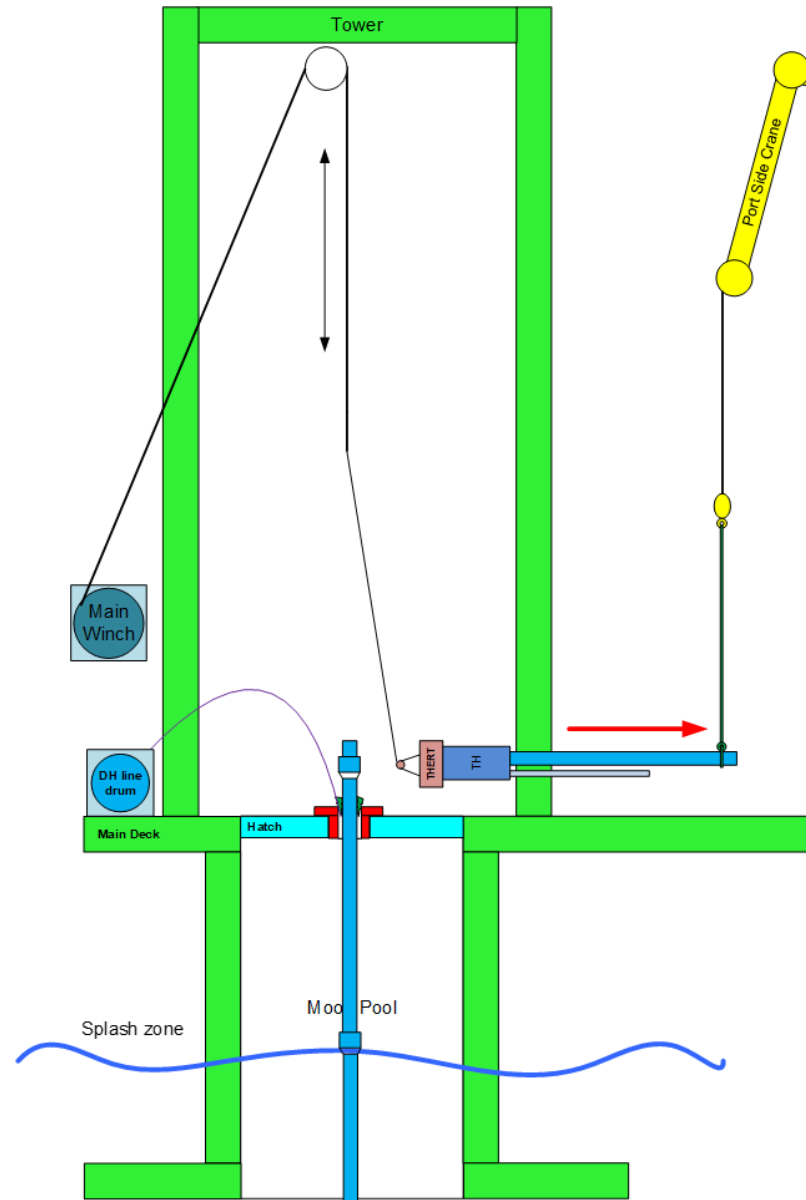
- Hook up DH lines to DH waste drum
- Secure tubing above cutter to reduce horizontal movement (guide lines)
- Hook up Port Side Crane with soft sling
- Cut tubing above joint
- Lay down cutting tool



Tubing Retrieval

Step 7

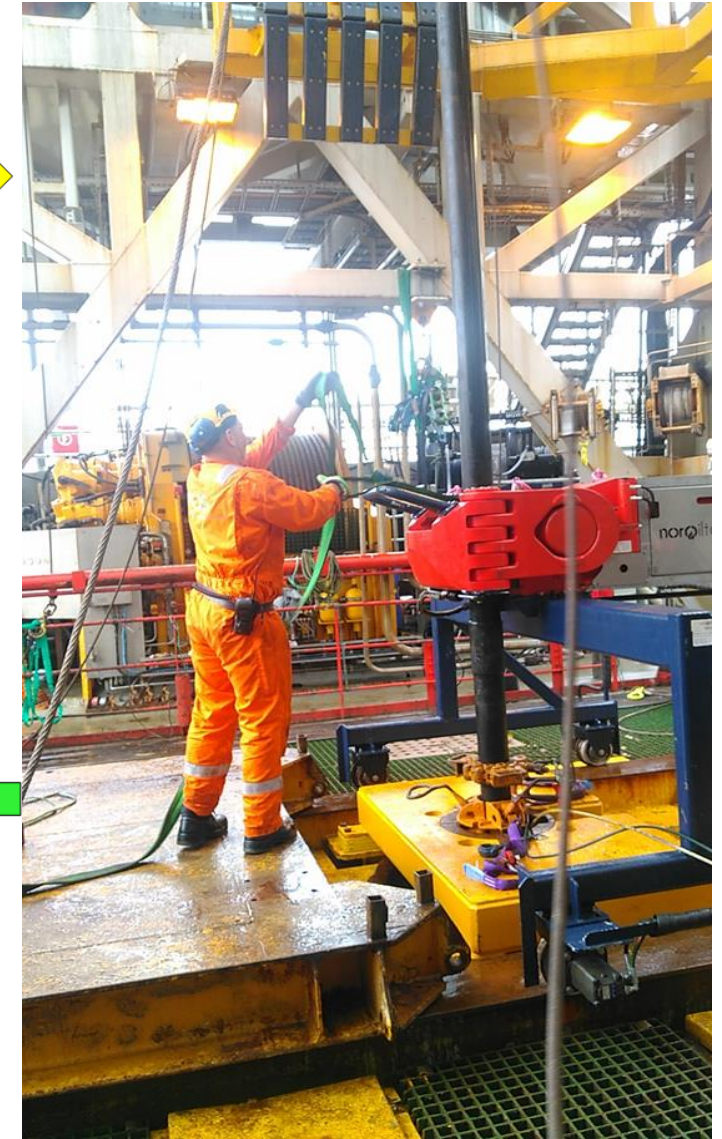
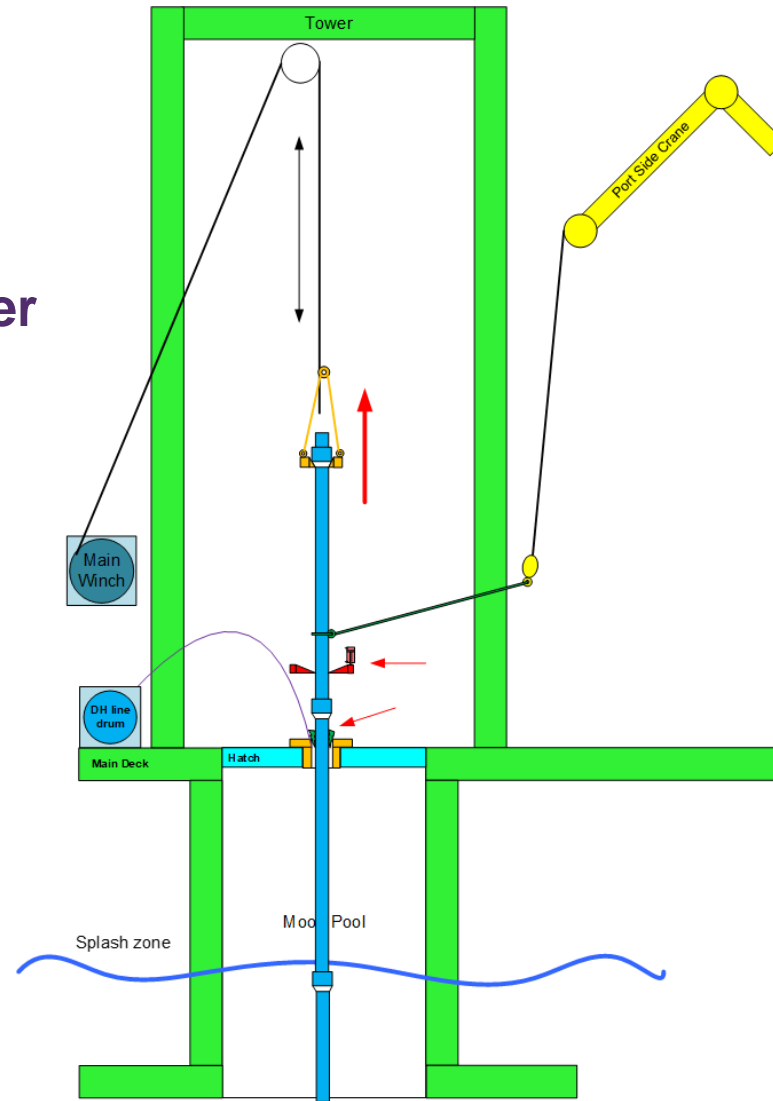
- Lay down TH string with Main winch and Port side crane
- Guide TH string out of tower
- Change lift position and remove string with Port crane
- Pick up hang off bails with Main winch



Tubing Retrieval

Step 8

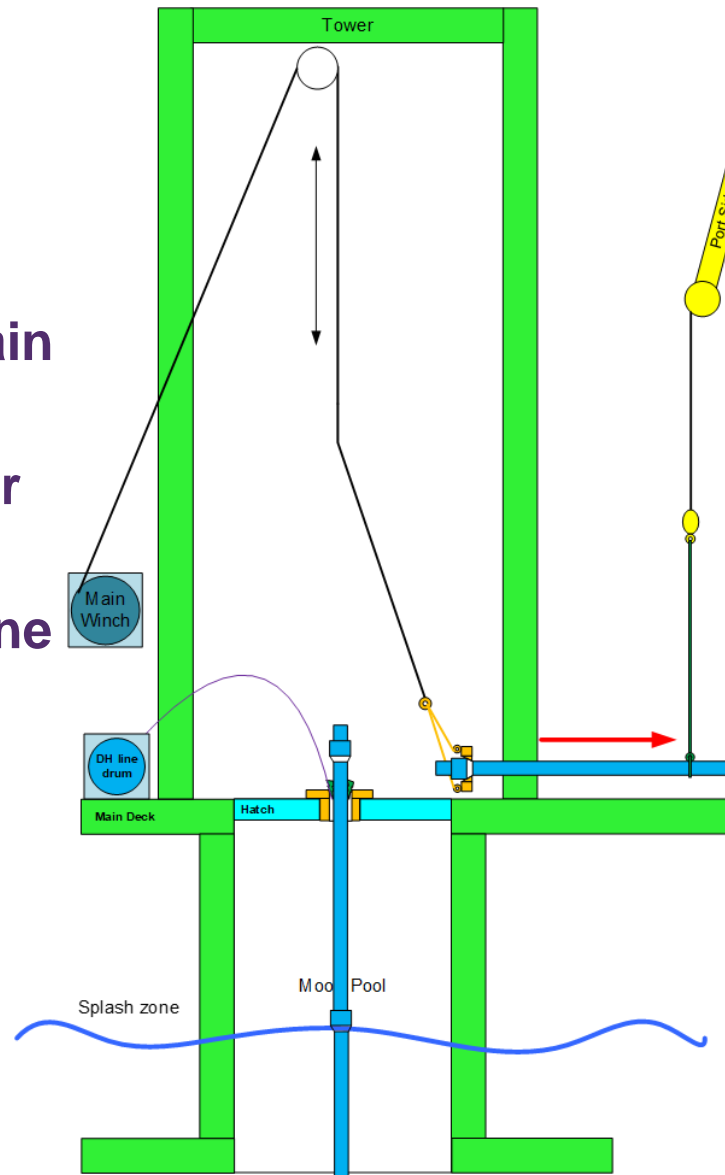
- Install bails on elevator shoulder
- Secure tubing above cutter to reduce horizontal movement (guide lines)
- Hook up Port Side Crane with soft sling
- Remove DH lines clamp
- Cut tubing above joint
- Lay down cutting tool



Tubing Retrieval

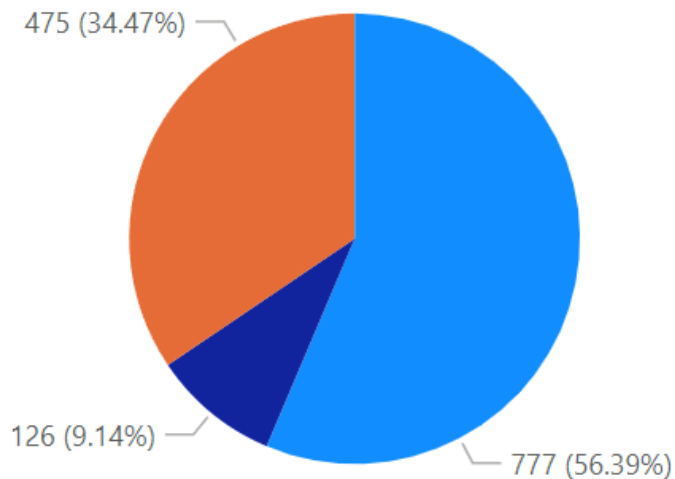
Step 9

- Lay down TH string with Main winch and Port side crane
- Guide TH string out of tower
- Change lift position and remove string with Port crane
- Repeat step 8 and 9 until all tubing is removed



HSE Performance and Statistics

- Total number of observation cards:
 - ● Proactive: 777
 - ● Reactive: 126
 - ● Safety conversations: 475



- Near Miss: 0
- Dropped objects: 0
- Potential D/O: 0
- Lost Time Injury: 0
- Restricted Work Case: 0
- First Aid case: 0
- Medical Treatment Case: 0
- Spill Incidents: 0

Lessons Learnt

- Ensure temporary pipework is set up as per P&ID's or changes discussed prior to vessel leaving mobilisation port
- Look into deck configuration to include pipe handling catwalk machine
- Change vessel pipework to allow venting of gases from storage tanks
- Height adjustment on Hydraulic pipe cutter



Thank You!

