



Kinetics Controls & Innovation Ltd

Case History

Site History:

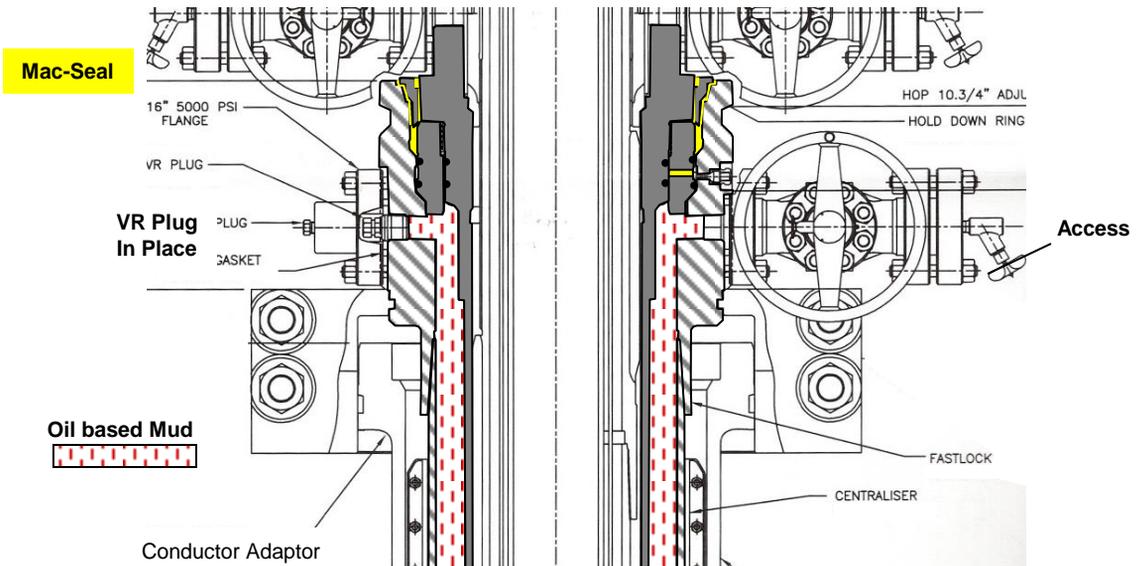
Past isolations have failed due to unexpected loading of the BOP stack above the lock ring of the 18-3/4" lowermost spool. The removal of the lock ring is being impeded by a slight offset load. Oil based mud is passing through the lock ring from the annulus.

Objectives:

Remove the ring and any of the existing exposed Mac-Seal from the ring profile.
Injection of 10 Litres of IBS (Isolation Barrier System) formula to float on the Oil Based Mud.
The IBS will be forced up through the leak path by the action of injecting seawater in to the C annulus.
A further application of Mac-Seal 02 will then be injected prior to replacing the lock down ring.

Once both products are cured a pressure test should be conducted through the C annulus gate valve.

In the event that ring is locked tight the IBS will still be deployed.



18-3/4 Lower Wellhead Assembly Current situation

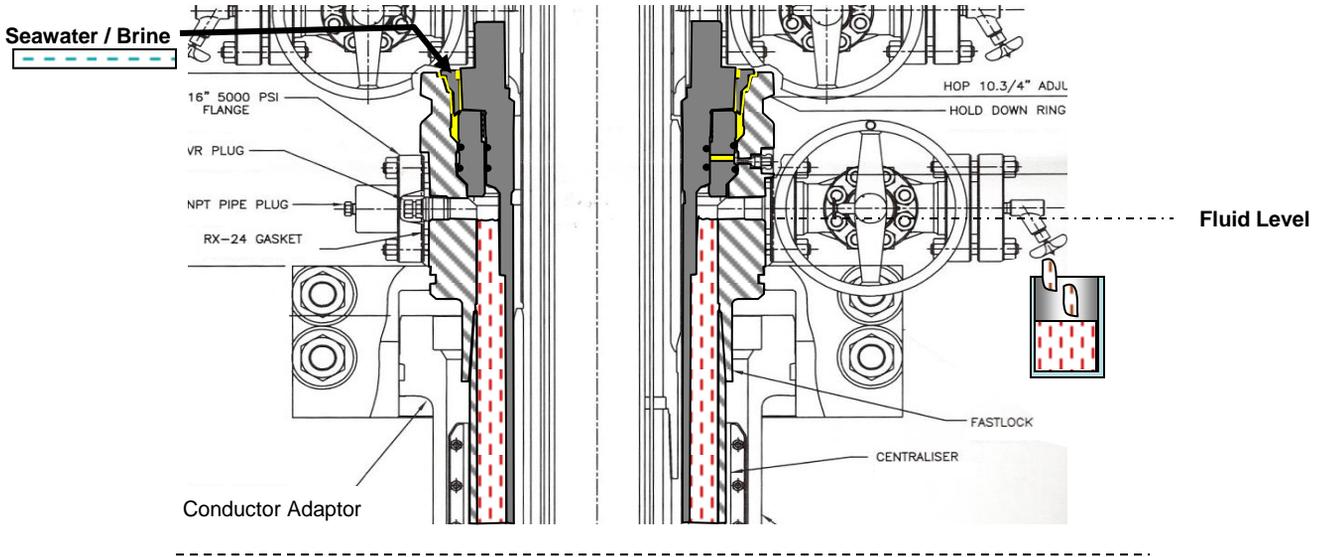


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Scope of Operations:

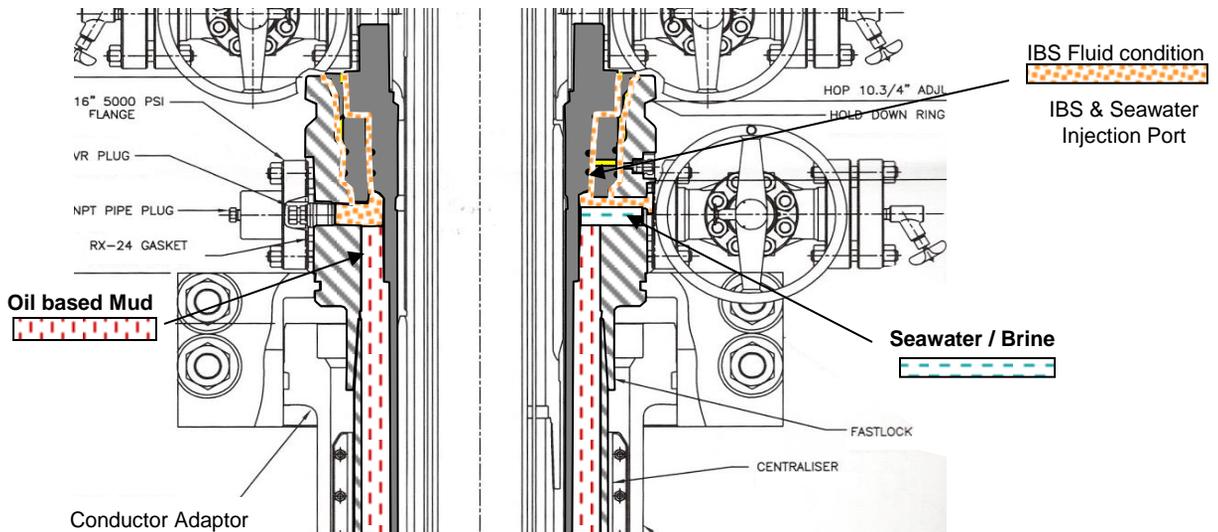
Open the 2" gate valve and needle valve bleed down and drain the C Annulus of existing annulus fluids (oil base mud) through the open 2" gate valve. Record fluid volume returned If possible.

To speed up this application the flange could be removed and the annulus flushed with seawater through the open top ring cavity. re-instate and pressure test the flange.



Ensure the 2" Flange is fitted with a 1/2" access port for IBS injection. Inject 10 litres of IBS Followed by 5Litres plus of seawater to allow the IBS to be displaced through the lock ring leak path of no more than 1litre.

Note: This IBS has been formulated to will float on top of oil and seawater / brine.



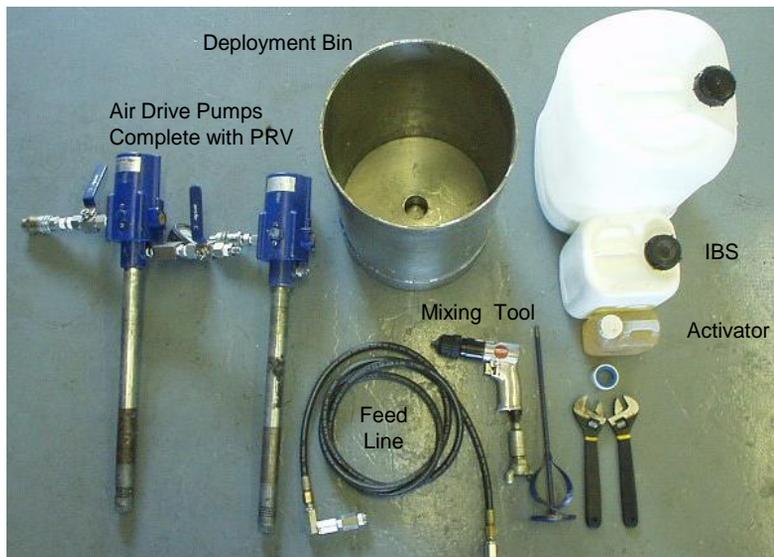
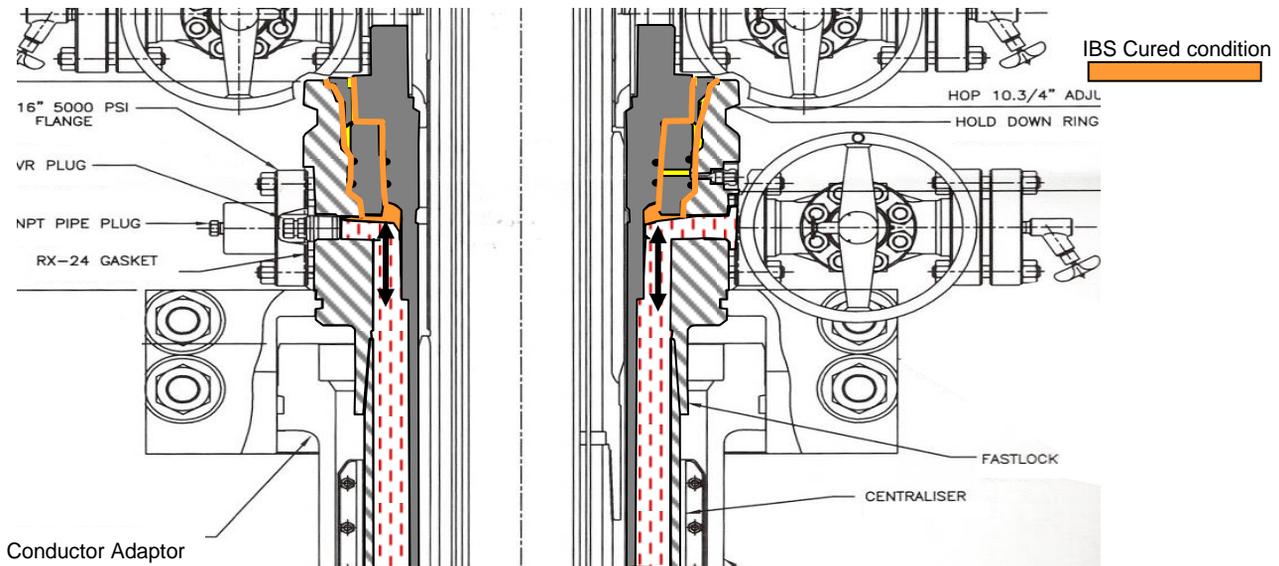


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Allow the IBS to cure to maturity for at least 12 hours. A sample can be left at the work Site to gauge the curing cycle.

Once the IBS has cured the Mac-Seal 02 approximately 2 litres can be applied to the top of the conductor prior to refitting the ring.

A pressure test with seawater / brine should be conducted to test the integrity of the seal area. Customer to advise of test procedure and pressure.

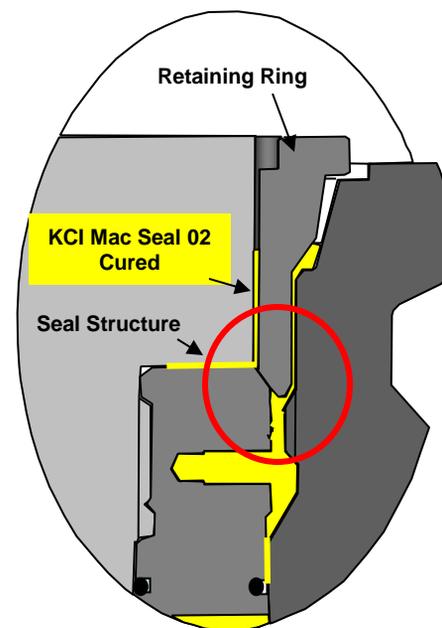
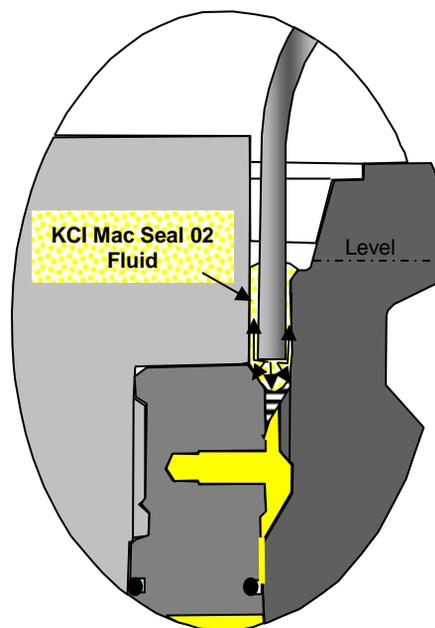
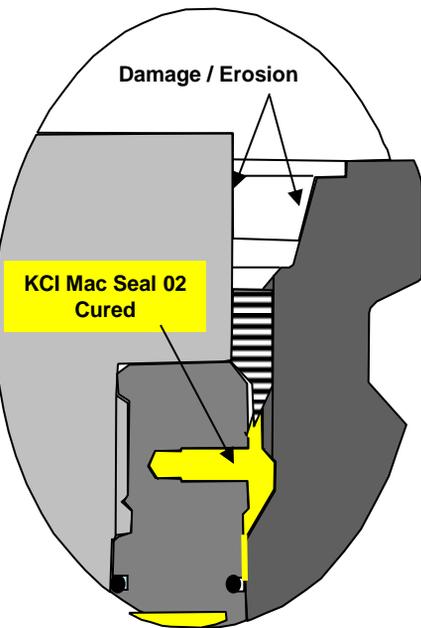
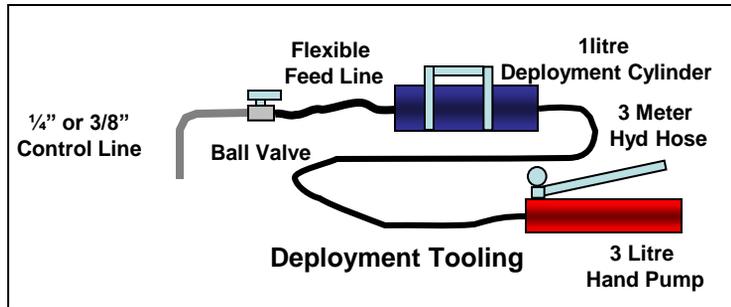
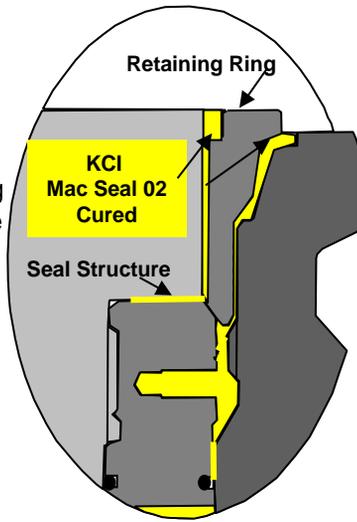


IBS Product Tool Package



Current Position:

The existing Mac-Seal will need to be removed to allow the retaining ring to be disassembled to be replaced with additional sealant.



Current Position:

Existing Mac-Seal (cured) will be present within the lower section of the hanger. Note this will not be 360°. The retaining ring has been removed and indications are that there is existing sealant at the top of the hanger.

Sealant Injection:

1/4" or 3/8" control line tube positioned to face down into the gap to maximise the sealant displacement. Deployment will be 360°. A second run may be required to support the sealant level.

Note: Too much sealant may increase torque values during installation of the retaining ring.

Sealant Displacement & Cure

As the retaining ring is rotated it will drive the sealant down towards the top of the hanger and it will also be displaced upward once there is resistance from below. The seal will be constructed at the base of the retaining ring. Allow to cure, 4 to 6 hours.