



Andrews, David

From: Fernandez, Frank [Frank.Fernandez@encana.com]
Sent: Sunday, August 15, 2010 1:35 PM
To: Fernandez, Frank; Andrews, David
Cc: Asuchak, Edward A.; Candelaria, Larry R.
Subject: RE: WF04B-22 surface depth request

Regarding Patterson rig 303 drilling ops on Encana's K22 pad.

David - We drilled surface on the WF14B-22 on K22 pad successfully without losses. Upon its subsequent wiper trip losses incurred and cross flow communication began into the WF14D-22 but not on the WF04B-22. These three wells are on the same pad. We treated the WF14B-22 with greater than 200% (200 bbls) cement to treat the fractures downhole. Total of 285 bbls cement was pumped. 1046 sx. All 14# Tail only blend. 131 bbls displacement. During the cement job we had returns to both the primary cemented well, WF14B-22, and WF14D-22 via its conductor/surface casing annulus.

Summary:

WF14B-22

API: 05-045-18917-00

Drill fluid cross flow into WF14D-22

No excess cement returns to surface on primary well being cemented. Only phenolthaleine change witnessed starting at 245 bbls cement pumped throughout the cement job.

Phenolthaleine change witnessed on secondary well WF14D-22 starting at 218 bbls cement pumped.

8/15/2010 tagged with plum bob @ ~65'. Fluid column holding to surface.

WF14D-22

API: 05-045-18879-00

Drill fluid cross flow into WF04B-22

Good cement job with 30 bbls good cement returns to surface on original cement job.

No cement returns witnessed via WF04B-22 annulus; only drill mud circulation during cement job.

8/14/2010 tagged with plum bob @ ~25'

8/15/2010 unable to tag with plum bob. Plum bob string length 70'.

WF04B-22

API: 05-045-18861-00

Lost cement returns 14 bbls into displacement. Calculated cement top estimated right around conductor shoe.

8/14/2010 unable to tag with plum bob. Plum bob string length 70'.

You know where to find me.

Thanks - Frank Fernandez

From: Fernandez, Frank
Sent: Thursday, August 12, 2010 6:49 PM
To: 'Andrews, David'
Subject: RE: WF04B-22 surface depth request

David - Soon after surface drillout of the well following to the WF04B-22 we had drill fluid cross flow up the conductor/surface casing. A description is attached. Also, a cement top job through 1" line will be scheduled. Let me know if you have any questions.

Thanks - Frank Fernandez

From: Andrews, David [mailto:David.Andrews@state.co.us]
Sent: Tuesday August 10, 2010 15:17 PM
To: Fernandez, Frank
Cc: Asuchak, Edward A.; Gerrard, Dawn
Subject: RE: WF04B-22 surface depth request

Frank,

COGCC's policy allows for an increase of the surface casing depth without prior approval, up to 20% of the approved setting depth (see attached). Therefore, as long as your setting depth is between 1750' and $1750' * 1.2 = 2100'$, you are good-to-go on this change. On the other hand, setting surface casing less than the approved depth by any amount requires prior approval.

Thanks,

David D. Andrews, P.E., P.G.
Engineering Supervisor - Western Colorado

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From: Fernandez, Frank [mailto:Frank.Fernandez@encana.com]
Sent: Tuesday, August 10, 2010 2:45 PM
To: Andrews, David
Cc: Asuchak, Edward A.; Gerrard, Dawn
Subject: WF04B-22 surface depth request

David - This is a follow-up to a voicemail placed at your office.

Regarding WF04B-22 (K22), API# 05-04-18861-00

Approved surface depth: 1750'
Current Drilled surface depth: 1810'
Requested surface depth: 1850'

We have experienced ~450 bbls lost circulation fluid starting around 1680'; pronounced around 1750'. The hole is healed now. It's difficult to assess if we are past the zone of lost circulation. I'd like to request we drill to 1850' to provide some insurance we have fractures cemented behind pipe before we drill out the production hole.

Thanks - Frank Fernandez

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<http://www.encana.com>

11, August 2010 23:00

At roughly 11:00 Wed 8/11 rig Patterson 303 was drilling on WF14D-22 @ 202' when flow-back was reported on the previously drilled surface string WF04B-22 between the 16" conductor and 9-5/8" surface casing. Pumps were stopped and operations halted until plans were organized to stop the cross-flow.

I arrived on location at approximately 12:00. Ed Asuchak and Larry Candelaria arrived around the same time to relieve the outgoing Co Man, Dawn Gerrard.

The drill sting was pulled out of the hole when we were assessing the situation. The cellar for the wells had been drained of drilling fluid via a surface pump. The mouse hole for WF14D-22 was exposed for us to see there was no indication of drill fluid communication. We decided to go back in the hole open ended and see exactly where flow was breaching the surface. The pumps were staged up to 515 gpm at 153 psi. No flow breach was observed on surface. We learned A dense LCM pill was spotted after the initial breach was observed. We pulled the open ended drill string and made an attempt to replicate the original drilling conditions that caused the flow breach. We ran in with the 8-3/4" PDC bit and 8" BHA. We wanted to see if the jetted flow and added psi restriction behind the BHA would break through the formation and breach surface on the WF04B-22. Pumps were staged up to 586 gpm at 1577 psi. We could not get the flow to breach surface. We assessed the LCM pill had successfully healed the well we were drilling. We made the decision to proceed drilling operations.

At 339' MD the drilling fluid breached surface through the WF04^B~~D~~-22 conductor/surf csg annulus once again. Plans were ordered to heal the fracture system via cement.

Plan.

1. flush mud system from WF14D-22 open hole, fracture system and WF04B-22 exposed annulus. (I made this decision as to help prevent the fracture system from closing up on us as it did when we attempted to replicate the original drilling conditions)
2. RIH with 4-1/2" drill pipe open ended as close to drill depth and still be able to swedge up cement equipment. (319')
3. Pump full cement volume to fill WF14D-22, fracture system and WF04B-22 exposed annulus. Add 100% excess.
4. Pull drill pipe and flush (displace cmt) with water as we pull out of the hole.
5. obtain a dredge pump to suck out cellars
6. Circulate excess cement to catch tank.
7. After setting time is reached go in hole with a 12-1/4" tri-cone bit and drill out cement down to the conductor shoe.
8. Wait another ~couple hrs and begin drill out formation cement. Assess cuttings to continue drilling cement to MD TD (319')
9. TOOH and build directional BHA.
10. Return to normal drilling operations.

Footnote: On the WF04B-22 we lost cement returns on the surface cement job at 14 bbls before bumping the plug. Theoretically, that would have put us close over the conductor. This cement plan may possibly heal the lost circ fracture zone and fill missing cement on the WF04B-22.

12, August 2010 06:00

Cement job observations:

130 bbls water pumped prior to cement. Initial pump rate @ 8 bpm and slowed to 5 bpm to catch up on cmt. Fluid to surface annular from SLB by 04:40 hrs. Continued pumping at 8 bpm until 79 bbl cmt pumped away. Reduced rate to 4.5 bpm until 195 bbl cmt pumped away. Last 5 bbl cmt pumped at increased rate of 8 bpm. Highest press observed was 200 psi @ 8 bpm. Visually flow rates were strong at surface annulus at onset of pumping operations but diminished through the job. Flow was diminished to a trickle at last 5 bbls of cmt job. Total 200 bbls cmt was pumped.

It is believed the cmt plugged the fracture zone and isolated the 2 wells. It does not appear that cmt made it to the WF04B-22 annulus.

Next steps:

1. Tag cmt at 09:00
2. drill out through the conductor. Assess the cmt integrity
3. Drill out cmt through the formation ~ 13:00. Assess cmt integrity
4. look out for any drill fluid cross-flow to WF04B-22
5. return to normal drilling operations

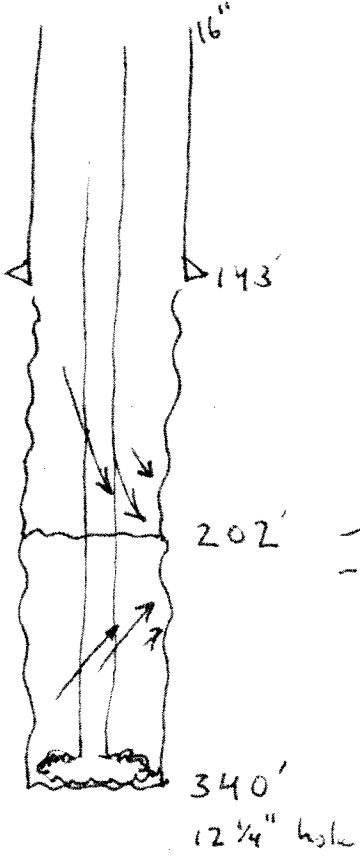
Cmt setting time: 2.5 hrs

Drill-out time: 7.5 hrs

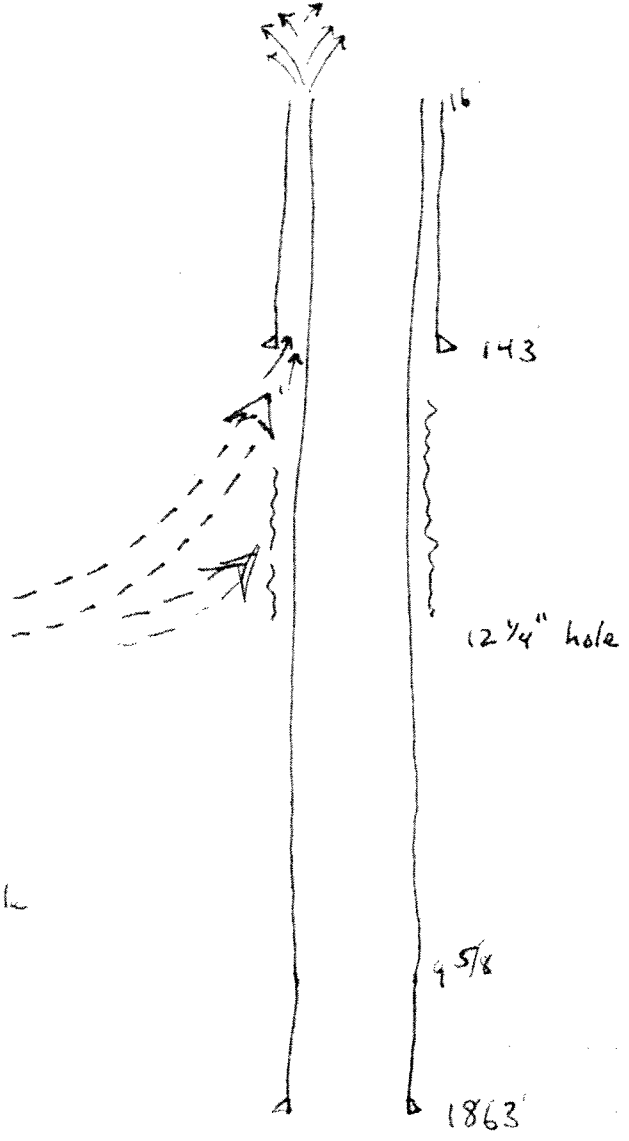
12, August 2010 18:30

The cement plug has been drilled out. As of 18:30 we are drilling @ 585'. Cross flow between wells is no longer occurring.

140-22



04B-22



WF140-22

$$\frac{15.75^2 - 4.5^2}{1029.4} (113) = 31.7$$

$$\frac{12.25^2 - 4.5^2}{1029.4} (59) = 7.4$$

$$\frac{12.25 - 4.5^2}{1029.4} (138) = 17.4$$

WF04B-22

$$\frac{15.75^2 - 9.625^2}{1029.4} (113) = 21.6$$

$$\frac{12.25^2 - 9.625^2}{1029.4} (59) = 3.3$$

① → 81.4 bbls plus fracture system

② → 100 bbls

③ → 100% excess

④ → 200 bbls cement ordered

$$\textcircled{5} \rightarrow 200 \text{ bbl cement} \left| \frac{5.6 \text{ cu ft}}{1 \text{ bbl}} \right| \left| \frac{1 \text{ sq}}{1.17 \text{ cu ft}} \right| = 757 \text{ sq cement}$$