Andrews, David

045-16311

REMEDIAL CEMENT SUMMARY

From: Andrews, David
Sent: Thursday, June 24, 2010 8:40 AM
To: 'Bunch, Bruce'
Cc: Lake, James
Subject: RE: TR 323-25-597 Remedial Cement To Achieve 200' min above upper most frac perf

Bruce,

Your post-remediation cement coverage is acceptable for compliance with Rule 317.i. Please proceed with your completion operations.

ORIGINAL SUNDRY NOTICE WITH REMEDIAL CEMENT APPROVAL: DOCUMENT No. 2054339 D.A.

Thanks,

Dave

From: Bunch, Bruce [mailto:Bruce.Bunch@Williams.com]
Sent: Monday, June 21, 2010 11:14 AM
To: Andrews, David
Cc: Lake, James
Subject: RE: TR 323-25-597 Remedial Cement To Achieve 200' min above upper most frac perf

Dave, attached is the CBL run after the 2nd remedial cement squeeze was pumped.

To summarize:

6-3-2010	Date 1st remedial squeeze was pumped
6-17-2010	Date 2nd remedial squeeze was pumped (add cmt to achieve 200' min above top most perf)
6-20-2010	Date of CBL after 2nd Squeeze
6562' MD	Top MV:
7250' MD	Top of MV Gas (KMV):
7264' MD	Proposed upper most frac stage perf
7054' MD	Current Top of Quality Cement
210'	Quality Cement Above upper most frac stage perf (Top Perf to TOC)

If the cement top meets with your approval we will proceed with frac completions.

Thanks.

Regards,
Bruce Bunch
Williams Production RMT, Highlands Asset
Phn 303-629-8442
Personal cell 661-808-8557

From: Bunch, Bruce
Sent: Tuesday, June 15, 2010 5:59 PM
To: 'Andrews, David'
Cc: Lake, James
Subject: RE: Cement remediation TR323-25-597

Thanks Dave.

Bruce

From: Andrews, David [mailto:David.Andrews@state.co.us]
Sent: Tuesday, June 15, 2010 5:45 PM
To: Bunch, Bruce
Cc: Stewart, Colt; Lake, James
Subject: RE: Cement remediation TR323-25-597

Bruce,

This procedure is acceptable.

Thanks,

Dave

From: Bunch, Bruce [mailto:Bruce.Bunch@Williams.com]
Sent: Tuesday, June 15, 2010 4:07 PM
To: Andrews, David
Cc: Stewart, Colt; Lake, James
Subject: RE: Cement remediation TR323-25-597

Dave, attached is our proposed Remedial Cement Squeeze Procedure #2 for the TR 323-25-597 designed to finish placing cement above the top most proposed perf to achieve at least 200 ft min over the proposed top frac perf.

The Cement Squeeze #1 did not "stack out" sufficiently high enough with quality cement to achieve the objective of at least 200 ft over the top most proposed perf. Squeeze #1 TOC is 7054' and BOC is 7186' for a total of 132' total interval). Therefore, squeeze #2 is designed to place cement on below the current bottom of quality cement @ 7186' MD down through to the proposed top most completion perf at 7264' MD (net add of 78 ft for 210' total). I note that the previous cement #1 squeeze was not designed (and did not) place cement below 7186' because this was just below a 6ft segment of casing that otherwise had good tight cement coverage.

Please call either Jim Lake or myself with any questions.

Thanks for your time and attention.

Regards,
Bruce Bunch
Williams Production RMT, Highlands Asset
office 303-629-8442
personal cell 661-808-8557

From: Andrews, David [mailto:David.Andrews@state.co.us]
Sent: Monday, June 14, 2010 4:07 PM
To: Lake, James
Cc: Bunch, Bruce; Stewart, Colt
Subject: RE: Cement remediation TR323-25-597

Jim,

Your remediation procedure proposed a target TOC of 6950'. The bond log shows a good TOC at 7055'. I am available in our Rifle office this week to discuss your post squeeze results, unless you have already discussed this with one of our other engineers.

Thanks,

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

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Oil and Gas Conservation Commission
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Website: http://www.colorado.gov/cogcc

From: Lake, James [mailto:James.Lake@Williams.com]
Sent: Wednesday, June 09, 2010 4:21 PM
To: Andrews, David
Cc: Bunch, Bruce; Stewart, Colt
Subject: Cement remediation TR323-25-597

Dave,

Attached is a copy of the post squeeze CBL on the TR323-25-597. Would you have an opportunity this week to get together and discuss the results of this squeeze?

Top of Gas (MV) 7250' MD
Top Perf/Frac: Highest frac planned is the sand interval from 7252' MD to 7268' MD with entry perfs at 7260'

Thanks,

Jim Lake

Highlands Asset Team
Production/ Completion Superintendent
Williams Production RMT

970-263-2761 - Office
970-270-7356 - Cell

Williams Production RMT, Piceance Highlands Asset
Well Work – Remedial Cement Squeeze Procedure June 15, 2010

FIELD	**TRAIL RIDGE**
WELL / LAND	**TR 323-25-597** (api 05-045-16311). Fee Surface and Minerals.
LOCATION	Sec 25, T5S, R97W, Garfield County, CO
AFE	WT 15781 (New Drill Well)

Purpose

Summary: Squeeze cement to achieve at least a 200 ft minimum continuous interval of cement above the future completion top perforation to satisfy COGCC requirements for low top of cement wells to be competed in the Williams Fork.

This procedure is for Remedial Cement Squeeze #2.

Permits Required

Approved COGCC Sundry For Cement Squeeze.

Principle Contacts

Engineer	Bruce Bunch, Denver	phn 303-629-8442, cell 661-808-8557
Field	Colt Stewart, Parachute	phn 970-263-2761, cell 632-5153

Well Information

Objective:	Cameo, Mesaverde completion below top of gas (termed "KMV").
Wellbore Condition:	New cemented wellbore. Drilling was finished in early 2009 and completion was deferred until 2010.
Current Perfs:	No fracing or perforation has been performed. Plan to commence completion perforations and fracs upon successful completion of squeezing.
Tubing Size/Depth:	No tubing installed
Production Casing:	4-1/2" 11.6#/Ft, I-80 LTC. Float collar top at 9761' MD. Casing shoe bottom at 9793' MD.
Prod Casing Test:	Not yet hydrotested. Plan to hydrotest after squeeze to 6,200 psig (80% of rated burst).
Correlate Log:	HES cased hole pulsed neutron (RMT).
CBL Log:	HES Acoustic CBL dated January 16, 2009. Logged to 9,748'. 2nd CBL log on 2-18-2009 by RMWS with 1000 psig casing pressure applied with no appreciable difference.
Top Of Cement:	Original Cement Job: 7182' MD (existing highest cement "point" in proximity to upper most proposed perf).
Squeeze #1 Cmt	TOC at 7054' MD. BOC at 7186' MD. 132' of quality hydraulic isolation cement placed.
Top of Mesaverde	6562' MD
Top of Gas (MV)	7250' MD
Top Perf/Frac:	Highest frac planned is the sand interval from 7252' MD to 7268' MD with entry perfs revised to 7264'. • This entry perf is 14 ft MD below Top of Gas (KMV) • This entry perf is 702 ft MD below Top of Mesaverde (MV) • After Cement Sqz #1 results the target post cement sqz TOC is 7054' MD (> 200 ft above upper most perf) with Cement Squeeze #2 designed to pack the interval from the upper most perf to the 7186' (Base of Cement Squeeze #1 Cement) with additional remedial cement.
Cement Criteria:	200 ft min continuous cement sheath in close proximity to and above top perf upon specific approval by COGCC.

- Cumulative interval of quality cement not presently adequate to achieve 200 ft minimum height quality cement sheath above top most perforation to be completed/fraced.

SQUEEZE PROCEDURE

Squeeze Type: Suicide cement squeeze to 1) squeeze/place sufficient cement to obtain at least 200 ft of quality cement above the top most perforation to achieve regulatory requirements.

Cement Services: Halliburton Energy Services (HES)

Sqz Design: Normal weight, HES "SqueezeCem" cement, 15.8 ppg, low fluid loss with retarder to enable robust circulation out time of cement returns per HES design.

- 50 Sks. Volume based upon squeezing packed cement behind casing from 7350' (relatively well cemented segment just below upper frac perf #3 on wellbore diagram) to current BOC at 7186' (164 ft interval) using 40% excess + volume necessary for CIBP/Retainer enclosure inside wellbore.

Sqz Upper "Pkr": Cast Iron, "drillable" Retainer w tubing on-off connection.

Sqz Bottom Plug: Composite, "drillable" Bridge Plug will be set below squeeze holes with sand dumped atop to pump squeeze against.

Tubing String: 2-3/8" N80 EUE Work String.

1. MIRU Workover Rig.
2. Run casing scraper to full depth.

Block Squeeze:

3. MIRU wireline unit. Set Cast Iron Bridge Plug top at **7375 ft MD** to squeeze against.
4. Dump sand atop Bridge Plug.
5. RIH w/ wireline and perforation guns for squeeze shots.
6. Shoot lower squeeze holes from **7347' – 7348' MD** using 4 ea (21 gram, 0.36" diameter, 120 degree phasing) holes. *This interval will be perfed in future for a frac entry point in the MV10 frac stage.*
7. Shoot upper squeeze holes from **7192' – 7193' MD** using 3 ea (0.25" diameter, 120 degree phasing) holes. *This set of hole will not be utilized again during the completion process.*
8. POOH w/ wireline and perforation guns. RDMO wireline rig.
9. MIRU Cementer (HES). RIH with Retainer and set to at **7200' MD**. *This sets up a 175' squeeze chamber within the casing.*
10. Circulate tubing capacity to ensure tubing is clear of obstructions.
11. Sting into Retainer.
12. **Fluid 1:** Pump **10 bbl produced water spacer** to breakdown lower squeeze perfs and establish injection rate through casing annulus and back into wellbore above retainer.
13. Shut down for ISIP.
14. **Fluid 2:** Pump **20 bbl mud flush** (Reactive spacer, Halliburton Mud Flush III).
15. **Fluid 3:** Pump **10 bbl produced water spacer** to displace mud flush.

16. **Fluid 4:** Pump **50 sks (10.2 bbls)** Halliburton design "SqueezeCem" cement at 15.8 ppg (standard weight, non-foamed cement)..
17. Displace cement down to Retainer by pumping produced water. Hold pressure per Halliburton instruction to enable cement consistency to take initial set.
18. Sting tubing out of Retainer leaving 1 bbl cement on top of Retainer.
19. Reverse circulate working tubing tail to take returns to just above Retainer. Reverse circulated a minimum of 6 casing volumes (1 volume ~ 72 bbls, 5 volumes ~ 432 bbls) since considerable cement returns will likely be above Retainer since this is a Suicide Squeeze.

Drill out:

20. Let cement sit as recommended by Halliburton.
21. Drill out Retainer and cement to just above Cast Iron Bridge Plug. Do not drill out Bridge Plug.
22. Make casing scraper run to prepare for CBL.
23. MIRU Logging Unit. Run CBL from drill out point up to 6900'. RDMO Logging Unit.
24. Evaluate squeeze cement results using CBL. If coverage is deemed "fit for purpose" to place a minimum of 200 ft of continuous cement above top perforation and satisfy COGCC then RDMO squeeze operation and resume fracing the remainder of the well.
25. If cement squeezes are not adequate, then resqueeze and evaluate with CBL as necessary.

Williams Production RMT, Piceance Highlands Asset
Well Work – Remedial Cement Squeeze Procedure

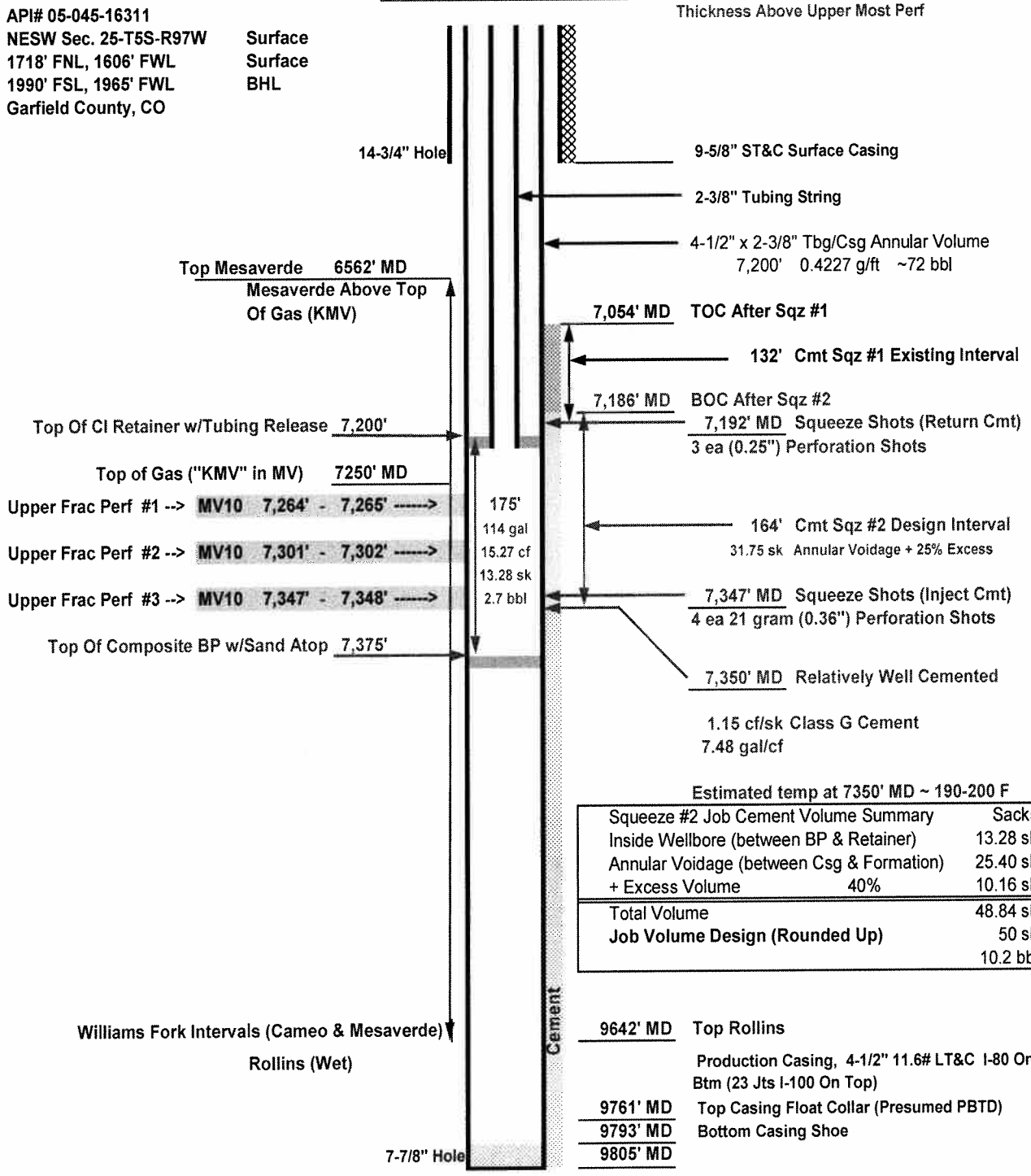
June 15, 2010

FIELD	**TRAIL RIDGE**
WELL / LAND	**TR 323-25-597** (api 05-045-16311). Fee Surface and Minerals.
LOCATION	Sec 25, T5S, R97W, Garfield County, CO
AFE	WT 15781 (New Drill Well)

Williams Production RMT Company
TR 323-25-597
API# 05-045-16311
NESW Sec. 25-T5S-R97W Surface
1718' FNL, 1606' FWL Surface
1990' FSL, 1965' FWL BHL
Garfield County, CO

Remedial Cement Squeeze #2
Suicide Squeeze Configuration

Objective: Achieve 200 ft Minimum Continuous Thickness Above Upper Most Perf



Estimated temp at 7350' MD ~ 190-200 F

Squeeze #2 Job Cement Volume Summary		Sacks	Volume
Inside Wellbore (between BP & Retainer)		13.28 sk	114 gal
Annular Voidage (between Csg & Formation)		25.40 sk	218 gal
+ Excess Volume	40%	10.16 sk	87 gal
Total Volume		48.84 sk	420 gal
Job Volume Design (Rounded Up)		50 sk	430 gal
		10.2 bbl	