

Great Bear Petroleum Operating LLC

Alcor #1

Vertical Completion Flowtest V2

Dylan Garrett – Halliburton Project Management, Completions Engineer

10/30/2012

Objective of Operation

The goal of this procedure is to test the Kuparuk formation in the Alcor #1 well with the goal of establishing reservoir parameters and collecting a reservoir fluid sample. The zone will be tested using ball seals to isolate the HRZ formation and pumping a breakdown of the Kuparuk. Then the well will be opened to the well test facilities. Coil tubing will assist in reservoir fluid recovery through nitrogen lifting if needed.

Health – Safety – Environmental – Quality

- HES' safety regulations are to be adhered to at all times by all personnel on location – no exceptions.
- Zero accidents.
- Zero environmental incidents.
- Perform daily safety meetings with crews and pre-job JSAs.
- Make daily HSEQ inspections.
- Minimum of four near misses to be documented per month of completion operations.
- Ensure that all vendors follow correct billing instructions.
- Ensure that all costs are captured in a timely manner.

Contact Information

- Neil Bosley – Well Site Supervisor: (307) 262-1189
- Pablo Headworth – Well Site Supervisor: (307) 315-3666
- Gary Smiley – Completions Superintendent: (307) 258-8480
- Dylan Garrett – Engineer: (720) 261-2755
- Buzz Yohman – Project Manager: (907) 230-2291
- Allan Ballard – HSE: (303) 947-4156

General Information

- Single Vertical 10,812 ft MD / 10,802 ft TVD [10,665 ft MD at Landing Collar]
- Legals: T7N-R14E-Sec. 5, 2769 ft FSL, 549' FEL
- Location: North Slope, AK
- GL: 164 ft KB = 23 ft
- Wellhead - WoodGroup 11", 10K X 7-1/16", 10K Tubing Head Adapter [7-1/16, 10K Frac Valves]
- Completion Fluid – 9.8 ppg NaCl with 6.6 gpt Aldacide G

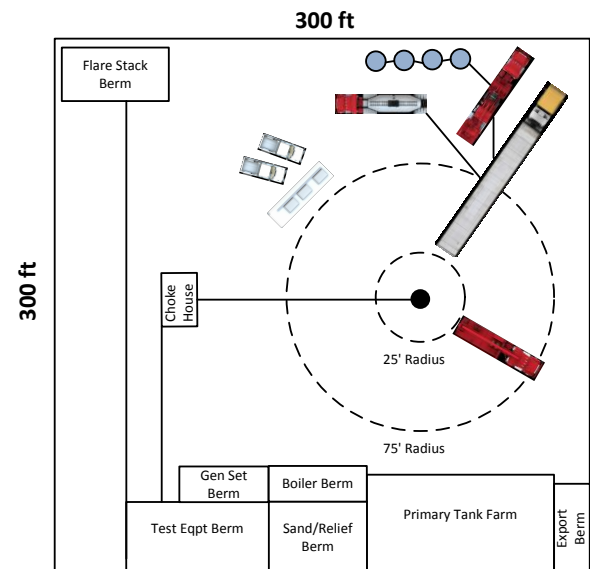
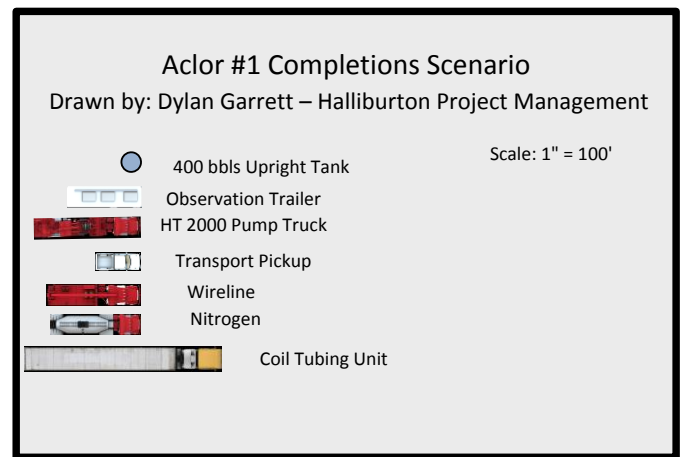
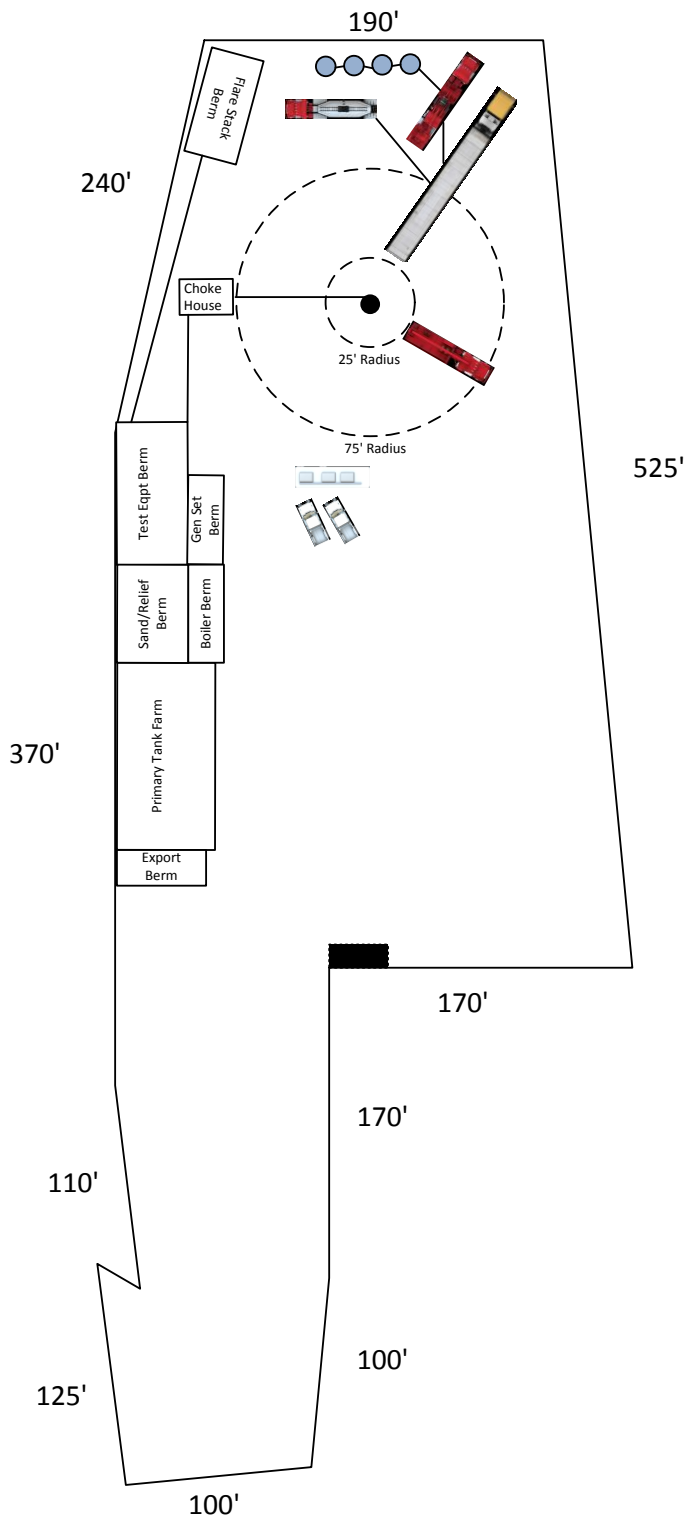
Tubulars

<u>Depth</u>	<u>Type</u>	<u>Specifications</u>	<u>Burst</u>	<u>Collapse</u>	<u>ID/Drift</u>
0-2,491'	Surface	9 ^{5/8} ", 40#, L-80, BTC	5,750 psi	3,090 psi	8.835"/8.679"
0-8,311'	Intermediate	7", 29#, P-110, BTC	11,220 psi	8,510 psi	6.184"/6.059"
7,983-10,753'	Prod. Liner	4 ^{1/2} ", 13.5#, P-110, Hydro 521	12,410 psi	10,690 psi	3.920"/3.795"

Vertical Completions Flowtest Procedure

- 1) MIRU Flowtesting equipment. Make sure all equipment is bermed to state regulations.
- 2) Pressure test flowtest lines to 2000 psi, monitor and chart pressure for 30 minutes. Bleed off surface pressure to 200 psi and shut in. Record flowrate, pressure drop, fluid recovered, and pressure build up.
- 3) MIRU Eline unit and crane to shoot Kuparuk perfs.
- 4) RIH with 3-7/8" gauge ring from surface to 9300 ft. Confirm depth and pull out of hole.
- 5) RIH with perforating guns (2-3/4" guns, 25 gram millennium charges, 20' of guns loaded with 3 spf and 120 degree phasing). Correlate at short joint as well as gamma readings off of shooting gamma. Ensure the hole is full of 9.8 ppg NaCl. Record surface pressure before the guns are shot. Kuparuk perforating depths are 9230 – 9250 ft.
 - a) Fire shots after depth correlations and observe wellhead pressure. If wellhead pressure is increasing then POOH with Eline. If wellhead pressure is decreasing, then continue monitoring for 30 minutes.
 - b) POOH with spent perf guns. ND the lubricator and NU night cap. Confirm spent perf guns at surface, then RDMO Eline and Crane.
- 6) Flow the well back at 2-3 bpm, adjust the choke size to maintain this flowrate. Record flowrate, pressure drop, choke size, and properties of fluid recovered.
- 7) MIRU pumping and ball dropping equipment equipment. Pressure test surface pumping lines to 7000 psi, monitor and chart pressure for 30 minutes.
- 8) Load 50, 1.3 SG x .875-in Perf Pak Balls to dropping equipment.
- 9) Step up to a rate of 13 bbls/min. Pump until pressure stabilizes.
- 10) Once pump rate and pressure have stabilized, begin to drop balls at rate of 1 every 2 seconds. Monitor the volume pumped after the first ball is dropped to anticipate when it will hit the HRZ perfs.
 - a) Volume from surface to the top HRZ perf at 9160' is 323 bbls. With a steady rate of 13 bbls/min, the first ball should reach the top perf in 25 minutes.
- 11) Note anytime ball action is seen and monitor pressure changes. Lower rate if the max pressure of 5700 psi is reached.

- 12) After all 50 balls have been dropped, maintain rate and monitor pressure. Once breakdown is seen, pump 150 bbls into the formation and then shut the pumps down. Record ISIP along with pressures after 5, 10, and 15 minutes.
- 13) RDMO pumping iron and equipment.
- 14) Flow back well at a max rate of 1 bpm / 60 bph / 1440 bpd. Adjust choke as necessary to keep rate constant.
- a) Email daily reports to dylan.garrett@halliburton.com. Reports should be sent out before or at 8AM MST.
 - b) Report the total load recovered, along with fluid type.
 - c) Continue to flow well until further notice from Dylan Garrett.
 - d) When the well flows at 1 bbl/min with a fully open choke, shut in and monitor a pressure build up for 3 hours.
- Once complete, flow the well again maintaining the same rate.
- 15) Once the well dies MIRU Coil tubing unit with Nitrogen.
- a) Pressure test coil tubing surface equipment and BOP to 5700 psi. Monitor and chart pressure for 30 minutes.
- 16) RIH with coil to 1000 ft and begin to inject nitrogen at 300 scf/min. Monitor flowback while pumping.
- a) Continue process to recover reservoir fluid until given word to stop operations from Dylan Garrett.
- 17) RDMO Coil tubing unit.
- 18) RDMO well testers and shut in well.
- 19) Evaluate results in order to make forward plans.



Company :	Great Bear Petroleum LLC
Play :	Shublik
Well Name :	Alcor #1 - Pilot
Legals	T7N-R14E-Sec. 5
Surface Loc:	2542' FEL, 652' FSL
Location :	North Slope
State:	Alaska
Rig:	Nabors
Ground Level :	178'

