FINAL WELL REPORT
Completion FWR
Licence no: PL046BS
Well: NO 15/9-F-4

StatoilHydro

Title:
FINAL WELL REPORT **Completion only** **Licence no: PL046BS** **Well: NO 15/9-F-4**

Document no.:	Contract no./project no.:	Filing no.:
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Water injection well, Completion report, Hugin Formation
Remarks:
Completion only . **For Drilling report, Refer to "Final Well Report, Drilling only,...."**

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Drilling Supervisor D&W DWS MDUN	Tore Endresen	

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1 General well data

Licence number: PL046BS
Well name: NO 15/9-F-4
Slot: 04
Type of well: Water Injection well
Water depth / airgap: 91 m MSL / 54,9 m RT
Subsea Wellhead: 138.9m (top 18 ¾" wellhead)
Surface Wellhead: 21.4m to bottom surface wellhead (multibowl)
Primary objective: Water injection in Hugin formation
Completion type: 7" Monobore
Depth reference: All depths in metres below rotary table, unless otherwise stated.

Section	Start time	End time	Rig name
NO 15/9-F-4 COMPL_LINER	28.02.2008 03:45	14.03.2008 07:45	MÆRSK INSPIRER
NO 15/9-F-4 COMPL_WPREP	14.03.2008 07:45	17.03.2008 16:15	MÆRSK INSPIRER
NO 15/9-F-4 COMPL_OTHER	17.03.2008 16:15	19.03.2008 21:00	MÆRSK INSPIRER
NO 15/9-F-4 COMPL_OTHER	19.03.2008 21:00	06.04.2008 09:00	MÆRSK INSPIRER
NO 15/9-F-4 COMPL_OTHER	06.04.2008 09:00	07.04.2008 20:45	MÆRSK INSPIRER
NO 15/9-F-4 COMPL_TBGRN	07.04.2008 20:45	11.04.2008 03:30	MÆRSK INSPIRER
NO 15/9-F-4 COMPL_THINS	11.04.2008 03:30	12.04.2008 20:30	MÆRSK INSPIRER
NO 15/9-F-4 COMPL_XTINS	12.04.2008 20:30	16.04.2008 17:00	MÆRSK INSPIRER
NO 15/9-F-4 COMPL_PERF	16.04.2008 17:00	22.04.2008 10:45	MÆRSK INSPIRER

Structure centre coordinates:
Geographic: Lat. 58° 26' 29.807" N Long. 01° 53' 14.929" E
UTM: 6 478 563.52 m N 435 050.02 m E

Wellhead coordinates :
Rectangular: -4.65 m N 0.92 m E (from structure centre)

2 Exemption data

Exemption from	Report no	Date	Title
NPD	None		
KP-10			
Drilling program			

3 Health, environment, safety and quality (HES&Q)

3.1 RUH

Type (colour code)	Synergi code	Number of
Yellow	3	4
Green	5	36
Green	4	5
Sum		45
Ref. Red synergi 1000642 dated 19.3.2008: "Person injured his left arm while handling craneload. Maersk Synergi 277429"		

3.1.1 RUH details

WELLBORE: NO 15/9-F-4

Synergi no	Hazard	Description
997997	3	Synergi 997997 (Closed) - 05.03.2008 - Near miss - Dropped object - Pin from fwd PRS dragchain fell to rig floor. The fwd PRs was already isolated and out of service. A safety netting was wrapped around the critical area. Unfortunately the last days high winds had torn the netting open in the lower part and thus allowed the object to fall on to the drill floor. The pin (230 g) fell 10 m from the PRS dragchain to the drill floor.
999269	3	Synergi 999269 (Closed) - 07.03.2008 - Condition - Men working below lifted container Men working below lifted container (crane) in sack store.
1003575	3	Synergi 1003575 (Closed) - 05.04.2008 - Near miss - Dropped object: Bolt head had fallen from PRS gripper head to drillfloor A bolt head from an allen/hex bolt was found on the walkway along the derrick. The operation was suspended for further investigation. Inspection of the TDS and PRS revealed that the bolt had fallen from the aft PRS gripper head. Weight of bolt head 123,6 g. Drop height 25 m. Repaired broken bolt and checked make up torque for 24 similar bolts on backside of gripper head. Associated downtime 8,5 hrs for investigation and remedial action. To be followed up in Mærsk synergi #283841.

Synergi no	Hazard	Description
1003762	3	Synergi 1003762 (Closed) - 06.04.2008 - Near miss - Dropped object - bolt head from aft PRS gripper head A dropped object was observed on the drillfloor 06.04.08 at 00:30 hrs. The object was a bolt head from a hex/allen bolt which is used in the PRS upper gripper head. The bolt head was sheared off the rest of the bolt which remained in the bolt hole. Description : Ø32 x 21 mm / 123 grammes / drop height 25 m / Approx 30 joules energy. A person working on the drillfloor was hit in the finger by the bolt, but he was not hurt. The object deflected on the floor or a structure close to the floor, hence it had lost most of its energy when eventually striking the finger. Person was working on changing an elevator approx 1 m from the assumed deflection point. Note that the PRS was not in use / not moving when the incident occurred. A similar incident occurred just 1 day ago. To be followed up in Mærsk Synergi #284107.
1002092	4	Synergi 1002092 (Closed) - 27.03.2008 - Near miss - A person was swung aside when handling rubber protector When removing a rubber protector (fairring) from one of the flanges on the high pressure drilling riser, a person was swung aside while holding on to the rubber protector. The rubber protector was attached to a tugger wire via the fairring handling tool. The fairring came loose and the strain in the tugger wire made the fairring and the person swing aside. The person was holding onto the fairring and handling tool. The fairring handling tool will be modified so that it is easier to detach. A reminder has been put in the program, instructing slack tugger wire for similar operations in the future. Reference made to Mærsk Synergi #280644.
1002469	4	Synergi 1002469 (Closed) - 29.03.2008 - Condition - Found bolt on scaffolding in moonpool A person working on scaffolding in moonpool found a 20 x 60 mm bolt laying on the scaffolding platform. The bolt posed a falling object risk. The bolt was removed. To be followed up in Mærsk synergi #281184
1002472	4	Synergi 1002472 (Closed) - 30.03.2008 - Condition - Sidecutters found on top of basket on main deck A pair of sidecutters, weight approx 300 grams, was found laying on the edge of basket FCB 1001 on main deck. The tool posed a falling object risk if not removed before the basket was lifted. The tool was removed by the observer. To be followed up in Mærsk synergi #281284.
1003173	4	Synergi 1003173 (Closed) - 02.04.2008 - Condition - Loose kick plates in derrick During a derrick inspection, 3 ea kick plates were observed to have come loose at different levels. Fastening bolts were loose. Tightened bolts. To be followed up in Mærsk synergi #282841.

3.2 Experience listing

Subject: 7in liner, no need to thread lock shoe track
Section: NO 15/9-F-4, COMPL_LINER
Rep date: 05.03.2008
Keywords: CASING/LINER
Downtime: No **Pot time improvements:** NA
Comp inv: Statoil
References: No
Synergi no: No **Cost:** NA
Synergi desc:
NA
Description:
Shoetrack was bakerlocked when running 7" . The liner was uintentionally released/lost in hole when RIH on landing string, fished OOH and racked back as stands in the derrick. It was not re-run, but later broken down and laid out from the derrick. Due to bakerlocked shoetrack, this was very difficult to brake, had to use rig tongs.

This is an injector well with a requirement to place the shoe track placed below 40m below the bottom reservoir. The shoe track will never be drilled out.
The potential problem would be, if the liner had to pulled, as did happen here, then the threadlocked joints may have to be heated to back them off and this requires hot work in a tent around the joint.
In the event, the joint above the landing collar was not threadlocked and it was possible to rack back the shoe track as a triple.
Immediate solution:

NA

Future recommended solution:

No need to bakerlock shoetrack when running liner, as long as it shall not be drilled out again.

Subject:	Cement plugs failed to release.
Section:	NO 15/9-F-4, COMPL_LINER
Rep date:	11.03.2008
Keywords:	CEMENTING
Downtime:	Not recorded in DBR
Pot time improvements:	(*)
Comp inv:	Weatherford Norge AS
References:	
Synergi no:	998874
Cost:	6300000 (*)

(*) Actual cost due to extra time to install plug in bottomn of liner to achieve good liner test.

Synergi desc:

Synergi 998874 (Closed) - 09.03.2008 - Other non-conformities - Weatherford wiper plugs for 7" liner did not release.

During a cmt job for a 7" liner both bottom and top dart were dropped, but the wiper plugs in the liner hanger RT did not release.

Description:

Cemented liner with rotation according to programme. Did not see any pressures indicating that cement plugs sheared out, but pressure and torque figures shoved that cement was displaced in place. Also had returns with spacer and cement when circulating out after releasing running tool. Pumped 2 sponge balls to clean string and POOH, found that the wiper plugs were still on, and found damaged darts on top of plugs with sponge ball wedged in between darts.

Dart(s) must have stopped somewhere in the string during cement job, and possibly the sponge balls had pushed them down to top of the plugs. All the string was drifted with 2 3/4" drift, string consisting of 5 1/2" DP and som 5 1/2" HWDP

Immediate solution:

Tool sent to town for investigation, awaiting result.
Evaluate design of darts.

Future recommended solution:

Consider to run bigger drifts, according to pipe size

Subject:	Premature hydraulic release
Section:	NO 15/9-F-4, COMPL_LINER
Rep date:	14.03.2008
Keywords:	LINER HANGER EQUIPMENT
Downtime:	153
Pot time improvements:	
Comp inv:	Weatherford Norge AS
References:	
Synergi no:	997010
Cost:	NOK 19890000

Synergi desc:

Synergi 997010 (Closed) - 01.03.2008 - Other non-conformities - 7" liner hanger running tool released from 7" liner hanger.

7" liner hanger running tool released from 7" liner hanger and 7" liner without exceeding the operational criterias. When liner hanger RT was inspected at surface, it was found that hydraulic release had been activated.

Description:

7" liner was RIH to 3392 mMD. Took 15 MT at 3392 mMD. Connected TDS and attempted to work past tight spot with 20-30 MT. 181 MT upweight and 141 MT down weight. Applied 9400 Nm right hand torque when working string up and released when working down to avoid mechanical release of running tool. Broke circulation, 230 lpm/37 bar, and established rate at 530 lpm/49 bar. applied max 20 MT when washing down. SPP increased to 60 bar. shut down pumps and recorded 22 bar back pressure trapped below shoe. Applied 9400 Nm righthand torque and worked string up. Upweight of 151 MT showed that the running tool had released and liner was left in hole. (Estimated weight of liner in mud at this depth was equal to 30 MT) POOH with liner running tool. The tool was inspected at surface and found that hydraulic release most likely had been activated. All remaining items on the running tool was intact.

Immediate solution:

The liner had to be pulled out with a spear assembly and the liner was racked back in the derrick in tripples. It was decided that the liner was not being re-run and thus it had to be laid out in singles after the new liner was run.

Future recommended solution:

Ref. Weatherford report. Human error.

Subject: Re-running of racked back CrS110 7" liner
Section: NO 15/9-F-4, COMPL_LINER
Rep date: 30.03.2008
Keywords: CASING/LINER
Downtime: No **Pot time improvements:** NA
Comp inv: Mærsk Contractors
References: No
Synergi no: NA **Cost:** NA
Synergi desc:
NA
Description:
After the 7" 13CrS110 liner was fished and racked back in the derrick, discussions were ongoing wether the liner should be able to re-run back in hole or wether the Vam Top connections could have been damaged causing more time to lay out the damaged joints while running back in hole with the liner. After discussions with the disipline adviser a complete new liner was RIH.

The racked back liner was inspected onshore and showed significant damage on most of the connections. All damaged conections were replaced.

This experience shows that chrome liner that has been run in hole should allways be send to shore for inspection prior to install it back in a well.

Immediate solution:

Racked back liner in derrick and run in hole a new liner.

Future recommended solution:

Never run used chroom liner in hole before inspecting the connections for damage.

Subject: Volve F-4 Completion 14.03.2008 Experience when installing Riser Landing Guide Funnel
Section: NO 15/9-F-4, COMPL_WPREP
Rep date: 15.03.2008
Keywords: ROV
Downtime: ---NA--- **Pot time improvements:**
Comp inv: Oceaneering
References:
Synergi no: **Cost:** ---NA---
Synergi desc:

Description:
Volve F-4 Completion 14.03.2008 Experience when installing Riser Landing Guide Funnel. Operation went fine, from handling RLGF from WL Platform down onto parking position on F-5 WH - See attachment!

Immediate solution:

Future recommended solution:

Subject: Experiences with Filter units - mobilized but not required in F-4
Section: NO 15/9-F-4, COMPL_WPREP
Rep date: 20.03.2008
Keywords: CLEAN WELL
Downtime: ---NA--- **Pot time improvements:**
Comp inv: Halliburton
References:
Synergi no: **Cost:** ---NA---

Synergi desc:

Description:
The Filter unit was used prior to the clean-up to filter some contaminated Packer-fluid (approx 80 m3 in Pit #4) which was circulated through the filters several times to reduce it from 180 to approximately 50 NTU. The fluid in the pit had been contaminated with Barite. (Note. Contamination was traced to Barite dust leaking into Plenum Chamber from Surge hopper. Chamber is sealed (to reduce dust) and therefore Barite leak could not be seen). This was a useful field test of the filter units prior to the actual clean-up operation to ensure it was fully working. Run for 1 hour, 52 x 2 = 104 25 micron and 52 x 2 = 104 10 micron filters used.

The filter unit was not used on the packer-fluid returns from the well as these went rapidly from being unfilterable (due to polymers) to "in specification" (less than 0.05% solids) and re-circulating used Packer-fluid was not required. The rapid clean up meant that on this occasion, as no re-circulation on a closed (filtered) system was needed the flowline etc could be cleaned off-line thus saving considerable amounts of rig time.

Immediate solution:
None.

Future recommended solution:
Despite the units not being needed during this particular clean up, it is recommended that filter units are onboard on future wells to reduce the amount of slops, particularly as future wells will probably behave differently, or as a contingency for pre-job packer-fluid contamination.

Consider increasing the volume of sea water spacer after the last Hi-Vis Soap pill to try and keep polymers separated from the Packer-fluid.

We also recommended the practice of filtering the brine while taking it onboard to the rig. This should be done by rigging up a cartridge unit on the loading station using 10 & 2 micron filters. This is to avoid contamination of the brine tank & also to reduce the amount of solids in the brine before it is mixed into Packer-fluid giving a cleaner starting point. On this well the cartridge units were received onboard after the brine so this was not possible.

Subject: Experiences during pulling HPDR
Section: NO 15/9-F-4, COMPL_OTHER
Rep date: 28.03.2008
Keywords: WORKOVER RISER
Downtime: ---NA--- **Pot time improvements:**
Comp inv: Aker Kværner Subsea
References:
Synergi no: **Cost:** ---NA---
Synergi desc:

Description:

Experiences during pulling HPDR:

1) After TBC was disconnected and pulled free from 18 3/4" WH, the ROV observed that the TBC internal debris seal was left around 18 3/4" WH (see attached picture).

2) One of the Fairing halves was broken in two parts (need more info to find out why)

3) All accessible (parted) riser-flanges were inspected by Vector rep., and all seal-surfaces found to be OK, prior to put on preservation fluid (Molykoat ...) and protectors/Handling Tools.

4) When a Fairing was being removed, too much tension was applied on the tugger attached to the Fairing handling Tool, so when it came loose, the person holding onto the tool was lifted along with the Fairing (RUH). --> Put note into DOP, to verify tugger is slack prior to loosening the Fairing from the riser flange. Action: Modify handling tool to make it easier to get it underneath the Fairing.

5) When the TBC was pulled above centralizer deck it was observed that the Guiding Skirt on the TBC (which we new was damaged during landing of riser on F-4) was loose, and two bolts were missing. Put into DOP that the TBC shall always be

inspected prior to lifting further up from the Centralizer deck, to avoid dropped objects. Action: The back-up TBC/Stress Joint is going to be used on next well F-14, while the primary is sent onshore for repair.

6) When the Lower Pup was pulled to drillfloor it was observed that the Zink-Anodes attached to it had moved approx 5cm, most probably due to interference with the WH deck openings during pulling riser. Action: The zinc-anodes need to be inspected and repaired, prior to be sent offshore again.

7) The newly trained Vetco riser crew needed some time to find out the best way to break the flange connections using the bandak Bolt Tensioning Tools, but later on they performed well with approx 2 hrs to break one connection. Some of the nuts did not come loose using the small turning-pins, due to some corrosion. Had to hit the nut lightly with a hammer. Had 7 Bolt Tensiong Tools available, but 3 was not in use in the end due to the return-function (springloaded) was not functioning well. Action: Need to send all M45 Tools onshore for full refurbishment.

8) Dummy hotstab (which was installed after TBC was landed) was missing when TBC was inspected at surface. Action: need to order new from Vetco.

9) When M/U Claxton handling and test tool to HPDR BOP Joint it was not possible to M/U it up to required torque for pulling entire riser. Had to disconnect and L/O BOP Joint prior to disconnect TBC. Action: Need to order special purpose built J-GUn adapter to be able to take up reactive torque against locking dogs on Claxton Tool.

10) During pulling of HPDR the significant wave height Hs varied from 1.25 to 2.25, and the observed horizontal pendulous-movement of the riser varied up to 1m to each side, based on ROV observations subsea, and visual observation of riser in splash zone.

11) When laying out HPDR doubles and racking them in the Horizontal Racking System in the logical sequence (in order to prepare for running on next well), the lowermost riser double consisting of Lower Pup and Tensioner Joint was not long enough to be resting on all Racking Arms. The risers are now stored without resting in the fwd-most racking arms, but are still resting in 3 racking arms which we have found to be adequate.

Immediate solution:

Future recommended solution:

Subject: Riser Landing Guide Funnel successfully installed on F-4, covered by rig-made hole cover to avoid dropped objects into well during running riser
Section: NO 15/9-F-4, COMPL_OTHER
Rep date: 30.03.2008
Keywords: ROV
Downtime: ---NA--- **Pot time improvements:**
Comp inv: Oceaneering
References:
Synergi no: **Cost:** ---NA---
Synergi desc:

Description:
Riser Landing Guide Funnel successfully installed on F-4, covered by rig-made hole cover to avoid dropped objects into well during running riser (see attachment).
Immediate solution:

Future recommended solution:

Subject: Experiences running Production Riser
Section: NO 15/9-F-4, COMPL_OTHER
Rep date: 31.03.2008
Keywords: RIG
Downtime: ---NA--- **Pot time improvements:**
Comp inv: Aker Kværner Subsea
References:

Synergi no: **Cost:** ---NA---
Synergi desc:

Description:
Experiences during running Production Riser (see also attached file with pictures):

1) TBC picked up to drillfloor. Flushed & Function tested TBC while TBC/Stress Joint hanging in TDS - No need to shut down Oil Production (Saved about 4 hrs Oil Production)

2) Took off Guide Wire Clamp and Dummy hot stabs prior to P/U TBC/Stress Joint to drillfloor, to reduce potential dropped object risk.

3) Found hole-covers which suited well for covering open hole around PR flanges during M/U operation. But still need to order new aluminum hole-covers (due to the ones purpose built): Action: order 2 sets of aluminum hole covers for PR & HPDR.

4) Vetco proved to perform well on M/U PR flanges using Bandak Bolt Tensioning Tools.

5) Used "Air Hammer" torque tool to remove hex-nuts on Handling Tools, in place of J-Gun (saved 1/2 hr per jt)

6) When TBC at Centraliser Deck:
a) Attached pull in wire to TBC body, approx 0.5m above btm of TBC, and taped wire loops using Duct tape. Attached monkey-fist for easy removal of sling by ROV.
b) Attached Guidewire clamp approx 1m above Stress Jint/TBC flange.
c) Attached 8.5t and 12.5t ROV hooks shackled to Guide Wire Clamp - Here we need to order one more 8.5t ROV hook, due to 12.5t was a bit big.
d) Stabbed and secured 2 off dummy hot stabs.
e) Ran TBC through Centr Deck, to be able to pull Guidewires from slot 5 and 3 up slot 4, where pre-attached ropes were used for keelhauling wires. A long fishing rod was used to get ropes around from slots.
f) Ran TBC down until upper flange on first double was landed in Spider - then the TBC was about 2-3m above sea level.
e) Ran guidewires to seabed, one by one to avoid tangling wires, and attached them to preinstalled Eagle Clamps on template, and let wires have some slack (to avoid over tensioning wires during running riser).
f) Had Hs=2.2m when lowered TBC into sea. Some pendulous motion observed, but OK for F-4, since no direct neighboring risers installed (but must consider waiting until lower Hs when having neighboring risers, prior to run TBC into sea!!!).
g) Due to pendulous motion the riser was stabilized with slings at Centraliser Deck. The pendulous motion was approx 1m to each side in Hs around 2m.
h) Tensioner Joint picked up with BX elevator attached to modified handling Sub, where a 3m DP pup was allready M/U. Used 12.5t wire slings from bails to BX elevator, to give space for 3m pup between handling sub and TDS. Put hose extensions between TDS and BX. Operation went nice and smoothly.
i) Landed TBC into Riser Landing Guide Funnel, assisting by pushing riser with ROV using C-guide tool. Continued land TBC into Funnel by one inch increments.
j) When TBC was leveled down to just into vertical guide insert, the TBC stabilized fully, the ROV vent down to observe entering of VGX/WH through inspection-window in RLGF, using ROV arm camera.
k) The TBC was then lowered very carefully to 5cm below WH datum, and the RLGF could be removed.
l) The RLGF was opened and pulled aside using Moonpool tugger. The ROV hooks were hooking into some hang-up spots - need to look closer into which type of hooks to be used next time.
m) Landed TBC OK with 10t down, and locked same OK.

Immediate solution:

Future recommended solution:

Subject: Used Inflated ball (båt-blåse på norsk) as Debris Barrier inside PR when beveling cutting profile.
Section: NO 15/9-F-4, COMPL_OTHER
Rep date: 01.04.2008
Keywords: COMPLETION
Downtime: ---NA--- **Pot time improvements:**
Comp inv: Norse Cutting
References:
Synergi no: **Cost:** ---NA---

Synergi desc:

Description:
Used Inflated ball (båt-blåse på norsk) as Debris Barrier inside Production Riser when beveling cutting profile, to avoid getting swarf into well.
Immediate solution:

Future recommended solution:

Subject: Took long time to rig up Maersk casing running equipment, for short job.
Section: NO 15/9-F-4, COMPL_OTHER
Rep date: 03.04.2008
Keywords: CASING/LINER
Downtime: ---NA--- **Pot time improvements:**
Comp inv: Mærsk Contractors
References:
Synergi no: **Cost:** ---NA---
Synergi desc:

Description:
Took long time to rig up Maersk casing running equipment (ref hrs in DBR):

Recommend to use casing running specialist company as Odfjell for running casing, to save significant rig-time on such a short casing running job (only 11 ea 10 3/4" connections to be made up).

In addition Flush Mounted Spider (FMS) should have been evaluated in place of using PS30 slips, for safer operation wrt. dropping casing string, where the worst case potential is to damage the subsea WH/Casing Hanger.

Immediate solution:

Future recommended solution:

Subject: Input to improve design on Riser Landing Guide Funnel Locking Bolt
Section: NO 15/9-F-4, COMPL_OTHER
Rep date: 03.04.2008
Keywords: ROV
Downtime: ---NA--- **Pot time improvements:**
Comp inv: Oceaneering
References:
Synergi no: **Cost:** ---NA---
Synergi desc:

Description:
Difficult to lock RLGF after it was split subsea: Input to improve design on Riser Landing Guide Funnel Locking Bolt is described in attachment.
Immediate solution:

Future recommended solution:

Subject: Failed pressure test on tie back adapter
Section: NO 15/9-F-4, COMPL_OTHER
Rep date: 05.04.2008
Keywords: CASING/LINER
Downtime: ---NA--- **Pot time improvements:**

Comp inv: Drill Quip
References:
Synergi no: **Cost:** ---NA---
Synergi desc:

Description:
After having pressure tested the adjustment sub the straddle cup tester was RIH to tie back adapter to pressure test same. When pressure testing to 380 bar with completion fluid a leakage from B-annulus was observed and the pressure test failed.
Immediate solution:
Pulled back to 10 m to put cup tester in straight pipe. Still not able to obtain the pressure test.
Future recommended solution:
When POOH with straddle cup tester no tears or flaws were observed, but OD significantly reduced. Evaluate to use other equipment for pressure testing the tie back adapter or evaluate to change the procedure / order of the pressure tests / keep back up equipment.

Subject: Consequences of last minute decision to run completion with preinstalled ball above NPR plug was not analyzed beforehand.
Section: NO 15/9-F-4, COMPL_TBGRN
Rep date: 08.04.2008
Keywords: PLUG AND PACKERS
Downtime: ---NA--- **Pot time improvements:** 8
Comp inv: StatoilHydro
References:
Synergi no: **Cost:** ---NA---
Synergi desc:

Description:
Consequences of last minute decision to run completion with preinstalled ball were not analyzed beforehand.
****
Tubing was run with preinstalled NPR plug below SB-3 packer.

1) In the last minute it was informed by BOT that the SB-3 injection packer has to be set against a plug in tailpipe below the packer.
This is because the SB-3 packer requires downpull on the packer from the pressure force on the plug, to set the slips fully.
From town a joint with preinstalled NPR was mobilized, including backup NPR plug and setting tool. Extra equipment was offshore in advance of start to run tubing (i.e. no lost time).
For comparison, The Granite packer used in the production wells can be set by pressuring up the well.

2) Decided to preinstall the ball in the NPR plug before RIH with tubing, to attempt to save some time. This was a wrong decision.
While RIH with tubing it was realized that the ball/NPR would function as a check valve when pulling out of the liner PBR if stinging in with the seals. Investigation revealed that a high underbalance pressure could be created in the liner in this situation, if stinging too far into the liner PBR.

3) No downtime logged(94), however situation caused probably 8 hrs extra operational time due to required space out procedure.

Immediate solution:
Therefore it was decided to verify sting in depth by pumping down the annulus and monitoring returns on tubing side. The seals were barely entered into the PBR. This method worked fine. The tubing was successfully spaced out.
Future recommended solution:
Avoid last minute changes to procedures. In this case the decision to preinstall the ball was agreed with relevant personnel. In a situation with time induced stress, the requirement for in depth analysis of the consequences was not seen.

Subject: Jam tong was set up with wrong factor for tubing type and mix up with ft-lbs and N-m torque values.
Section: NO 15/9-F-4, COMPL_TBGRN
Rep date: 08.04.2008

Keywords: TUBING
Downtime: 14,75 **Pot time improvements:** 14,75
Comp inv: Odfjell Well Services
References:
Synergi no: 1004359 **Cost:** 885.000,-(60000 NOK/hr)
Synergi desc:

Description:
Found Jam tong was set up with wrong factors for tubing type. Connections were made up to too low torque. Situation was discovered due to difference between computer reading and manual gauge reading. Had to pull out 5 joints and SB-3 injection packer and run with backup packer assembly. Re-ran same Seal stem.
After RIH with SB-3 packer and 1 new tubing joint it was found that the tubing joints had been made up to above maximum torque limit, due to mix up between ft-lbs and N-m. The tong was programmed with wrong torque values. Stopped operation while obtaining advice that it was possible to continue operation with the overtorqued connections. Meanwhile a 2nd backup SB-3 packer was shipped offshore. Performed drift run through 1st coupling, using 5.977" Seawell adjustable drift and tugger. It was found that the incorrect torque values were given in the tally document that was issued. This was probably contributing factor, but experienced Odfjell personnel should have known by experience that something was wrong since the torque figures were "way too high".
DBR: 92 / Lost time: 14,75 hrs

Immediate solution:
Set up Jam tong correctly.
Future recommended solution:
Make sure experienced personnel operate equipment. Experienced personnel would have known that the torques set in the Jam tong were "way off".
Make sure correct torque values are given in all documents.

Subject: Unable to install XMT with use of deck crane.
Section: NO 15/9-F-4, COMPL_XTINS
Rep date: 13.04.2008
Keywords: X-MAS TREE
Downtime: ---NA--- **Pot time improvements:** 12
Comp inv: Mærsk Contractors
References:
Synergi no: **Cost:** ---NA---
Synergi desc:

Description:
Made plan for installation of the XMT by skidding rig and using deck crane. When rig was skidded it was discovered that the deck crane could not reach the well (not any well!), due to derrick structure in the way. Had to skid rig back and install XMT via moonpool. NO lost time logged in DBR, but probably 12 hours extra time was used.
Immediate solution:
Skid rig to correct position.
Future recommended solution:
Make proper plans in advance of operations.

Subject: BPV and dart leak when leak testing XMT.
Section: NO 15/9-F-4, COMPL_XTINS
Rep date: 14.04.2008
Keywords: T/A PLUGS & MECH. PLUGS
Downtime: ---NA--- **Pot time improvements:** 1
Comp inv: Vetco Gray
References:
Synergi no: **Cost:** ---NA---
Synergi desc:

Description:

No visible cause of leak when pulling dart/BPV. XMT had too much grease on inside, but probably not caused problem. No downtime logged in DBR, but probably used 1 hr extra time.

Immediate solution:
Used back up BPV and dart.

Future recommended solution:
QA QC of equipment.

Subject: Excess grease in XMT
Section: NO 15/9-F-4, COMPL_XTINS
Rep date: 15.04.2008
Keywords: X-MAS TREE
Downtime: ---NA--- **Pot time improvements:**
Comp inv: Vetco Gray
References:
Synergi no: **Cost:** ---NA---
Synergi desc:

Description:
Excess grease inside XMT caused problems when pulling leaking BPV and installing new BPV. Nothing to do with leak in BPV/dart when leak testing XMT. Recommend to 1) advice Vetco to remove excess dope before shipping and 2) check XMT bore for dope offshore before installation.

Immediate solution:
None.

Future recommended solution:
Recommend to 1) advice Vetco to remove excess dope before shipping and 2) check XMT bore for dope offshore before installation.

Subject: XMT commissioning finished ahead of schedule, causing waiting on wireline equipment to arrive by boat.
Section: NO 15/9-F-4, COMPL_XTINS
Rep date: 15.04.2008
Keywords: X-MAS TREE
Downtime: 18 **Pot time improvements:** 18
Comp inv: Mærsk Contractors
References:
Synergi no: No Synergi written **Cost:** ---NA---
Synergi desc:

Description:
XMT commissioning finished ahead of schedule, causing 18 hrs (logged in DBR) waiting on wireline equipment to arrive by boat.

Immediate solution:
Rerouted boat to get early equipment delivery.

Future recommended solution:
Make more accurate plans.

Subject: Recommendation for future XMT installation
Section: NO 15/9-F-4, COMPL_XTINS
Rep date: 15.04.2008
Keywords: X-MAS TREE
Downtime: ---NA--- **Pot time improvements:**
Comp inv: Mærsk Contractors
References:
Synergi no: **Cost:** ---NA---
Synergi desc:

Description:
Recommendation regarding XMT installation via moonpool. Remove 2 x hatches with tugger from drill floor. Use intermediate landing of XMT on hatch. Lift XMT with top drive. Skid rig as required to get XMT in position above well.

Ref separate document with detailed recommended future procedure and procedure used on F-4 (with pictures).
Immediate solution:

Future recommended solution:

Subject:	Seawell delivered equipment was with wrong ID and leaking		
Section:	NO 15/9-F-4, COMPL_PERF		
Rep date:	16.04.2008		
Keywords:	WIRELINE ELECTRICAL		
Downtime:	3,50	**Pot time improvements:**	3,50
Comp inv:	Seawell Ltd		
References:			
Synergi no:	1007083/1006514	**Cost:**	210.000,- (60.000,- NOK/hr)
Synergi desc:			

Description:
7/32" BOP, and FMC XO and 1 m riser section was delivered with wrong ID (5" instead of 6 3/8"). Equipment was replaced. Due to Maersk finished commissioning of XMT ahead of planned finish time, the replacement equipment did not reach the rig in time. Therefore this caused 18 hrs downtime waiting for equipment.

One of the FMC XO block and bleed valves leaked. Ordered immediately new one from town (by helicopter). Did not loose any time on this according to Seawell. Continued to rig up to rig floor in the meantime to minimize lost time.
Lost time on DBR(102): 3,5 hrs.

Immediate solution:
Replaced equipment with new.
Future recommended solution:
Seawell to improve QAQC of shipped equipment.

Subject:	Lifting of WL BOP from main deck to moonpool.		
Section:	NO 15/9-F-4, COMPL_PERF		
Rep date:	17.04.2008		
Keywords:	PERFORATION		
Downtime:	---NA---	**Pot time improvements:**	
Comp inv:	Maersk		
References:			
Synergi no:		**Cost:**	---NA---
Synergi desc:			

Description:
Planned:
1. The WL BOP's will be lowered down through the small moonpool hatch using the port aft deck crane onto the moonpool trolley one by one.
2. The WL BOP's are then transported using the starboard gantry crane to the starboard aft corner close to the parked drilling BOP.
3. The weight of the WL BOP is transferred to a tugger wire from the drill floor. Additional slings will be used to prevent sideways travel.
4. The WL BOP is then connected to the short riser section.

Recommendation for future installations: (WL BOP's and XMT):
1. With the FWD PRS operational the foxhole can be dismantled in a controlled and efficient way. The foxhole is blocking the way for the port moonpool gantry crane to reach to the moonpool trolley below the moonpool hatch.

2. With the port moonpool gantry crane operational, problems with the gear box, it is possible to reach the moonpool trolley and transport it over the wellhead hatch deck.
3. The weight is then transferred in a more controlled way to the tugger from drill floor due the ability to centre the lift with the rotary.

Enclosed are pictures of the current situation.

Immediate solution:

Future recommended solution:

Subject: Required to rig up high scaffolding due to equipment supplied by Shlumberger did not allow break point close to rig floor.
Section: NO 15/9-F-4, COMPL_PERF
Rep date: 19.04.2008
Keywords: PERFORATION
Downtime: ---NA--- **Pot time improvements:**
Comp inv: Schlumberger
References:
Synergi no: **Cost:** ---NA---
Synergi desc:

Description:
The riser/lubricator rig up ON DRILLFLOOR required use of high scaffolding to get break point at correct height. This worked fine and there was no additional hazard associated with the operation. The break point above rig floor allowed installing the orienting weight section and the 2 guns sections in the riser before connecting the cable head.
Alternatively(preferred and planned method), to get the break point at a height not requiring scaffolding, the toolstring/guns should have been supplied with "special" adapter to allow making up the last gun section to the cable head (orienting weight section and the 1 guns section already in the riser on C-plate). This requirement was missed out in the planning phase.
Seawell had plenty of alternative riser and lubricator sections onboard, which proved useful to get the break point as low as possible, in the current situation.
Cause: Special requirements for the Schlumberger equipment was not picked up in pre-planning talks between Seawell and Schlumberger.

Immediate solution:
Built workable scaffolding.
Future recommended solution:
Recommendation: Order guns with "special" adapter, if required due to perforation interval length. Prefer break point a rig floor.

Subject: Schlumberger did not have the adapter for PGGT to be able to run PGGT in combination with electric release cable head
Section: NO 15/9-F-4, COMPL_PERF
Rep date: 19.04.2008
Keywords: PERFORATION
Downtime: ---NA--- **Pot time improvements:**
Comp inv: Schlumberger
References:
Synergi no: **Cost:** ---NA---
Synergi desc:

Description:
Schlumberger did not have the adapter for PGGT to be able to run PGGT in combination with electric release cable head.
Immediate solution:
The equipment was not delivered from shore. Got missing eqpt by helicopter from Sleipner A. No lost time.

Future recommended solution:
Schlumberger to ensure shipping required equipment for job

Subject: Smedvig pump for local control of HMV and TRSCSSV was not set for 570 bar to TRSCSSV
Section: NO 15/9-F-4, COMPL_PERF
Rep date: 19.04.2008
Keywords: PERFORATION
Downtime: ---NA--- **Pot time improvements:** 1
Comp inv: Smedvig
References:
Synergi no: **Cost:** ---NA---
Synergi desc:

Description:
Seawell pump is not set up for pressuring up the TRSCSSV Control Line in the water injection wells to 570 bar. TRSCSSV pressure relief valve is set to 540 bar. Test pump could deliver 515 bar.

The water injection wells require 570 bar control line pressure while leak testing well to 380 bar.

No downtime logged in DBR, but probably used 1 hr extra time
Immediate solution:
Used Vetco test pump for TRSCSSV operation. Vetco test pump is stored in Vetco container.
Future recommended solution:
Investigate to upgrade Seawell pump to deliver 570 bar on TRSCSSV, to be prepared for completion of future water injection wells. It is safest (and most practical) to operate HMV and TRSCSSV from the same panel. (Otherwise the Vetco pump and the Seawell pump is at different locations which require more personnel to guard during the operation.)

Subject: Lessons learned Install Completion
Section: NO 15/9-F-4, COMPL_TBGRN
Rep date: 20.04.2008
Keywords: COMPLETION EQUIPMENT
Downtime: **Pot time improvements:**
Comp inv: StatoilHydro
References:
Synergi no: **Cost:**
Synergi desc:

Description:
Ref. attached report.
Immediate solution:

Future recommended solution:

Subject: Lifting cap for guns was not certified
Section: NO 15/9-F-4, COMPL_PERF
Rep date: 20.04.2008
Keywords: PERFORATION
Downtime: 2,30 **Pot time improvements:** 2,30
Comp inv: Schlumberger
References:
Synergi no: 1006667 **Cost:** 138.000,- (60.000,- NOK/hr)
Synergi desc:

Description:

Downtime due to planning lifting of guns with available equipment.

Immediate solution:

Managed to lift guns using swivel, cable head and logging cable. Was very difficult to get in contact with Schlumberger duty phone onshore during the night, to discuss problem.
Meanwhile ordered certified lifting equipment from town with split flight helicopter (arrived in time for lifting out guns after run #1).

Future recommended solution:

Schlumberger to improve onshore planning

Subject: Rig up to bleed off to closed drain worked fine.
Section: NO 15/9-F-4, COMPL_PERF
Rep date: 20.04.2008
Keywords: PERFORATION
Downtime: ---NA--- **Pot time improvements:**
Comp inv: Seawell Ltd
References:
Synergi no: **Cost:** ---NA---
Synergi desc:

Description:

Rig up to bleed off to closed drain worked fine. For example bled off 50 bar in 15 minutes.
Recommendation: Capacity of bleed down hose is sufficient

Immediate solution:

Future recommended solution:

Subject: Lessons learned report for wireline operations.
Section: NO 15/9-F-4, COMPL_PERF
Rep date: 22.04.2008
Keywords: PERFORATION
Downtime: ---NA--- **Pot time improvements:**
Comp inv: Seawell Ltd
References:
Synergi no: **Cost:** ---NA---
Synergi desc:

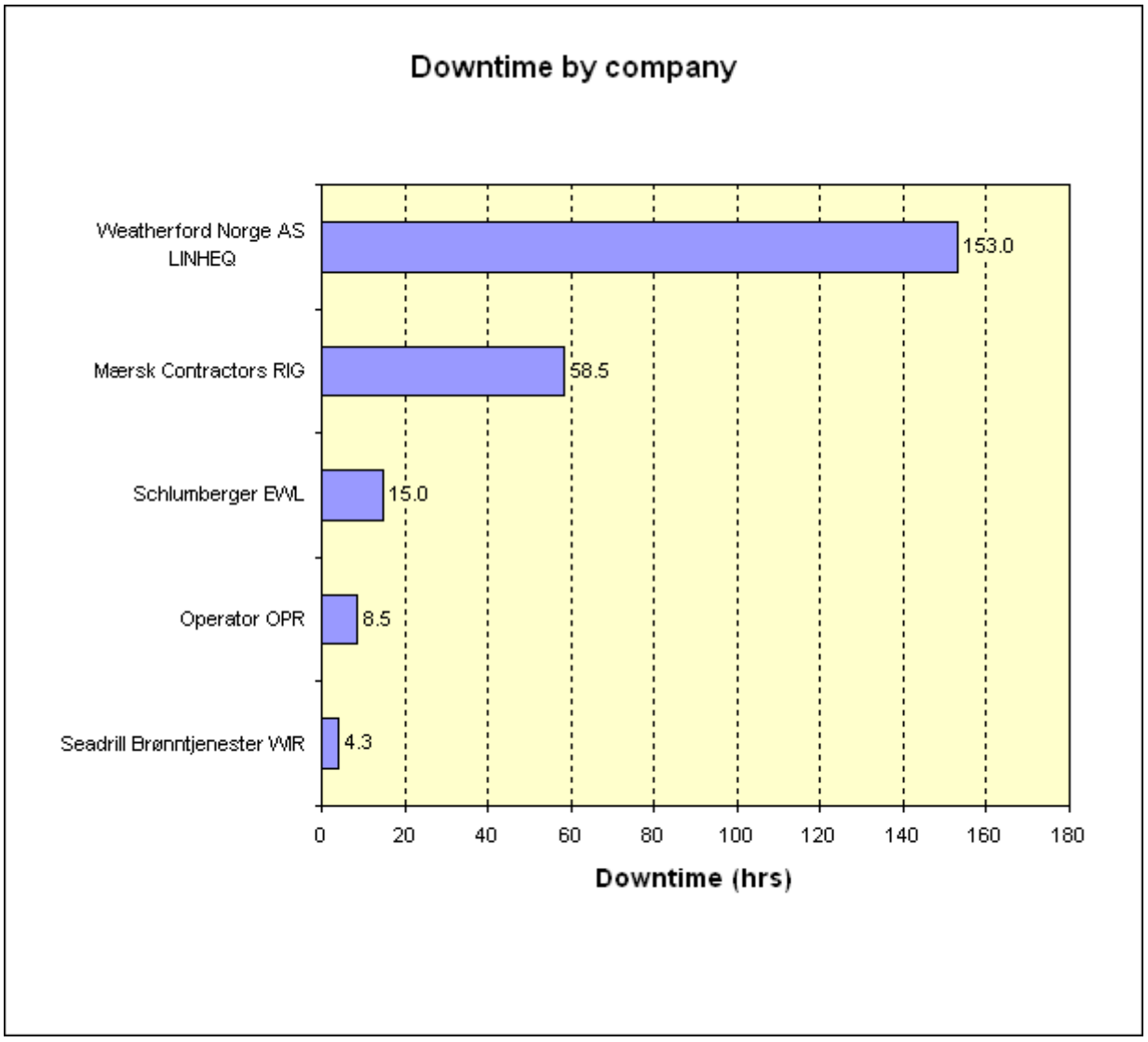
Description:

Ref attached report and pictures

Immediate solution:

Future recommended solution:

3.3 Incidents by service and company



SERVICE COMPANY: Electric Wireline Logging EWL Schlumberger
WELLBORE: NO 15/9-F-4

Incident start time	Failure code	Synergi no	Title	Quality cost		Downtime		
				NOK	NOK/d	Total hrs	Comp share %	Comp share hrs
19.04.2008 23:00:00	EWL-E02 Auxiliary mechanical	1006667	Schlumberger did not have certified lifting cap for 4.5" TCP guns.	236250	2520000	2,3	100	2,3
21.04.2008 06:00:00	EWL-E04 Cables/Heads & Assoc..	1007296	MISRUN for Schlumbeger 4.5" TCP guns ran on 7/16" WL.	1338750	2520000	12,8	100	12,8

Incident start time	Failure code	Synergi no	Title	Quality cost		Downtime		
				NOK	NOK/d	Total hrs	Comp share %	Comp share hrs
			Total	1575000				15,0

SERVICE COMPANY: Liner Hanger Equipment LINHEQ Weatherford Norge AS
WELLBORE: NO 15/9-F-4

Incident start time	Failure code	Synergi no	Title	Quality cost		Downtime		
				NOK	NOK/d	Total hrs	Comp share %	Comp share hrs
01.03.2008 00:45:00	LINHEQ-E01 Other equipment	997010	7" liner hanger running tool released from 7" liner hanger.	19890000	3120000	153,0	100	153,0
			Total	19890000				153,0

SERVICE COMPANY: Operator OPR Operator
WELLBORE: NO 15/9-F-4

Incident start time	Failure code	Synergi no	Title	Quality cost		Downtime		
				NOK	NOK/d	Total hrs	Comp share %	Comp share hrs
08.04.2008 11:45:00	CPLEQ-01 Procedure	1004359	Wrong torque setting on casing tong jam computer	892500	2520000	8,5	100	8,5
			Total	892500				8,5

SERVICE COMPANY: Rig Operations RIG Mærsk Contractors
WELLBORE: NO 15/9-F-4

Incident start time	Failure code	Synergi no	Title	Quality cost		Downtime		
				NOK	NOK/d	Total hrs	Comp share %	Comp share hrs
29.02.2008 06:00:00	RIG-02 Doc./Spec.	996802	Threads on 5 1/2" HWDP and 5 1/2" DP had different length.	260000	3120000	2,0	100	2,0
03.03.2008 09:30:00	RIG-E346 Manual tongs	997538	Missing parts in dragchain on pipe handling machine (PRS)	780000	3120000	6,0	100	6,0
11.03.2008 12:30:00	RIG-E10 Drawwork	999074	Changed out drill line spooler.	390000	3120000	3,0	100	3,0

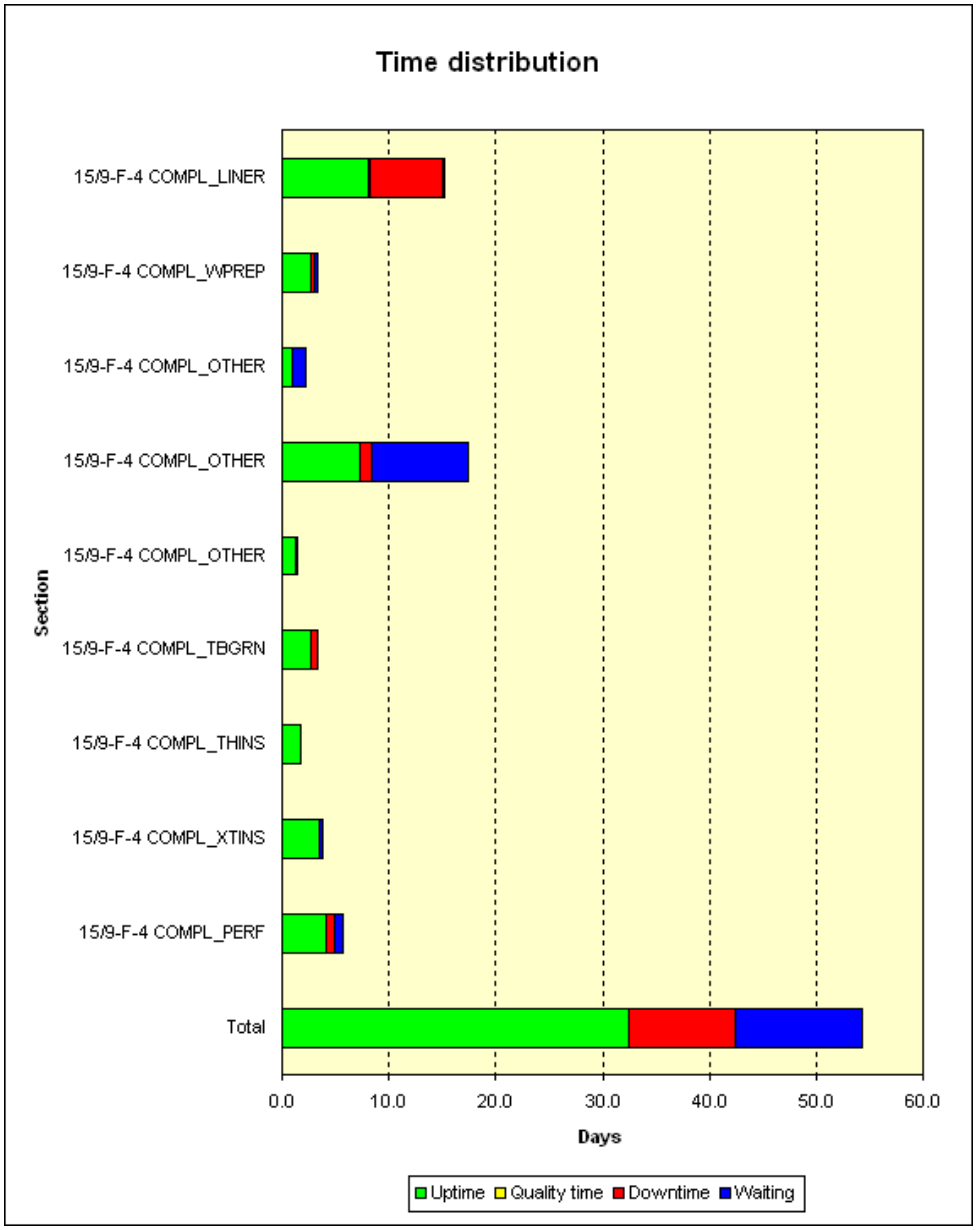
Incident start time	Failure code	Synergi no	Title	Quality cost		Downtime		
				NOK	NOK/d	Total hrs	Comp share %	Comp share hrs
11.03.2008 16:00:00	RIG-E347 Pipe handling equ/sys other	999078	Damaged fittings on HTS rollers.	97500	3120000	0,8	100	0,8
13.03.2008 01:30:00	RIG-E341 Vert pipe handling system	999292	DP std was pulled out off fingerboard by PRS lower arm.	227500	3120000	1,8	100	1,8
14.03.2008 20:00:00	RIG-E347 Pipe handling equ/sys other					1,0	100	1,0
16.03.2008 08:00:00	RIG-E10 Drawwork					5,3	100	5,3
03.04.2008 02:00:00	RIG-E388 General	1003551	Problems with Mærsk provided casing tongs	1365000	2426667	13,5	100	13,5
04.04.2008 00:00:00	RIG-E07 Top drive	1003572	Problems with torque wrench on TDS	210000	1260000	4,0	100	4,0
04.04.2008 17:45:00	RIG-E341 Vert pipe handling system	1003575	Dropped object: Bolthead had fallen from PRS gripper head to drillfloor			8,5	100	8,5
06.04.2008 00:00:00	RIG-E341 Vert pipe handling system	1003762	Dropped object - bolthead from aft PRS gripper head			2,5	100	2,5
06.04.2008 10:45:00	RIG-E347 Pipe handling equ/sys other	1003936	Problems with PDM (pipe deck machine) control system	183750	2520000	1,8	100	1,8
07.04.2008 00:00:00	RIG-E388 General	1004140	Dropped object on drillfloor - half lock/simmer ring for pin			0,8	100	0,8
07.04.2008 02:45:00	RIG-E345 Elevator	1003941	Leakage on BX elevator	157500	2520000	1,5	100	1,5
08.04.2008 05:00:00	RIG-E388 General	1004353	Used wrong pressure trancducer on Odfjell casing tong	656250	2520000	6,3	100	6,3
			Total	4327500				58,5

SERVICE COMPANY: Wireline WIR Seadrill Brønntjenester
WELLBORE: NO 15/9-F-4

Incident start time	Failure code	Synergi no	Title	Quality cost		Downtime		
				NOK	NOK/d	Total hrs	Comp share %	Comp share hrs
18.04.2008 12:15:00	WIR-E06 Lubricator/Riser	1006514	Leak in FMC drain valve.	367500	2520000	3,5	100	3,5
18.04.2008 21:00:00	WIR-E06 Lubricator/Riser	1007083	Leaking o-ring in XO below tool catcher in WL lubricator.	78750	2520000	0,8	100	0,8
			Total	446250				4,3

3.4 Time distribution

		Length	Budget		TL		Actual		Ops
Section	Start time	m	hrs	days	hrs	days	hrs	days	(f)
NO 15/9-F-4 COMPL_LINER	28.02.2008 03:45	0,0	46,0	1,9	182,5	7,6	364,0	15,2	54,1
NO 15/9-F-4 COMPL_WPREP	14.03.2008 07:45	0,0	71,0	3,0	44,5	1,9	80,5	3,4	92,2
NO 15/9-F-4 COMPL_OTHER	17.03.2008 16:15	0,0	15,0	0,6	10,0	0,4	52,8	2,2	100,0
NO 15/9-F-4 COMPL_OTHER	19.03.2008 21:00	0,0	190,0	7,9	128,5	5,4	419,0	17,5	86,0
NO 15/9-F-4 COMPL_OTHER	06.04.2008 09:00	0,0	16,5	0,7	12,5	0,5	35,8	1,5	88,5
NO 15/9-F-4 COMPL_TBGRN	07.04.2008 20:45	0,0	48,0	2,0	33,5	1,4	78,8	3,3	81,3
NO 15/9-F-4 COMPL_THINS	11.04.2008 03:30	0,0	32,0	1,3	19,0	0,8	41,0	1,7	100,0
NO 15/9-F-4 COMPL_XTINS	12.04.2008 20:30	0,0	68,0	2,8	58,0	2,4	92,5	3,9	100,0
NO 15/9-F-4 COMPL_PERF	16.04.2008 17:00	0,0	62,0	2,6	51,0	2,1	137,8	5,7	86,0
Sum			548,5	22,8	539,5	22,5	1302,2	54,4	



The graph above is based on the following details:

Section	Downtime	Uptime	Quality time	Waiting time	Total time
15/9-F-4 COMPL_LINER	6,9	8,1	0,0	0,0	15,2
15/9-F-4 COMPL_WPREP	0,3	2,8	0,0	0,3	3,4
15/9-F-4 COMPL_OTHER	0,0	0,9	0,0	1,3	2,2
15/9-F-4 COMPL_OTHER	1,2	7,3	0,0	9,0	17,5
15/9-F-4 COMPL_OTHER	0,2	1,3	0,0	0,0	1,5
15/9-F-4 COMPL_TBGRN	0,6	2,7	0,0	0,0	3,3
15/9-F-4 COMPL_THINS	0,0	1,7	0,0	0,0	1,7
15/9-F-4 COMPL_XTINS	0,0	3,6	0,0	0,3	3,9
15/9-F-4 COMPL_PERF	0,8	4,2	0,0	0,8	5,7
Total	10,0	32,4	0,0	11,8	54,3

3.5 Cost

Project kind	WBS	Currency	Budget	Actual cost
Completion	L.O046V.002.2A01C02	NOK		68 123 195
Drilling	L.O046V.002.2A01C01	NOK		162 121 920
Main project	L.O046V.002.2A01C	NOK		1 384 103
Total				231 629 218

4 Activity highlights

4.1 NO 15/9-F-4, COMPL_LINER (28.02.2008 03:45)

START: 28.02.2008 03:45 3510 mMD
END : 14.03.2008 07:45 3510 mMD

OBJECTIVE
RIH with 7" liner to TD. Set and cement liner at 3508 mMD. Test well to 400 bar/15 minutes seawater equivalent.

SUMMARY
RIH with 7" liner on 5 1/2" DP to 2750 mMD. Broke circulation in the shoe with 1000 lpm/53 bar.

Continued to RIH from 2750 m to 3392 mMD.

Took 15 MT at 3392 mMD. Connected TDS and attempted to work past tight spot with 20-30 MT. 181 MT upweight and 141 MT down weight. Applied 9400 Nm right hand torque when working string up and released when working down. Broke circulation, 230 lpm/37 bar, and established rate at 530 lpm/49 bar. applied max 20 MT when washing down. SPP increased to 60 bar. shut down pumps and recorded 22 bar back pressure trapped below shoe. Applied 9400 Nm righthand torque and worked string up. Upweight of 151 MT showed that the running tool had released and liner was left in hole. (Estimated weight of liner in mud at this depth was equal to 30 MT) POOH with liner running tool. The tool was inspected at surface and found that hydraulic release most likely had been activated. All remaining items on running tool was intact.

RIH with spear assembly to 2450 m, 100 m above shallowest top of liner. Broke circulation and circulated one full circulation with 2000 lpm/88-94 bar. Continued to circulate due to gas peaks of 3.35%.

RIH hole from 2450 m to 2562 m while circulating with 490 lpm/18 bar. Tripped slowly when approaching the shallowest expected TOL depth at 2541 mMD. Observed pressure increase at 2562 m to 45 bar indicating that the pack-off had entered the liner hanger area. Engaged grapple and took 10 MT overpull to put the liner in tension. Established circulation at 265 lpm/32 bar for 15 minutes. P/U to 45 MT overpull and observed 7" liner breaking free.

Pumped OOH with liner with 265 lpm/32 bar from 3414 m to 2755 m. Circulated at 1000 lpm/59 bar in the casing shoe with a gas peak of 6.8%. POOH. It was discovered that the X/O below the 8 1/2" stabilizer and 3 1/2" DP pup joints was only held by three threads. A separate report on this incident will be prepared. Dis-engaged spear at surface and laid out liner hanger assembly. Neither the TSP nor the liner hanger had any visual signs of being activated. The 7" liner joints were racked back in tripples. The centralizers and the connections were broken without any reported issues. According to the plan, 4 connections were supposed to be thread locked. This was done under supervision. However, the pin connection on top of the LC released.

A wiper trip was performed and the hoe found to be in good condition , tight spots were wiped at xxxm and xxxm

New liner job
Because of risk of failed pressure test with rerun joints a fresh liner string was run. Straightforward job, One tight spot at 3358 was passed by a 1/2 turn of the string. Washed down last sand and tagged TD. 20 RPM was achieved with <15kNm torque. Centralisers were 16 bowsprings , 1 per joint above the shoe and 8 rigid , 1 per joint in the liner lap.
Cement job looked good but the telltale flag took 1 strokes (= half shoe track) before it showed that the darts had passed. good pressure and torque indications showed that the cement moved up the annulus. The plugs failed to bump. When the excess ceement was circulated out there were clear indications oof spacer and cement but no whole cement.
When the running string was retreived the plugs were in position with the darts on top. (A mark on the bottom dart sugested it may have hung up somewhere on the string) The string was drifted to 2 3/4" before the job on the way out of the hole on the wiper trip.

A pressure test was attempted >30hours after cement in placee. Pressure built up in a straight line but dropped off sharply at 290bar.
Clean out run with bit & scrapers using part of the planned clean out string. No cement was found and a 10m area was scraped to allow setting of an EZSV bridge plug.

4.2 NO 15/9-F-4, COMPL_WPREP (14.03.2008 07:45)

START: 14.03.2008 07:45 3510 mMD
END : 17.03.2008 16:15 3510 mMD

OBJECTIVE
Run cleanout string, cleanout well and displace to completion fluid.

SUMMARY
RIH with cleanout string as per plan.

Tagged PBR at 2662,3 mMDRT (1,2 m deeper than installation tally).

Inflow tested casing to estimated 17 bar differential pressure by using SPS Well Commissioner and pumping 26 m3 baseoil inside DP.
NOTE: In fact when the well was perforated, it was discovered that the reservoir pressure was lower than expected thus well hydrostatic pressure was in overbalance during "inflow test".

Pumped cleaning pills:
1) 26 m3 base oil (inflow test)
2) 10 m3 dope cleaner pill
3) 30 m3 hivis push pill
4) 15 m3 hivis soap pill
5) 10 m3 seawater
6) 209 m3 completion fluid (< 0,01% Solids)

Pump data:	lpm	bar
Conditioned mud:	1960	292
End of cleaning pills:	3200	300
Displace with completion fluid:	2200	155

Leak tested well with completion fluid: 345 bar

Lessons learned:
1) Added defoamer to trip tank to treat foaming problem causing uncertainty of well stability.
2) The Filter unit was used prior to the clean-up to filter some contaminated Packer-fluid.
3) Ref. Experience report dated 20.03.2008.

4.3 NO 15/9-F-4, COMPL_OTHER (17.03.2008 16:15)

START: 17.03.2008 16:15 3510 mMD
END : 19.03.2008 21:00 3510 mMD

OBJECTIVE
Install GTV plug at 612-617 mMDRT.
Leak test below GTV to 380 bar.

SUMMARY
No additional comments.

4.4 NO 15/9-F-4, COMPL_OTHER (19.03.2008 21:00)

START: 19.03.2008 21:00 3510 mMD
END : 06.04.2008 09:00 3510 mMD

OBJECTIVE
- Retrieve High Pressure Drilling Riser (HPDR).
- Run Production Riser(PR).
- Run 10 3/4" surface tie-back casing

SUMMARY
- Retrieved wearbushing from subsea wellhead.
- Found metal chip on wearbushing.
- Washed subsea wellhead with jetting sub.
- Installed 10 3/4" lock down sub in subsea wellhead OK.
- WOW total 149.5 hours due to wave height above limit for pulling HPDR.
- N/D Diverter, BOP and surface riser OK.
- Pulled HPDR OK.
- WOW 55.5 hrs due to wave height above limit for running PR.
- Ran PR OK.
- Cut PR and installed surface wellhead OK.
- Installed Surface riser, BOP and Diverter OK.
- Installed bowl protector in surface wellhead.
- Retrieved annulus insert from subsea wellhead (had to work it free).
  At surface J-slot running tool was jammed in J-slot due to debris in J-slot.
- Displaced PR to completion fluid.
- Performed extra washing trip to clean 10 3/4" tie-back adapter, with bull nose/jetting sub.
- Retrieved bowl protector in surface wellhead OK.
- Ran 10 3/4" surface tie-back casing. Ref experience report.
- Leak tested 10 3/4" surface tie-back casing and well down to GTV plug to 380 bar, using 10 3/4" RT.
- Installed MS seal in surface wellhead OK.

4.5 NO 15/9-F-4, COMPL_OTHER (06.04.2008 09:00)

START: 06.04.2008 09:00 3510 mMD
END : 07.04.2008 20:45 3510 mMD

OBJECTIVE
- Run 9,567" drift to 10 3/4" x 9 5/8" casing X-over.
- Pull GTV plug.

SUMMARY
No further comments.

4.6 NO 15/9-F-4, COMPL_TBGRN (07.04.2008 20:45)

START: 07.04.2008 20:45 3510 mMD
END : 11.04.2008 03:30 3510 mMD

OBJECTIVE
Run 7" tubing.

SUMMARY
- Pulled secondary bowl protector from surface wellhead.
- At the start of RIH with completion BHA's it was found that some connections had been made up to too low values due to Jam torque computer was programmed wrong. While re-running new packer BHA the connections were made up to too high torque values due to mix-up between ft-lbs and N-m torque values.....Ref. experience report.....13 hrs Downtime recorded.

- Last minute change to the procedure was required due to SB-3 Injection packer has to be set against a plug in the tailpipe (It was previously assumed to set packer by pressuring up well, similar to granite packer). Therefore a NPR plug was rush preinstalled in a tubing joint below the packer. To attempt to save time, the ball was preinstalled in the NPR at surface. This was a wrong decision, since it turned out to be impossible to perform the normal space out operation by stinging into and tagging the liner PBR. The spaceout operation was however successfully achieved by pumping down annulus and barely inserting the seal stem seals into the PBR bore.
- Positive experience was discussion with "expert center" to reveal potential hazard to well barrier if stinging fully into PBR. When pulling out, the ball/ball-seat would act as a check valve and by suction action the pressure in the liner could be pulled down to far below the inflow test pressure test.

- Extra time used for the space out operation was probably 8 hrs.

4.7 NO 15/9-F-4, COMPL_THINS (11.04.2008 03:30)

START: 11.04.2008 03:30 3510 mMD
END : 12.04.2008 20:30 3510 mMD

OBJECTIVE
- M/U and land tubing hanger.
- Leak test tubing and annulus to 380 bar.
- ND diverter, BOP and surface riser.

SUMMARY
- M/U tubing hanger and landed and tested tubing/hanger OK.
- Leak tested tubing and annulus to 380 bar OK.

4.8 NO 15/9-F-4, COMPL_XTINS (12.04.2008 20:30)

START: 12.04.2008 20:30 3510 mMD
END : 16.04.2008 17:00 3510 mMD

OBJECTIVE
- Install XMT.
- Install instrumentation and commission XMT.
- Hook up and leak test flowline.

SUMMARY
- Installed BPV.
- Pulled dart and BPV before start to commission XMT.
- Hooked up an leak tested flowline and Commissioned XMT in 47 hrs.

Lessons learned:
1) Had to run backup BPV and dart to be able to leak test XMT. Unable to locate problem with BPV. XMT had too much excess grease inside, but this was probably not cause for leak in BPV.
2) Ref. experience dated 15.04.2008, with attached report with pictures.

4.9 NO 15/9-F-4, COMPL_PERF (16.04.2008 17:00)

START: 16.04.2008 17:00 3510 mMD
END : 22.04.2008 10:45 3510 mMD

OBJECTIVE
Perforate 27 m in 2 runs using 7/16" mono conductor cable.
Hand well over to production.

SUMMARY
- Waited 18 hrs for wireline equipment and personnel to arrive on rig (due to time used for XMT commissioning was much shorter than time estimate).
- Used 34 hrs to rig up WL after arrival of wireline equipment.
- Ref wireline operations experience report, including pictures. Keywords: Wrong ID on supplied BOP and riser, leak in FMC drain valve on riser, scaffolding requirement for perforating, Changed electric panel in Schlumberger container due to not working, misrun to perforate due to short in cable head, missing .....adapter, uncertified gun lifting cap supplied by Schlumberger.
- Perforated according to plan. Correlated OK on depth with GR on first run and CCL on last run. GR signature on reference log easily recognised on perforation GR. Pupjoint in 7" liner and collars easily recognised on perforation CCL.

5 Formation evaluation

Ref. “FINAL WELL REPORT Drilling Only”.

6 Appendix 1: Directional data

Ref. “FINAL WELL REPORT Drilling Only”.

7 Appendix 2: Operational experience

7.1 DBR Experience Attachments list

Experience dated	Attachment content
23.4.2008	Lessons learned Wireline operations Volve Well F-4
20.4.2008	Lessons learned install Completion
17.4.2008	Moonpool Pictures regarding planning of WL BOP lift operation
15.4.2008	Lessons learned XMT installation
6.4.2008	Experience report for DOP 28 - Installation of Surface Tieback
3.4.2008	Experience transfer Landing Production Riser using RLGF.
31.3.2008	Pictures regarding running of Production Riser
28.3.2008	Experiences during pulling HPDR
15.3.2008	Experience when installing Riser Landing Guide Funnel

7.2 Appendix 2.4: Operational listing

WELLBORE ID: NO 15/9-F-4
INTERVAL: COMPL_LINER
START TIME: 28.02.2008 03:45
END TIME: 14.03.2008 07:45

Report date	Description
28.02.2008	POOH with MDT toolstring to 9 5/8" shoe depth at 2750 m MD. Broke out side entry sub. Retrieved WL and checked cable - ok. Circulated bottoms up in shoe to remove gas. POOH from shoe to surface. Broke out and laid down MDT logging toolstring. Changed to 5 1/2" saver sub on TDS. Broke pup and x-overs. Positioned casing running equipment on drilfloor.
29.02.2008	Installed HTS roller section. Removed WL sheave in derrick. Drifted pipe on setback. RU 7" liner running equipment. Ran 844 m of 7" liner. MU liner hanger. RU 5 1/2" DP handling equipment. Started PU and RIH with 7" liner hanger on 5 1/2" DP.
01.03.2008	RIH with 7" liner on 5 1/2" DP from 860 m to 3392 m MD. Worked to pass tight spot at 3392 m and lost 30 MT. Investigated situation and found that liner hanger RT was still inserted into liner hanger, but were not able to establish circulation. Discussed situation with town. Found that 7" liner had parted from liner hanger RT and slided down hole. POOH with liner hanger RT to 3340 m MD.
02.03.2008	POOH with 7" liner hanger RT on 5 1/2" DP from 3340 m to OOH. Inspected liner hanger RT. Found hydraulic release activated. All items intact on RT. Waiting on fishing tools to arrive from town. LD 5 1/2" DP in singles while waiting.
03.03.2008	LO stds of 5 1/2" DP 24.7 lbs/ft in singles while waiting for fishing tools to arrive from town. Found that pack-off on spear assembly was wrong size. Waited on helicopter to get the correct size pack-off. RIH with spear assembly on 5 1/2" DP from 11 m to 693 m MD.
04.03.2008	RIH with spear assembly on 5 1/2" DP from 693 m to 2466 m. Circulated 175 m3 at 2000 lpm / 90 bar. Repaired PRS drag chain. Washed down with 490 lpm / 18.4 bar and had pressure increase to 45 bar when sliding into 7" liner at 2562 m MD. Engaged spear. Circulated 265 lpm / 32 bar. PU 7" liner and pulled free. Pumped OOH with 265 lpm / 32 bar with 7" liner on 5 1/2" DP from 3122 m to 2755 m MD. Circulated btms up at shoe. POOH with 7" liner on 5 1/2" DP from 2755 m to 2716 m MD
05.03.2008	POOH with 7" liner on 5 1/2" DP from 2716 m to 867 m MD. LO bumper sub and spear. RU csg tong and handling equipment. LD liner hanger. POOH and RB 7" liner in derrick from 852 m to OOH. RD csg tong and handling equipment.
06.03.2008	MU and RIH with 8 1/2" wiper trip BHA to 9 5/8" csg shoe at 2751 m. Circulated btms up at 2000 lpm / 164 bar. Continued RIH with 8 1/2" wiper trip BHA on 5 1/2" DP from 2751 m to 3320 m MD.
07.03.2008	RIH with 8 1/2" wiper trip BHA on 5 1/2" DP from 3320 m to TD. Worked tight spots at 3395 m, 3423-3428 m and 3478 m, Circulated hole clean. POOH with 8 1/2" wiper trip BHA from 3510 m to 928 m MD. No obstructions encountered.
08.03.2008	POOH with 8 1/2" wiper trip BHA on 5 1/2" DP from 928 m to OOH. BO and LD wiper trip BHA. Changed to Odfjell csg tong and 7" csg equipment. MU and RIH with 7" liner to 812 m.
09.03.2008	MU and RIH with 7" liner from 812 m to 835 m. MU 7" liner hanger/RT. RD csg handling equipment and RU DP handling equipment. RIH with 7" liner on DP from 850 m to TD at 3510 m. PU and installed cmt head. Circulated. Sat liner hanger. Circulate and cement 7" liner.
10.03.2008	Sat liner hanger packer. Released liner hanger RT and circulated out excess cement. POOH and LD liner hanger RT with wiper plugs attached. BO and LD fishing BHA. RU 7" csg equipment. RIH with 7" liner stds to 738 m. POOH and LO 7" liner in singles from 738 m to 671 m.
11.03.2008	Continued LO 7" liner in singles from 671 m to OOH. Leak tested 7" liner without sucess. Performed BOP test.
12.03.2008	Changed out drill line spooler and tested kill and standpipe manifolds. MU and RIH with 6" PDC bit and scraper assembly from surface to 1977 m MD.
13.03.2008	RIH with 6" PDC bit and scraper assy from 1977 m to 3458 m MD. Scraped plug setting area 3440-3450 m. POOH with 6" PDC bit and scraper assy from 3458 m to OOH. LD 6" PDC bit and scraper assemblies.
14.03.2008	RIH with EZSV plug and Circ. Sub from surface to 3448m. Installed EZSV plug at 3448m. Pressure tested 7" liner and EZSV plug to 300 bars 10min with 1.45 SG mud. POOH with EZSV plug RT to 525m.

WELLBORE ID: NO 15/9-F-4
INTERVAL: COMPL_WPREP
START TIME: 14.03.2008 07:45
END TIME: 17.03.2008 16:15

Report date	Description
15.03.2008	POOH with 3½" DP and EZSV plug RT to surface. RIH with BOP clean out assy and cleaned the BOP, riser and WH, POOH and L/O same. RIH with 7" liner clean out assy. Commenced to wash down from 3380m to 3420m
16.03.2008	Scraped 7"/9 5/8"/10 3/4" casing, dressed/polished 7" liner top. Conditioned the mud. Inflow tested the well. Pumped wash pills and displaced well to 1.03 sg NaCl until well was clean.
17.03.2008	Leak tested the well to 345 bars. Slipped and cut drill line. Installed the Fairings on F7 and F12 for the PR TBC using the ROV. POOH with clean out BHA's. Had to stop POOH due to exhaust blowing into the rig floor from the production gas turbines.

INTERVAL: COMPL_OTHER
START TIME: 17.03.2008 16:15
END TIME: 19.03.2008 21:00

Report date	Description
18.03.2008	POOH with clean out BHA's. Had to stop the operation several times, due to exhaust fumes blowing into the rig floor from the production gas turbines. MU and RIH with 9 5/8" GTV plug. Set GTV plug at 614.5m, mid elements. Leak tested from below to 380 bars 10 min.
19.03.2008	Pressure tested the GTV plug from above, 345 bars 10 min. Retrieved the wear bushing. RIH and jet washed WH area. Operation had to be suspended several times due to exhaust fumes blowing into the rig floor. Meanwhile cleaned the moon pool, pit room and pump room.

START TIME: 19.03.2008 21:00
END TIME: 06.04.2008 09:00

Report date	Description
20.03.2008	Operation had to be suspended due to exhaust fumes blowing into the rig floor. Meanwhile cleaned the moon pool, pit room, pump room and perform general maintenance. Install the 10 3/4" lock down sub. WOW. Meanwhile inspected and serviced the aft PRS and the TDS. Changed out Wash pipe.
21.03.2008	WOW. Performed general maintenance.
22.03.2008	WOW prior to retrieve the HP drilling riser. Meanwhile cleaned stand pipe/Choke line manifold. Changed oil on the TDS. Performed general maintenance and PM's. Changed out the cathead wire. Prepared tools and lifting equipment, for nippling down the Diverter, BOP and the HPDR. Commenced installation of flood light in derrick.
23.03.2008	WOW prior to retrieve the HP riser. Performed general maintenance and PM's. Commenced changing out the seal assy of BOP door. Installed flood light in derrick. Cleaned pit # 6,8,9,10 & 11.
24.03.2008	WOW prior to retrieve the HP riser. Performed general maintenance and PM's. Changed out of BOP door seal assy, greased manual valves on choke/kill line. Cleaned pit. Performed general maintenance and PM's. Not able to work at rig floor, due to exhaust fumes. Installed CRI check valve on to F-14. Attempted to inject in to F-12 annulus.
25.03.2008	WOW prior to retrieve the HP riser. No access to rig floor, due to exhaust fumes. RIH with test plug, attempted to test against plug. Performed general maintenance and PM's. Re-ran in hole with test plug with polypack seals. Pressure tested plug to 25/345 bars 5/10 min.
26.03.2008	WOW prior to retrieve the HP riser. No access to rig floor, due to exhaust fumes. Pressure tested BOP and TDS 20/345 bars 5/10 min. Performed derrick inspection. N/D diverter and BOP. Installed Claxton tool and made up same.
27.03.2008	WOW prior to pull HPDR. Shut in F12 production. Prepared for/disconnected and pulled HPDR.

Report date	Description
28.03.2008	Pulled HPDR from 140 m to surface. Laid doubles in horizontal storage rack. Prepared singles for backload.
29.03.2008	Waited on weather for running production riser. Meanwhile brought flexible hose to XMT deck and hooked up same. Landed BOP on test stump. Attempted to test BOP to 15 K. Had leakage on test stump. Changed gasket on test stump. LIfted F-4 XMT to moonpool. Transferred tension cylindres to XMT deck.
30.03.2008	Waited on weather to obtain conditions for running production riser. Meanwhile tested BOP to 15 K. Lifted TBC to drillfloor and performed pre-operational checks. Laid out 10 3/4" casing. Installed vinyl guides and tension ring in wellhead module decks.
31.03.2008	WOW for running production riser. Shut down F-12 production and ran production riser. Landed TBC on top of wellhead. Ran hot stab and minireel hose along guidewire.
01.04.2008	Locked TBC connector to subsea wellhead. Performed overpull test. Pumped hydraulic fluid / corrosion inhibitor in TBC cavities. Tested riser to 200 bar against GTV plug. Installed tensioning assembly on Centralizer deck and transferred load from block to tension cylinders. Installed centralizers in wellhead decks. Cut riser and made 45 deg bevel in riser circumference.
02.04.2008	Installed surface wellhead and tested same. Ran BOP riser joint. Nippled up BOP. Installed diverter and slickjoint. Tested BOP connection and annulus valves against test plug to 345 bar. Made up bowl protector RT.
03.04.2008	Installed bowl protector. Retrieved annulus insert in 10 3/4" hanger. Displaced well to 1,03 sg packer fluid. Made extra washing run to clean tie-back adapter. Retrieved bowl protector. Rig up for running 10 3/4" tie-back casing.
04.04.2008	Troubleshot Mærsk casing tong. Changed to Odfjell casing tong. Troubleshot Odfjell casing tong. Made up and RIH with 10 3/4" surface tie-back casing. Made up adjustment sub and 10 3/4" hanger. Engaged spear. Troubleshot TDS torque wrench. RIH and made several attempts to land. Achieved satisfactory datum on 4th attempt. Made up tie-back adapter to 10 000 Nm. POOH with spear. Rigged down casing tong and PS-30 slips.
05.04.2008	Changed die holders in TDS. Ran adjustment sub activation tool and retracted adjustment sub. Tested metal seal in adjustment sub to 380 bar. Rigged up casing running equipment to run hanger RT. Observed dropped object on drilfloor - suspended operations for investigation and repair work on aft PRS. RIH with hanger RT on 10 3/4" casing.
06.04.2008	Landed 10 3/4" casing hanger running tool. Pressure tested upper tie-back casing against GTV plug to 380 bar - ok. Suspended operations due to exhaust fumes on drillfloor. Meanwhile cleaned in drilling areas. Shut down gas turbines. Pulled 10 3/4" casing hanger RT. Rigged down casing running equipment. Dropped object on drillfloor - suspended operations. Secured and isolated aft PRS. Resumed operations. Made up MS-seal running tool. Function tested tool.

START TIME: 06.04.2008 09:00
END TIME: 07.04.2008 20:45

Report date	Description
07.04.2008	Set and tested MS seal - ok. Ran bowl protector in WH. Troubleshot PDM. Ran drift to 580 m MD using DP singles. Dropped object on drillfloor simmer/lock ring. Investigated and found source to be Cherry picker. RIH with GTV pulling tool to 130 m MD using DP singles.

INTERVAL: COMPL_TBGRN
START TIME: 07.04.2008 20:45
END TIME: 11.04.2008 03:30

Report date	Description
08.04.2008	Retrieved GTV plug at 615 m MD. Retrieved secondary bowl protector in surface wellhead. Prepared for running 7" tubing and rigged up tubing handling equipment. Ran completion assemblies. Ran 7" tubing to 72 m MD.
09.04.2008	Investigated problems with casing tong transducer. POOH with 5 tubing joints and SB-3 injection packer. RIH with back-up packer assy. Investigated faulty torque setting on casing tong. Drifted 2 tubing couplings with 5,98"/5,8" drift to verify plug retrieval. Ran 7" tubing to 750 m MD.
10.04.2008	Ran 7" tubing from 750 m to 2164 m MD. Picked up and made up completion assy#3 DHSV.

INTERVAL: COMPL_THINS
START TIME: 11.04.2008 03:30
END TIME: 12.04.2008 20:30

Report date	Description
11.04.2008	RIH with 7" tubing from 2164 m to 2661 m MD. Entered 7" liner PBR with lower most seal on seal stem at 2664.3 m. Spaced out tubing. Installed tubing hanger. Terminated control line.
12.04.2008	Performed high pressure test of control line through TH. MU communication collar and tubing hanger RT. RIH and landed tubing hanger in surface wellhead. Performed low pressure tubing leak test and function test of TRSCSSV. Sat packer and leak tested tubing to 345 bar. Inflow tested TRSCSSV and tested A-annulus to 380 bar. Ran BPV and installed in tubing hanger. ND and pulled diverter.

INTERVAL: COMPL_XTINS
START TIME: 12.04.2008 20:30
END TIME: 16.04.2008 17:00

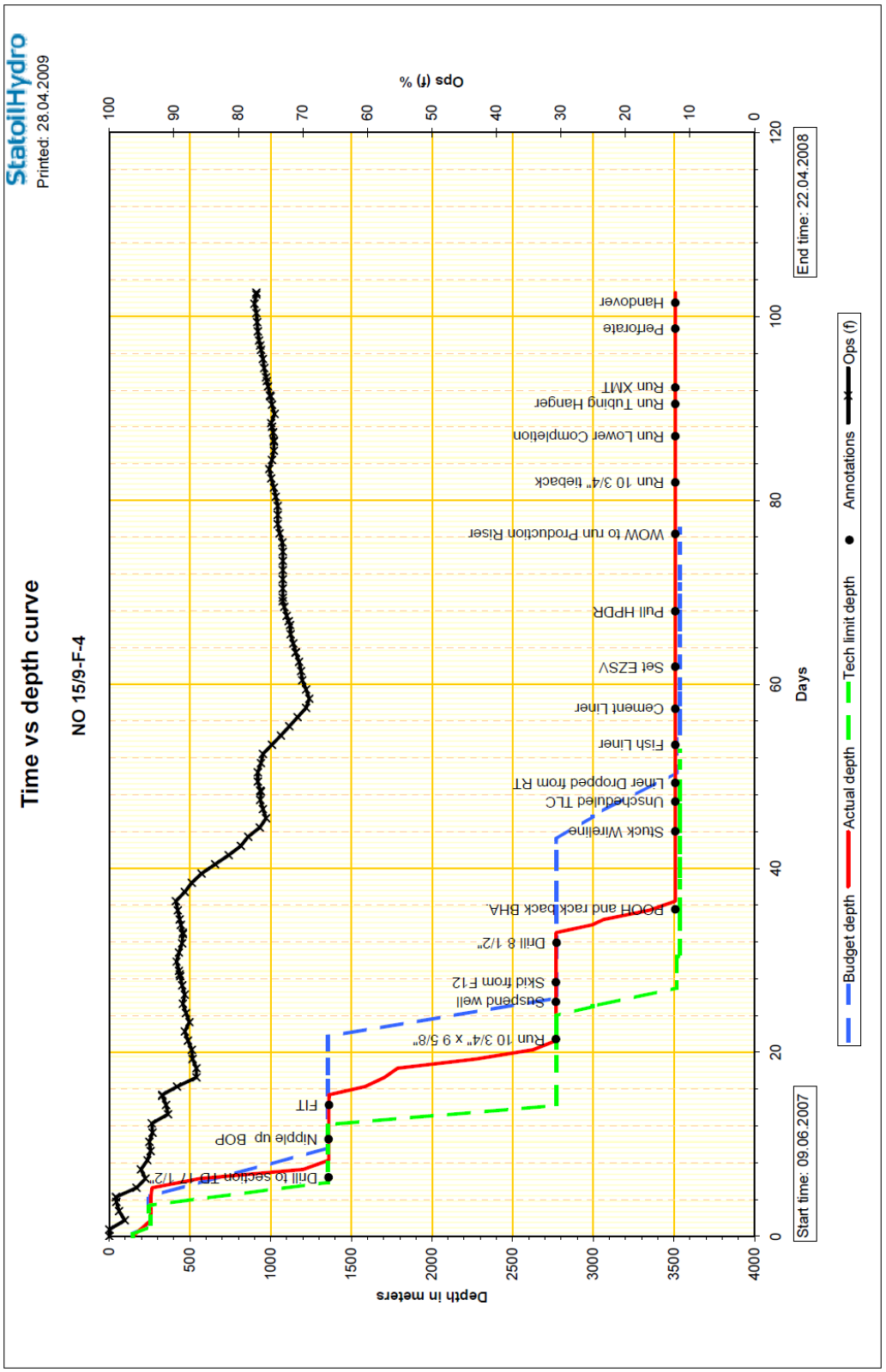
Report date	Description
13.04.2008	ND BOP and surface riser. Installed spacer spool on WH and dart in BPV. Skidded rig to lift XMT into wellhead module. Lifted XMT on to F-4 spacer spool.
14.04.2008	Lifted XMT on to F-4 spacer spool. Installed XMT assy and flowline. Waited on production department to start production from F-12. Pressure tested line up from cmt unit to 20 bar for 5 min against XMT KWV.
15.04.2008	Pressure tested XMT. Pulled dart and BPV in TH. Pressure tested flowline. Started commissioning XMT.
16.04.2008	Completed instrumentation on XMT. Commenced commissioning.

INTERVAL: COMPL_PERF
START TIME: 16.04.2008 17:00
END TIME: 22.04.2008 10:45

Report date	Description
17.04.2008	Commissioned XMT. Waited on WL equipment and personnel to arrive on rig.
18.04.2008	Waited on WL equipment and personnel to arrive on rig. Spotted WL equipment on rig floor. Starter RU LW equipment.
19.04.2008	Continued RU WL equipment. RU WL tool string with GS and equalizing prong for pulling NPR plug. Released and retracted slips in pre-installed NPR plug at 2649.7 m MD.
20.04.2008	POOH with NPR plug. Pressure tested 7" tubing/liner to 380 bar. Extended rig up with additional lengths of riser and lubricator. Built scaffolding to be able to install perforation guns in riser. Tested rig-up to 30/185 bar with dummy toolstring. Broke riser at in-situ sub and installed perforation guns.
21.04.2008	Connected firing head to guns. MU lubricator and tested against in-situ sub to 185 bar. RIH with perforation run #1, correlate and fire guns. POOH and LD fired guns. PU and MU guns for perforation run #2. RIH with perforation run #2, correlate and fire guns. POOH from 3390 m to 1800 m MD.
22.04.2008	Continued POOH with perforation guns from 1800 m to OOH. Confirmed that guns had not fired due to leak in logging head. Built new logging head and MU and checked toolstring. RIH with perforation run #3, correlated and fired guns. POOH from 3390 m to OOH. Had zero WHP. Left MEG above TRSCSSV and tested XMT cross. LD guns. RD WL equipment.

8 Appendix 3: Figures and tables

8.1 Time/depth curve



8.2 Project planner

PROJECT NAME: Volve F-4 D&C
PROJECT NUMBER: L.O046V.002.2A01C

Start time	End time	Budget time hrs	Acc budget days	Tech limit hrs	Acc tech days	Plan time hrs	Act time hrs	Acc actual days	Down time	Description	Companies
28.02.2008 03:45	14.03.2008 07:45	46,0	1,9	182,5	7,6	264,5	364,3	15,2	166,5	COMPL_LINER [NO 15/9-F-4]	
28.02.2008 03:45	28.02.2008 09:30	4,0	0,2	2,0	0,1	2,0	5,8	0,2	0,0	71 RU 7" casing handling equipment	Weath,Maersk,Schlum
28.02.2008 09:30	29.02.2008 01:30	12,0	0,7	6,0	0,3	16,0	16,0	0,9	0,0	72 MU and RIH w/7" liner. (appr. 800 m)	Schlum,Weath,Maersk,Hall
29.02.2008 01:30	29.02.2008 03:30	1,0	0,7	0,5	0,4	1,5	2,0	1,0	0,0	73 MU 7" liner hanger/RT.	Hall,Schlum,Weath,Maersk
29.02.2008 03:30	29.02.2008 05:30	2,0	0,8	1,0	0,4	1,0	2,0	1,1	0,0	74 RD casing handling equipment. RU DP handling equipment.	Weath,Maersk
29.02.2008 05:30	01.03.2008 04:30	10,0	1,2	7,0	0,7	8,0	23,0	2,0	5,0	75 RIH with 7" liner on DP. RT-failure.	Schlum,Weath,Maersk,Hall
01.03.2008 04:30	01.03.2008 18:00	0,0	1,2	15,0	1,3	15,0	13,5	2,6	12,5	76 POOH with liner hanger RT.	Weath,Schlum,Hall,Maersk
01.03.2008 18:00	02.03.2008 19:45	0,0	1,2	30,0	2,6	24,0	25,8	3,7	0,0	77 Waiting on fishing tools to arrive from town. LD 5 1/2" DP while waiting.	Schlum,Weath,Hall,Maersk
02.03.2008 19:45	05.03.2008 08:00	0,0	1,2	12,0	3,1	40,0	60,3	6,2	59,0	78 RIH and fish 7" liner. POOH. Rack back liner in derrick.	Maersk,Weath
05.03.2008 08:00	07.03.2008 11:30	0,0	1,2	12,0	3,6	36,0	51,5	8,3	51,5	79 Perform wiper trip.	Maersk,Schlum,Schlum
07.03.2008 11:30	08.03.2008 22:30	0,0	1,2	18,0	4,3	30,0	35,0	9,8	33,0	80 RU csg equipment. RIH with 7" liner.	Maersk,Weath
08.03.2008 22:30	09.03.2008 01:30	3,0	1,3	2,0	4,4	2,5	3,0	9,9	0,0	81 PU and install cement head. Circulate. Set liner hanger.	Schlum,Weath,Maersk,Hall
09.03.2008 01:30	09.03.2008 06:00	4,0	1,5	3,0	4,5	3,5	4,5	10,1	0,0	82 circulate and cement 7" liner	Maersk,Hall,Hall,Schlum,Weath
09.03.2008 06:00	09.03.2008 10:15	3,0	1,6	2,5	4,6	3,0	4,3	10,3	0,0	83 Set liner hanger packer. Circulate out excess cement.	Maersk,Hall,Schlum,Weath
09.03.2008 10:15	09.03.2008 21:45	6,0	1,9	5,0	4,8	5,0	11,5	10,8	0,0	84 Release running tool. Circulate. LD liner hanger running tool.	Hall,Maersk,Schlum,Weath
09.03.2008 21:45	10.03.2008 20:00	0,0	1,9	15,0	5,5	15,0	22,3	11,7	0,0	85 Lay down racked 7" liner from derrick	Weath,Schlum,Hall,Maersk
10.03.2008 20:00	11.03.2008 07:00	0,0	1,9	6,0	5,7	6,0	11,0	12,1	0,0	86 a Perform BOP test.	Maersk
11.03.2008 07:00	13.03.2008 06:00	0,0	1,9	30,0	7,0	30,0	47,0	14,1	5,5	87 b MU and RIH with 6" bit assy to clean out and scrape liner for plug setting. POOH.	Maersk,SPS
13.03.2008 06:00	13.03.2008 20:15	0,0	1,9	15,0	7,6	15,0	14,3	14,7	0,0	88 c MU and RIH with 7" bridge plug to 3447 m. Set plug.	Hall,Maersk
13.03.2008 20:15	14.03.2008 07:45	1,0	1,9	0,5	7,6	11,0	11,5	15,2	0,0	89 Leak test 7" liner to 400 bar equivalent with 1.03 sg fluid. POOH.	Schlum,Weath,Hall,Maersk

Start time	End time	Budget time hrs	Acc budget days	Tech limit hrs	Acc tech days	Plan time hrs	Act time hrs	Acc actual days	Down time	Description	Companies
14.03.2008 07:45	17.03.2008 16:15	71,0	3,0	44,5	1,9	56,0	80,8	3,4	6,3	COMPL_WPREP [NO 15/9-F-4]	
14.03.2008 07:45	14.03.2008 14:00	5,0	2,1	4,0	7,8	5,0	6,3	15,4	0,0	90 Perform BOP/Riser/WH cleaning run.	Maersk,Hall,Schlum,MIS,SPS
14.03.2008 14:00	14.03.2008 17:45	6,0	2,4	4,0	7,9	5,0	3,8	15,6	0,0	91 MU clean out assy for 7" liner and RIH on 3 1/2" DP.	SPS,MIS,Maersk
14.03.2008 17:45	15.03.2008 03:00	10,0	2,8	8,0	8,3	10,0	9,3	16,0	1,0	92 MU 7" PBR tieback polish/topdress mill, well comm. tool and 9 5/8" casing cleanout assy and RIH on 5 1/2" DP.	Maersk,MIS,SPS,Weath
15.03.2008 03:00	15.03.2008 07:30	5,0	3,0	3,0	8,4	4,0	4,5	16,2	0,0	93 MU 10 3/4" casing clean out assy and RIH on 5 1/2" DP.	Weath,SPS,MIS,Maersk
15.03.2008 07:30	15.03.2008 10:45	6,0	3,3	3,0	8,5	4,0	3,3	16,3	0,0	94 Scrape 7"/9 5/8"/10 3/4" casing, dress/polish 7" liner top. Condition mud.	Maersk,MIS,SPS
15.03.2008 10:45	15.03.2008 19:00	4,0	3,4	3,0	8,6	4,0	8,3	16,6	0,0	95 Inflow test 7" liner with well commissioner and base oil in DP	Maersk,MIS,SPS,Hall
15.03.2008 19:00	16.03.2008 03:30	10,0	3,8	5,0	8,9	6,0	8,5	17,0	0,0	96 Pump wash pills and displace well to 1.03 sg NaCl until well is clean.	Maersk,MIS,SPS
16.03.2008 03:29	16.03.2008 03:30	10,0	4,3	4,0	9,0	5,0	0,0	17,0	0,0	97 Clean surface pits shakers and flowlines	Maersk,SPS,MIS
16.03.2008 03:30	16.03.2008 06:45	1,0	4,3	0,5	9,0	1,0	3,3	17,1	0,0	98 Leaktest well to 345 bar.	Maersk,MIS,SPS,Hall
16.03.2008 06:45	17.03.2008 16:15	14,0	4,9	10,0	9,5	12,0	33,5	18,5	5,3	99 POOH and LD BHA's. LD 3 1/2" BHA	Maersk,SPS
17.03.2008 16:15	19.03.2008 21:00	15,0	0,6	10,0	0,4	12,0	52,8	2,2	0,0	COMPL_OTHER [NO 15/9-F-4]	
17.03.2008 16:15	18.03.2008 03:15	5,0	5,1	3,0	9,6	4,0	11,0	19,0	0,0	100 MU and RIH with 9 5/8" GTV plug.	Maersk,BOT
18.03.2008 03:15	18.03.2008 06:00	3,0	5,2	2,0	9,7	2,0	2,8	19,1	0,0	101 Set GTV plug at +/-615mMDRT. Leak test from below to 380 bar.	BOT,Maersk,Hall
18.03.2008 06:00	18.03.2008 12:30	3,0	5,3	2,0	9,7	3,0	6,5	19,4	0,0	102 POOH and LD GTV setting tool.	BOT,Maersk
18.03.2008 12:30	19.03.2008 21:00	4,0	5,5	3,0	9,9	3,0	32,5	20,7	0,0	103 Run, land and set 10 3/4" lock down sub. POOH.	Maersk
19.03.2008 21:00	06.04.2008 09:00	190,0	7,9	128,5	5,4	194,5	420,5	17,5	28,5	COMPL_OTHER [NO 15/9-F-4]	
19.03.2008 21:00	26.03.2008 03:00	8,0	5,8	4,0	10,0	6,0	150,0	27,0	0,0	104 Nipple down Diverter and BOP.	Maersk
26.03.2008 03:00	26.03.2008 19:00	8,0	6,2	4,0	10,2	6,0	16,0	27,6	0,0	105 Run in and MU Claxton tool to NT-2 connector on High Pressure Drilling Riser	Maersk,Vetco
26.03.2008 19:00	27.03.2008 01:45	8,0	6,5	6,0	10,5	7,0	6,8	27,9	0,0	106 Transfer riser tension to TDS. Disconnect tension cylinders.	Maersk,Vetco
27.03.2008 01:45	27.03.2008 03:00	3,0	6,6	2,0	10,5	2,0	1,3	28,0	0,0	107 Disconnect HPDR from subsea wellhead. HEAVY LIFT OPERATION - NO PRODUCTION.	Ocean,Maersk,Vetco,AKS
27.03.2008 03:00	28.03.2008 06:00	28,0	7,8	16,0	11,2	18,0	27,0	29,1	0,0	108 POOH with HPDR. HEAVY LIFT OPERATION - NO PRODUCTION.	Ocean,Maersk,Vetco,AKS
28.03.2008 06:00	30.03.2008 06:00	0,0	7,8	0,0	11,2	48,0	48,0	31,1	0,0	110 WOW for running production riser	AKS,Ocean,Vetco,Maersk
30.03.2008 06:00	30.03.2008 12:45	4,0	8,0	2,0	11,3	1,0	6,8	31,4	0,0	109 Prepare for running production riser	Ocean,Maersk,Vetco,AKS

Start time	End time	Budget time hrs	Acc budget days	Tech limit hrs	Acc tech days	Plan time hrs	Act time hrs	Acc actual days	Down time	Description	Companies
30.03.2008 12:45	31.03.2008 13:45	36,0	9,5	24,0	12,3	30,0	25,0	32,4	0,0	111 Run production riser. Leak test. HEAVY LIFT OPERATION - NO PRODUCTION	Ocean,Maersk,Vetco,AKS
31.03.2008 13:45	31.03.2008 23:00	18,0	10,2	16,0	13,0	10,0	9,3	32,8	0,0	112 Install Centralisers, Tensioner ring assy and tension sylinders.	AKS,Ocean,Vetco,Maersk
31.03.2008 23:00	01.04.2008 09:00	8,0	10,5	6,0	13,2	8,0	10,0	33,2	0,0	113 Cut tension joint	Maersk,Vetco,AGR
01.04.2008 09:00	01.04.2008 16:30	8,0	10,9	6,0	13,5	8,0	7,5	33,5	0,0	114 Install surface wellhead. Test BT seals.	Vetco,Maersk
01.04.2008 16:30	01.04.2008 17:45	7,0	11,2	6,0	13,7	7,0	1,3	33,6	0,0	115 Install surface riser	Maersk,Vetco
01.04.2008 17:45	02.04.2008 05:30	12,0	11,7	10,0	14,1	12,0	11,8	34,1	0,0	116 N/U BOP and diverter	Maersk
02.04.2008 05:29	02.04.2008 05:30	2,0	11,8	0,0	14,1	0,0	0,0	34,1	0,0	120 Wash multibowl.	MIS,Vetco,Maersk,Hall
02.04.2008 05:30	02.04.2008 08:30	4,0	11,9	2,5	14,2	3,0	3,0	34,2	0,0	117 Install Bowl protector in surface wellhead	Vetco,Maersk
02.04.2008 08:30	02.04.2008 21:30	6,0	12,2	4,0	14,4	5,0	13,0	34,7	0,0	118 RIH and retrieve Annulus insert from subsea wellhead. Displace riser to packer fluid.	Maersk,Vetco
02.04.2008 21:30	02.04.2008 22:00	3,0	12,3	2,0	14,5	2,5	0,5	34,8	0,0	119 RIH and Retrieve Bowl protector from surface wellhead. (Extra trip to jet across tie-back adapter)	Maersk,Vetco,MIS,Hall
02.04.2008 22:00	04.04.2008 03:15	8,0	12,6	5,0	14,7	6,0	29,3	36,0	14,5	121 Prepare and run 10 3/4" surface tie-back casing.	Vetco,Maersk
04.04.2008 03:15	04.04.2008 09:00	3,0	12,8	2,0	14,8	3,0	5,8	36,2	3,0	122 M/U subsea tie-back connector.	Maersk,Vetco
04.04.2008 09:00	04.04.2008 11:45	3,0	12,9	1,5	14,8	1,5	2,8	36,3	0,0	123 RIH with adjustable casing sub setting tool. Activate adjustable casing sub. POOH.	Maersk,Vetco
04.04.2008 11:44	04.04.2008 11:45	3,0	13,0	2,5	14,9	2,5	0,0	36,3	0,0	125 Continue RIH with straddle cup tester. Leak test tieback connector.POOH.	Vetco,Maersk,Hall
04.04.2008 11:45	04.04.2008 17:30	3,0	13,1	2,0	15,0	3,0	5,8	36,6	0,0	124 RIH with straddle cup tester. Leak test adjustable casing sub.	Vetco,Maersk,Hall
04.04.2008 17:30	06.04.2008 03:45	3,0	13,3	2,0	15,1	2,0	34,2	38,0	11,0	126 RIH with tie-back casing hanger running tool and MU to casing hanger. Leak test 10 3/4" tie-back casing to 400 bar against GTV plug.POOH.	Maersk,Vetco
06.04.2008 03:45	06.04.2008 09:00	4,0	13,4	3,0	15,2	3,0	5,3	38,2	0,0	127 Install MS seal. Leak test.	Maersk,Vetco,Hall
06.04.2008 09:00	07.04.2008 20:45	16,5	0,7	12,5	0,5	17,5	35,9	1,5	4,0	COMPL_OTHER [NO 15/9-F-4]	
06.04.2008 09:00	06.04.2008 10:45	1,5	13,5	1,0	15,3	1,0	1,8	38,3	0,0	128 Run bowl protector in surface wellhead.	Vetco,Maersk
06.04.2008 10:45	07.04.2008 02:45	4,0	13,6	3,0	15,4	7,0	16,0	39,0	2,5	129 Drift 10 3/4" surface tie-back casing to app. 600 m running in on singles	Maersk,Vetco
07.04.2008 02:45	07.04.2008 09:30	4,0	13,8	3,0	15,5	4,0	6,8	39,2	1,5	130 RIH with DP singles and GTV retrieving tool.	Maersk,BOT,Vetco
07.04.2008 09:30	07.04.2008 11:15	2,0	13,9	1,5	15,6	1,5	1,8	39,3	0,0	131 Circulate out Hi-vis pill with packer fluid.	Hall,MIS,BOT,Maersk,Vetco
07.04.2008 11:15	07.04.2008 20:45	5,0	14,1	4,0	15,8	4,0	9,5	39,7	0,0	132 Retrive GTV plug. POOH and L/D.	BOT,Maersk,Vetco
07.04.2008 20:45	11.04.2008 03:30	48,0	2,0	33,5	1,4	42,0	78,9	3,3	14,8	COMPL_TBGRN [NO 15/9-F-4]	
07.04.2008 20:45	07.04.2008 22:30	4,0	14,3	2,5	15,9	3,0	1,8	39,8	0,0	133 Pull bowl protector and wash surface wellhead	Maersk,Vetco

Start time	End time	Budget time hrs	Acc budget days	Tech limit hrs	Acc tech days	Plan time hrs	Act time hrs	Acc actual days	Down time	Description	Companies
07.04.2008 22:30	08.04.2008 03:30	4,0	14,4	2,0	15,9	3,0	5,0	40,0	0,0	134 Prepare to run completion.	Vetco,Maersk,BOT
08.04.2008 03:30	08.04.2008 05:00	5,0	14,6	3,0	16,1	4,0	1,5	40,1	0,0	135 RIH with lower completion assemblies.	Vetco,Maersk,BOT
08.04.2008 05:00	10.04.2008 05:15	20,0	15,5	17,0	16,8	20,0	48,3	42,1	14,8	136 RIH with 7" tubing until TRSCSSV assembly.	Maersk,Vetco,BOT,WD
10.04.2008 05:15	10.04.2008 08:00	4,0	15,6	2,0	16,9	3,0	2,8	42,2	0,0	137 MU TRSCSSV. Connect and leak test control line.	Maersk,BOT,WD
10.04.2008 08:00	10.04.2008 16:30	6,0	15,9	4,0	17,0	5,0	8,5	42,5	0,0	138 RIH with 7" tubing and TRSCSSV control line, until ready to tag liner PBR.	BOT,Maersk,Vetco,WD
10.04.2008 16:30	11.04.2008 03:30	5,0	16,1	3,0	17,1	4,0	11,0	43,0	0,0	139 Tag liner PBR and perform space out of tubing.	Maersk,BOT,Vetco,WD
11.04.2008 03:30	12.04.2008 20:30	32,0	1,3	19,0	0,8	27,5	41,2	1,7	0,0	COMPL_THINS [NO 15/9-F-4]	
11.04.2008 03:30	11.04.2008 08:15	6,0	16,4	4,0	17,3	5,0	4,8	43,2	0,0	140 MU tubing hanger assy. Terminate control line.	Vetco,Maersk,BOT,WD
11.04.2008 08:15	11.04.2008 10:30	3,0	16,5	1,5	17,4	2,0	2,3	43,3	0,0	141 MU communication collar and tubing hanger running tool.	BOT,Maersk,Vetco,WD
11.04.2008 10:30	11.04.2008 13:30	5,0	16,7	3,0	17,5	4,0	3,0	43,4	0,0	142 RIH, land and test TH	Hall,BOT,Vetco,Maersk,WD
11.04.2008 13:30	11.04.2008 17:00	2,0	16,8	1,0	17,5	1,5	3,5	43,6	0,0	143 Perform low pressure tubing leak test and function test of TRSCSSV.	BOT,Hall,Maersk,Vetco
11.04.2008 17:00	11.04.2008 17:30	2,0	16,9	1,0	17,6	1,5	0,5	43,6	0,0	144 Set production packer and leak test tubing.	BOT,Hall,Maersk,Vetco
11.04.2008 17:30	11.04.2008 21:00	2,0	16,9	1,0	17,6	1,5	3,5	43,7	0,0	145 Inflow test TRSCSSV. Test A-annulus to 380 bar.	Hall,BOT,Vetco,Maersk
11.04.2008 21:00	12.04.2008 02:45	3,0	17,1	2,0	17,7	3,0	5,8	44,0	0,0	146 POOH with landing string. Run BPV and set in tubing hanger	Maersk,Vetco
12.04.2008 02:45	12.04.2008 19:15	8,0	17,4	5,0	17,9	7,0	16,5	44,6	0,0	147 ND diverter, BOP and surface riser.	Vetco,Maersk
12.04.2008 19:15	12.04.2008 20:30	1,0	17,4	0,5	17,9	2,0	1,3	44,7	0,0	148 Install spacer spool.	Maersk,Vetco
12.04.2008 20:30	16.04.2008 17:00	68,0	2,8	58,0	2,4	146,0	92,6	3,9	0,0	COMPL_XTINS [NO 15/9-F-4]	
12.04.2008 20:30	13.04.2008 05:15	4,0	17,6	2,0	18,0	3,0	8,8	45,1	0,0	149 Skid rig to be able to lift XMT with port aft crane.	Maersk,Vetco,Hall
13.04.2008 05:15	15.04.2008 04:00	28,0	18,8	20,0	18,9	23,0	46,8	47,0	0,0	150 Install XMT assy and flowline and test same. Pull dart and BPV.	Hall,Vetco,Maersk
15.04.2008 04:00	16.04.2008 17:00	36,0	20,3	36,0	20,4	120,0	37,0	48,6	0,0	152 Commision XMT	Hall,Maersk,Vetco
16.04.2008 17:00	22.04.2008 10:45	62,0	2,6	51,0	2,1	75,0	137,9	5,7	19,4	COMPL_PERF [NO 15/9-F-4]	
16.04.2008 17:00	18.04.2008 21:00	24,0	21,3	12,0	20,9	18,0	52,0	50,7	3,5	153 Rig up WL equipment	Seadrill WL,Maersk
18.04.2008 21:00	19.04.2008 10:30	0,0	21,3	0,0	20,9	12,0	13,5	51,3	0,8	154 Pull NPR plug.	Seadrill WL,Maersk,BOT
19.04.2008 10:30	19.04.2008 15:00	0,0	21,3	1,0	20,9	2,0	4,5	51,5	0,0	154 a Pressure test tubing/liner to 380 bar.	Seadrill WL,Maersk,BOT
19.04.2008 15:00	20.04.2008 20:30	14,0	21,9	10,0	21,3	12,0	29,5	52,7	2,3	155 Perforate well Run #1.	Seadrill WL,Maersk,Schlum
20.04.2008 20:30	21.04.2008 07:45	14,0	22,4	10,0	21,7	12,0	11,3	53,2	0,0	156 Perforate well Run #2. MISFIRE.	Maersk,Seadrill WL,Schlum
21.04.2008 07:45	22.04.2008 01:00	0,0	22,4	12,0	22,2	12,0	17,3	53,9	12,8	156a Perforate well Run #3.	Seadrill WL,Schlum,Maersk
22.04.2008 01:00	22.04.2008 08:45	8,0	22,8	5,0	22,4	6,0	7,8	54,2	0,0	157 RD WL equipment.	Seadrill WL,Maersk
22.04.2008 08:45	22.04.2008 10:45	2,0	22,9	1,0	22,5	1,0	2,0	54,3	0,0	158 Handover well.	Seadrill WL,Maersk

8.3 BHA reports

WELLBORE: NO 15/9-F-4
BHA NO: 9
BHA KIND:
DESCRIPTION: MDT on TLC
BHA NAME: 9

String component	OD in	ID in	Length m	Acc length m
MRAH-AA	5,000		0,06	0,06
MRPO	5,000		3,24	3,30
LFA	5,000		1,55	4,85
MRPQ	5,000		2,74	7,59
MRHY	5,000		2,57	10,16
MRPS	5,000		2,44	12,60
MRHY	5,000		2,57	15,17
MRBA	5,000		0,99	16,16
LFA	5,000		1,55	17,71
MRPO	5,000		3,24	20,95
CGA	5,000		1,55	22,50
MRMS	5,000		4,02	26,52
MRMS	5,000		4,02	30,54
MRPC	5,000		1,51	32,05
DTA-A			1,22	33,27
SGT-N			1,68	34,95
DTC-H			0,91	35,86
ACTS-B1			1,22	37,08
AH			0,61	37,69
DWCH			2,44	40,13
AH-X-OVER			0,92	41,05

BHA NO: 11
BHA KIND:
DESCRIPTION: 7" Liner Fishing BHA
BHA NAME: 11

String component	OD in	ID in	Length m	Acc length m
PACK OFF	5,750	1,500	0,76	0,76
SPEAR	5,529	2,000	1,12	1,88
STABILIZER	6,000	2,313	1,56	3,44
DP PUP JOINT	3,500	2,500	3,05	6,49
DP PUP JOINT	3,500	2,500	2,89	9,38
XO	6,500	2,250	0,66	10,04
STABILIZER	8,500	2,313	1,41	11,45
BUMPER SUB	6,500	2,750	3,82	15,27
XO	7,250	3,000	1,22	16,49
HW DRILL PIPE	5,500		112,78	129,27
DRILL PIPE	5,500			129,27

BHA NO: 12

BHA KIND:
DESCRIPTION: 8 1/2" wiper trip BHA
BHA NAME: 12

String component	OD in	ID in	Length m	Acc length m
HP21G~NA	8,500	2,250	0,26	0,26
BIT SUB W/FLOAT	6,560	2,250	0,78	1,04
NM STAB, 8 1/8"	6,810	2,810	1,70	2,74
TELESCOPE 675	6,750	3,940	8,17	10,91
ARC 675	6,750	2,810	6,33	17,24
HW DRILL PIPE, 5"	5,000	2,000	18,88	36,12
JAR	6,810	2,750	10,28	46,40
HW DRILL PIPE, 5"	5,000	3,000	28,16	74,56
5" XH DP	4,860	4,280	1464,48	1539,04
X-OVER	6,750	3,000	1,11	1540,15
5 1/2" DP	5,420	4,670	2171,20	3711,35

BHA NO: 15
BHA KIND:
DESCRIPTION: 6" PDC bit and scraper assembly
BHA NAME: 14

String component	OD in	ID in	Length m	Acc length m
RSR711M-D2~6"	6,000	1,500	0,16	0,16
BIT SUB	5,000	1,750	0,75	0,91
PUP JOINT,	3,500	2,250	3,10	4,01
PUP JOINT,	3,500	2,250	1,82	5,83
RAZOR BACK CLEAN	5,874	2,000	1,92	7,75
MAGNET WELL SWEEP	5,820	2,000	1,30	9,05
MAGNET WELL SWEEP	5,820	2,000	1,30	10,35
PUP JOINT,	3,500	2,250	3,10	13,45
DP 3 1/2"	3,500		791,94	805,39
X-OVER			0,92	806,31
DP 5 1/2"			2623,72	3430,03

WELLBORE: NO 15/9-F-4
BHA NO: 16
BHA KIND:
DESCRIPTION: Clean out assy prior to run completion
BHA NAME: 15

String component	OD in	ID in	Length m	Acc length m
MULE SHOE	6,000	1,500	2,71	2,71
PUP JOINT	3,500	2,250	3,10	5,81
RAZOR BACK	5,874	2,000	1,92	7,73
WELLSWEEP MAGNET	5,820	2,000	1,30	9,03
WELLSWEEP MAGNET	5,820	2,000	1,30	10,33
PUP JOINT	3,500	2,250	3,10	13,43
DRILL PIPE	3,500		762,87	776,30
PUP JOINT	3,500	2,250	1,50	777,80
POLISH MILL	7,375		0,70	778,50
XO	6,500		1,11	779,61

String component	OD in	ID in	Length m	Acc length m
PUP JOINT	3,500		1,50	781,11
SAVER SUB	4,750	2,250	1,12	782,23
WELL COMMISIONER	8,374	2,250	0,37	782,60
WELL COMMISIONER	8,374		2,04	784,64
WELLSWEEP MAGNET	8,340	2,250	1,35	785,99
WELLSWEEP MAGNET	8,340	2,250	1,39	787,38
XO	5,000	3,000	3,05	790,43
DRILL PIPE	5,500		2058,00	2848,43
XO	7,375	2,250	1,22	2849,65
RAZOR BACK	9,399	2,812	2,26	2851,91
WELLSWEEP MAGNET	8,340	2,250	1,39	2853,30
PUP JOINT	5,500	3,250	2,98	2856,28
DRILL PIPE	5,500			2856,28

BHA NO: 17
BHA KIND:
DESCRIPTION: Set bowl protector in surface wellhead
BHA NAME: 16

String component	OD in	ID in	Length m	Acc length m
WEAR SLEEVE	13,625	1,000	1,00	1,00

BHA NO: 18
BHA KIND:
DESCRIPTION: Retrieve 10 3/4" annulus insert
BHA NAME: 17

String component	OD in	ID in	Length m	Acc length m
J-SLOT RETRIEV. TOOL	10,000		1,58	1,58
HW DRILL PIPE, 5½"	5,500	3,125	138,20	139,78

BHA NO: 19
BHA KIND:
DESCRIPTION: Pull bowl protector in surface wellhead
BHA NAME: 19

String component	OD in	ID in	Length m	Acc length m
WEAR SLEEVE	13,625	1,000	1,00	1,00

BHA NO: 21
BHA KIND:
DESCRIPTION: Driftrun for DHSV
BHA NAME: 22

String component	OD in	ID in	Length m	Acc length m
DRIFT	9,567			

BHA NO: 22
BHA KIND:
DESCRIPTION: Straddle cup run
BHA NAME: 20

String component	OD in	ID in	Length m	Acc length m
CUP TESTER				

BHA NO: 23
BHA KIND:
DESCRIPTION: Casing hanger running tool run for pressure testing
BHA NAME: 21

String component	OD in	ID in	Length m	Acc length m
RUNNING TOOL				

BHA NO: 24
BHA KIND:
DESCRIPTION: Retrieve GTV plug
BHA NAME: 23

String component	OD in	ID in	Length m	Acc length m
LT-CT RETRIEV. TOOL	5,000		4,00	4,00

BHA NO: 25
BHA KIND:
DESCRIPTION: Run secondary bowl protector
BHA NAME: 22

String component	OD in	ID in	Length m	Acc length m
BOWL				

BHA NO: 26
BHA KIND:
DESCRIPTION: Retrieved secondary bowl protector
BHA NAME: 24

String component	OD in	ID in	Length m	Acc length m
BOWL				

BHA NO: 28
BHA KIND:
DESCRIPTION: Pull NPR plug
BHA NAME: 26

String component	OD in	ID in	Length m	Acc length m
PRONG,	2,419		1,63	1,63
GS PULLING TOOL	3,110		0,29	1,92
XO PACKER	2,500		0,13	2,05
FLUTED CENTRALIZER	5,750		0,64	2,69
STEM	2,500		0,91	3,60
VARIATOR DRIFT	5,750		1,17	4,77
MECHANICAL JAR,	2,500		2,42	7,19
EASY ADJUSTABLE JAR,	2,500		1,97	9,16
STEM	2,500		0,91	10,07
STEM	2,500		0,91	10,98
ACCELERATOR	2,500		1,80	12,78
ROPE SOCKET	2,500		0,28	13,06

BHA NO: 29
BHA KIND:
DESCRIPTION: Perforation run #1
BHA NAME: 27

String component	OD in	ID in	Length m	Acc length m
BOTTOM NOSE	4,500		0,10	0,10
ORIENTED WEIGHT SUB,	4,500		3,27	3,37
XO	4,500		0,20	3,57
ORIENTED GUN,	4,500		10,00	13,57
ADAPTER	4,500		0,20	13,77
ORIENTED GUN,	4,500		10,00	23,77
ADAPTER	4,500		0,20	23,97
SWIVEL	4,500		0,65	24,62
XO	4,500		0,15	24,77
SPACER	3,375		0,40	25,17
SINGLE PORT FIRING HEAD	3,375		0,14	25,31
SCHOCK TOOL	3,375		1,07	26,38
ECRD	3,375		0,16	26,54
PGGT-D	3,625		1,78	28,32
LEH-QT	3,375		0,97	29,29

BHA NO: 30
BHA KIND:
DESCRIPTION: Perforation run #2
BHA NAME: 28

String component	OD in	ID in	Length m	Acc length m
BOTTOM NOSE	4,500		0,10	0,10
ORIENTED WEIGHT SUB,	4,500		3,27	3,37
XO	4,500		0,20	3,57
ORIENTED GUN,	4,500		10,00	13,57
ADAPTER	4,500		0,20	13,77
ORIENTED GUN,	4,500		10,00	23,77
ADAPTER	4,500		0,20	23,97
SWIVEL	4,500		0,65	24,62
XO	4,500		0,15	24,77
SPACER	3,375		0,40	25,17
SINGLE PORT FIRING HEAD	3,375		0,14	25,31
CAL-B	3,375		0,83	26,14

String component	OD in	ID in	Length m	Acc length m
AH-83	3,375		0,25	26,39
LEH-QT	3,375		0,97	27,36

BHA NO: 31
BHA KIND:
DESCRIPTION: Perforation run #3
BHA NAME: 29

String component	OD in	ID in	Length m	Acc length m
BOTTOM NOSE	4,500		0,10	0,10
ORIENTED WEIGHT SUB,	4,500		3,27	3,37
XO	4,500		0,20	3,57
ORIENTED GUN,	4,500		10,00	13,57
ADAPTER	4,500		0,20	13,77
ORIENTED GUN,	4,500		10,00	23,77
ADAPTER	4,500		0,20	23,97
SWIVEL	4,500		0,65	24,62
XO	4,500		0,15	24,77
SPACER	3,375		0,40	25,17
SINGLE PORT FIRING HEAD	3,375		0,14	25,31
CAL-B	3,375		0,83	26,14
AH-83	3,375		0,25	26,39
LEH-QT	3,375		0,97	27,36

8.4 Mechanical plug

WELLBORE ID: NO 15/9-F-4

Report date	Depth mMD	Diam. in	Plug type	Tagged depth mMD	Pressure test bar	Setting time	Pulling time	Remarks
15.03.2008	3448,0	7"	EZSV		300,0	14.03.2008		Pressure tested with 1.45 SG mud

8.5 Well schematic

8.6 Completion schematic (CSD)

Volve

NO 15/9-F-04 (Main Wellbore)

Compl.: Rev 1.00 **Tub.Inst.Date:** 12.04.2

Rig: **Status:** Water Injector

Existing

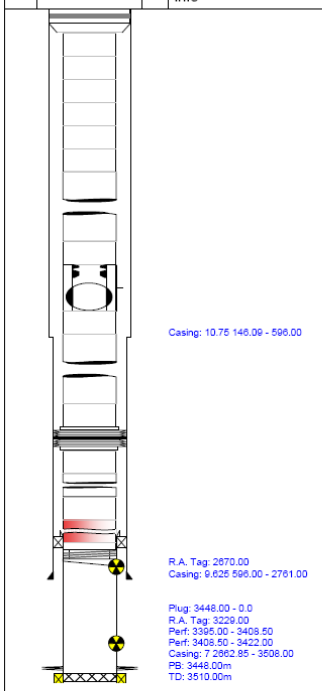
INSTALLED COMPLETION - WATER INJECTION

StatoilHydro

Prep. by: Trond H Berge **Date:** 22.04.200

Rev.: Rev 1.00 **Opr.Fin.Date:** 22.04.2008

Last update: 15.09.2008 19:36:11



Ass	Symbol	Min Zon	Symbol Extra Info	MD [RKB] Top [m]	MD [RKB] Bottom [m]	Length [m]	Description	Comment
				20.45	20.65	0.20	7" TBH - Volve	N102822-1
				20.65	21.92	1.27	7" 29# Vam Top Pup Joint	
				21.92	23.47	1.55	7" 29# Vam Top Pup Joint	
				23.47	26.03	2.56	7" 29# Vam Top Pup Joint	
				26.03	27.03	1.00	7" 29# Vam Top Pup Joint	
				27.03	29.60	2.57	7" 29# Vam Top Pup Joint	
				29.60	32.24	2.64	7" 29# Vam Top Pup Joint	
				32.24	493.35	461.11	7" 29# Vam Top Tubing	
				493.35	495.93	2.58	7" 29# Vam Top Pup Joint	
				495.93	498.45	2.52	7" TSM 7,5 Safety Valve	Valve: H824-93-5878 02K
				498.45	501.04	2.59	7" 29# Vam Top Pup Joint	
				501.04	2627.45	2126.41	7" 29# Vam Top Tubing	
				2627.45	2630.00	2.55	7" 29# Vam Top Pup Joint	
				2630.00	2631.48	1.48	7" x 9 5/8" SB-3 Permanent Packer	H409-24-7402 A16 101409899
				2631.48	2634.03	2.55	7" 29# Vam Top Pup Joint	
				2634.03	2657.82	23.79	7" 29# Vam Top Tubing	
				2657.82	2660.37	2.55	7" 29# Vam Top Pup Joint	
				2660.37	2663.78	3.41	BOT_sealstem	H297-50-1800 A16 101369004
				2663.78	2665.23	1.45	190-75 Ratcheting Muleshoe	H441-69-7503 A16 101311223
				2665.23				

Casing

Size inch	MD Top m	MD Bottom m	Nom Wt. kg/m	ID inch	Matl Spec	Threads
30.00	146.09	251.00	460.88		X-52	
13.38	146.09	1352.00	105.10	12.35	P-110	Vam Top
10.75	146.09	596.00	90.33	9.66	C-95	Vam Top
9.63	596.00	2761.00	79.62	8.54	C-95	Vam Top
7.00	2662.85	3508.00	43.16	6.18	13 CrS-110	Vam Top HT

Completion History

Date	Comment
21.04.2008	Initial perforation during completion

Casing Attribute

Type	MD Top m	MD Bottom m	Install Date	Drift ID
R.A. Tag	2670.00	2670.00		
R.A. Tag	3229.00	3229.00		
Plug	3448.00		14.03.2008	

Perforation

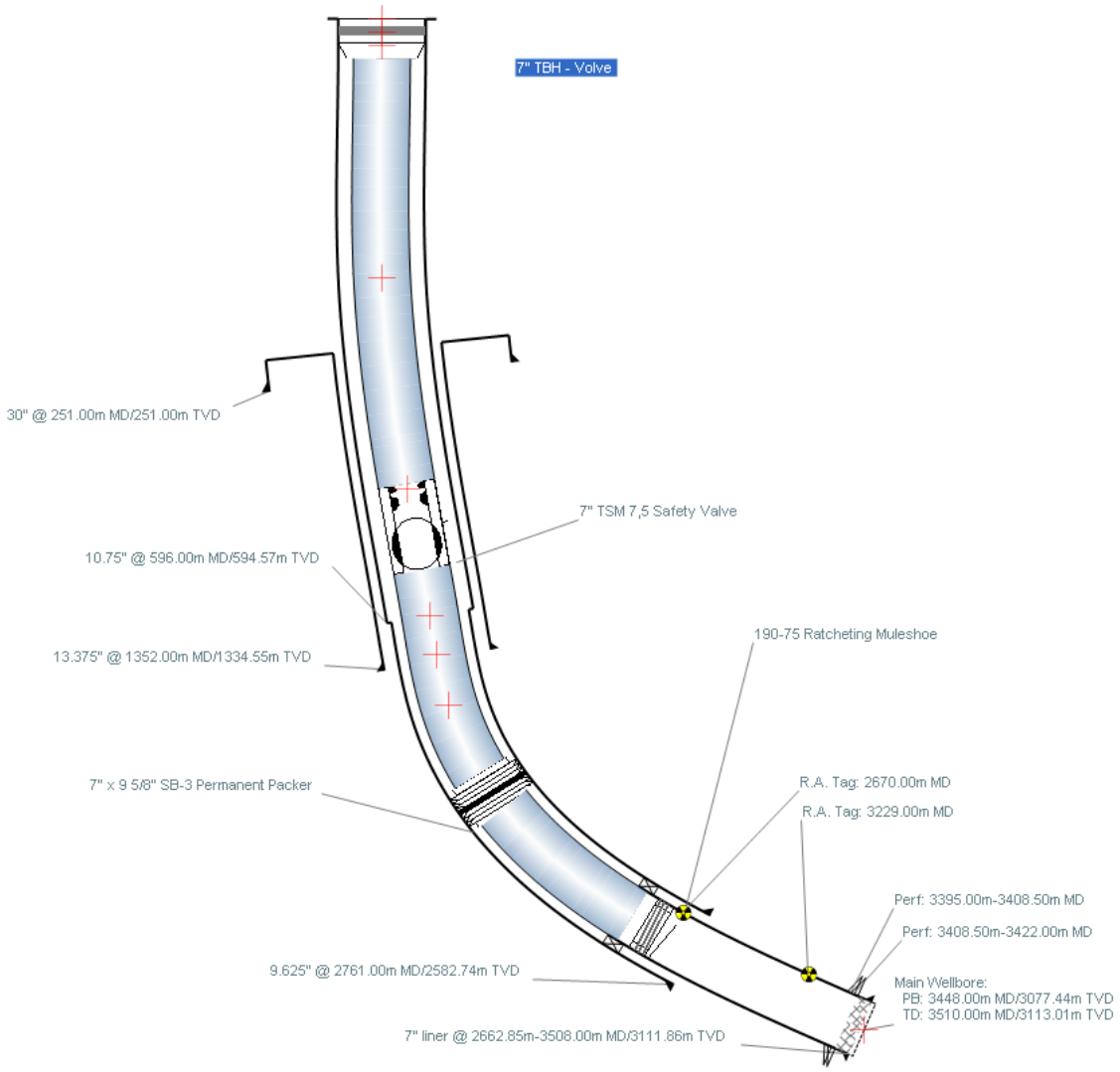
Mineral Zones	MD Top m	MD Bottom m	Phasing Deg	Shots/ ft	Date Shot	Date Closed
Hugin	3395.00	3408.50	10/350	4.0	21.04.2008	
Hugin	3408.50	3422.00	10/350	4.0	21.04.2008	

Completion Data

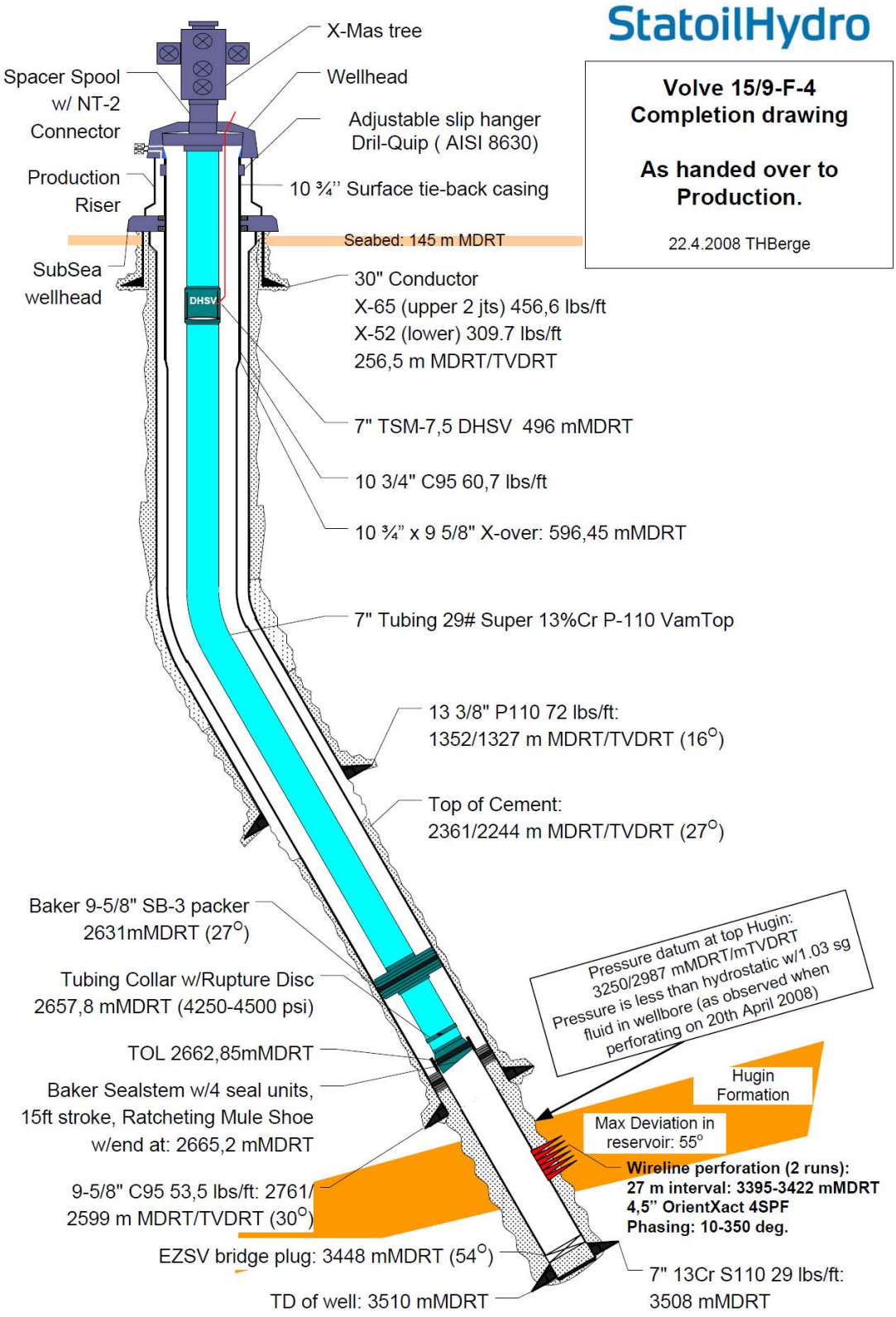
PBTD MD:	3448.00m	TVD:	3077.44m	Max deviation:	55.0Deg@3366.09m
TD MD:	3510.00m	TVD:	3113.01m	Max dogleg:	3.5Deg@2801.09m
Top of fill MD:	m	TVD:	m	Av. angle thru pay:	55.0Deg
Fill date:		RKB-TBGH:	20.45m	Vol. annulus:	31.63m^3
Up/down weight:	172/141 MT	RKB-MSL:	53.87m	Tub. str. vol:	51.19m^3
Packer fluid: 1.03 SG NaCl					

Completion String Design by Completion Services as

8.7 Completion sketch (CSD)



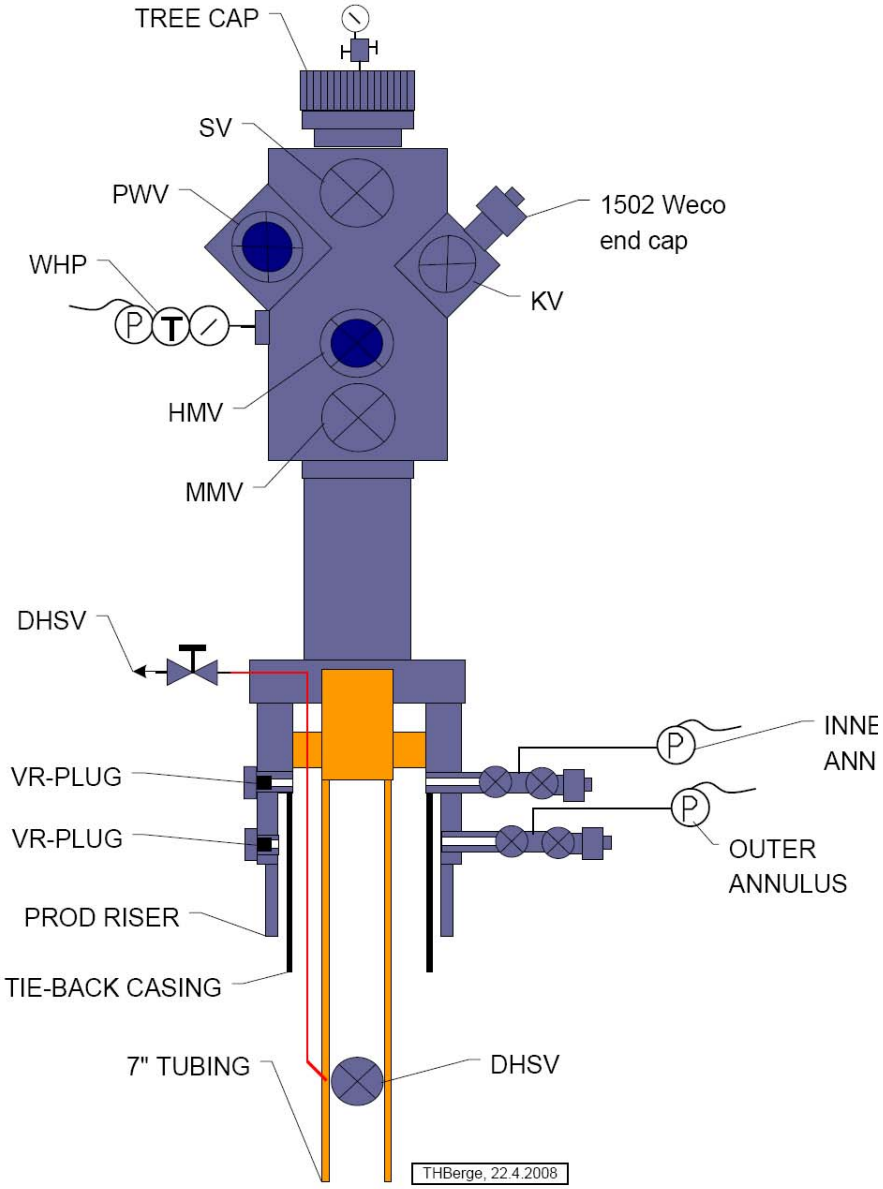
8.8 Completion drawing


StatoilHydro
Volve 15/9-F-4
Completion drawing
As handed over to Production.
22.4.2008 THBerge
X-Mas tree
Wellhead
Spacer Spool w/ NT-2 Connector
Adjustable slip hanger Dril-Quip (AISI 8630)
Production Riser
10 ¾'' Surface tie-back casing
Seabed: 145 m MDRT
SubSea wellhead
DHSV
30" Conductor
X-65 (upper 2 jts) 456,6 lbs/ft
X-52 (lower) 309.7 lbs/ft
256,5 m MDRT/TVDRT
7" TSM-7,5 DHSV 496 mMDRT
10 3/4" C95 60,7 lbs/ft
10 ¾" x 9 5/8" X-over: 596,45 mMDRT
7" Tubing 29# Super 13%Cr P-110 VamTop
13 3/8" P110 72 lbs/ft:
1352/1327 m MDRT/TVDRT (16°)
Top of Cement:
2361/2244 m MDRT/TVDRT (27°)
Baker 9-5/8" SB-3 packer
2631mMDRT (27°)
Tubing Collar w/Rupture Disc
2657,8 mMDRT (4250-4500 psi)
TOL 2662,85mMDRT
Baker Sealstem w/4 seal units,
15ft stroke, Ratcheting Mule Shoe
w/end at: 2665,2 mMDRT
9-5/8" C95 53,5 lbs/ft: 2761/
2599 m MDRT/TVDRT (30°)
EZSV bridge plug: 3448 mMDRT (54°)
TD of well: 3510 mMDRT
Pressure datum at top Hugin:
3250/2987 mMDRT/mTVDRT
Pressure is less than hydrostatic w/1.03 sg fluid in wellbore (as observed when perforating on 20th April 2008)
Hugin Formation
Max Deviation in reservoir: 55°
Wireline perforation (2 runs):
27 m interval: 3395-3422 mMDRT
4,5" OrientXact 4SPF
Phasing: 10-350 deg.
7" 13Cr S110 29 lbs/ft:
3508 mMDRT

8.9 Wellhead / TSR / X-tree schematic

X-MAS TREE and WELLHEAD
WELL F-4

Status at handover to Production
22.4.2008



9 Appendix 4: Contractors list

Completion Service	Contract no	Contractor
Production Riser	SAP4600009167	Aker Kværner Subsea
GTV Plug	SAP4600002226	Baker Oil Tools
Completion Equipment	SAP4600006684	Baker Oil Tools
10 ¾" tie-back casing running equipment	SAP4600005076	Dril-Quip
Cementing / Pumping	SAP4600007720	Halliburton
Completion fluids	SAP4600007720	Halliburton (MI Drilling Fluids)
Well cleaning	SAP4600006671	MI Swaco (SPS International)
Rig Operations	SAP4500847188	Mærsk Contractors
ROV Systems	SAP4600006702	Oceaneering
Liner Hanger Equipment	SAP4600007536	Weatherford Norge AS
Perforation	SAP4600008934	Schlumberger
Wireline	SAP4600004873	Seawell
Spear for 10 ¾" surface tie-back installation	SAP4600008017	Smith Red Baron
Subsea and surface wellhead / X-mas tree	SAP4600006904	Vetco Gray
Cable clamps	SAP4600007391	Well Dynamics