



# Summary Report

Drill

Drill and Suspend

Job Start Date: 6/9/2014

Job End Date: 7/15/2014

30-025-41731

Well Name GRAMMA RIDGE 14-24-34 002H		Lease Gramma Ridge 14-24-34	Field Name Red Hills North	Business Unit Mid-Continent	
Ground Elevation (ft) 3,508.00	Original RKB (ft) 3,533.00	Current RKB Elevation 3,533.00, 6/4/2014		Mud Line Elevation (ft)	Water Depth (ft)

Report Start Date: 6/9/2014

Com

Rig Down & L/D Gas Buster, Hang Blocks & Un-Spool Dw, R/D And Rig Out Catwalk, R/D BOS EQUIP, R/D Floor, Rig Out Board And Flod Up, Rig Down Winches And Coil Up On Racking Board, Cont. Rigging Down Misc. Back Yard Equip.

Report Start Date: 6/10/2014

Com

Operations suspended until daylight.

Hold PJSM with Diamond Tank Rental and Ensign and review rig move checklist. Continue R/D and prepare for mobilization Ensign 153 on Red Hills 11-25-33 1H. Lower rig floor. Attempt to Lower Derrick No success. TroubleShoot hydraulic system. While continuing to move BOP wrangler, drill pipe, BHA, and pipe wrangler to Gramma Ridge 14-24-34 2H.

TroubleShoot hydraulic system.

Lower Derrick. String Down Blocks. Suspended operations until daylight.

Report Start Date: 6/11/2014

Com

Operations suspended until daylight. Hold PJSM with Diamond Tank Rental and Ensign and Trend.

R/D Ensign 153 and move to Gramma Ridge 14-24-34 2H. Move camp onto location, Spot loads, R/U Ensign 153.

Suspended operations until daylight.

Report Start Date: 6/12/2014

Com

Suspended operations until daylight.

Hold PJSM with Diamond Tank Rental and Ensign Crew.

Continue to Spot loads, String Up blocks. Raise Derrick and Rig floor. R/U Ensign 153.

Note: Contacted NMOCD @ 21:30 6/12/2014 with intent to spud. No Answer, Left Message On Answering Machine With Details.

Report Start Date: 6/13/2014

Com

Continue to R/U in Back yard. While Changing oil in TDS, Install Flowline across pits. Function Test Catwalk, Function Test and Spin Test TDS. Install IBOP and Saver sub on TDS and torque same.

Install Bails and Elevator on TDS. Perform TDS inspection. Fill pits. Move CSG. Calibrate Blocks. Check off Safety checklist. Pressure Test line to 1000 psi for 10 min. Accept rig at 14:00 hrs 6-13-2014.

Nipple up Conductor and related equipment. Rig Frac tank manifold. Move CSG to pipe racks.

L/O and strap BHA while continuing to set light plants and dress out Shakers and Install flow show paddle.

Service Rig ( While Troubleshoot catwalk)

Shut down due to high winds and lightening.

P/U 17-1/2" BHA. and TIH to 140' MD.

Spud well at 22:30 hrs 6-13-2014. Drill 17-1/2" Hole F 140' T/ 183'

Report Start Date: 6/14/2014

Com

Drig f/ 183' to 500'  
AROP = 52.8 fph  
WOB = 5 - 10 kips  
TD RPM = 90  
GPM = 400  
SPP = 300 psi  
MW = 8.5 ppg  
pH = 7

HOBSOCD

DEC 19 2014

MAR 03 2015

RECEIVED

FOR RECORD ONLY



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Com

Drig fl 500' to 776'  
AROP = 55.2 fph  
WOB = 10 -15 kips  
TD RPM = 94  
GPM = 530  
SPP = 710 psi  
MW = 8.4+ ppg  
pH = 7

Note (if applicable):  
C/O two swabs on mud pump from 0800 hrs -0900 hrs

Drig fl 776' to 1,023'  
AROP = 41.2 fph  
WOB = 15-20 klbs  
TD RPM = 110  
GPM = 567  
SPP = 1000 psi  
MW = 8.5 ppg  
pH = 7

Drig fl 1,023' to 1,202'  
AROP = 60 fph  
WOB = 20-25 klbs  
TD RPM = 120  
GPM = 730  
SPP = 1000 psi  
MW = 8.5 ppg  
pH = 7

Circulate two B/U. Flow check well – Static  
MW=8.6  
Visc=30  
PH=7

Note (if applicable):  
Drop Gyro before pulling out of hole

Notified Patricia of OCD District 1 @ 2200 hrs on 6/14/2014 of intent to run and cement surface casing.

TOH fl 1203' to Surface'  
L/D Shock Sub, Teledrift, and Bit

Note : Inclination Survey at 1202' TD showed 1 deg.

**Report Start Date:** 6/15/2014

Com

Nipple down conductor pipe and clear rig floor  
PJSM w/ Franks. R/U casing running equipment.

Run 13 3/8" 48# H-40 STC csg as follows:  
Float Shoe  
1 Shoe Jt  
Float Collar  
26 Joints  
Pup Joint  
Wellhead (13 3/8" SH-2)

Centralizer place 10' above FS, 15' above FC, one every three 3 jts to surface.

Tag bottom at 1,202'  
Casing shoe landed at 1,995'  
Top of FC at 1,955'

Circulate and condition mud 1.5 btms up.  
Waiting on cement to arrive on location.

Note:  
R/D casing running equipment.  
PJSM with Halliburton and R/U cementing equipment.



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Com

Perform cmt job as follows:  
 Pressure test lines to 1000 psi  
 Pump 60 bbls of fresh water spacer at 8.4 ppg.  
 Mix and pump 1160 sxs (355 bbls) of lead cement at 13.5 ppg.  
 Mix and pump 570 sxs (136 bbls) of tail cement at 14.8 ppg.  
 Drop top plug and displace cmt w/ 181bbls + 3 bbls half of shoe track of 10.0 ppg brine.  
 Did not bump plug.  
 Bleed off pressure – floats held.

Details:  
 Full returns throughout job  
 Final circulation pressure prior to bumping plug 300 psi at 2 bpm 318 bbls (1038 sxs) of cmt to surface  
 Cmt in place at 1545 hrs.

R/D Halliburton cementers

Lay down landing joint. Dress SH-2 Well Head test same to 520 psi (good test)

PJSM and NU DSA, Spacer Spools & 13 3/8" 5M BOPE. Install flow lines, accumulator lines, etc.

**Report Start Date:** 6/16/2014

Com

PJSM w/ Man Welding BOP tester. R/U BOP Testing equipment. Function test BOP.

Accumulator test.  
 Usable fluid: 1650 psi (Pass)  
 Precharge: 700 psi (Fail)  
 Pump Capacity: 1:45 sec (Pass)

Note:  
 Cameron called to recharge bottles  
 One accumulator pump inoperable. Replacement pump in route.

First test of lower pipe rams failed due to leaking ring gasket on B section of wellhead. Remove BOP, DSA, and wellhead flange from wellhead. Clean out trash in ring gasket groove and replace ring gasket to fix leak. Reattach BOP and DSA to wellhead.

Complete BOP Test to 250 psi 5 min low / 5000 psi 5 min high (3500 high on annular) as per MCBU-SOP-008. Details documented in MCBU BOP Testing Sheet. All test good. Second accumulator test performed

Second Accumulator Test:  
 Usable Fluid: 1700 psi (Pass)  
 Precharge: 1000 psi (Pass)  
 Pump Capacity: 1:46 (Pass)

Note:  
 Bottom Rams failed test due to leaking B section ring gasket on wellhead (5 hrs NPT).  
 Hydraulic leak on HCR valve (2 hrs NPT)  
 Top Drive IBOP failed initial test and was replaced second test good.

Test casing to 1200 psi (Good Test)

Lay out and strap 100 joints of drill pipe. Pick 5000' of drill pipe and rack back in derrick while waiting on replacement accumulator pump to ship from Houston

**Report Start Date:** 6/17/2014

Com

Lay out and strap 100 joints of drill pipe. Pick 5000' of drill pipe and rack back in derrick while waiting on replacement accumulator pump to ship from Houston

Pick Up BHA#2 as follows:  
 12 1/4" PDC bit (Ulterra 616S)  
 7 3/4" Motor (.26 rev/gal)

TIH and tag cement/float collar at 1,127'

Circ hole with 10 ppg brine and perform choke drill.

Wait on accumulator pump to arrive on location.

Note:  
 Remove inoperable accumulator pump.  
 Rig up fill up line.  
 Change out expendable pump parts

**Report Start Date:** 6/18/2014



# Summary Report

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Job End Date: 7/15/2014

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Com

Wait on accumulator pump to arrive on location.  
Install new accumulator pump.

Note:  
New pump arrived on location @ 0530 hrs on 6/18/2014

Dri FE & Cmt to 1260'. Dri 10' of new hole.

Note:  
Install rotating head

Circulate btms up and perform fit test to 68 psi (EWM 11 ppg) (Test Good)

Drlg f/ 1,202' to 1,528'  
AROP = 93.1 fph  
WOB = 10 - 20 klbs  
TD RPM = 30-20  
Motor RPM = 148  
GPM = 570  
SPP = 2900 psi  
MW = 9.9 ppg  
pH = 10

Note:  
Survey Depth: 1376, INC: 1.29, AZM: 337.57, TVD: 1375.84, VS: -9.08, DLS: 0.27

Drlg f/ 1,528' to 2,180'  
AROP = 118.5 fph  
WOB = 20 klbs  
TD RPM = 60  
Motor RPM = 177  
GPM = 692  
SPP = 3000 psi  
MW = 9.9 ppg  
pH = 11

Note:  
Survey Depth: 2092, INC: 1.6, AZM: 324.79, TVD: 2091.70, VS: -21.85, DLS: 0.34  
Slide from 2,169' - 2,174' @ 138 MAG Toolface

Report Start Date: 6/19/2014

Com

Drlg f/ 2,180' to 2,875'  
AROP = 115.8 fph  
WOB = 20 klbs  
TD RPM = 60  
Motor RPM = 177  
GPM = 692  
SPP = 3000 psi  
MW = 9.9 ppg  
pH = 13

Note:  
Survey Depth: 2808, INC: 1.47, AZM: 319.28, TVD: 2807, VS: -34.54, DLS: 0.20  
Slide from 2,435 - 2,460' @ 140 MAG Toolface

Drlg f/ 2,875' to 3,416'  
AROP = 90.17 fph  
WOB = 15 - 20 klbs  
TD RPM = 70  
Motor RPM = 190  
GPM = 730  
SPP = 3650 psi  
MW = 10 ppg  
pH = 13

Note:  
Survey Depth: 3344, INC: 1.1, AZM: 356.65, TVD: 3343.37, VS: -46.08, DLS: 0.11  
Slide from 2,966 - 2,998' @ 160 MAG Toolface (1 hr)  
Slide from 3,054 - 3,086' @ 160 MAG Toolface (0.5 hr)  
Slide from 3,233 - 3,268' @ 160 MAG Toolface (1 hr)



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Com

Drig f/ 3,416' to 3,953'  
 AROP = 107.4 fph  
 WOB = 25-30 klbs  
 TD RPM = 70  
 Motor RPM = 189  
 GPM = 725  
 SPP = 3740 psi  
 MW = 10 ppg  
 pH = 13

Note:  
 Survey Depth: 3881, INC: 1.8, AZM: 41.09, TVD: 3880.18, VS: -58.20, DLS: 0.16  
 Slide from 3,769' - 3,814' @ 210 MAG Toolface  
 Intsall rotating head (1430 - 1500 hrs)  
 Rig Service (1500-1530 hrs)

Drig f/ 3,953' to 4,230'  
 AROP = 46.17 fph  
 WOB = 25-30 klbs  
 TD RPM = 60  
 Motor RPM = 179  
 GPM = 687  
 SPP = 3200 psi  
 MW = 10 ppg  
 pH = 13

Note:  
 Survey Depth: 4061, INC: 0.89, AZM: 43.45, TVD: 4060.13, VS: -61.12, DLS: 0.51  
 Slide from 3,949' - 3,983' @ 220 MAG Toolface (1.5 hr)  
 Slide from 4,038' - 4,078' (1 hr)  
 Side from 4,128' - 4,143' (0.5 hr)

Report Start Date: 6/20/2014

Com

Drig f/ 4,230' to 4,664'  
 AROP = 46.17fph  
 WOB = 20-35 klbs  
 TD RPM = 70  
 Motor RPM = 190  
 GPM = 687 - 720  
 SPP = 3400 psi  
 MW = 10 ppg  
 pH = 13

Note:  
 Survey Depth: 4597, INC: 3.39, AZM: 96.33,  
 TVD: 4595.99, VS: -61.71, DLS: 1.65

Drill, slide and survey 12 1/4" production hole from 4,664' to 4,888'.

Rotate:	Slide:
AROP: 60 fph	AROP: 29.78 fph
WOB = 30 Klbs	WOB = 25 Klbs
RPM = 70	Motor RPM = 158
Motor RPM = 178	GPM = 607
GPM = 684	SPP = 2700 psi
SPP = 3582 psi	Torque = 5.0 Kft*lbs
Torque = 8.5 Kft*lbs	Differential = 550 psi
Differential = 750 psi	

Rotate:	Slide:
	4,664' - 4,760'
4,715' - 4,760'	4,670' - 4,843'
4,843' - 4,888'	

Note:  
 Last Survey:  
 SD: 4776, INC: 3.74, AZM: 82.65,  
 TVD: 4774.65, VS: -61.01, DLS: 0.51



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Com

Silde f/ 4,888' - 5,156'  
AROP: 29.78 fph  
WOB =25 Klbs  
Motor RPM = 158  
GPM = 607  
SPP = 2700 psi  
Torque = 5.0 Kft\*lbs  
Differential = 550 psi

Note:  
Last Survey:  
Survey Depth: 5134, INC: 3.07, AZM: 72.23,  
TVD: 5131.92, VS: -62.70, DLS: 0.62

C/O valve and seat on MP #2 from 1400 hrs - 1430 hrs. (0.5 hrs)  
Rig service from 1530 hrs - 1600 hrs. (0.5 hrs)

Silde f/ 5,156' to 5,370'  
AROP: 35.67 fph  
WOB =25 Klbs  
Motor RPM = 179  
GPM = 689  
SPP = 2800 psi  
Torque = 4.6 Kft\*lbs  
Differential = 520 psi

Note:  
Last Survey:  
Survey Depth: 5303, INC: 2.55, AZM: 52.75,  
TVD: 5300.72, VS: -65.78, DLS: 0.64

C/O swab on MP #1 from 1800 hrs - 1900 hrs. (1 hrs)  
Rotate f/ 5,290 - 5,370'

**Report Start Date: 6/21/2014**

Com

Pump 40 bbl high visc sweeps @ TD, circulate two B/U.  
Flow check well - Static.  
Pump 12 ppg slug.

TOH f/ 5,370' to surface  
L/D BHA, motor and bit.  
Pull wear bushing  
Clean rig floor.

Note:  
Hole took correct fill.  
Remove rotating head @ 817'

PJSM w/ Franks. R/U casing running equipment. Elevators callipered by toolpusher and driller.

Run 9 5/8" 40# HCK-55 LTC csg as follows:

Float Shoe  
2 Shoe Jts  
Float Collar  
138 Joints  
1 Pup Joint  
Casing hanger

Centralizers placed 10' above FS, 10' above FC, across the first casing collar, across the FC, and one per 4 jts to surface.

Tag bottom at 5370'  
Casing shoe landed at 5,363'  
Top of FC at 5,288'

Notified Patricia of OCD at 0320 hrs on 06/21/201 of intent to run and cmt csg. No answer, left message.

PJSM with Halliburton cementers and R/U cementing equipment.

Circulate and condition mud 1.5 btms up.

Note:  
R/D Frank's casing running equipment.



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Report Start Date: 6/22/2014

Com

Perform cmt job as follows:  
 Pressure test lines to 3000 psi  
 Pump 20 bbls of fresh water and 20 bbls of Tuned Spacer.  
 Mix and pump 1725 sxs (580 bbls) of Econoncem HLC lead at 12.9 ppg.  
 Mix and pump 380 sxs (93 bbls) of Halcem C tail at 14.8 ppg.  
 Drop top plug and displace cmt w/ 401 bbls of 8.4 ppg fresh water.  
 Bump plug with 500 psi over final circulating pressure.  
 Bleed off pressure – floats held.

Details:  
 Ful returns throughout job  
 Final circulation pressure prior to bumping plug 1700 psi at 3 bpm  
 270 bbls of cmt to surface  
 Cmt in place at 0400 hrs.

Test casing to 1500 psi (good test)

R/D Halliburton cementing equipment

Backout landing joint. Install packoff and test to 5000 psi (Good Test)

Pick Up BHA#3 as follows:  
 8 3/4" PDC bit (Halliburton MM65DM).  
 6 3/4" Motor (.29 rev/gal)

TIH and tag cement/float collar at 5285'

Note:  
 Rotating head installed @ 727'

Circulate bottoms up and perform choke drill.

Drl FE & Cmt to 1,540'. Drl 10' of new hole.

Perform FIT Test to 12 ppg EMW (836 psi) – Good Test.

Drlg f/ 5,380' to 5870'  
 AROP = 75.38 fph  
 WOB = 25-30 klbs  
 TD RPM = 45  
 Motor RPM = 171  
 GPM = 588  
 SPP = 3250 psi  
 MW = 9.0 ppg  
 pH = 13

Note:  
 Survey Depth: 5684, INC: 2.02, AZM: 88.04,  
 TVD: 5681.44, VS: -72.73, DLS: 0.85

Report Start Date: 6/23/2014

Com

Drlg f/ 5,870' to 6550'  
 AROP = 113.34 fph  
 WOB = 20 - 27 klbs  
 TD RPM = 62  
 Motor RPM = 172  
 GPM = 592  
 SPP = 3125 psi  
 MW = 8.9+ ppg  
 pH = 13

Drlg f/ 6,550' to 7,347'  
 AROP = 132.83 fph  
 WOB = 20 - 27 klbs  
 TD RPM = 62  
 Motor RPM = 172  
 GPM = 592  
 SPP = 3125 psi  
 MW = 8.9+ ppg  
 pH = 13

Service Rig



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Com

Drig f/ 7,347' to 7,890'  
 AROP = 98.7 fph  
 WOB = 20 - 27 klbs  
 TD RPM = 62  
 Motor RPM = 172  
 GPM = 592  
 SPP = 3125 psi  
 MW = 8.9+ ppg  
 pH = 13

Drig f/ 7,890' to 8,280'  
 AROP = 65 fph  
 WOB = 20 - 27 klbs  
 TD RPM = 62  
 Motor RPM = 172  
 GPM = 592  
 SPP = 3125 psi  
 MW = 8.9+ ppg  
 pH = 13

Report Start Date: 6/24/2014

Com

Drig f/ 8,280' to 8,510'  
 AROP = 39 fph  
 WOB = 20 - 27 klbs  
 TD RPM = 70  
 Motor RPM = 139  
 GPM = 535  
 SPP = 2,750 psi  
 MW = 8.9+ ppg  
 pH = 13

Drig f/ 8,510' to 8,763'  
 AROP = 63 fph  
 WOB = 20 - 27 klbs  
 TD RPM = 70  
 Motor RPM = 139  
 GPM = 535  
 SPP = 2,750 psi  
 MW = 9.0 ppg  
 pH = 13

Repair wear plate gasket on Pump #2

Ccirculate at reduced rate while making repair

Drig f/ 8,763' to 9,043'  
 AROP = 47 fph  
 WOB = 20 - 27 klbs  
 TD RPM = 70  
 Motor RPM = 139  
 GPM = 535  
 SPP = 2,800 psi  
 MW = 9.0 ppg  
 pH = 13

Drig f/ 9,043' to 9,300'  
 AROP = 43 fph  
 WOB = 22 - 29 klbs  
 TD RPM = 70  
 Motor RPM = 139  
 GPM = 535  
 SPP = 2,800 psi  
 MW = 9.0 ppg  
 pH = 13

Report Start Date: 6/25/2014



# Summary Report

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Com

Drig f/ 9,300' to 9,494'  
 AROP = 39 fph  
 WOB = 27 - 33 klbs  
 TD RPM = 65  
 Motor RPM = 139  
 GPM = 535  
 SPP = 2,850 psi  
 MW = 8.9+ ppg  
 pH = 13

Rig servcie

Drig f/ 9,494' to 9,639'  
 AROP = 29 fph  
 WOB = 27 - 33 klbs  
 TD RPM = 65  
 Motor RPM = 139  
 GPM = 535  
 SPP = 2,875 psi  
 MW = 8.9+ ppg  
 pH = 13

Note: Decision was made to TOH due to low ROP to change bit and motor

Circulate and condition hole, Perform flow check prior to TOH.

Flow check: Well Static

TOH to directional tools

L/D BHA

No visible damage to motor, Bit graded 1-2, slight damage on shoulder

Pick Up BHA# 4 as follows:

8 3/4" PDC bit (Halliburton MM65DM).  
 6 3/4" Motor (.29 rev/gal)  
 Muleshoe sub  
 Monel  
 Flex Monel  
 X/O sub  
 (9) 6-1/2" DC's  
 (6) HWDP  
 Jars  
 (5) HWDP

Shallow test MWD- test good

Run in hole with new BHA

Report Start Date: 6/26/2014

Com

Run in hole with new bit/motor to 5,469'

Fill pipe at 3,411'

Install rotating head and fill pipe, transfer fluid from frac tanks into active

Test MWD in open hole- test good

Spot LCM pill above loss zone

TIH to 9,639'

Drig f/ 9,639' to 9,940'  
 AROP = 50 fph  
 WOB = 27 - 30 klbs  
 TD RPM = 65  
 Motor RPM = 139  
 GPM = 535  
 SPP = 3,100 psi  
 MW = 8.9+ ppg  
 pH = 13



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Com

Drig f/ 9,940' to 10,028'  
 AROP = 35 fph  
 WOB = 27 - 30 klbs  
 TD RPM = 65  
 Motor RPM = 139  
 GPM = 535  
 SPP = 3,200 psi  
 MW = 8.9+ ppg  
 pH = 13

Circulate and condition hole prior to TOH to shoe, perform flow check, and pump slug

Flow check: well static

TOH to 6,000'

Max overpull= 35K

Pump 80 BBL LCM (8 PPB LCM) pill and displace out of pipe

Continue TOH to casing shoe to perform repairs on service loop

**Report Start Date:** 6/27/2014

Com

Repair service loop. 3 electric wires had exposed wiring. Repaired wires and re-routed kelly hose to front of service loop to avoid service loop rubbing against derrick

Run in hole to bottom, no tight spots seen.

Drig f/ 10,028' to 10,120'  
 AROP = 27 fph  
 WOB = 26 - 30 klbs  
 TD RPM = 65  
 Motor RPM = 139  
 GPM = 535  
 SPP = 3,100 psi  
 MW = 8.9+ ppg  
 pH = 13

Rig service

Drig f/ 10,120' to 10,161'  
 AROP = 41 fph  
 WOB = 26 - 30 klbs  
 TD RPM = 65  
 Motor RPM = 139  
 GPM = 535  
 SPP = 3,100 psi  
 MW = 8.9+ ppg  
 pH = 13

Replace cap gasket on pump #2

Drig f/ 10,161' to 10,455'  
 AROP = 49 fph  
 WOB = 26 - 30 klbs  
 TD RPM = 65  
 Motor RPM = 139  
 GPM = 535  
 SPP = 3,400 psi  
 MW = 8.9+ ppg  
 pH = 13

Drig f/ 10,455' to 10,620'  
 AROP = 30 fph  
 WOB = 26 - 30 klbs  
 TD RPM = 65  
 Motor RPM = 139  
 GPM = 450  
 SPP = 3,150 psi  
 MW = 8.9+ ppg  
 pH = 13

Note: At 10,526' an immediate pressure spike of 600 PSI was observed, it was determined a jet was plugged and drilling would continue at 450 GPM to TD.

**Report Start Date:** 6/28/2014



# Summary Report

Drill  
Drill and Suspend  
Job Start Date: 6/9/2014  
Job End Date: 7/15/2014

Well Name GRAMMA RIDGE 14-24-34 002H		Lease Gamma Ridge 14-24-34		Field Name Red Hills North		Business Unit Mid-Continent	
Ground Elevation (ft) 3,508.00	Original RKB (ft) 3,533.00	Current RKB Elevation 3,533.00, 6/4/2014			Mud Line Elevation (ft)	Water Depth (ft)	

Com

Drlg f/ 10,620' to 10,644'

AROP = 24 fph  
WOB = 26 - 30 klbs  
TD RPM = 65  
Motor RPM = 131  
GPM = 450  
SPP = 3,150 psi  
MW = 8.9+ ppg  
pH = 13

Note:  
Seeping 6-8 bph.

Circulate & Condition hole clean. Pump 40 bbls hi vis sweep. Spot 80 bbls LCM pill inside casing shoe.

Note:  
LCM pill contained LCF Fine, LCF Blend & paper to help control losses/seepage.

Flow check- well static. Pump slug and prep to TOH.

TOH f/ 10,644' t/ 727'.

Note: Hole taking more fill (6-8 bbls/5 stds instead of 3.7 bbls/5 stds)

Pull rotating head.

L/D vertical BHA:

8 3/4" MM65DM jetted w/ 6-14's  
SN: 12445543  
6 3/4" 7/8 5.0 ABH @ 1.83 Motor  
SN: 24XH6502105

Note:  
Bit graded: 6-2  
Cored out and 4 out of 6 plugged nozzles.

M/U 8 3/4" Curve BHA as follows:  
8 3/4" MMD55DM jetted w/ 4- 18's  
(SN: 12450511)  
6 3/4" 7/8 5.0 FBH @ 2.38 (SN: 24X17116)  
Muleshoe  
Monel  
Flex Monel

Shallow test motor & MWD - test ok.

Clean and prepare rig floor for trip. Lay out and strap HWDP.

TIH 6 stds of DP & 5 stds HWDP.

P/U 120 jts 5" DP from pipe racks. TIH F/ 1,080 - t/ 5,692'.

Note: Hole not achieving proper displacement.

Test MWD: test good

Spot LCM pill at casing shoe to mitigate losses.

TIH f/ 5,692' - t/ 8,600'

Fill pipe every 3,000' on trip in.

**Report Start Date:** 6/29/2014

Com

TIH f/ 8,600' - t/ 10,563'

Note: Fill pipe & wash last stand to bottom. Sync MWD.



# Summary Report

Drill  
Drill and Suspend  
Job Start Date: 6/9/2014  
Job End Date: 7/15/2014

Well Name GRAMMA RIDGE 14-24-34 002H		Lease Gramma Ridge 14-24-34		Field Name Red Hills North		Business Unit Mid-Continent	
Ground Elevation (ft) 3,508.00	Original RKB (ft) 3,533.00	Current RKB Elevation 3,533.00, 6/4/2014				Mud Line Elevation (ft)	Water Depth (ft)

Com

### Build and pump LCM pill.

Drill, slide and survey 8 3/4" curve section from 10,644' to 10,817'.

Rotate:	Slide:
AROP: 40 fph	AROP: 27.8 fph
WOB = 20 Klbs	WOB = 10 - 25 Klbs
RPM = 20	Motor RPM = 139
Motor RPM = 138	GPM = 480
GPM = 475	SPP = 2500 psi
SPP = 2200 psi	Torque = 2.8 Kft*lbs
Torque = 7.1 Kft*lbs	Differential = 350 psi
Differential = 250 psi	

Rotate:	Slide:
10,742' - 10,762'	10,644' - 10,742'
	10,762' - 10,817'

Note:  
Last Survey:  
SD: 10,780, INC: 19.13, AZM: 167.04,  
TVD: 10773.53, VS: 14.03, DLS: 10.93

Drill, slide and survey 8 3/4" curve section from 10,817' to 11,084'.

Rotate:	Slide:
AROP: 38 fph	AROP: 51 fph
WOB = 20 Klbs	WOB = 13 - 25 Klbs
RPM = 20	Motor RPM = 148
Motor RPM = 145	GPM = 510
GPM = 500	SPP = 2500 psi
SPP = 2500 psi	Torque = 2.1 Kft*lbs
Torque = 8.5 Kft*lbs	Differential = 350 psi
Differential = 250 psi	

Rotate:	Slide:
10,817' - 10,832'	10,832' - 10,859'
10,859' - 10,877'	10,877' - 10,901'
10,901' - 10,922'	10,922' - 10,948'
10,948' - 10,969'	10,969' - 10,992'
10,992' - 11,011'	11,011' - 11,036'
11,036' - 11,056'	11,056' - 11,084'

Note:  
Last Survey:  
SD: 11,049, INC: 39.81, AZM: 172.06,  
TVD: 11,004.63, VS: 177.47, DLS: 7.79



# Summary Report

Drill  
Drill and Suspend  
Job Start Date: 6/9/2014  
Job End Date: 7/15/2014

Well Name GRAMMA RIDGE 14-24-34 002H		Lease Gramma Ridge 14-24-34	Field Name Red Hills North	Business Unit Mid-Continent	
Ground Elevation (ft) 3,508.00	Original RKB (ft) 3,533.00	Current RKB Elevation 3,533.00, 6/4/2014		Mud Line Elevation (ft)	Water Depth (ft)

Com

Drill, slide and survey 8 3/4" curve section from 11,084' to 11,410'.

Rotate:                    Slide:  
 AROP: 45 fph            AROP: 33 fph  
 WOB = 20 Klbs        WOB = 13 - 25 Klbs  
 RPM = 20              Motor RPM = 151  
 Motor RPM = 145      GPM = 520  
 GPM = 500            SPP = 2700 psi  
 SPP = 2500 psi        Torque = 4.1 Kft\*lbs  
 Torque = 9.5 Kft\*lbs   Differential = 250 psi  
 Differential = 250 psi

Rotate:                    Slide:  
 11,084' - 11,101'      11,101' - 11,131'  
 11,131' - 11,145'      11,145' - 11,177'  
 11,177' - 11,190'      11,190' - 11,222'  
 11,222' - 11,237'      11,237' - 11,327'  
 11,327' - 11,340'      11,340' - 11,371'  
 11,371' - 11,383'      11,383' - 11,410'

Note:  
 Last Survey:  
 SD: 11,362', INC: 71.6°, AZM: 174.82,  
 TVD: 11,187.06, VS: 397.5', DLS: 11.36

Report Start Date: 6/30/2014

Com

Drill, slide and survey 8 3/4" curve section from 11,410' to 11,503'.

Rotate:                    Slide:  
 AROP: 31 fph            AROP: 46 fph  
 WOB = 20 Klbs        WOB = 13 - 25 Klbs  
 RPM = 20              Motor RPM = 151  
 Motor RPM = 145      GPM = 520  
 GPM = 500            SPP = 2700 psi  
 SPP = 2500 psi        Torque = 4.1 Kft\*lbs  
 Torque = 9.5 Kft\*lbs   Differential = 250 psi  
 Differential = 250 psi

Rotate:                    Slide:  
 11,410' - 11,433'      11,433' - 11,459'  
 11,459' - 11,483'      11,483' - 11,503'

Note:  
 Last Survey:  
 SD: 11451, INC: 80.79, AZM: 175.71,  
 TVD: 11208.26, VS: 483.83, DLS: 10.30  
 PTB: 11503, Inc: 86, Azm: 175.71,  
 Above/Below: 5 Above, Left/Right: 9 Left, DLN: 3.0

Circ & condition well until clean up on shakers. Spot 80 bbls LCM pill to casing shoe.

Flow check well - well static. Pump slug and prep to trip out of hole.

TOOH from 11,503' to 1,080'.

Note: Hole taking proper fill.

Pull rotating head.

POOH w/ BHA from 1,080' to 93'.

C/O Directional tools.

P/U:  
 8 3/4" DP606X jetted w/ 6-14's  
 (SN: 7151230)  
 6 3/4" 7/8 3.5 ABH @ 1.83  
 (SN: 24XH165-147)

Test Motor & MWD- test ok

Clean and prep floor to TIH.

TIH from 98' to 4,929'.



# Summary Report

Drill  
Drill and Suspend  
Job Start Date: 6/9/2014  
Job End Date: 7/15/2014

Well Name GRAMMA RIDGE 14-24-34 002H		Lease Gramma Ridge 14-24-34	Field Name Red Hills North	Business Unit Mid-Continent	
Ground Elevation (ft) 3,508.00	Original RKB (ft) 3,533.00	Current RKB Elevation 3,533.00, 6/4/2014		Mud Line Elevation (ft)	Water Depth (ft)

Com

Slip and cut 14 wraps drlg line

TIH to 5,700' to conduct MWD test in open hole

Test MWD in open hole: test good

TIH to bottom, fill pipe and orient tool face to begin drilling lateral section

**Report Start Date: 7/1/2014**

Com

Rotate and slide F/ 11,503' T/11,732'

Rotate:  
 AROP: 38 fph  
 WOB = 25 Klbs  
 RPM = 50  
 Motor RPM = 75  
 GPM = 500  
 SPP = 2500 psi  
 Torque = 15 Kft\*lbs  
 Differential = 300 psi

Rotate and slide F/11,732' T/11,988'

Rotate:  
 AROP: 43 fph  
 WOB = 30 Klbs  
 RPM = 67  
 Motor RPM = 76  
 GPM = 507  
 SPP = 2675 psi  
 Torque = 20 Kft\*lbs  
 Differential = 400 psi

Rotate and slide F/11,988' T/12,268'

Rotate:  
 AROP: 51 fph  
 WOB = 30 Klbs  
 RPM = 60  
 Motor RPM = 76  
 GPM = 505  
 SPP = 2700 psi  
 Torque = 20 Kft\*lbs  
 Differential = 375 psi

Rig service

Rotate and slide F/12,268' T/12,565'

Rotate:  
 AROP: 50 fph  
 WOB = 30 Klbs  
 RPM = 70  
 Motor RPM = 76  
 GPM = 505  
 SPP = 2775 psi  
 Torque = 20/23 Kft\*lbs  
 Differential = 375 psi

**Report Start Date: 7/2/2014**

Com

Rotate and slide F/12,565' T/12,805'

AROP: 40 fph  
 WOB = 28-30 Klbs  
 RPM = 67  
 Motor RPM = 76  
 GPM = 505  
 SPP = 2750 psi  
 Torque = 21 Kft\*lbs  
 Differential = 375 psi



# Summary Report

Drill  
Drill and Suspend  
Job Start Date: 6/9/2014  
Job End Date: 7/15/2014

Well Name GRAMMA RIDGE 14-24-34 002H		Lease Gramma Ridge 14-24-34	Field Name Red Hills North	Business Unit Mid-Continent	
Ground Elevation (ft) 3,508.00	Original RKB (ft) 3,533.00	Current RKB Elevation 3,533.00, 6/4/2014		Mud Line Elevation (ft)	Water Depth (ft)

Com

Rotate and slide F/12,805' T/13,095'

AROP: 45 fph  
WOB = 20-30 Klbs  
RPM = 70  
Motor RPM = 76  
GPM = 505  
SPP = 2800 psi  
Torque = 22 Kft\*lbs  
Differential = 350 psi

Rotate and slide F/13,095' T/13,397'

AROP: 50 fph  
WOB = 18-24 Klbs  
RPM = 70  
Motor RPM = 76  
GPM = 505  
SPP = 2700 psi  
Torque = 23 Kft\*lbs  
Differential = 400 psi

Rotate and slide F/13,397' T/13,611'

AROP: 86 fph  
WOB = 30 Klbs  
RPM = 70  
Motor RPM = 76  
GPM = 505  
SPP = 2800 psi  
Torque = 23 Kft\*lbs  
Differential = 350 psi

Rig Service

Rotate and slide F/13,611' T/13,729'

AROP: 39 fph  
WOB = 30 Klbs  
RPM = 70  
Motor RPM = 76  
GPM = 505  
SPP = 2800 psi  
Torque = 23 Kft\*lbs  
Differential = 350 psi

Report Start Date: 7/3/2014

Com

Rotate and slide F/13,729' T/14,059'

AROP: 71 fph  
WOB = 22 Klbs  
RPM = 67  
Motor RPM = 76  
GPM = 505  
SPP = 2900 psi  
Torque = 23.5 Kft\*lbs  
Differential = 300 psi

Rotate and slide F/14,059' T/14,388'

AROP: 55 fph  
WOB = 18 Klbs  
RPM = 67  
Motor RPM = 76  
GPM = 505  
SPP = 2900 psi  
Torque = 24 Kft\*lbs  
Differential = 300 psi



# Summary Report

Drill  
Drill and Suspend  
Job Start Date: 6/9/2014  
Job End Date: 7/15/2014

Well Name GRAMMA RIDGE 14-24-34 002H		Lease Gramma Ridge 14-24-34	Field Name Red Hills North	Business Unit Mid-Continent	
Ground Elevation (ft) 3,508.00	Original RKB (ft) 3,533.00	Current RKB Elevation 3,533.00, 6/4/2014		Mud Line Elevation (ft)	Water Depth (ft)

Com

Rotate and slide F/ 14,388' T/14,685'

AROP: 59 fph  
WOB = 22 Klbs  
RPM = 62  
Motor RPM = 76  
GPM = 505  
SPP = 2900 psi  
Torque = 24 Kft\*lbs  
Differential = 325 psi

Rig Service

Reboot MWD computer, cycle pumps

Rotate and slide F/14,685' T/14,862'

AROP: 45 fph  
WOB = 12 Klbs  
RPM = 67  
Motor RPM = 76  
GPM = 505  
SPP = 2900 psi  
Torque = 24 Kft\*lbs  
Differential = 325 psi

Perform clean-up cycle. Reciprocate drill string while rotating at 70 rpm and pumping 500 gpm. Pump 4 40 Bbl Hi-vis sweeps.

**Report Start Date:** 7/4/2014

Com

Finish clean up cycle- Circulate sweeps out of the hole while reciprocating drill string.

Rotate and slide F/14,862' T/15,096'

AROP: 47 fph  
WOB = 12 Klbs  
RPM = 67  
Motor RPM = 76  
GPM = 505  
SPP = 2900 psi  
Torque = 24 Kft\*lbs  
Differential = 325 psi

Rotate and slide F/15,096' T/15,420'

AROP: 54 fph  
WOB = 24 Klbs  
RPM = 67  
Motor RPM = 76  
GPM = 505  
SPP = 2850 psi  
Torque = 24 Kft\*lbs  
Differential = 325 psi

Rotate and slide F/14,420' T/15,642'

AROP: 34 fph  
WOB = 22 Klbs  
RPM = 67  
Motor RPM = 76  
GPM = 505  
SPP = 2700 psi  
Torque = 25 Kft\*lbs  
Differential = 200 psi

Perform clean up cycle. Reciprocate drill string while rotating @ 75 RPM and pumping 550 GPM. Pumped (6) 40 bbl Hi-Vis sweeps.

**Report Start Date:** 7/5/2014

Com

Finish circulating clean up cycle.

Flow check (Well Static). Spot 375 bbl lube pill F/15,642' T/10,646'. Pump Slug

TOH F/15,642' T/10,796'.

Tight hole encountered at 10,796'. Backream out of hole F/10,796' T/10,255'. Pump slug.



# Summary Report

Drill  
Drill and Suspend  
Job Start Date: 6/9/2014  
Job End Date: 7/15/2014

Well Name GRAMMA RIDGE 14-24-34 002H		Lease Gramma Ridge 14-24-34	Field Name Red Hills North	Business Unit Mid-Continent	
Ground Elevation (ft) 3,508.00	Original RKB (ft) 3,533.00	Current RKB Elevation 3,533.00, 6/4/2014		Mud Line Elevation (ft)	Water Depth (ft)

Com

L/D DP F/10,255' T/5,837'.

Pull into tight spot 80K over string weight, unable to come loose.

Drill string stuck at 5,837'. Working pipe. Spot 50 bbl H2O pill. Spot 80 Bbl H2O pill. Circ @ 600 GPM for 30 min while working pipe. Mix and spot 50 bbl Pipelax pill (50bbls Diesel/4 Drums Pipelax, spot half in anulus and half in string) , continue working pipe.

Report Start Date: 7/6/2014

Com

Working stuck pipe @ 5,837'. P/U to 200k, S/O to 50k. Applying and releasing 23.5k rotary torque.

(Cleaning and organizing rig and location)

Working stuck pipe @ 5,837'. P/U to 200k, S/O to 50k. Applying and releasing 23.5k rotary torque.

(Recieve and inspect fishing tools on location. Held BOP, Fire, Man down, and Spill drills with day rig crew)

Working stuck pipe @ 5,837". P/U to 200k, S/O to 50k. Applying and releasing 23.5k rotary torque.

(Evaluate and plan job steps for upcoming free point, back off, and fishing operations. Held BOP, Fire, Man down, Spill drills with night rig crew.)

Report Start Date: 7/7/2014

Com

Working stuck pipe at 5740', P/U to 200k, S/O to 50k, Apply 20k rotary torque and release.

M/U Side entry assembly on ground, pick up same and latch up in mast.

Hang wireline sheaves and run wireline.

Run in hole with wireline and free point. Find free point. Use P/U 190K, S/O 145K and 7K ft/lbs torque to find free point. Free point found at top of BHA

Run in hole with string shot to back off at 5,256'. Put back-torque in pipe to 16K ft/lbs (5-1/2 wraps) and attempt to fire shot, pipe did not back off. Pull wireline out of hole, charge did not fire

Lay string shot down and re-dress to attempt back-off again.

Report Start Date: 7/8/2014

Com

Run in hole with string shot and free pipe at 5,256'. L/D wireline and tools. Rig down . Pipe free, P/U: 140K.

Pump 30 bbls of 10 ppg Brine and prepare to TOH.

TOH F/5642', L/D shot Jt. (Hole taking propper fill)

Pull Rotaitng Head and Wear bushing for BOP test.

PJSM W/tester, set test plug, fill stack and R/U test equipment

Test 1- Annular (250 psi low/ 3500psi High). Test 2- Lower Pipe rams. Test 3-Upper pipe rams, Inner kill valve and HCR. Test 4- Upper pipe rams, outer kill valve manual HCR. Test 5- Upper pipe rams, Check valve, Inner manifold valves. Test 6- Blind rams, Inner Kill valve, Outer manifold valves. Test 7-Blind rams, Inner kill valve, chokes (Bump test 5000psi). Test 8- Blind rams, Inner kill valve, # 5 valve behind choke. Test 9- Test 4" Mud pump valves (250 psi low/4000 psi high). Test 10- 4" standpipe valve (250 psi low/4000 psi high). Test 11- IBOP. Test 12- Manual IBOP. Test 13- TIW. Test14- Dart. (All tests 250 psi low for 5 min./5000 psi high for 5 min. unless otherwise noted)Accumulator Performance test.

Service Rig. Change out dies on top drive.

P/U fishing assembly:

Screw in sub, bumper sub, XO, drilling jars, 9 6-1/4" DC, XO, accelarator, XO

Report Start Date: 7/9/2014

Com

Install Rotating head and TIH T/5245'.

Screw into fish and Jar free.

Neutral Wt-150K, P/U to 170K S/O to 70K to fire jars, took 24 hits to free.

Backream out of hole F/ 5252' T/ 5340'

Note: Slow trip out, breaking out connections using scorpion

Pump slug. Check for flow.

Cont. TOH F/ 5340' T/ 1046'.

Pull Rot Head. Install trip nip



# Summary Report

Drill  
Drill and Suspend  
Job Start Date: 6/9/2014  
Job End Date: 7/15/2014

Well Name GRAMMA RIDGE 14-24-34 002H		Lease Gramma Ridge 14-24-34	Field Name Red Hills North	Business Unit Mid-Continent	
Ground Elevation (ft) 3,508.00	Original RKB (ft) 3,533.00	Current RKB Elevation 3,533.00, 6/4/2014		Mud Line Elevation (ft)	Water Depth (ft)

Com

TOH F/ 1056' T/ 356'

L/D XO, Accelerator, XO, 9 6" DC, Jars, XO, Bumper Sub, Screw In Sub.

Recover 100% of fish: L/D 11 jts. of 5" DP, Flex JT, Monel, Muleshoe, motor, bit sub, 8-3/4" bit

Clear rig floor of slip, trip, and fall hazards.

Rig service- Grease Blocks, Crown, Top Drive, Draw works. Inspect bocks, top drive and derrick due to previous jarring operations.

Install wear bushing

Lay out and strap DC and DP to be picked up for reamer run.

**Report Start Date:** 7/10/2014

Com

M/U Reaming assembly, P/U 5" DP F/122' T/4952'

TIH F/4952' T/5465'. ( P/U Jars and 2 jts HWDP @ 5222'. Install Rot Hd @ 5315')

Ream F/5465' T/6200'.

Note: Previously stuck with lateral BHA @ 5,837' and had to backream out with fish.

Circulate bottoms up.

TIH F/6200' T/13,274'. (Reaming F/10,640' T/10,687')

Note: Tripping in as the hole would allow and reaming when necessary.

Circulate bottoms up.

TIH F/13,274' T/14,500'

Reaming F/13,400 T/13,460'. F/13,780 T/13,920'.

Note: Tripping in as the hole would allow and reaming when necessary.

Circulate bottoms up.

Reaming F/14,500' T/14,690'

**Report Start Date:** 7/11/2014

Com

Ream F/ 14,690' T/ 14,815'

TIH F/ 14,815' T/ 15,570'

Ream F/ 15,570' T/ 15,642

Circulate 3 btms up

Spot Lube Pill

TOH F/ 15,642' T/ 5,311'

Rig Service

TOH F/ 5,311 T/ 122'

L/D drill pipe racked back in derrick

**Report Start Date:** 7/12/2014

Com

L/D DP racked back in derrick, reamers, and 6" DC.

Note:

Pragma catwalk hydraulic hose (1 hr NPT)

Pull wear busing @ 13:30

Clear rig floor

Reamer condition: Minimal to no wear on cutting surfaces or body.

PJSM w/ casing company. R/U casing running equipment.



# Summary Report

Drill  
Drill and Suspend  
Job Start Date: 6/9/2014  
Job End Date: 7/15/2014

Well Name GRAMMA RIDGE 14-24-34 002H		Lease Gamma Ridge 14-24-34	Field Name Red Hills North	Business Unit Mid-Continent	
Ground Elevation (ft) 3,508.00	Original RKB (ft) 3,533.00	Current RKB Elevation 3,533.00, 6/4/2014		Mud Line Elevation (ft)	Water Depth (ft)

Com

Run 5 1/2" 17# HCP-110 CDC csg as follows:

Float Shoe  
 2 Shoe Jts  
 Float Collar  
 1 Joint  
 Landing Collar  
 Pup Joint  
 1 Joint  
 RSCI Tool (Toe Sleeve)  
 Pup Joint  
 119 Joints  
 Marker Joint  
 261 Joints  
 Pup & Casing Hanger

Centralizer place 10' above FS, 10' above FC, every joint from 15,430' - 14,615', one every other joint to 14,615' - 11,552', one every third joint 11,552' - 4,485'.

Notified Patricia of NMOCD at 0225 hrs on 07/12/2014 of intent to run and cmt csg.

Details:  
 Filled pipe every 30 joints  
 Circulate b/u @ '  
 Washed csg f/ '

Report Start Date: 7/12/2014

Com

Report Start Date: 7/13/2014

Com

Run 5 1/2" 17# HCP-110 CDC csg as follows:

Float Shoe  
 2 Shoe Jts  
 Float Collar  
 1 Joint  
 Landing Collar  
 Pup Joint  
 1 Joint  
 RSCI Tool (Toe Sleeve)  
 Pup Joint  
 119 Joints  
 Marker Joint  
 261 Joints  
 Pup & Casing Hanger

Centralizer place 10' above FS, 10' above FC, every joint from 15,430' - 14,615', one every other joint to 14,615' - 11,552', one every third joint 11,552' - 4,485'.

Notified Patricia of NMOCD at 0225 hrs on 07/12/2014 of intent to run and cmt csg.

Details:  
 Filled pipe every 30 joints  
 Washed csg f/ 5,786' - 5,800'  
 Circulate b/u @ 10640'  
 Max Gas 1245 units  
 Tagged btm @ 15,654'

R/D Express casing running equipment and CRT

PJSM w/ Halliburton cementers. R/U Halliburton cementing equipment

Circulate 1.5 btms up

Note:  
 Max Gas 1650 Units  
 Shut in well due to H2S alarm (Alarm was malfunctioning) 0 psi shown on casing pressure gauge. (2100-2130 hrs)



# Summary Report

Drill  
Drill and Suspend  
Job Start Date: 6/9/2014  
Job End Date: 7/15/2014

Well Name GRAMMA RIDGE 14-24-34 002H		Lease Gramma Ridge 14-24-34	Field Name Red Hills North	Business Unit Mid-Continent	
Ground Elevation (ft) 3,508.00	Original RKB (ft) 3,533.00	Current RKB Elevation 3,533.00, 6/4/2014		Mud Line Elevation (ft)	Water Depth (ft)

Com

Perform cmt job as follows:

Pressure test lines to 5000 psi  
 Pump 20 bbls of dyed fresh water and 20 bbls of Tuned Spacer III  
 Mix and pump 635 sxs (288 bbls) of lead at 11.3 ppg.  
 Mix and pump 1525 sxs (493 bbls) of 2nd lead at 12.5 ppg.  
 Mix and pump 100 sxs (100 bbls) of tail at 15 ppg.  
 Drop top plug and displace cmt w/24 bbls MSA and 346.5 BBLs fresh water (370.5 bbls displacement total).  
 Bump plug with 500 psi over final circulating pressure.  
 Bleed off pressure – floats held 3.0 bbls bleed back

Details:

Full to Partial returns throughout job.  
 Final circulation pressure prior to bumping plug 2114 psi at 3.1 bpm  
 No cement or spacer to surface.  
 Cmt in place at 02:25 hrs on 7/14/2014.

Actual displacement of 370.5 bbls was 9.5 bbls over calculated displacement of 361 bbls including half shoe track. Pumped 6.5 bbls over due 30 joint average of IDs on casing. Did not bump after pumping the 6.5 bbls. Halliburton made recommendation to pump annular volume from shoe to RSCI tool (8 bbls). Pumped 3 bbls and plug bumped.

Report Start Date: 7/14/2014

Com

Perform cmt job as follows:

Pressure test lines to 5000 psi  
 Pump 20 bbls of dyed fresh water and 20 bbls of Tuned Spacer III  
 Mix and pump 635 sxs (288 bbls) of lead at 11.3 ppg.  
 Mix and pump 1525 sxs (493 bbls) of 2nd lead at 12.5 ppg.  
 Mix and pump 100 sxs (100 bbls) of tail at 15 ppg.  
 Drop top plug and displace cmt w/24 bbls MSA and 346.5 BBLs fresh water (370.5 bbls displacement total).  
 Bump plug with 500 psi over final circulating pressure.  
 Bleed off pressure – floats held 3.0 bbls bleed back

Details:

Full to Partial returns throughout job.  
 Final circulation pressure prior to bumping plug 2114 psi at 3.1 bpm  
 No cement or spacer to surface.  
 Cmt in place at 02:25 hrs on 7/14/2014.

Actual displacement of 370.5 bbls was 9.5 bbls over calculated displacement of 361 bbls including half shoe track. Pumped 6.5 bbls over due 30 joint average of IDs on casing. Did not bump after pumping the 6.5 bbls. Pumped annular volume from shoe to RSCI tool (8 bbls). Pumped 3 bbls and plug bumped.

R/D Halliburton cementers

L/D landing joint and install and test packoff to 5000 psi (test good). Install BPV.

N/D BOP

Install and test tubing head to 4500 psi.

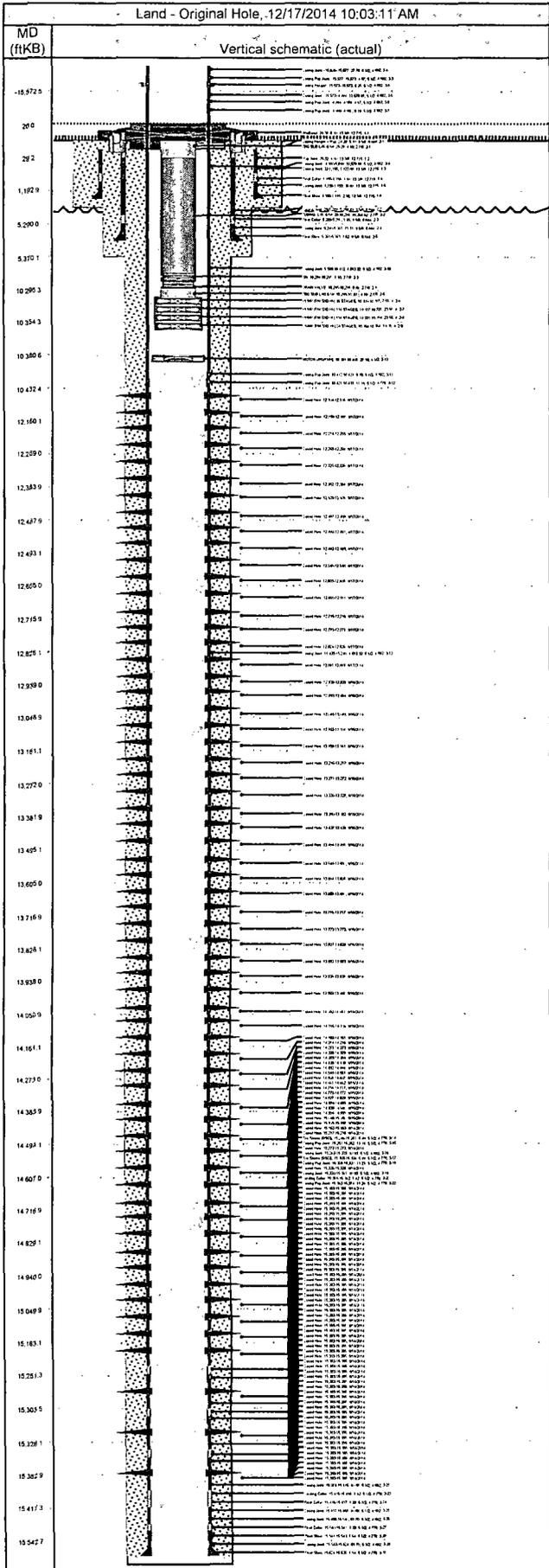
R/D Ensign 153 and prepare for mobilization.

Rig released @ 00:00 hrs on 7/15/2014



# Wellbore Schematic

Well Name GRAMMA RIDGE 14-24-34 002H	Lease Gramma Ridge 14-24-34	Field Name Red Hills North	Business Unit Mid-Continent
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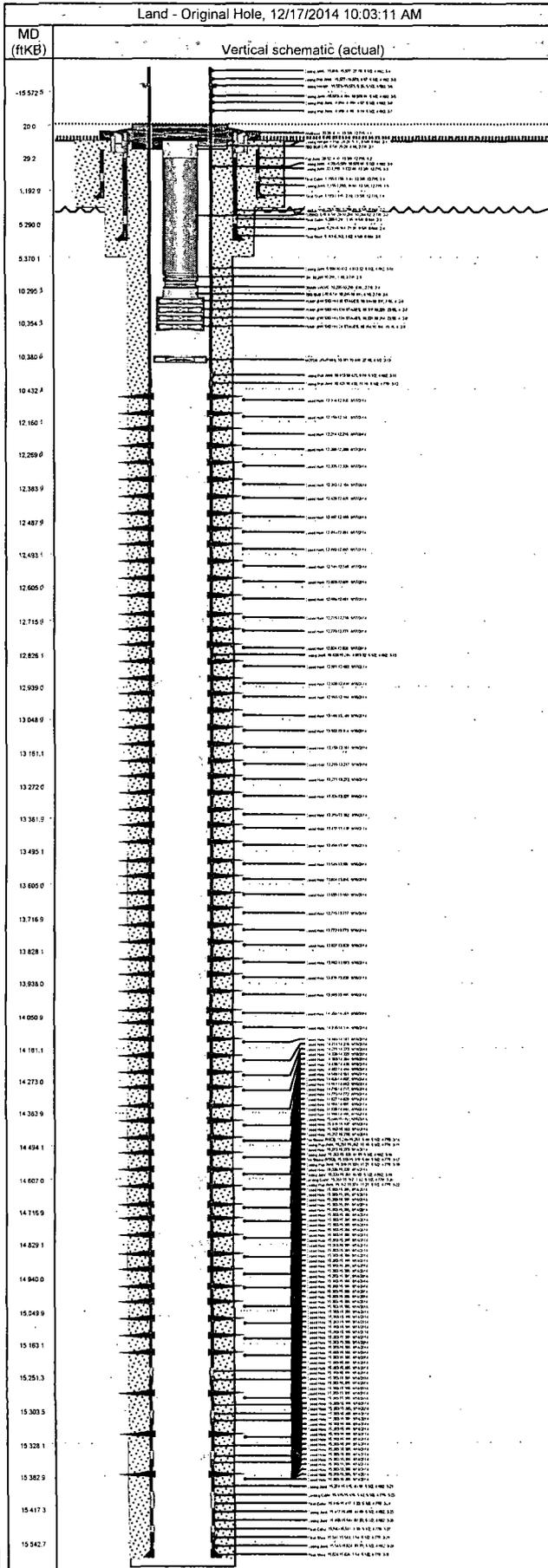


Job Details						
Job Category			Start Date	Release Date		
Drill			6/9/2014	7/15/2014		
Casing Strings						
Csg Des	OD (in)	Wt/Len (lb/ft)	Grade	Top Thread	Set Depth (MD) (ftKB)	
Surface	13 3/8	48.00	H-40	ST&C	1,195	
Intermediate Casing 1	9 5/8	40.00	HCK-55	LT&C	5,363	
Production Casing	5 1/2	17.00	P-110		15,626	
Tubing Strings						
Tubing set at 10,411.9ftKB on 11/26/2014 07:00						
Tubing Description		Run Date	String Length (ft)		Set Depth (MD) (ftKB)	
Tubing		11/26/2014	10,386.92		10,411.9	
Item Des	Jts	OD (in)	Wt (lb/ft)	Grade	Len (ft)	Btm (ftKB)
TBG SUB L-80 6.5#	1	2 7/8	6.50	L-80	4.10	29.1
TUBING L-80 6.5#	313	2 7/8	6.50	L-80	10,264.62	10,293.7
SN	1	2 7/8			1.10	10,294.8
DRAIN VALVE	1	2 7/8			0.60	10,295.4
TBG SUB L-80 6.5#	1	2 7/8	6.50	L-80	4.10	10,299.5
PUMP (PM SXD H6) 35 STAGES	1	4			7.55	10,307.1
PUMP (PM SXD H6) 134 STAGES	1	4			23.55	10,330.6
PUMP (PM SXD H6) 134 STAGES	1	4			23.55	10,354.2
PUMP (PM SXD H6) 24 STAGES	1	4			10.05	10,364.2
Gas separator	1				4.30	10,368.5
SEAL	1				6.10	10,374.6
SEAL	1				6.10	10,380.7
MOTOR (450/FMH)	1	4 1/2			27.10	10,407.8
CENTINEL	1				4.10	10,411.9
Perforations						
Date	Top (ftKB)	Btm (ftKB)	Shot Dens (shots/ft)	Entered Shot Total	Zone & Completion	
9/17/2014	12,104.0	12,105.0	6.0	6	Bone Springs, Original Hole	
9/17/2014	12,159.0	12,160.0	6.0	6	Bone Springs, Original Hole	
9/17/2014	12,214.0	12,215.0	6.0	6	Bone Springs, Original Hole	
9/17/2014	12,268.0	12,269.0	6.0	6	Bone Springs, Original Hole	
9/17/2014	12,325.0	12,326.0	6.0	6	Bone Springs, Original Hole	
9/17/2014	12,382.0	12,384.0	6.0	12	Bone Springs, Original Hole	
9/17/2014	12,429.0	12,431.0	6.0	12	Bone Springs, Original Hole	
9/17/2014	12,487.0	12,488.0	6.0	6	Bone Springs, Original Hole	
9/17/2014	12,490.0	12,491.0	6.0	6	Bone Springs, Original Hole	
9/17/2014	12,492.0	12,493.0	6.0	6	Bone Springs, Original Hole	
9/17/2014	12,546.0	12,548.0	6.0	12	Bone Springs, Original Hole	
9/17/2014	12,603.0	12,605.0	6.0	12	Bone Springs, Original Hole	
9/17/2014	12,660.0	12,661.0	6.0	6	Bone Springs, Original Hole	



# Wellbore Schematic

Well Name GRAMMA RIDGE 14-24-34 002H	Lease Gramma Ridge 14-24-34	Field Name Red Hills North	Business Unit Mid-Continent
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Perforations					
Date	Top (ftKB)	Btm (ftKB)	Shot Dens (shots/ft)	Entered Shot Total	Zone & Completion
9/17/2014	12,715.0	12,716.0	6.0	6	Bone Springs, Original Hole
9/17/2014	12,770.0	12,771.0	6.0	6	Bone Springs, Original Hole
9/17/2014	12,824.0	12,826.0	6.0	12	Bone Springs, Original Hole
9/17/2014	12,881.0	12,883.0	6.0	12	Bone Springs, Original Hole
9/16/2014	12,938.0	12,939.0	6.0	6	Bone Springs, Original Hole
9/16/2014	12,993.0	12,994.0	6.0	6	Bone Springs, Original Hole
9/16/2014	13,048.0	13,049.0	6.0	6	Bone Springs, Original Hole
9/16/2014	13,102.0	13,104.0	6.0	12	Bone Springs, Original Hole
9/16/2014	13,159.0	13,161.0	6.0	12	Bone Springs, Original Hole
9/16/2014	13,216.0	13,217.0	6.0	6	Bone Springs, Original Hole
9/16/2014	13,271.0	13,272.0	6.0	6	Bone Springs, Original Hole
9/16/2014	13,326.0	13,327.0	6.0	6	Bone Springs, Original Hole
9/16/2014	13,380.0	13,382.0	6.0	12	Bone Springs, Original Hole
9/16/2014	13,437.0	13,439.0	6.0	12	Bone Springs, Original Hole
9/16/2014	13,494.0	13,495.0	6.0	6	Bone Springs, Original Hole
9/16/2014	13,549.0	13,550.0	6.0	6	Bone Springs, Original Hole
9/16/2014	13,604.0	13,605.0	6.0	6	Bone Springs, Original Hole
9/16/2014	13,658.0	13,660.0	6.0	12	Bone Springs, Original Hole
9/16/2014	13,715.0	13,717.0	6.0	12	Bone Springs, Original Hole
9/16/2014	13,772.0	13,773.0	6.0	6	Bone Springs, Original Hole
9/16/2014	13,827.0	13,828.0	6.0	6	Bone Springs, Original Hole
9/16/2014	13,882.0	13,883.0	6.0	6	Bone Springs, Original Hole
9/16/2014	13,936.0	13,938.0	6.0	12	Bone Springs, Original Hole
9/16/2014	13,993.0	13,995.0	6.0	12	Bone Springs, Original Hole
9/16/2014	14,050.0	14,051.0	6.0	6	Bone Springs, Original Hole
9/16/2014	14,105.0	14,106.0	6.0	6	Bone Springs, Original Hole
9/16/2014	14,160.0	14,161.0	6.0	6	Bone Springs, Original Hole
9/16/2014	14,214.0	14,216.0	6.0	12	Bone Springs, Original Hole
9/16/2014	14,271.0	14,273.0	6.0	12	Bone Springs, Original Hole
9/15/2014	14,328.0	14,329.0	6.0	6	Bone Springs, Original Hole



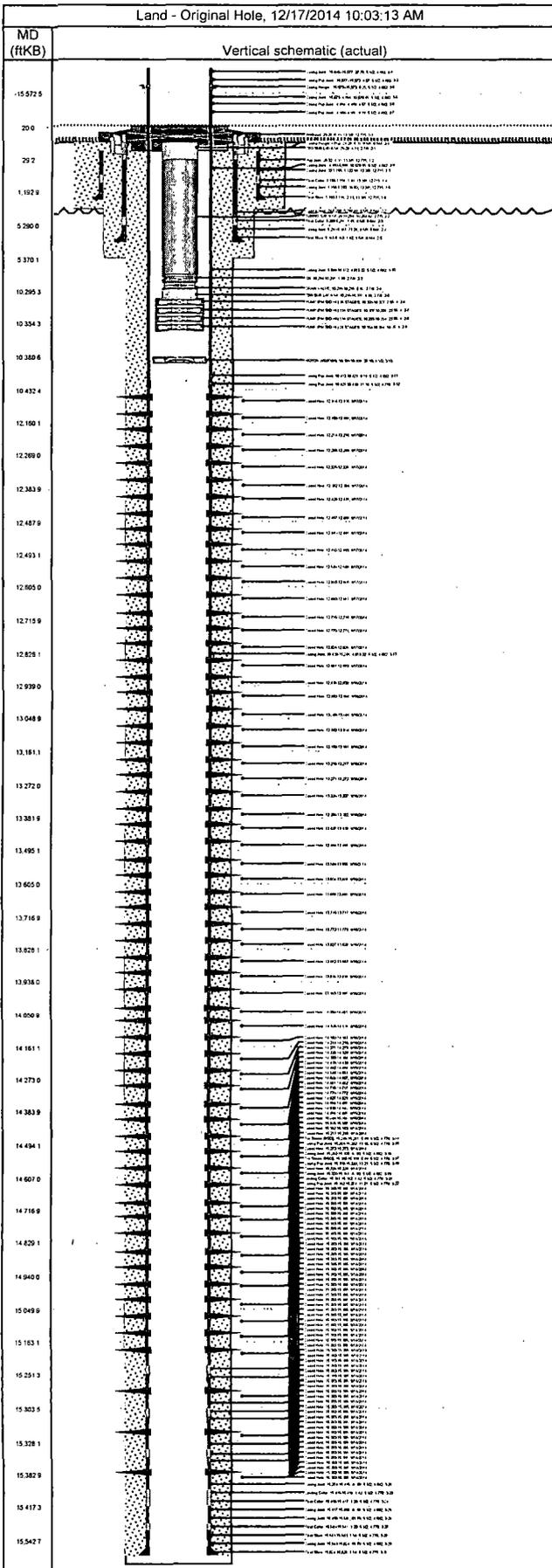






# Wellbore Schematic

Well Name GRAMMA RIDGE 14-24-34 002H	Lease Gramma Ridge 14-24-34	Field Name Red Hills North	Business Unit Mid-Continent
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Other In Hole					
Des	Top (ftKB)	Botm (ftKB)	Run Date	Pull Date	Com
Bridge Plug (Permanent) Fasdrill	14,573.0	14,575.0	9/15/2014	9/18/2014	Obsidian Caged Ball
Bridge Plug (Permanent) Fasdrill	14,850.0	14,852.0	9/15/2014	9/18/2014	Obsidian Caged Ball
Bridge Plug (Permanent) Fasdrill	15,134.0	15,138.0	9/15/2014	9/18/2014	Obsidian Caged Ball



# Casing Summary

Well Name GRAMMA RIDGE 14-24-34 002H		Lease Gramma Ridge 14-24-34		Field Name Red Hills North		Business Unit Mid-Continent	
Ground Elevation (ft) 3,508.00	Original RKB (ft) 3,533.00	Current RKB Elevation 3,533.00, 6/4/2014				Mud Line Elevation (ft)	Water Depth (ft)

## Surface, Planned?-N, 1,195ftKB

Set Depth (MD) (ftKB) 1,195		Set Tension (kips)		String Nominal OD (in) 13 3/8		String Min Drift (in)		Centralizers 10		Scratchers	
Jts	Item Des	OD (in)	ID (in)	Wt (lb/ft)	Grade	Top Thread	Top Depth (MD) (ftKB)	Btm Depth (MD) (ftKB)	Len (ft)	P Burst (psi)	P Collapse (psi)
1	Wellhead	13 3/8	12.715	48.00	H-40	ST&C	20	28	8.00		
1	Pup Joint	13 3/8	12.715	48.00	H-40	ST&C	28	32	4.00		
26	Casing Joint	13 3/8	12.715	48.00	H-40	ST&C	32	1,155	1,122.88		
1	Float Collar	13 3/8	12.715			ST&C	1,155	1,156	1.40		
1	Casing Joint	13 3/8	12.715	48.00	H-40	ST&C	1,156	1,193	36.60		
1	Float Shoe	13 3/8	12.715			ST&C	1,193	1,195	2.10		

## Intermediate Casing 1, Planned?-N, 5,363ftKB

Set Depth (MD) (ftKB) 5,363		Set Tension (kips)		String Nominal OD (in) 9 5/8		String Min Drift (in) 8.688		Centralizers 38		Scratchers	
Jts	Item Des	OD (in)	ID (in)	Wt (lb/ft)	Grade	Top Thread	Top Depth (MD) (ftKB)	Btm Depth (MD) (ftKB)	Len (ft)	P Burst (psi)	P Collapse (psi)
1	Casing Hanger + Pup	9 5/8	8.844	40.00	HCK-55	LT&C	24	29	5.00	3,950.0	4,230.0
13	Casing Joint	9 5/8	8.844	40.00	HCK-55	LT&C	29	5,289	5,259.49	3,950.0	4,230.0
8											
1	Float Collar	9 5/8	8.844			LT&C	5,289	5,290	1.45	3,950.0	4,230.0
2	Casing Joint	9 5/8	8.844	40.00	HCK-55	LT&C	5,290	5,361	71.31	3,950.0	4,230.0
1	Float Shoe	9 5/8	8.844			LT&C	5,361	5,363	1.62	3,950.0	4,230.0

## Production Casing, Planned?-N, 15,626ftKB

Set Depth (MD) (ftKB) 15,626		Set Tension (kips)		String Nominal OD (in) 5 1/2		String Min Drift (in)		Centralizers Tesco & Bow Spring		Scratchers	
Jts	Item Des	OD (in)	ID (in)	Wt (lb/ft)	Grade	Top Thread	Top Depth (MD) (ftKB)	Btm Depth (MD) (ftKB)	Len (ft)	P Burst (psi)	P Collapse (psi)
0	Casing Pup Joint	5 1/2	4.892	17.00	P-110		-15,605	-15,605	0.00		7,480.0
1	Casing Hanger	5 1/2	4.892	17.00	P-110		-15,605	-15,605	0.25		7,480.0
1	Casing Joint	5 1/2	4.892	17.00	P-110		-15,605	-15,577	27.78		7,480.0
1	Casing Pup Joint	5 1/2	4.892	17.00	P-110		-15,577	-15,573	4.57		7,480.0
1	Casing Hanger	5 1/2	4.892	17.00	P-110		-15,573	-15,573	0.25		7,480.0
26	Casing Joint	5 1/2	4.892	17.00	P-110		-15,573	-4,994	10,578.85		7,480.0
1	Casing Pup Joint	5 1/2	4.892	17.00	P-110		-4,994	-4,989	4.57		7,480.0
1	Casing Pup Joint	5 1/2	4.892	17.00	P-110		-4,989	-4,980	9.19		7,480.0
26	Casing Joint	5 1/2	4.892	17.00	P-110		-167	10,412	10,578.85		7,480.0
11	Casing Joint	5 1/2	4.892	17.00	P-110		-4,980	-167	4,813.32		7,480.0
9											
1	Casing Pup Joint	5 1/2	4.892	17.00	P-110		10,423	10,433	9.19		7,480.0
1	Casing Pup Joint	5 1/2	4.778	17.00	P-110		10,412	10,423	11.16		8,830.0
26	Casing Joint	5 1/2	4.892	17.00	P-110		10,438	15,251	4,813.32		7,480.0
11	Casing Joint	5 1/2	4.892	17.00	P-110		10,433	10,438	5.49		8,830.0
9											
1	Toe Sleeve (RSCI)	5 1/2	4.778	17.00	P-110		15,292	15,303	11.16		8,830.0
1	Casing Pup Joint	5 1/2	4.778	17.00	P-110		15,251	15,292	40.93		7,480.0
1	Casing Joint	5 1/2	4.892	17.00	P-110		15,315	15,320	5.49		8,830.0
1	Toe Sleeve (RSCI)	5 1/2	4.778	17.00	P-110		15,303	15,315	11.21		8,830.0
1	Casing Pup Joint	5 1/2	4.778	17.00	P-110		15,322	15,362	40.93		7,480.0
1	Casing Joint	5 1/2	4.892	17.00	P-110		15,320	15,322	1.42		8,830.0
1	Casing Pup Joint	5 1/2	4.778	17.00	P-110		15,362	15,374	11.21		8,830.0
1	Casing Joint	5 1/2	4.892	17.00	P-110		15,374	15,415	40.88		7,480.0
1	Landing Collar	5 1/2	4.778	17.00	P-110		15,416	15,417	1.42		8,830.0
1	Float Collar	5 1/2	4.778	17.00	P-110		15,415	15,416	1.33		8,830.0
1	Casing Joint	5 1/2	4.892	17.00	P-110		15,499	15,540	40.88		7,480.0
2	Casing Joint	5 1/2	4.892	17.00	P-110		15,417	15,499	81.70		7,480.0
1	Float Collar	5 1/2	4.778	17.00	P-110		15,541	15,543	1.33		8,830.0
1	Float Shoe	5 1/2	4.778	17.00	P-110		15,540	15,541	1.54		8,830.0



# Casing Summary

Well Name GRAMMA RIDGE 14-24-34 002H		Lease Gramma Ridge 14-24-34		Field Name Red Hills North		Business Unit Mid-Continent	
Ground Elevation (ft) 3,508.00	Original RKB (ft) 3,533.00	Current RKB Elevation 3,533.00, 6/4/2014				Mud Line Elevation (ft)	Water Depth (ft)

Jts	Item Des	OD (in)	ID (in)	Wt (lb/ft)	Grade	Top Thread	Top Depth (MD) (ftKB)	Btm Depth (MD) (ftKB)	Len (ft)	P Burst (psi)	P Collapse (psi)
2	Casing Joint	5 1/2	4.892	17.00	P-110		15,543	15,624	81.70		7,480.0
1	Float Shoe	5 1/2	4.778	17.00	P-110		15,624	15,626	1.54		8,830.0



# Cement Summary

Surface Casing Cement

Well Name GRAMMA RIDGE 14-24-34 002H		Lease Gramma Ridge 14-24-34		Field Name Red Hills North		Business Unit Mid-Continent	
Ground Elevation (ft) 3,508.00	Original RKB (ft) 3,533.00	Current RKB Elevation 3,533.00, 6/4/2014		Mud Line Elevation (ft)	Water Depth (ft)		

<b>Original Hole</b>							
Wellbore Name Original Hole		Directional Type Horizontal		Kick Off Depth (ftKB) 10,646		Vertical Section Direction (*) 175.57	
Hole Size (in)		Act Top (ftKB)		Act Btm (ftKB)			
17 1/2		25.0				1,202.0	
12 1/4		1,202.0				5,370.0	
8 3/4		5,370.0				15,642.0	

<b>&lt;typ&gt;, &lt;make&gt; on &lt;dtmstart&gt;</b>					
Type			Install Date		
Des	Make	Model	WP (psi)	Service	SN

<b>Surface, Planned?-N, 1,195ftKB</b>											
Casing Description Surface		Wellbore Original Hole		Run Date 6/15/2014		Set Depth (MD) (ftKB) 1,195		Stick Up (ftKB) -20.0		Set Tension (kips)	
Centralizers 10						Scratchers					

Jts	Item Des	OD (in)	ID (in)	Wt (lb/ft)	Grade	Top Conn Sz (in)	Top Thread	Len (ft)	Top Depth (MD) (ftKB)	Btm Depth (MD) (ftKB)
1	Wellhead	13 3/8	12.715	48.00	H-40		ST&C	8.00	20	28
1	Pup Joint	13 3/8	12.715	48.00	H-40		ST&C	4.00	28	32
26	Casing Joint	13 3/8	12.715	48.00	H-40		ST&C	1,122.88	32	1,155
1	Float Collar	13 3/8	12.715	-			ST&C	1.40	1,155	1,156
1	Casing Joint	13 3/8	12.715	48.00	H-40		ST&C	36.60	1,156	1,193
1	Float Shoe	13 3/8	12.715				ST&C	2.10	1,193	1,195

<b>Intermediate Casing 1, Planned?-N, 5,363ftKB</b>											
Casing Description Intermediate Casing 1		Wellbore Original Hole		Run Date 6/21/2014		Set Depth (MD) (ftKB) 5,363		Stick Up (ftKB) -24.1		Set Tension (kips)	
Centralizers 38						Scratchers					

Jts	Item Des	OD (in)	ID (in)	Wt (lb/ft)	Grade	Top Conn Sz (in)	Top Thread	Len (ft)	Top Depth (MD) (ftKB)	Btm Depth (MD) (ftKB)
1	Casing Hanger + Pup	9 5/8	8.844	40.00	HCK-55		LT&C	5.00	24	29
138	Casing Joint	9 5/8	8.844	40.00	HCK-55		LT&C	5,259.49	29	5,289
1	Float Collar	9 5/8	8.844				LT&C	1.45	5,289	5,290
2	Casing Joint	9 5/8	8.844	40.00	HCK-55		LT&C	71.31	5,290	5,361
1	Float Shoe	9 5/8	8.844				LT&C	1.62	5,361	5,363

<b>Production Casing, Planned?-N, 15,626ftKB</b>											
Casing Description Production Casing		Wellbore Original Hole		Run Date 7/14/2014		Set Depth (MD) (ftKB) 15,626		Stick Up (ftKB) 15,605.5		Set Tension (kips)	
Centralizers Tesco & Bow Spring						Scratchers					

Jts	Item Des	OD (in)	ID (in)	Wt (lb/ft)	Grade	Top Conn Sz (in)	Top Thread	Len (ft)	Top Depth (MD) (ftKB)	Btm Depth (MD) (ftKB)
0	Casing Pup Joint	5 1/2	4.892	17.00	P-110			0.00	-15,605	-15,605
1	Casing Hanger	5 1/2	4.892	17.00	P-110			0.25	-15,605	-15,605
1	Casing Joint	5 1/2	4.892	17.00	P-110			27.78	-15,605	-15,577
1	Casing Pup Joint	5 1/2	4.892	17.00	P-110			4.57	-15,577	-15,573
1	Casing Hanger	5 1/2	4.892	17.00	P-110			0.25	-15,573	-15,573
261	Casing Joint	5 1/2	4.892	17.00	P-110			10,578.85	-15,573	-4,994
1	Casing Pup Joint	5 1/2	4.892	17.00	P-110			4.57	-4,994	-4,989
1	Casing Pup Joint	5 1/2	4.892	17.00	P-110			9.19	-4,989	-4,980
261	Casing Joint	5 1/2	4.892	17.00	P-110			10,578.85	-167	10,412
119	Casing Joint	5 1/2	4.892	17.00	P-110			4,813.32	-4,980	-167
1	Casing Pup Joint	5 1/2	4.892	17.00	P-110			9.19	10,423	10,433
1	Casing Pup Joint	5 1/2	4.778	17.00	P-110			11.16	10,412	10,423
119	Casing Joint	5 1/2	4.892	17.00	P-110			4,813.32	10,438	15,251
1	Toe Sleeve (RSCI)	5 1/2	4.778	17.00	P-110			5.49	10,433	10,438
1	Casing Pup Joint	5 1/2	4.778	17.00	P-110			11.16	15,292	15,303
1	Casing Joint	5 1/2	4.892	17.00	P-110			40.93	15,251	15,292
1	Toe Sleeve (RSCI)	5 1/2	4.778	17.00	P-110			5.49	15,315	15,320
1	Casing Pup Joint	5 1/2	4.778	17.00	P-110			11.21	15,303	15,315



# Cement Summary

Surface Casing Cement

Well Name GRAMMA RIDGE 14-24-34 002H		Lease Gramma Ridge 14-24-34		Field Name Red Hills North		Business Unit Mid-Continent	
Ground Elevation (ft) 3,508.00	Original RKB (ft) 3,533.00	Current RKB Elevation 3,533.00, 6/4/2014				Mud Line Elevation (ft)	Water Depth (ft)

Jts	Item Des	OD (in)	ID (in)	Wt (lb/ft)	Grade	Top Conn Sz (in)	Top Thread	Len (ft)	Top Depth (MD) (ftKB)	Btn Depth (MD) (ftKB)
1	Casing Joint	5 1/2	4.892	17.00	P-110			40.93	15,322	15,362
1	Landing Collar	5 1/2	4.778	17.00	P-110			1.42	15,320	15,322
1	Casing Pup Joint	5 1/2	4.778	17.00	P-110			11.21	15,362	15,374
1	Casing Joint	5 1/2	4.892	17.00	P-110			40.88	15,374	15,415
1	Landing Collar	5 1/2	4.778	17.00	P-110			1.42	15,416	15,417
1	Float Collar	5 1/2	4.778	17.00	P-110			1.33	15,415	15,416
1	Casing Joint	5 1/2	4.892	17.00	P-110			40.88	15,499	15,540
2	Casing Joint	5 1/2	4.892	17.00	P-110			81.70	15,417	15,499
1	Float Collar	5 1/2	4.778	17.00	P-110			1.33	15,541	15,543
1	Float Shoe	5 1/2	4.778	17.00	P-110			1.54	15,540	15,541
2	Casing Joint	5 1/2	4.892	17.00	P-110			81.70	15,543	15,624
1	Float Shoe	5 1/2	4.778	17.00	P-110			1.54	15,624	15,626

**Surface Casing Cement, Casing, 6/15/2014 12:30**

Cementing Start Date 6/15/2014	Cementing End Date 6/15/2014	Wellbore Original Hole
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Evaluation Method Returns to Surface	Cement Evaluation Results 318 bbls (1038 sxs) of cmt to surface
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Comment

**1, 25.0-1,195.0ftKB**

Top Depth (ftKB) 25.0	Bottom Depth (ftKB) 1,195.0	Full Return? N	Vol Cement Ret (bbl) 318.0	Top Plug? N	Bottom Plug? Y
Initial Pump Rate (bbl/min) 5	Final Pump Rate (bbl/min) 2	Avg Pump Rate (bbl/min) 3		Final Pump Pressure (psi) 300.0	Plug Bump Pressure (psi)
Pipe Reciprocated? N	Reciprocation Stroke Length (ft)	Reciprocation Rate (spm)	Pipe Rotated? N	Pipe RPM (rpm)	
Depth Tagged (MD) (ftKB)	Tag Method	Depth Plug Drilled Out To (ftKB)	Drill Out Diameter (in)	Drill Out Date	

<b>Spacer</b>				
Fluid Type Spacer	Fluid Description Fresh Water	Quantity (sacks)	Class	Volume Pumped (bbl) 60.0
Estimated Top (ftKB)	Estimated Bottom Depth (ftKB)	Percent Excess Pumped (%)	Yield (ft <sup>3</sup> /sack)	Fluid Mix Ratio (gal/sack)
Free Water (%)	Density (lb/gal) 8.40	Zero Gel Time (min)	Thickening Time (hr)	1st Compressive Strength (psi)

<b>Cement Fluid Additives</b>		
Add	Type	Conc

<b>Lead</b>				
Fluid Type Lead	Fluid Description Halcem Class C	Quantity (sacks) 1,160	Class C	Volume Pumped (bbl) 355.0
Estimated Top (ftKB) 24.5	Estimated Bottom Depth (ftKB) 900.0	Percent Excess Pumped (%) 250.0	Yield (ft <sup>3</sup> /sack) 1.75	Fluid Mix Ratio (gal/sack) 9.24
Free Water (%)	Density (lb/gal) 13.50	Zero Gel Time (min)	Thickening Time (hr)	1st Compressive Strength (psi)

<b>Cement Fluid Additives</b>		
Add	Type	Conc

<b>Tail</b>				
Fluid Type Tail	Fluid Description Halcem Class C	Quantity (sacks) 570	Class C	Volume Pumped (bbl) 136.0
Estimated Top (ftKB) 925.0	Estimated Bottom Depth (ftKB) 1,202.0	Percent Excess Pumped (%) 250.0	Yield (ft <sup>3</sup> /sack) 1.36	Fluid Mix Ratio (gal/sack) 6.57
Free Water (%)	Density (lb/gal) 14.80	Zero Gel Time (min)	Thickening Time (hr)	1st Compressive Strength (psi)

<b>Cement Fluid Additives</b>		
Add	Type	Conc

<b>Displacement</b>				
Fluid Type Displacement	Fluid Description Brine	Quantity (sacks)	Class	Volume Pumped (bbl) 182.0
Estimated Top (ftKB) 24.5	Estimated Bottom Depth (ftKB) 1,945.0	Percent Excess Pumped (%)	Yield (ft <sup>3</sup> /sack)	Fluid Mix Ratio (gal/sack)
Free Water (%)	Density (lb/gal) 10.00	Zero Gel Time (min)	Thickening Time (hr)	1st Compressive Strength (psi)



# Cement Summary

Surface Casing Cement

Well Name GRAMMA RIDGE 14-24-34 002H		Lease Gramma Ridge 14-24-34		Field Name Red Hills North		Business Unit Mid-Continent	
Ground Elevation (ft) 3,508.00	Original RKB (ft) 3,533.00	Current RKB Elevation 3,533.00, 6/4/2014			Mud Line Elevation (ft)	Water Depth (ft)	

## Cement Fluid Additives

Add	Type	Conc