

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

OCD Artesia

FORM APPROVED
OMB NO: 1004-0135
Expires: July 31, 2010**SUNDRY NOTICES AND REPORTS ON WELLS**
*Do not use this form for proposals to drill or to re-enter an abandoned well. Use form 3160-3 (APD) for such proposals.*5. Lease Serial No.
NMNM17224

6. If Indian, Allottee or Tribe Name

7. If Unit or CA/Agreement, Name and/or No.

SUBMIT IN TRIPLICATE - Other instructions on reverse side.8. Well Name and No.
RUSTLER BLUFF 19 24 29 3H9. API Well No.
30-015-42593-00-X110. Field and Pool, or Exploratory
PIERCE CROSSING11. County or Parish, and State
EDDY COUNTY, NM

1. Type of Well

☒ Oil Well ☐ Gas Well ☐ Other2. Name of Operator
CHEVRON USA INCORPORATEDContact: BRITANY CORTEZ
E-Mail: BCORTEZ@CHEVRON.COM3a. Address
15 SMITH ROAD
MIDLAND, TX 797053b. Phone No. (include area code)
Ph: 432-687-7415

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)

Sec 19 T24S R29E SESW 0330FSL 1490FWL
32.196672 N Lat, 103.196672 W Lon**12. CHECK APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA**

TYPE OF SUBMISSION	TYPE OF ACTION			
☐ Notice of Intent	☐ Acidize	☐ Deepen	☐ Production (Start/Resume)	☐ Water Shut-Off
☒ Subsequent Report	☐ Alter Casing	☐ Fracture Treat	☐ Reclamation	☐ Well Integrity
☐ Final Abandonment Notice	☐ Casing Repair	☐ New Construction	☐ Recomplete	☒ Other
	☐ Change Plans	☐ Plug and Abandon	☐ Temporarily Abandon	Drilling Operations
	☐ Convert to Injection	☐ Plug Back	☐ Water Disposal	

13. Describe Proposed or Completed Operation (clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recompleat horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports shall be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompleat in a new interval, a Form 3160-4 shall be filed once testing has been completed. Final Abandonment Notices shall be filed only after all requirements, including reclamation, have been completed, and the operator has determined that the site is ready for final inspection.)

10/25/14 THROUGH 10/26/14- DRILLED 150'-408'

10/26/14- RAN 13 3/8" SURFACE CSG SET @ 393'

10/27/14- CMT W/ 460 SX. NO CMT BACK TO SURFACE. RAN TEMP LOG TO FIND TOC WILL PUMP CMT TO SURFACE
W/ 1" PIPE BETWEEN CONDUCTOR AND SURFACE CSG. TOC @190' NOTIFIED JIM HUGHES WITH BLM. CMT WITH 134
SX OF CMT

10/30/14 THROUGH 10/31/14- DRILLED 418'-2627'

11/1/14- RAN 9 5/8" CSG SET @2617'. CMT W/ 900 SX OF CMT. 311 SX TO SURFACE. WOC FOR 18 HOURS

11/3/14 THROUGH 11/21/14- DRILLED 2637'-13058' (TD)

11/22/14- RAN 5 1/2" PRODUCTION CSG SET @ 13042'

11/24/14- CMT W/ 1200 SX.

11/25/14- RELEASE RIG

UD 8/15
Accepted for Record
MAGSDNM OIL CONSERVATION
ARTESIA DISTRICT

AUG 10 2015

14. I hereby certify that the foregoing is true and correct.

Electronic Submission #295668 verified by the BLM Well Information System

For CHEVRON USA INCORPORATED, sent to the Carlsbad,
Committed to AFMSS for processing by MARISSA KLEIN on 06/11/2015 (500K 405655)

Name (Printed/Typed) BRITANY CORTEZ

Title REGULATORY SPECIALIST

Signature (Electronic Submission)

Date 03/20/2015

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By

Title

Conditions of approval, if any, are attached. Approval of this notice does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.

Office

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED **



Summary Report

Drill
Drill and Suspend
Job Start Date: 10/17/2014
Job End Date: 11/26/2014

Well Name RUSTLER BLUFF 19-24-29 FED 003H		Lease Rustler Bluffs Unit	Field Name PIERCE CROSSING	Business Unit Mid-Continent	
Ground Elevation (ft) 2,918.00	Original RKB (ft) 2,949.00	Current RKB Elevation 2,949.00, 10/20/2014		Mud Line Elevation (ft)	Water Depth (ft)

Report Start Date: 10/17/2014

Com

Prepare rig for rig move.

Wait on day light.

Report Start Date: 10/18/2014

Com

Wait on daylight.

Safety meeting with Ensign, Monster heavy haulers, and Chevron reps.

Rig down, set in back yard, and continue moving rig to Rustler Bluff 19 Federal 3H.

Wait on daylight.

Report Start Date: 10/19/2014

Com

Wait on daylight.

Pre job meeting with Monster Trucking and Ensign.

Wait on daylight.

Rig up backyard and rig down derrick and subs. Note: Wolfslayer on location to access damage to subs.

Report Start Date: 10/20/2014

Com

Wait on daylight.

Safety meeting with Monster Trucking and Ensign.

Continue rigging up backyard, set camp, and set subs.

Note: Welders started repairing damage on subs @ 1700.

Wait on daylight.

Report Start Date: 10/21/2014

Com

Wait on daylight.

Safety meeting with Monster Trucking and Ensign.

Rig up back yard while welding on subs and derrick. Set center steel, a-leg section, and crown section.

Wait on daylight.

Report Start Date: 10/22/2014

Com

Wait on daylight.

Safety meeting with Monster Trucking and Ensign.

Rig up derrick, gas buster, string up blocks, raise floor and derrick.

Note: Notified NM BLM Office, Spoke with Richard Carrasco to notify intent to spud.

Wait on daylight.

Report Start Date: 10/23/2014

Com

Wait on daylight.

Safety meeting with Ensign & Monster Trucking

Continue rigging up misc equip. Cut off conductor 50" below ground level; Install shaker screens, troubleshoot electrical issuers.

Note: Electrical issues with VFD & drawworks.

Report Start Date: 10/24/2014

Com

Continue working on electrical issues, continue preparing to spud.

Note: Electrical issues with VFD, top drive, & mud pumps.

Report Start Date: 10/25/2014

Com

Rig up unit 100%. Perform pre-spud inspection. Install conductor riser and rig up flowline. Install swivel packing and pressure test lines to 2500 PSI.

Note: Swivel packing was leaking after it was newly installed.

Rig acceptance @ 13:00

Lay out and strap BHA. Make up 17 1/2" Security bit. P/U BHA and tag bottom at 150'



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Com

Spud well. Drill from 150' to 155'

Rotating Parameters

AROP = 10' ft/hr

WOB = 10 K

TD RPM = 60 RPM

GPM = 300 GPM

SPP = 100 psi

Note: Notified NM BLM Office, Spoke with Joe Salcido to notify intent to cement surface casing.

Repair weight indicator and fix flow line leaks.

Rotate from 155' to 166'

Rotating Parameters

AROP = 11' ft/hr

WOB = 10 K

TD RPM = 60 RPM

GPM = 300 GPM

SPP = 100 psi

Note: Notified NM BLM Office, Spoke with Joe Salcido to notify intent to cement surface casing.

Report Start Date: 10/26/2014

Com

Rotate from 166' to 285'

Rotating Parameters

AROP = 48 ft/hr

WOB = 10 K - 25 K

TD RPM = 60-70 RPM

GPM = 300-400 GPM

SPP = 100-160 psi

Rig Service

Rotate from 285' to 408'

Rotating Parameters

AROP = 27 ft/hr

WOB = 10 K - 25 K

TD RPM = 60-70 RPM

GPM = 300-400 GPM

SPP = 100-160 psi

Pumped 60 bbl high vis sweep @ TD & circulate hole clean.

Calculated 20 bbl washout

Drop totco survey tool.

TOOH from 408' to surface and retrieve totco. Inclination 1.75 deg. R/B 8" DC & 6-1/2" DC, break & L/D bit, bit sub and shock sub and lay down same. Clean rig floor.

Lay down conductor riser.

Pre-job safety meeting rig up casing equipment & running 13-3/8" csg. R/U Franks casing equipment

Run 393' of 13 3/8" 48# H 40.

P/U Wellhead, damaged pup joint threads on catwalk skate and trough. L/D same

Report Start Date: 10/27/2014

Com

R/D Franks casing crew and equipment.

Pre-job safety meeting with Halliburton and rig crew rig up cementing head to circulate.

Pre-cement circulation while cementers rig up equipment.

Pre-job safety meeting with Halliburton cementers and rig crew. Discussed pump job and rig down of equipment.



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Com

Pump Cement as Follows:

- 1) Pressure test lines to 2000 psi
- 2) Pump 20 bbls fresh water spacer w/ red dye
- 3) Pump 460 sacks of premium Class C w/ 2% CaCl at 14.8 ppg 1.36 yield 8.33 ppg FW mix
- 4) Drop top plug and displace cmt w/ 48.2 bbls of FW at 8.33 ppg
- 5) Bump plug with 610 psi over final circulating pressure
- 6) Bleed off pressure - Floats held, had 1 bbl bleed back
- 7) Final circulating pressure prior to bumping plug 200 psi at 2.5 bpm

460 SK

**Note: No Cement back to surface, 10 bbls of red dye spacer back to surface.

Cmt in place at 03:30 CST

WOC before releasing tension & cutting casing.

Note:

BLM requires 8 hour setting time before releasing tension.

Set up wireline with temp log to find TOC, then will pump cement to surface w/ 1" pipe between conductor & surface csg.

Cut 13-3/8" surface casing to 14" below ground level so the wellhead will be welded on conductor pipe.

PJSM w/ Weatherford & R/U wireline to run temp log.

Run temp log & verified TOC @ 190'.

Notified Jim Hughes from BLM.

R/D Weatherford wireline.

PJSM w/ Halliburton to pump top job w/ 1" pipe & TIH to 180'.

Pumped 5 bbls FW spacer to gain circulation.

Mixed & pumped 134 sacks (32.5 bbls) of premium Class C w/ 1% CaCl at 14.8 ppg 1.36 yield 8.33 ppg FW mix

Cmt in place at 20:45 CST

Notified Jim Hughes from BLM about top job success.

TOH w/ 180' of 1" pipe & R/D Halliburton cementers.

Prepare casing to install wellhead and weld wellhead on conductor casing.

Report Start Date: 10/28/2014

Com

Finish welding WH. Test void to 500 psi. Dress out WH.

Pre-job safety meeting with Man Welding nipple up crew. Discuss best practices, hazards and mitigation.

Nipple up 13 5/8 10M BOPE with rig crew and Man Welding N/U crew.

PJSM w/ Man Welding & Ensign for performing BOP test & R/U tester.

Test choke manifold 250 psi low 5000 psi, had to grease and work valves on choke manifold, test good.

Rig up on BOP and test annular 250 psi low 3500 psi high, test good.

Test top pipe rams, HCR, manual choke line valve, manifold master valve, kill line inner and outer valves, variable pipe rams and blind rams 250 psi low 5000 psi high, test good.

Test for 10 min low & 10 min high.

Report Start Date: 10/29/2014

Com

Continue testing BOPE, test to pump valves to 250 psi low, 4000 psi high. Test manual IBOP, TIW, & grey valve to 250 psi low & 5000 psi high. Tests for 10 min low & 10 min high. All test good.

R/D test equipment.

R/U turn buckles on BOPs

Held safety stand down w/ Ensign crews, Phoenix, Petro Safety, & Chevron to discuss Chevron safety policies and performance curve.

Note: Darrell Hammons & Don Stagner on location for safety stand down.

R/U turn buckles on BOPs, straighten stack to rotary floor, extensions & wheels to BOP rams, & flare line.

Install trip nipple.

Rig Service

L/O & strap 12-1/4" intermediate BHA.

Install wear bushing.

PJSM w/ Phoenix & rig crew prior to P/U directional BHA.

P/U & M/U Phoenix directional BHA

Report Start Date: 10/30/2014

Com

Continue P/U Phoenix directional BHA assembly & tag cement @ 290'.



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10-30-14
Circulate while testing MWD. Test good. Perform choke drill.

Com

Drill surface shoe track and 10' of new formation from 408' to 418' MD.

Circulate bottoms up. Perform FIT to 13.4 ppg; test good.

Drill 12-1/4" Intermediate hole section f/ 418' to 626'

AROP: 60
WOB: 12
TD RPM: 70
GPM: 425
SPP: 1000
MW: 10.05
pH: 10

Note:
Pump sweeps for hole cleaning as needed.

POOH f/ 114' & RIH with 6-1/2" DC to 620'.

Drill 12-1/4" Intermediate hole section f/ 626' to 1010'

AROP: 70
WOB: 15
TD RPM: 73
GPM: 610
SPP: 2700
MW: 10.05
pH: 10

Note:
Pump sweeps for hole cleaning as needed.

Install rotating head @ 1010'.

Drill 12-1/4" Intermediate hole section f/ 1010' to 1558'

AROP: 65
WOB: 30
TD RPM: 72
GPM: 675
SPP: 2750
MW: 10.05
pH: 10

Note:
Pump sweeps for hole cleaning as needed.

Report Start Date: 10/31/2014

Com

Drill 12-1/4" Intermediate hole section f/ 1,558' to 2,533'

AROP: 72
WOB: 25
TD RPM: 72
GPM: 675
SPP: 2750
MW: 10.2
pH: 10.5

Note:
Pump sweeps for hole cleaning as needed.

Slide f/ 2,533' to 2,548'



Summary Report

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Com

Drill 12-1/4" Intermediate hole section f/ 2,548' to 2,627'

AROP: 53
WOB: 30
TD RPM: 72
GPM: 675
SPP: 2750
MW: 10.2
pH: 10.5

Note:
Pump sweeps for hole cleaning as needed.

Circulate hole clean with sweep. Calculated 75 bbl washout (24%). Check for flow, no flow.

Remove rotating head & install trip nipple.

TOH w/ DP to BHA.

Notified Terry Wilson from BLM @ 20:45 about 9-5/8" csg run

L/D DCs, directional tools, & bit. Clean rig floor.

Report Start Date: 11/1/2014

Com

L/D DCs, directional tools, & bit. Clean rig floor.

Pull wear bushing.

PJSM w/ Franks casing crew & R/U casing running equipment.

Run 9-5/8" intermediate casing and set shoe @ 2620'

R/D Casing running equipment.

PJSM w/ Halliburton & R/U cement equipment.

Test lines to 3,000 psi and perform one stage cement job as follows:

20 bbls Fresh water (red dye)
214 bbls (725 sks) lead cement - ExtandaCem-C
66 bbls (275 sks) tail cement - HalCem-C
188 bbls displacement (Freshwater)

725
275
900 AM

92 bbls (311 sks) cement back to surface.

FCP 900 psi @ 3 bbl/min.

Bumped plug @ 1,516 psi.

Bled back 1 BBL.

Float Held.

R/D Halliburton & flush through BOPs.

L/O Landing joint, R/D casing bails & elevators, R/U rig bails & elevators.

Set & test pack-off to 500 psi for 10 min. Test good.

Install wear bushing.

L/O & Strap BHA, M/U 6-1.2" DC & rack back

WOC

Note:
Transfer fluid & prepare rig to drill out 8-3/4" vertical section.

Report Start Date: 11/2/2014

Com

Wait on cement for 18 hours per BLM.

Prepare to TIH with 8-3/4" vertical section BHA. Run motor & MWD thru rotary & test. While pulling slips from monel, 1 slip die missing. Presumed to be down hole.

Wait on fishing BHA to retrieve slip die.

L/O & strap fishing tools. RIH with Magnet BHA & tagged TOC @ 2,325' & washed down to 2,529'.

1- 7" Texas Pattern Magnet

2- 7" Junk Baskets

6-5/8" XO

15 Joints of 5" HWDP

66 Joints of 5" DP

Circulated @ 300 gpm to lift die. Shut pumps off to let die settling in junk basket.

TOH from 2,529' to surface with fishing BHA w/out die on magnet or in junk baskets. L/D fishing BHA.



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RUSTLER BLUFF 19-24-29 FED 003H	Rustler Bluffs Unit	PIERCE CROSSING	Mid-Continent
Ground Elevation (ft)	Original RKB (ft)	Current RKB Elevation	Mud Line Elevation (ft)
2,918.00	2,949.00	2,949.00, 10/20/2014	Water Depth (ft)

Com

Rig service.

Report Start Date: 11/3/2014

Com

M/U vertical production BHA & TIH ∇ 2,529'

Remove trip nipple & install rotating head.

Circulate through choke & test 9-5/8" casing to 1500 psi for 30 min. Test good.

Perform choke drill.

Drill shoe track ∇ 2,529' to 2,637'

Perform FIT @ EMW 13.4 ppg, hold @ 600 psi, & test MWD.

Drill ∇ 2,637' to 2,904'

AROP: 90
WOB: 15-20
TD RPM: 70
GPM: 450
SPP: 1850
MW: 9.05
pH: 12

Note:

Pump sweeps for hole cleaning as needed.

Slide ∇ 2,904' to 2,920'

Drill ∇ 2,904' to 3,067'

AROP: 90
WOB: 15-20
TD RPM: 70
GPM: 450
SPP: 1850
MW: 9.05
pH: 12

Note:

Pump sweeps for hole cleaning as needed.

TOH 5 stands ∇ 3,067' to the 9-5/8" shoe @ 2,637' due for repairs on pump #2.

Circulated w/ pump #2 online & blew the pop off. Re-built pop off, circulated & blew the pop off a second time. Re-built pop off again & both pumps back online.

TIH to 3,067'

Drill ∇ 3,067' to 3,269'

AROP: 57
WOB: 15-20
TD RPM: 70
GPM: 450
SPP: 2300
MW: 9.05
pH: 12

Note:

Pump sweeps for hole cleaning as needed.

Pump #1 down, drilling w/ pump #2.

Repair electrical issues w/ Totco.

Report Start Date: 11/4/2014

Com

Drill 8 3/4" Production hole section from 3,269' to 3,282' MD.

Note: MWD Tool failure; attempt to troubleshoot while drilling ahead.

Circulate sweep. Continue to troubleshoot MWD. Perform Flow check; well static.

TOH from 3,282' to 2,827' MD.

Perform flow check; well flowing at 2 bbl/hr.

TIH from 2,827' to 3,282' MD.

Circulate well, build 10.1ppg pill. Pump 60 bbl on 10.1ppg pill. Flow check; well flowing. Spot 40 bbl of 10.1 ppg pill on back side. Perform Flow check; well static. Install trip nipple, monitor well, fill trip tank with 10 ppg mud.

TOH from 3,282' pull 5 stands; monitor flow; well static. TOH every 5 stands and monitor well to surface.



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Com

C/O MWD and Motor due to MWD being washed out. Scribe nw mortor and instal MWD; Test same. Make up Bit.

TIH with new MWD and Vertical BHA from surface to 1,006' MD.

Remove trip nipple; install rotating head.

TIH with Vertical drill string from 1,006' to 3,062' MD.

Relog from 3,062' to 3,282' MD.

Drill 8 3/4" Production hole section from 3,282' to 3,379' MD.

Rotate from 3,379' to 3,389' MD.

Drill 8 3/4" Production hole section from 3,389' to 3,737' MD.

AROP = 99 ft/hr; RPM = 71; WOB = 18; GPM = 450 GPM; SPP = 2,100 psi; Diff Press = 250; Motor RPM = 130

Report Start Date: 11/5/2014

Com

Drill from 3,737' to 3,950' MD.

Slide from 3,950' to 3,960' MD.

Drill 8 3/4" Production hole section from 3,960' to 5,279' MD.

AROP = 106 ft/hr; RPM = 70; WOB = 20; GPM = 450 GPM; SPP = 1,800 psi; Diff Press = 450; Motor RPM = 130

Perform rig service as per Ensign specifications.

Drill from 5,279' to 5,468' MD.

Slide from 5,468' to 5,478' MD.

Drill from 5,478' to 5,695' MD.

Report Start Date: 11/6/2014

Com

Drill 8 3/4" Production hole section from 5,695' to 6,890' MD.

AROP = 68 ft/hr; RPM = 70; WOB = 28; GPM = 550 GPM; SPP = 2,200 psi; Diff Press = 450; Motor RPM = 157

Perform rig service as per Ensign specifications.

Drill 8 3/4" Production hole section from 6,890' to 7,176' MD.

AROP = 64 ft/hr; RPM = 72; WOB = 18; GPM = 543 GPM; SPP = 2,500 psi; Diff Press = 350; Motor RPM = 156

Slide from 7,176' to 7,186' MD.

Drill from 7,186' to 7,224' MD

Report Start Date: 11/7/2014

Com

Drill from 7,224' to 7,367' MD.

Slide from 7,367' to 7,376' MD.

Drill 8 3/4" Production hole section from 7,376' to 7,797' MD.

AROP = 44 ft/hr; RPM = 69; WOB = 15; GPM = 502 GPM; SPP = 2,200 psi; Diff Press = 150; Motor RPM = 144

Tag bottom; no pressure change. Test Motor, Motor failure. Prep to TOOH wet.

Perform Flow Check; Well Flowing.

Shut in Hydrill, csg pressure increase to 90 psi.

Bleed off pressure and open Hydrill. Circulate bottoms up. Transfer 10 ppg fluid to slug pit and #2 Trip tank. Pump 160 bbl of 10# mud from surface to 3,200' MD.

Perform Flow Check; well static.

TOH with 8 3/4" Vertical Production BHA from 7,797' to 7,366' MD.

Monitor well on Trip Tank.

TOH with 8 3/4" Vertical Production BHA from 7,336' to 6,890' MD.

Monitor well on Trip Tank. Shut in well. No Pressure.

Circulate at 6,890' MD while building 12 ppg pill in slugging pit.

Report Start Date: 11/8/2014

Com

Build 100 bbl 12 ppg pill, spot same. Perform Flow check; well static.

TOH with 8 3/4" Vertical Production BHA from 6,890' to 1,003' MD.

Remove rotating head. Install trip nipple. Flow check; well flowing 2 bbl/hr.

Pump 70 bbl of 10 ppg. Flow check; well static.

Perform rig service as per Ensign specifications.

TOH from 1,003' MD, L/D 6.5" DC's.

L/D Vertical Production BHA.



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Com

Clean and clear rig floor. Prep to run Curve assembly.

P/U and M/U 8 3/4" Curve Assembly. Install MWD, test same, test good. M/U Bit.

Bit: MMD55DM 8 3/4" 5x14's

Motor: 6 1/2 7/8 5.0 @ 2.38 0.288 rev/gal

TIH with 8 3/4" Curve Assembly from surface to 3,000' MD.

Circulate B/U at 3,000' MD.

TIH from 3,000' to 5,853' MD.

Circulate B/U at 5,853'. Catch 50 bbls 12 # ppg mud in trip tank.

TIH from 5,853' to 7,751' MD.

Report Start Date: 11/9/2014

Com

Circulate bottoms up at 7,751' MD. Catch 12 ppg pill in trip tank.

Drill 8 3/4" vertical Production hole section from 7,797' to 7,900' MD.

Build 8 3/4" curve. Slide from 7,900' to 8,391' MD.

Build and Circulate sweep. Build 120 bbls of 12 ppg.

Perform rig service as per Ensign specifications.

Spot 12 ppg pill on surface.

Report Start Date: 11/10/2014

Com

Spot 12 ppg pill at surface.

Flow Check; Well static. Fill trip tank with 10.1 ppg.

TOOH from 8,391' to 7,468' MD.

Fill hole and monitor well; lost returns. Regain static well.

TOOH with 8 3/4" curve assembly.

Check MWD Tools. L/D 8 3/4" curve assembly.

Clean and Clear rig floor.

Pull Wear Bushing.

Perform rig service as per Ensign specifications.

R/U 2 7/8" tubing tools.

Wait on 2 7/8" Tubing; strap same Monitor Well.

PJSM over picking up and handling Tubing.

TIH with 507' of 2 7/8" Tubing.

P/U Whipstock and UBHO, Orientate same, pump through Whipstock.

TIH with whipstock and Drill string to 975' MD.

Report Start Date: 11/11/2014

Com

TIH with Drill string and Whipstock to 8,134' MD. Top joint of Whipstock at 7,600' MD.

Wait on Wireline. Monitor Well.

Hold PJSM with Scientific Wireline; R/U same.

Orientate Whipstock to 24.4 degrees with wireline.

Drop ball to set Whipstock anchor. R/D wireline.

Set Whipstock at 7,600' MD. Shear sick at 4,200 psi.

Let 2nd ball drop, Shear off Whipstock with 2,300 psi.

Wait on Cement. Clean rig.

Circulate BU on Choke at 8,391' MD. Monitor well on trip tank.

Hold PJSM with Halliburton Cementers; Rig up same.

Cement Whipstock and 2 7/8" Tubing from 8,134' to 7,600' MD.

R/D Halliburton Cementers.

TOH 10 stands.

Drop foam ball to clean pipe. Circulate B/U.

Monitor well and check flow.

Report Start Date: 11/12/2014

Com

TOH with 5" Drill String from 7,192' MD to Whipstock Assembly.

Pull trip nipple. Install wear bushing.



Summary Report

Drill
Drill and Suspend
Job Start Date: 10/17/2014
Job End Date: 11/26/2014

Well Name RUSTLER BLUFF 19-24-29 FED 003H		Lease Rustler Bluffs Unit	Field Name PIERCE CROSSING	Business Unit Mid-Continent	
Ground Elevation (ft) 2,918.00	Original RKB (ft) 2,949.00	Current RKB Elevation 2,949.00, 10/20/2014		Mud Line Elevation (ft)	Water Depth (ft)

Com

PJSM with Phoenix on handling BHA. P/U and M/U Curve Assembly.

Bit: 8 3/4" MDSi613 JH5908.

Motor: 6 1/2 7/8 5.0 @2.38 0.288rev/gal

TIH with curve assembly and tag cement at 7,270' MD.

Drill 8 3/4" cement from 7,270' to 7,525' MD.

Drill 8 3/4" hole section from 7,525' to 7,555' MD.

Report Start Date: 11/13/2014

Com

Sidetrack 8 3/4" hole section from 7,555' to 7,557' MD.

Troubleshoot Totco hookload and WOB. Erratic readings causing autodriller malfunction.

Sidetrack 8 3/4" hole section from 7,557' to 7,595' MD. 100% formation reading from cuttings sample.

Drill 8 3/4" curve section from 7,595' to 8,001' MD.

Report Start Date: 11/14/2014

Com

Drill 8 3/4" curve section from 8,001' to 8,040' MD.

Repair Mud Pump #1.

Drill 8 3/4" curve section from 8,001' to 8,190' MD.

Report Start Date: 11/15/2014

Com

Drill 8 3/4" curve section from 8,190' to 8,391' MD.

Drill 8 3/4" curve section from 8,391' to 8,415' MD.

Service rig as per Ensign specifications.

Drill 8 3/4" curve section from 8,415' to 8,561' MD.

Report Start Date: 11/16/2014

Com

Drill 8 3/4" curve section from 8,561' to 8,736' MD.

Circulate hole clean. Flow Check; well static. Pump slug.

TOOH from 8,375' to curve assembly.

L/D 8 3/4" Curve assembly.

Monitor well for flow before testing BOPE. Pull trip nipple and wear bushing. Clean and prepare floor. Set test plug.

Test BOPE.

Report Start Date: 11/17/2014

Com

Rig up on BOP and test annular 250 psi low 3500 psi high, test not good. Pull and inspect plug. M/U Man Welding test plug and RIH with same. Test lower pipe rams 250 psi low 5000 psi high, test good. Attempt to test variable pipe rams and blind rams, HCR, manual choke line valve, manifold master valve 250 psi low 5000 psi high, test no good. All bleed off pressures were 200-300 psi on high test, possibly from 18° air temp.

Test to pump valves to 250 psi low, 4000 psi high. Test manual IBOP to 250 psi low & 5000 psi high. Tests good

Rig up on BOP and retest variable pipe rams, blind rams, annular, manual choke line valve, manifold master valve 250 psi low 5000 psi high. Tests for 10 min low & 10 min high. All test good.

Test choke manifold 250 psi low 5000 psi, test good. Test HCR, manual choke line valve, manifold master valve, kill line inner and outer valves. 250 psi low 5000 psi high. Test for 10 min low & 10 min high. All tests good except for HCR (manual & hydraulic) and kill line.

Work both HCR valves and kill line several times to attempt to clean out. Retest HCR, manual choke valve, and kill line to 250 psi low 5000 psi high, test good. Test for 10 min low & 10 min high.

Swap hoses on accumulator for kill line and HCR (accumulator valves leaking) and test accumulator. All tests good.

Report Start Date: 11/18/2014

Com

R/D Test equipment.

Pump brine through choke manifold to prevent freezing.

Repair IR die blocks. Replace bent pins, damaged bottom plates, and dies

Install wear bushing.

Hold pre-job safety meeting with Phoenix Directional before P/U lateral assembly.

P/U lateral assembly. CVX Rep witness for scribe. SPT good - 560 psi @ 420 gpm. M/U bit #6.

P/U 21 jts of 5" DP to replace HWD.

TIH T/2,948' MD & install rotating head.

Finish TIH T/8,736' MD

Circulate bottoms up. Max - 450 units of gas.

Rotate and slide for planned left turn F/8,736 MD - T/9,058' MD

Report Start Date: 11/19/2014



Summary Report

Drill
Drill and Suspend
Job Start Date: 10/17/2014
Job End Date: 11/26/2014

Well Name RUSTLER BLUFF 19-24-29 FED 003H	Lease Rustler Bluffs Unit	Field Name PIERCE CROSSING	Business Unit Mid-Continent
Ground Elevation (ft) 2,918.00	Original RKB (ft) 2,949.00	Current RKB Elevation 2,949.00, 10/20/2014	Mud Line Elevation (ft) Water Depth (ft)

Com

Drill and slide to 9,275' MD.

P/U and take a checkshot to determine accurate motor yield.

Rotate & Slide f/ 9,275' to 9,925' @ 60L TF.

Note:

Pumped 15 bbl high vis sweeps w/ LubraBeads in active.

Rotate & Slide f/ 9,925' to 10,060' @ HS TF.

Note:

Pumped 15 bbl high vis sweeps w/ LubraBeads in active.

Prepare necessary work permit and LOTO. Review pre-job JSA.

Replace swab on #1 Mud Pump.

Reciprocate pipe w/80 RPM for hole cleaning.

Rotate & Slide f/10,060' to 10,184' MD holding 91-91° inc. & 357-358° azim.

Report Start Date: 11/20/2014

Com

Rotate & Slide f/10,184' to 12,081' MD holding 91° inc. & 359° azim.

Added 40 bbls of Slick- 555 G to mud system.

Report Start Date: 11/21/2014

Com

Rotate & Slide f/12,081' to 13,012' MD holding 91° inc. & 359° azim.

Top Drive service due to smoking/overheating.

Rotate to TD f/13,012' - 1/13,058'.

Circulate and sweep hole while rotating and working work string. Spot 170 bbl lube/bead pill.

Shut down and check flow - well static. Build and pump slug.

TOH 1/11,870' MD. Pulled off bottom with no excessive drag.

Report Start Date: 11/22/2014.

Com

TOH 1/11,870' MD to 8850' stand back lateral in derrick.

Shut down for Rig maintenance

POOH standing back in derrick from 8850' to 7503'

POOH laying down drill string from 7503'

NOTE: Having problems with tong dies

Lay out BHA and Bit

TIH with work string from derrick to 2660'

L/D 5" DP 1/2,053' MD.

NOTE: Multiple issues with IR dies and tong dies. Decision made to rack back pipe and run 5-1/2" Prod. Casing

TOH with 21 stands of DP.

L/D bit sub and bit.

Report Start Date: 11/23/2014

Com

Pull wear bushing and clear floor.

PJSM & JSA Review w/ Frank's Casing crew & R/U 5-1/2" casing running equipment. R/U casing equipment and inspect same.



Summary Report

Drill
Drill and Suspend
Job Start Date: 10/17/2014
Job End Date: 11/26/2014

Well Name	Lease	Field Name	Business Unit
RUSTLER BLUFF 19-24-29 FED 003H	Rustler Bluffs Unit	PIERCE CROSSING	Mid-Continent
Ground Elevation (ft)	Original RKB (ft)	Current RKB Elevation	Mud Line Elevation (ft)
2,918.00	2,949.00	2,949.00, 10/20/2014	Water Depth (ft)

Com

Run 5-1/2" production casing to 9,600'. Had to stop & circulate due to catwalk malfunctioning.

Casing string as followed:

Float shoe
2 - casing joints
Float collar
Casing joint
Landing collar
Pup
Casing joint
Pup
RSI tool
Pup
134 - casing joint
Marker joint
183 - casing joint
Landing joint

Notified Jim Hughes on 11/22 @ 1430 of casing run.

JSA & Permit reviews before repairing catwalk.

Perform repairs on catwalk.

Run 5-1/2" production casing f/9,600' - t/10,840'.

Report Start Date: 11/24/2014

Com

Run 5-1/2" production casing f/10,840' to 13,043'.
PU two jts and tagged bottom.
PU landing jt and landed casing.

R/D CRT & casing tools

Circulate through cement head.

PJSM & JSA Review w/ Halliburton before R/U.

Test lines and cemented 5-1/2" production casing. Held 500 psi over. Floats held.

R/D Halliburton Cement.

Install pack off and test.

Install BPV.

Nipple down BOP, Lay over stack with wrangler, R/D casing bells & elevators.

Report Start Date: 11/25/2014

Com

N/D BOPE and L/D Stack

Install and test well head to 5K, finish washing mud tanks.

Lay down 6000' of 5" drill pipe from derrick, hauling drilling fluids to disposal, moving frac tanks to new location. Release Rig @ 0000 hours.



Casing Summary

Well Name RUSTLER BLUFF 19-24-29 FED 003H		Lease Rustler Bluffs Unit		Field Name PIERCE CROSSING		Business Unit Mid-Continent	
Ground Elevation (ft) 2,918.00	Original RKB (ft) 2,949.00	Current RKB Elevation 2,949.00, 10/20/2014				Mud Line Elevation (ft)	Water Depth (ft)

Conductor, Planned?-N, 120ftKB

Set Depth (MD) (ftKB) 120		Set Tension (kips)		String Nominal OD (in) 20		String Min Drift (in)		Centralizers 4		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	Conductor	20	19.124				31	120	89.00	2,250.0	

Surface, Planned?-N, 393ftKB

Set Depth (MD) (ftKB) 393		Set Tension (kips)		String Nominal OD (in) 13 3/8		String Min Drift (in) 12.563		Centralizers 5		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)
7	Casing Joint	13 3/8	12.715	48.00	H-40		31	302	270.79	1,730.0	740.0
1	Float Collar	13 3/8	12.715	48.00	H-40		302	303	1.38	1,730.0	740.0
2	Casing Joint	13 3/8	12.715	48.00	H-40		303	391	88.31	1,730.0	740.0
1	Float Shoe	13 3/8	12.715	48.00	H-40		391	393	1.53	1,730.0	740.0

Intermediate Casing 1, Planned?-N, 2,617ftKB

Set Depth (MD) (ftKB) 2,617		Set Tension (kips)		String Nominal OD (in) 9 5/8		String Min Drift (in) 8.688		Centralizers 22		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	Landing Joint	9 5/8	8.844	40.00	K-55		31	31	0.00		
1	Pup Joint	9 5/8	8.844	40.00	K-55		31	36	4.96		
63	Casing Joint	9 5/8	8.844	40.00	K-55		36	2,533	2,496.92		
1	Float Collar	9 5/8	8.844				2,533	2,534	1.21		
2	Casing Joint	9 5/8	8.844	40.00	K-55		2,534	2,615	81.53	3,950.0	2,570.0
1	Float Shoe	9 5/8	8.844				2,615	2,617	1.63		

Production Casing, Planned?-N, 13,042ftKB

Set Depth (MD) (ftKB) 13,042		Set Tension (kips)		String Nominal OD (in) 5 1/2		String Min Drift (in) 4.781		Centralizers 105		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 Joint	5 1/2	4.892	17.00	P-110		31	31	0.00	10,640.0	8,580.0
0	Landing Joint	5 1/2	4.892	17.00	P-110		31	31	0.00	10,640.0	8,580.0
1	Pup	5 1/2	4.892	17.00	P-110		31	36	4.98	10,640.0	8,580.0
18	Casing Joint	5 1/2	4.892	17.00	P-110		36	7,380	7,344.31	10,640.0	8,580.0
2	Marker Joint	5 1/2	4.892	17.00	P-110		7,380	7,390	10.04	10,640.0	8,580.0
13	Casing Joint	5 1/2	4.892	17.00	P-110		7,390	12,856	5,466.02	10,640.0	8,580.0
6											
1	RSI	5 1/2	4.892	17.00	P-110		12,856	12,862	5.55	10,640.0	8,580.0
1	Pup	5 1/2	4.892	17.00	P-110		12,862	12,868	6.10	10,640.0	8,580.0
1	Casing Joint	5 1/2	4.892	17.00	P-110		12,868	12,909	41.00	10,640.0	8,580.0
1	Pup	5 1/2	4.892	17.00	P-110		12,909	12,915	5.83	10,640.0	8,580.0
1	Landing collar	5 1/2	4.892	17.00	P-110		12,915	12,916	1.48	10,640.0	8,580.0
1	Casing Joint	5 1/2	4.892	17.00	P-110		12,916	12,957	40.93	10,640.0	8,580.0
1	Float Collar	5 1/2	4.892	17.00	P-110		12,957	12,959	2.00	10,640.0	8,580.0
2	Casing Joint	5 1/2	4.892	17.00	P-110		12,959	13,040	80.99	10,640.0	8,580.0
1	Float Shoe	5 1/2	4.892	17.00	P-110		13,040	13,042	1.78	10,640.0	8,580.0



Cement Summary

Cement Plug

Well Name RUSTLER BLUFF 19-24-29 FED 003H	Lease Rustler Bluffs Unit	Field Name PIERCE CROSSING	Business Unit Mid-Continent
Ground Elevation (ft) 2,918.00	Original RKB (ft) 2,949.00	Current RKB Elevation 2,949.00, 10/20/2014	Mud Line Elevation (ft) Water Depth (ft)

Original Hole

Wellbore Name Original Hole	Directional Type Horizontal	Kick Off Depth (ftKB) 7,525	Vertical Section Direction (") 179.80
Hole Size (in)	Act Top (ftKB)	Act Btm (ftKB)	
20	31.0	120.0	
17 1/2	120.0	408.0	
12 1/4	408.0	2,627.0	
8 3/4	2,627.0	8,391.0	
8 3/4	7,270.0	8,736.0	

Sidetrack 1

Wellbore Name Sidetrack 1	Directional Type Horizontal	Kick Off Depth (ftKB) 7,557	Vertical Section Direction (") 359.38
Hole Size (in)	Act Top (ftKB)	Act Btm (ftKB)	
8 3/4	7,557.0	13,058.0	

<typ>, <make> on <dtmstart>

Type	Install Date				
Des	Make	Model	WP (psi)	Service	SN

Conductor, Planned?-N, 120ftKB

Casing Description Conductor	Wellbore Original Hole	Run Date 10/13/2014	Set Depth (MD) (ftKB) 120	Stick Up (ftKB) -31.0	Set Tension (kips)					
Centralizers 4			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	Conductor	20	19.124					89.00	31	120

Surface, Planned?-N, 393ftKB

Casing Description Surface		Wellbore Original Hole		Run Date 10/26/2014		Set Depth (MD) (ftKB) 393		Stick Up (ftKB) -31.0		Set Tension (kips)	
Centralizers 5						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)	
7	Casing Joint	13 3/8	12.715	48.00	H-40			270.79	31	302	
1	Float Collar	13 3/8	12.715	48.00	H-40			1.38	302	303	
2	Casing Joint	13 3/8	12.715	48.00	H-40			88.31	303	391	
1	Float Shoe	13 3/8	12.715	48.00	H-40			1.53	391	393	

Intermediate Casing 1, Planned?-N, 2,617ftKB

Casing Description Intermediate Casing 1		Wellbore Original Hole		Run Date 11/1/2014		Set Depth (MD) (ftKB) 2,617		Stick Up (ftKB) -30.8		Set Tension (kips)	
Centralizers 22						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	Landing Joint	9 5/8	8.844	40.00	K-55			0.00	31	31	
1	Pup Joint	9 5/8	8.844	40.00	K-55			4.96	31	36	
63	Casing Joint	9 5/8	8.844	40.00	K-55			2,496.92	36	2,533	
1	Float Collar	9 5/8	8.844					1.21	2,533	2,534	
2	Casing Joint	9 5/8	8.844	40.00	K-55			81.53	2,534	2,615	
1	Float Shoe	9 5/8	8.844					1.63	2,615	2,617	

Production Casing, Planned?-N, 13,042ftKB

Casing Description		Wellbore		Run Date		Set Depth (MD) (ftKB)		Stick Up (ftKB)		Set Tension (kips)	
Production Casing		Sidetrack 1		11/22/2014		13,042		-31.0			
Centralizers						Scratchers					
105											
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 Joint	5 1/2	4.892	17.00	P-110			0.00	31	31	
0	Landing Joint	5 1/2	4.892	17.00	P-110			0.00	31	31	
1	Pup	5 1/2	4.892	17.00	P-110			4.98	31	36	
182	Casing Joint	5 1/2	4.892	17.00	P-110			7,344.31	36	7,380	
1	Marker Joint	5 1/2	4.892	17.00	P-110			10.04	7,380	7,390	
136	Casing Joint	5 1/2	4.892	17.00	P-110			5,466.02	7,390	12,856	
1	RSI	5 1/2	4.892	17.00	P-110			5.55	12,856	12,862	



Cement Summary

Cement Plug

Well Name RUSTLER BLUFF 19-24-29 FED 003H	Lease Rustler Bluffs Unit	Field Name PIERCE CROSSING	Business Unit Mid-Continent
Ground Elevation (ft) 2,918.00	Original RKB (ft) 2,949.00	Current RKB Elevation 2,949.00, 10/20/2014	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)	Btm Depth (MD) (ftKB)
1	Pup	5 1/2	4.892	17.00	P-110			6.10	12,862	12,868
1	Casing Joint	5 1/2	4.892	17.00	P-110			41.00	12,868	12,909
1	Pup	5 1/2	4.892	17.00	P-110			5.83	12,909	12,915
1	Landing collar	5 1/2	4.892	17.00	P-110			1.48	12,915	12,916
1	Casing Joint	5 1/2	4.892	17.00	P-110			40.93	12,916	12,957
1	Float Collar	5 1/2	4.892	17.00	P-110			2.00	12,957	12,959
2	Casing Joint	5 1/2	4.892	17.00	P-110			80.99	12,959	13,040
1	Float Shoe	5 1/2	4.892	17.00	P-110			1.78	13,040	13,042

Cement Plug, Plug, 11/11/2014 20:00

Cementing Start Date 11/11/2014	Cementing End Date 11/11/2014	Wellbore Original Hole
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Evaluation Method 	Cement Evaluation Results
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Comment
Pump 320 saks of Plugcem (TM) System. Mix with FW @ 8.33 ppg.

1, 7,600.0-8,134.0ftKB

Top Depth (ftKB) 7,600.0	Bottom Depth (ftKB) 8,134.0	Full Return? N	Vol Cement Ret (bbl) 0.0	Top Plug? N	Bottom Plug? N
Initial Pump Rate (bbl/min) 4	Final Pump Rate (bbl/min) 2	Avg Pump Rate (bbl/min) 4	Final Pump Pressure (psi) 	Plug Pump Pressure (psi) 	
Pipe Reciprocated? N	Reciprocation Stroke Length (ft) 	Reciprocation Rate (spm) 	Pipe Rotated? N	Pipe RPM (rpm) 	
Depth Tagged (MD) (ftKB) 7,550	Tag Method Drill Bit	Depth Plug Drilled Out To (ftKB) 	Drill Out Diameter (in) 	Drill Out Date 	

Fluid Type Spacer	Fluid Description Tuned Spacer III	Quantity (sacks) 	Class 	Volume Pumped (bbl) 18.5
Estimated Top (ftKB) 	Estimated Bottom Depth (ftKB) 	Percent Excess Pumped (%) 	Yield (ft ³ /sack) 	Fluid Mix Ratio (gal/sack)
Free Water (%) 	Density (lb/gal) 12.00	Zero Gel Time (min) 	Thickening Time (hr) 	1st Compressive Strength (psi)

Add 	Type 	Conc
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Fluid Type Lead	Fluid Description PlugCem - H; PLUGCEM (TM) System	Quantity (sacks) 320	Class H	Volume Pumped (bbl) 55.0
Estimated Top (ftKB) 	Estimated Bottom Depth (ftKB) 	Percent Excess Pumped (%) 	Yield (ft ³ /sack) 0.95	Fluid Mix Ratio (gal/sack)
Free Water (%) 	Density (lb/gal) 17.50	Zero Gel Time (min) 	Thickening Time (hr) 	1st Compressive Strength (psi)

Add 	Type 	Conc
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Fluid Type Spacer	Fluid Description Tuned Spacer III	Quantity (sacks) 	Class 	Volume Pumped (bbl) 6.5
Estimated Top (ftKB) 	Estimated Bottom Depth (ftKB) 	Percent Excess Pumped (%) 	Yield (ft ³ /sack) 	Fluid Mix Ratio (gal/sack)
Free Water (%) 	Density (lb/gal) 12.00	Zero Gel Time (min) 	Thickening Time (hr) 	1st Compressive Strength (psi)

Add 	Type 	Conc
----------------	-----------------	-----------------

Fluid Type Displacement	Fluid Description Fresh Water	Quantity (sacks) 	Class 	Volume Pumped (bbl) 124.0
Estimated Top (ftKB) 	Estimated Bottom Depth (ftKB) 	Percent Excess Pumped (%) 	Yield (ft ³ /sack) 	Fluid Mix Ratio (gal/sack)
Free Water (%) 	Density (lb/gal) 8.33	Zero Gel Time (min) 	Thickening Time (hr) 	1st Compressive Strength (psi)

Add 	Type 	Conc
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Cement Summary

Surface Casing Cement

Well Name RUSTLER BLUFF 19-24-29 FED 003H	Lease Rustler Bluffs Unit	Field Name PIERCE CROSSING	Business Unit Mid-Continent
Ground Elevation (ft) 2,918.00	Original RKB (ft) 2,949.00	Current RKB Elevation 2,949.00, 10/20/2014	Mud Line Elevation (ft) Water Depth (ft)

Original Hole

Wellbore Name Original Hole	Directional Type Horizontal	Kick Off Depth (ftKB) 7,525	Vertical Section Direction (°) 179.80
Hole Size (in)	Act Top (ftKB)	Act Btm (ftKB)	
20	31.0	120.0	
17 1/2	120.0	408.0	
12 1/4	408.0	2,627.0	
8 3/4	2,627.0	8,391.0	
8 3/4	7,270.0	8,736.0	

Sidetrack 1

Wellbore Name Sidetrack 1	Directional Type Horizontal	Kick Off Depth (ftKB) 7,557	Vertical Section Direction (°) 359.38
Hole Size (in)	Act Top (ftKB)	Act Btm (ftKB)	
8 3/4	7,557.0	13,058.0	

<typ>, <make> on <dtmstart>

Type	Install Date				
Des	Make	Model	WP (psi)	Service	SN

Conductor, Planned? -N, 120ftKB

Casing Description Conductor		Wellbore Original Hole		Run Date 10/13/2014		Set Depth (MD) (ftKB) 120		Stick Up (ftKB) -31.0		Set Tension (kips)	
Centralizers 4						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	Conductor	20	19.124					89.00	31	120	

Surface, Planned? -N, 393ftKB

Casing Description		Wellbore		Run Date		Set Depth (MD) (ftKB)		Stick Up (ftKB)		Set Tension (kips)	
Surface		Original Hole		10/26/2014		393		-31.0			
Centralizers						Scratchers					
5											
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)	
7	Casing Joint	13 3/8	12.715	48.00	H-40			270.79	31	302	
1	Float Collar	13 3/8	12.715	48.00	H-40			1.38	302	303	
2	Casing Joint	13 3/8	12.715	48.00	H-40			88.31	303	391	
1	Float Shoe	13 3/8	12.715	48.00	H-40			1.53	391	393	

Intermediate Casing 1, Planned? -N, 2,617ftKB

Casing Description Intermediate Casing 1		Wellbore Original Hole		Run Date 11/1/2014		Set Depth (MD) (ftKB) 2,617		Stick Up (ftKB) -30.8		Set Tension (kips)	
Centralizers 22						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	Landing Joint	9 5/8	8.844	40.00	K-55			0.00	31	31	
1	Pup Joint	9 5/8	8.844	40.00	K-55			4.96	31	36	
63	Casing Joint	9 5/8	8.844	40.00	K-55			2,496.92	36	2,533	
1	Float Collar	9 5/8	8.844					1.21	2,533	2,534	
2	Casing Joint	9 5/8	8.844	40.00	K-55			81.53	2,534	2,615	
1	Float Shoe	9 5/8	8.844					1.63	2,615	2,617	

Production Casing, Planned? -N, 13,042ftKB

Casing Description	Wellbore	Run Date	Set Depth (MD) (ftKB)	Stick Up (ftKB)	Set Tension (kips)					
Production Casing	Sidetrack 1	11/22/2014	13,042	-31.0						
Centralizers	Scratchers									
105										
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 Joint	5 1/2	4.892	17.00	P-110			0.00	31	31
0	Landing Joint	5 1/2	4.892	17.00	P-110			0.00	31	31
1	Pup	5 1/2	4.892	17.00	P-110			4.98	31	36
182	Casing Joint	5 1/2	4.892	17.00	P-110			7,344.31	36	7,380
1	Marker Joint	5 1/2	4.892	17.00	P-110			10.04	7,380	7,390
136	Casing Joint	5 1/2	4.892	17.00	P-110			5,466.02	7,390	12,856
1	RSI	5 1/2	4.892	17.00	P-110			5.55	12,856	12,862



Cement Summary

Surface Casing Cement

Well Name RUSTLER BLUFF 19-24-29 FED 003H		Lease Rustler Bluffs Unit		Field Name PIERCE CROSSING		Business Unit Mid-Continent	
Ground Elevation (ft) 2,918.00	Original RKB (ft) 2,949.00	Current RKB Elevation 2,949.00, 10/20/2014				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)	Btm Depth (MD) (ftKB)
1	Pup	5 1/2	4.892	17.00	P-110			6.10	12,862	12,868
1	Casing Joint	5 1/2	4.892	17.00	P-110			41.00	12,868	12,909
1	Pup	5 1/2	4.892	17.00	P-110			5.83	12,909	12,915
1	Landing collar	5 1/2	4.892	17.00	P-110			1.48	12,915	12,916
1	Casing Joint	5 1/2	4.892	17.00	P-110			40.93	12,916	12,957
1	Float Collar	5 1/2	4.892	17.00	P-110			2.00	12,957	12,959
2	Casing Joint	5 1/2	4.892	17.00	P-110			80.99	12,959	13,040
1	Float Shoe	5 1/2	4.892	17.00	P-110			1.78	13,040	13,042

Surface Casing Cement, Casing, 10/27/2014 02:57

Cementing Start Date 10/27/2014		Cementing End Date 10/27/2014		Wellbore Original Hole	
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Evaluation Method Temperature Log	Cement Evaluation Results No cement to surface, 10 bbls of spacer w/ red dye to surface.
---	--

Comment
Pump 460 sacks of Premium plus C cement w/ 2% CaCl₂. Mix w/ FW @ 8.4 ppg.

Pump Cement as Follows:

- 1) Pressure test lines to 2000 psi
- 2) Pump 20 bbls fresh water spacer w/ red dye
- 3) Pump 460 sacks of Premium Class C w/ 2% CaCl at 14.8 ppg 1.36 yield 8.4 ppg FW mix
- 4) Drop top plug and displace cmt w/ 53 bbls of FW at 8.33 ppg
- 5) Bump plug with 500 psi over final circulating pressure
- 6) Bleed off pressure - Floats held, had xx bbl bleed back
- 7) Final circulating pressure prior to bumping plug xxx psi at 2.5 bpm

**Note: Pumped xx bbls (xx sacks) of cement to surface

Properties are:

Slurry Yield - 1.36 ft³/sk
Slurry Density - 14.8 ppg
Water Requirement - 6.57 gal/sack

1, 190.0-408.0ftKB					
Top Depth (ftKB) 190.0	Bottom Depth (ftKB) 408.0	Full Return? N	Vol Cement Ret (bbl) N	Top Plug? N	Bottom Plug? Y
Initial Pump Rate (bbl/min) 4	Final Pump Rate (bbl/min) 2	Avg Pump Rate (bbl/min) 3	Final Pump Pressure (psi) 610.0	Plug Bump Pressure (psi) 610.0	
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	

Lead					
Fluid Type Lead	Fluid Description 167 sacks of premium plus with 2% calcium chloride @ 14.8 ppg	Quantity (sacks) 460	Class C	Volume Pumped (bbl) 111.0	
Estimated Top (ftKB) 0.0	Estimated Bottom Depth (ftKB) 190.0	Percent Excess Pumped (%)	Yield (ft ³ /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)	

Cement Fluid Additives		
Add	Type	Conc



Cement Summary

Intermediate Casing Cement

Well Name RUSTLER BLUFF 19-24-29 FED 003H	Lease Rustler Bluffs Unit	Field Name PIERCE CROSSING	Business Unit Mid-Continent
Ground Elevation (ft) 2,918.00	Original RKB (ft) 2,949.00	Current RKB Elevation 2,949.00, 10/20/2014	Mud Line Elevation (ft) Water Depth (ft)

Original Hole

Wellbore Name Original Hole	Directional Type Horizontal	Kick Off Depth (ftKB) 7,525	Vertical Section Direction (°) 179.80
Hole Size (in)	Act Top (ftKB)	Act Blm (ftKB)	
20	31.0	120.0	
17 1/2	120.0	408.0	
12 1/4	408.0	2,627.0	
8 3/4	2,627.0	8,391.0	
8 3/4	7,270.0	8,736.0	

Sidetrack 1

Wellbore Name Sidetrack 1	Directional Type Horizontal	Kick Off Depth (ftKB) 7,557	Vertical Section Direction (°) 359.38
Hole Size (in)	Act Top (ftKB)	Act Blm (ftKB)	
8 3/4	7,557.0	13,058.0	

<typ>, <make> on <dtmstart>

Type	Install Date				
Des	Make	Model	WP (psi)	Service	SN

Conductor, Planned?-N, 120ftKB

Casing Description	Wellbore	Run Date	Set Depth (MD) (ftKB)	Stick Up (ftKB)	Set Tension (kips)					
Conductor	Original Hole	10/13/2014	120	-31.0						
Centralizers	Scratchers									
4										
Jts	Item Des	OD (in)	ID (in)	Wt (lb/ft)	Grade	Top Conn Sz (in)	Top Thread	Len (ft)	Top Depth (MD) (ftKB)	Blm Depth (MD) (ftKB)
1	Conductor	20	19.124					89.00	31	120

Surface, Planned?-N, 393ftKB

Casing Description Surface		Wellbore Original Hole		Run Date 10/26/2014		Set Depth (MD) (ftKB) 393		Stick Up (ftKB) -31.0		Set Tension (kips)	
Centralizers 5						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)	
7	Casing Joint	13 3/8	12.715	48.00	H-40			270.79	31	302	
1	Float Collar	13 3/8	12.715	48.00	H-40			1.38	302	303	
2	Casing Joint	13 3/8	12.715	48.00	H-40			88.31	303	391	
1	Float Shoe	13 3/8	12.715	48.00	H-40			1.53	391	393	

Intermediate Casing 1, Planned?-N, 2,617ftKB

Casing Description Intermediate Casing 1		Wellbore Original Hole		Run Date 11/1/2014		Set Depth (MD) (ftKB) 2,617		Stick Up (ftKB) -30.8		Set Tension (kips)	
Centralizers 22						Scratchers					
Jts	Item Des	OD (in)	ID (in)	Wt (lb/ft)	Grade	Top Conn Sz (in)	Top Thread	Len (ft)	Top Depth (MD) (ftKB)	Blm Depth (MD) (ftKB)	
1	Landing Joint	9 5/8	8.844	40.00	K-55			0.00	31	31	
1	Pup Joint	9 5/8	8.844	40.00	K-55			4.96	31	36	
63	Casing Joint	9 5/8	8.844	40.00	K-55			2,496.92	36	2,533	
1	Float Collar	9 5/8	8.844					1.21	2,533	2,534	
2	Casing Joint	9 5/8	8.844	40.00	K-55			81.53	2,534	2,615	
1	Float Shoe	9 5/8	8.844					1.63	2,615	2,617	

Production Casing, Planned?-N, 13,042ftKB

Casing Description		Wellbore		Run Date		Set Depth (MD) (ftKB)		Stick Up (ftKB)		Set Tension (kips)	
Production Casing		Sidetrack 1		11/22/2014		13,042		-31.0			
Centralizers						Scratchers					
105											
Jts	Item Des	OD (in)	ID (in)	Wt (lb/ft)	Grade	Top Conn Sz (in)	Top Thread	Len (ft)	Top Depth (MD) (ftKB)	Blm Depth (MD) (ftKB)	
0	Casing Joint	5 1/2	4.892	17.00	P-110			0.00	31	31	
0	Landing Joint	5 1/2	4.892	17.00	P-110			0.00	31	31	
1	Pup	5 1/2	4.892	17.00	P-110			4.98	31	36	
182	Casing Joint	5 1/2	4.892	17.00	P-110			7,344.31	36	7,380	
1	Marker Joint	5 1/2	4.892	17.00	P-110			10.04	7,380	7,390	
136	Casing Joint	5 1/2	4.892	17.00	P-110			5,466.02	7,390	12,856	
1	RSI	5 1/2	4.892	17.00	P-110			5.55	12,856	12,862	



Cement Summary

Intermediate Casing Cement

Well Name RUSTLER BLUFF 19-24-29 FED 003H	Lease Rustler Bluffs Unit	Field Name PIERCE CROSSING	Business Unit Mid-Continent
Ground Elevation (ft) 2,918.00	Original RKB (ft) 2,949.00	Current RKB Elevation 2,949.00, 10/20/2014	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)	Btm Depth (MD) (ftKB)
1	Pup	5 1/2	4.892	17.00	P-110			6.10	12,862	12,868
1	Casing Joint	5 1/2	4.892	17.00	P-110			41.00	12,868	12,909
1	Pup	5 1/2	4.892	17.00	P-110			5.83	12,909	12,915
1	Landing collar	5 1/2	4.892	17.00	P-110			1.48	12,915	12,916
1	Casing Joint	5 1/2	4.892	17.00	P-110			40.93	12,916	12,957
1	Float Collar	5 1/2	4.892	17.00	P-110			2.00	12,957	12,959
2	Casing Joint	5 1/2	4.892	17.00	P-110			80.99	12,959	13,040
1	Float Shoe	5 1/2	4.892	17.00	P-110			1.78	13,040	13,042

Intermediate Casing Cement, Casing, 11/1/2014 11:00

Cementing Start Date 11/1/2014	Cementing End Date 	Wellbore Original Hole
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Evaluation Method 	Cement Evaluation Results 92 bbls of cement to surface
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Comment
Pump 725 sacks of Cemex Premium plus C lead cement & 275 sacks of HalCem tail cement. Mix w/ FW @ 8.4 ppg.

Full returns through entire job.

FCP: 900 psi

Bump Plug: 1,515 psi

Float Held

Bled Back: 1 bbl

1, 31.0-2,627.0ftKB

Top Depth (ftKB) 31.0	Bottom Depth (ftKB) 2,627.0	Full Return? Y	Vol Cement Ret (bbl) 92.0	Top Plug? N	Bottom Plug? Y
Initial Pump Rate (bbl/min) 6	Final Pump Rate (bbl/min) 3	Avg Pump Rate (bbl/min) 5	Final Pump Pressure (psi) 900.0	Plug Bump Pressure (psi) 1,516.0	
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 	

Spacer

Fluid Type Spacer	Fluid Description Fresh Water	Quantity (sacks) 	Class 	Volume Pumped (bbl) 20.0
Estimated Top (ftKB) 	Estimated Bottom Depth (ftKB) 	Percent Excess Pumped (%) 0.0	Yield (ft ³ /sack) 	Fluid Mix Ratio (gal/sack)
Free Water (%) 	Density (lb/gal) 8.34	Zero Gel Time (min) 	Thickening Time (hr) 	1st Compressive Strength (psi)

Cement Fluid Additives

Add	Type	Conc

Lead

Fluid Type Lead	Fluid Description ExtendaCem - C 100% BWOC - Cemex Premium Plus C 4% BWOC - Bentonite Wyoming- PB 0.125 lbm - Poly-E-Flake	Quantity (sacks) 725	Class C	Volume Pumped (bbl) 214.0
Estimated Top (ftKB) 	Estimated Bottom Depth (ftKB) 	Percent Excess Pumped (%) 200.0	Yield (ft ³ /sack) 1.66	Fluid Mix Ratio (gal/sack) 8.66
Free Water (%) 	Density (lb/gal) 13.70	Zero Gel Time (min) 	Thickening Time (hr) 	1st Compressive Strength (psi)

Cement Fluid Additives

Add	Type	Conc
D-Air 5000		0.25
Kol-Seal		3.0
Polyester Flakes		0.125

Tail

Fluid Type Tail	Fluid Description HalCem - C	Quantity (sacks) 275	Class C	Volume Pumped (bbl) 66.0
Estimated Top (ftKB) 	Estimated Bottom Depth (ftKB) 	Percent Excess Pumped (%) 200.0	Yield (ft ³ /sack) 1.34	Fluid Mix Ratio (gal/sack) 6.34
Free Water (%) 	Density (lb/gal) 14.80	Zero Gel Time (min) 	Thickening Time (hr) 	1st Compressive Strength (psi)



Cement Summary

Intermediate Casing Cement

Well Name RUSTLER BLUFF 19-24-29 FED 003H		Lease Rustler Bluffs Unit	Field Name PIERCE CROSSING	Business Unit Mid-Continent	
Ground Elevation (ft) 2,918.00	Original RKB (ft) 2,949.00	Current RKB Elevation 2,949.00; 10/20/2014		Mud Line Elevation (ft)	Water Depth (ft)

Cement Fluid Additives

Add	Type	Conc

Displacement

Fluid Type Displacement	Fluid Description Fresh Water	Quantity (sacks)	Class	Volume Pumped (bbl) 195.0
Estimated Top (ftKB)	Estimated Bottom Depth (ftKB)	Percent Excess Pumped (%) 0.0	Yield (ft ³ /sack)	Fluid Mix Ratio (gal/sack)
Free Water (%)	Density (lb/gal) 8.34	Zero Gel Time (min)	Thickening Time (hr)	1st Compressive Strength (psi)

Cement Fluid Additives

Add	Type	Conc



Cement Summary

Production Casing Cement

Well Name RUSTLER BLUFF 19-24-29 FED 003H	Lease Rustler Bluffs Unit	Field Name PIERCE CROSSING	Business Unit Mid-Continent
Ground Elevation (ft) 2,918.00	Original RKB (ft) 2,949.00	Current RKB Elevation 2,949.00, 10/20/2014	Mud Line Elevation (ft) Water Depth (ft)

Original Hole

Wellbore Name Original Hole	Directional Type Horizontal	Kick Off Depth (ftKB) 7,525	Vertical Section Direction (*) 179.80
Hole Size (in)	Act Top (ftKB)	Act Btm (ftKB)	
20	31.0	120.0	
17 1/2	120.0	408.0	
12 1/4	408.0	2,627.0	
8 3/4	2,627.0	8,391.0	
8 3/4	7,270.0	8,736.0	

Sidetrack 1

Wellbore Name Sidetrack 1	Directional Type Horizontal	Kick Off Depth (ftKB) 7,557	Vertical Section Direction (*) 359.38
Hole Size (in)	Act Top (ftKB)	Act Btm (ftKB)	
8 3/4	7,557.0	13,058.0	

<typ>, <make> on <dtmstart>

Type	Install Date
Des	Make
Model	WP (psi)
Service	SN

Conductor, Planned? -N, 120ftKB

Casing Description Conductor	Wellbore Original Hole	Run Date 10/13/2014	Set Depth (MD) (ftKB) 120	Suck Up (ftKB) -31.0	Set Tension (kips)
Centralizers 4	Scratchers				
Jts	Item Des	OD (in)	ID (in)	Wt (lb/ft)	Grade
1	Conductor	20	19.124		
					Top Conn Sz (in)
					Top Thread
					Len (ft)
					Top Depth (MD) (ftKB)
					Btm Depth (MD) (ftKB)

Surface, Planned? -N, 393ftKB

Casing Description Surface	Wellbore Original Hole	Run Date 10/26/2014	Set Depth (MD) (ftKB) 393	Suck Up (ftKB) -31.0	Set Tension (kips)
Centralizers 5	Scratchers				
Jts	Item Des	OD (in)	ID (in)	Wt (lb/ft)	Grade
7	Casing Joint	13 3/8	12.715	48.00	H-40
1	Float Collar	13 3/8	12.715	48.00	H-40
2	Casing Joint	13 3/8	12.715	48.00	H-40
1	Float Shoe	13 3/8	12.715	48.00	H-40
					Top Conn Sz (in)
					Top Thread
					Len (ft)
					Top Depth (MD) (ftKB)
					Btm Depth (MD) (ftKB)

Intermediate Casing 1, Planned? -N, 2,617ftKB

Casing Description Intermediate Casing 1	Wellbore Original Hole	Run Date 11/1/2014	Set Depth (MD) (ftKB) 2,617	Suck Up (ftKB) -30.8	Set Tension (kips)
Centralizers 22	Scratchers				
Jts	Item Des	OD (in)	ID (in)	Wt (lb/ft)	Grade
1	Landing Joint	9 5/8	8.844	40.00	K-55
1	Pup Joint	9 5/8	8.844	40.00	K-55
63	Casing Joint	9 5/8	8.844	40.00	K-55
1	Float Collar	9 5/8	8.844		
2	Casing Joint	9 5/8	8.844	40.00	K-55
1	Float Shoe	9 5/8	8.844		
					Top Conn Sz (in)
					Top Thread
					Len (ft)
					Top Depth (MD) (ftKB)
					Btm Depth (MD) (ftKB)

Production Casing, Planned? -N, 13,042ftKB

Casing Description Production Casing	Wellbore Sidetrack 1	Run Date 11/22/2014	Set Depth (MD) (ftKB) 13,042	Suck Up (ftKB) -31.0	Set Tension (kips)
Centralizers 105	Scratchers				
Jts	Item Des	OD (in)	ID (in)	Wt (lb/ft)	Grade
0	Casing Joint	5 1/2	4.892	17.00	P-110
0	Landing Joint	5 1/2	4.892	17.00	P-110
1	Pup	5 1/2	4.892	17.00	P-110
182	Casing Joint	5 1/2	4.892	17.00	P-110
1	Marker Joint	5 1/2	4.892	17.00	P-110
136	Casing Joint	5 1/2	4.892	17.00	P-110
1	RSI	5 1/2	4.892	17.00	P-110
					Top Conn Sz (in)
					Top Thread
					Len (ft)
					Top Depth (MD) (ftKB)
					Btm Depth (MD) (ftKB)



Cement Summary

Production Casing Cement

Well Name RUSTLER BLUFF 19-24-29 FED 003H		Lease Rustler Bluffs Unit		Field Name PIERCE CROSSING		Business Unit Mid-Continent	
Ground Elevation (ft) 2,918.00	Original RKB (ft) 2,949.00	Current RKB Elevation 2,949.00, 10/20/2014				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) (ft)	Blm Depth (MD) (ft)
1	Pup	5 1/2	4.892	17.00	P-110			6.10	12,862	12,868
1	Casing Joint	5 1/2	4.892	17.00	P-110			41.00	12,868	12,909
1	Pup	5 1/2	4.892	17.00	P-110			5.83	12,909	12,915
1	Landing collar	5 1/2	4.892	17.00	P-110			1.48	12,915	12,916
1	Casing Joint	5 1/2	4.892	17.00	P-110			40.93	12,916	12,957
1	Float Collar	5 1/2	4.892	17.00	P-110			2.00	12,957	12,959
2	Casing Joint	5 1/2	4.892	17.00	P-110			80.99	12,959	13,040
1	Float Shoe	5 1/2	4.892	17.00	P-110			1.78	13,040	13,042

Production Casing Cement, Casing, 11/24/2014 11:30

Cementing Start Date 11/24/2014		Cementing End Date 11/24/2014		Wellbore Sidetrack 1	
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Evaluation Method Returns to Surface	Cement Evaluation Results 4 bbls to surface before losing returns. Pumped down back side with rig pumps, took 30 bbls to fill.
--	--

Comment
Pump 1200 sacks of VariCem PB-1, 785 sacks of VariCem PB-2, 110 sacks of SoluCem H + 0.25 lb/sx D-Air5000. Mix w/ 8.33 ppg FW.

Full returns through entire job.

FCP: psi

Bump Plug: psi

Float Held

Bled Back: bbl

1, 31.0-13,058.0ftKB

Top Depth (ftKB) 31.0	Bottom Depth (ftKB) 13,058.0	Full Return? N	Vol Cement Ret (bbl) 4.0	Top Plug? N	Bottom Plug? Y
Initial Pump Rate (bbl/min) 8	Final Pump Rate (bbl/min) 4.5	Avg Pump Rate (bbl/min) 6	Final Pump Pressure (psi) 1,255.0	Plug Bump Pressure (psi) 2,070.0	
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	

Lead

Fluid Type Lead	Fluid Description	Quantity (sacks) 1,200	Class C	Volume Pumped (bbl) 542.0	
Estimated Top (ftKB) 0.0	Estimated Bottom Depth (ftKB) 7,650.0	Percent Excess Pumped (%) 100.0	Yield (ft ³ /sack) 2.52	Fluid Mix Ratio (gal/sack) 0.01	
Free Water (%)	Density (lb/gal) 11.30	Zero Gel Time (min)	Thickening Time (hr) 8.00	1st Compressive Strength (psi)	

Cement Fluid Additives

Add	Type	Conc

Lead

Fluid Type Lead	Fluid Description	Quantity (sacks) 785	Class C	Volume Pumped (bbl) 251.0	
Estimated Top (ftKB) 7,650.0	Estimated Bottom Depth (ftKB) 11,900.0	Percent Excess Pumped (%) 100.0	Yield (ft ³ /sack) 1.80	Fluid Mix Ratio (gal/sack) 0.01	
Free Water (%)	Density (lb/gal) 12.50	Zero Gel Time (min)	Thickening Time (hr) 6.00	1st Compressive Strength (psi)	

Cement Fluid Additives

Add	Type	Conc

Tail

Fluid Type Tail	Fluid Description	Quantity (sacks) 110	Class H	Volume Pumped (bbl) 51.0	
Estimated Top (ftKB) 11,900.0	Estimated Bottom Depth (ftKB) 13,058.0	Percent Excess Pumped (%) 35.0	Yield (ft ³ /sack) 2.60	Fluid Mix Ratio (gal/sack) 0.10	
Free Water (%)	Density (lb/gal) 15.00	Zero Gel Time (min)	Thickening Time (hr) 2.50	1st Compressive Strength (psi)	

Cement Fluid Additives

Add	Type	Conc

Phoenix Technology Services SURVEY DATA CERTIFICATION



PHOENIX JOB NUMBER

1412116

OPERATOR

Chevron

WELL NAME

Rustler Bluff 19/24/29 Federal 3H

COUNTY & STATE

Eddy County, New Mexico

API WELL NUMBER

30-015-42593

PROPOSED DIRECTION

359.38°

TIE-IN DATA						
MEASURED	VERTICAL			N-S	E-W	DATA
DEPTH	DEPTH	INCLIN	AZIMUTH	COORD	COORD	SOURCE
0.00 ft	0.00 ft	0.00°	0.00°	0.00 ft	0.00 ft	Surface

FIRST SURVEY DATE	FIRST SURVEY DEPTH	INCLIN	AZIMUTH
30-Oct-14	467.00 ft	1.58°	213.82°

SURVEY INSTRUMENT TYPE
Phoenix MWD

LAST SURVEY DATE	LAST SURVEY DEPTH	INCLIN	AZIMUTH
9-Nov-14	8,328.00 ft	51.32°	320.90°

TO THE BEST OF MY KNOWLEDGE I
CERTIFY THIS SURVEY DATA TO BE
TRUE AND CORRECT.

PROJECTED TD SURVEY DATE	PROJECTED TD SURVEY DEPTH	INCLIN	AZIMUTH
9-Nov-14	8,383.00 ft	54.91°	330.30°

Benjamin J. Maulding

PRINT YOUR NAME ABOVE

Benjamin J. Maulding

SIGN YOUR NAME ABOVE

11/12/2014

TODAY'S DATE

MAGNETIC DECLINATION OR TOTAL GRID

TOTAL CORRECTION USED	GRID
7.39	
DECLINATION OR GRID	GRID

MWD SUPERVISOR 1

Ben Maulding

DIRECTIONAL DRILLER 1

John Barnett

MWD SUPERVISOR 2

Joe Owens

DIRECTIONAL DRILLER 2

Carl Oetken

12329 Cutten Rd.,

Houston, Texas 777066

(713)337-0600 (Voice), (713)337-0599 (Fax)

Chevron

Eddy County, NM (NAD27 NME)

Rustler Bluff 19 24 29 Federal

3H

Wellbore #1 Job 1412116

Survey: Phoenix MWD Surveys

Standard Survey Report

22 November, 2014

Survey Report

Company: Chevron
 Project: Eddy County, NM (NAD27 NME)
 Site: Rustler Bluff 19 24 29 Federal
 Well: 3H
 Wellbore: Wellbore #1 Job 1412116
 Design: Surveys (Ensign 767)

Local Co-ordinate Reference: Well 3H
 TVD Reference: RKB @ 2949.00usft (Ensign 767)
 MD Reference: RKB @ 2949.00usft (Ensign 767)
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature
 Database: Compass 5000 GCR

Project: Eddy County, NM (NAD27 NME)
 Map System: US State Plane 1927 (Exact solution)
 Geo Datum: NAD 1927 (NADCON CONUS)
 Map Zone: New Mexico East 3001

System Datum: Mean Sea Level

Site: Rustler Bluff 19 24 29 Federal

Site Position: Northing: 435,360.00 usft Latitude: 32° 11' 47.58064 N
 From: Map Easting: 594,822.00 usft Longitude: 104° 1' 36.46420 W
 Position Uncertainty: 0.00 usft Slot Radius: 13-3/16 " Grid Convergence: 0.16 °

Well: 3H
 Well Position: +N-S 0.00 usft Northing: 435,360.00 usft Latitude: 32° 11' 47.58064 N
 +E-W 0.00 usft Easting: 594,822.00 usft Longitude: 104° 1' 36.46420 W
 Position Uncertainty: 0.00 usft Wellhead Elevation: 0.00 usft Ground Level: 2,918.00 usft

Wellbore: Wellbore #1 Job 1412116

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2014	10/24/2014	7.55	59.99	48,170

Design: Surveys (Ensign 767)

Audit Notes:
 Version: 1.0 Phase: ACTUAL Tie On Depth: 0.00
 Vertical Section: Depth From (TVD) (usft) +N-S (usft) +E-W (usft) Direction (°)
 0.00 0.00 0.00 359.38

Survey Program: Date 11/22/2014

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
467.00	8,383.00	Phoenix MWD Surveys (Wellbore #1 Job 1	PHX+MWD+BGGM	PHX+MWD+BGGM v3: standard declination

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N-S (usft)	+E-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
467.00	1.58	213.82	466.94	-5.35	-3.58	-5.31	0.34	0.34	0.00
WB1 First Phoenix Survey									
560.00	1.52	208.26	559.91	-7.50	-4.88	-7.45	0.17	-0.06	-5.98
766.00	1.59	193.39	765.83	-12.69	-6.84	-12.61	0.20	0.03	-7.22
947.00	1.48	185.88	946.77	-17.46	-7.66	-17.37	0.13	-0.06	-4.15
1,137.00	1.26	190.28	1,136.71	-21.95	-8.28	-21.86	0.13	-0.12	2.32
1,327.00	1.38	203.97	1,326.66	-26.10	-9.58	-25.99	0.18	0.06	7.21
1,517.00	1.40	216.17	1,516.61	-30.06	-11.88	-29.93	0.16	0.01	6.42
1,707.00	1.17	218.57	1,706.56	-33.45	-14.46	-33.29	0.12	-0.12	1.26
1,897.00	1.23	222.50	1,896.52	-36.47	-17.05	-36.29	0.05	0.03	2.07

Survey Report

Company: Chevron
 Project: Eddy County, NM (NAD27 NME)
 Site: Rustler Bluff 19 24 29 Federal
 Well: 3H
 Wellbore: Wellbore #1 Job 1412116
 Design: Surveys (Ensign 767)

Local Co-ordinate Reference: Well 3H
 TVD Reference: RKB @ 2949.00usft (Ensign 767)
 IMD Reference: RKB @ 2949.00usft (Ensign 767)
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature
 Database: Compass 5000 GCR

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N-S (usft)	+E-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
2,087.00	1.05	173.61	2,086.48	-39.71	-18.23	-39.51	0.50	-0.09	-25.73
2,277.00	1.33	163.46	2,276.44	-43.55	-17.41	-43.36	0.18	0.15	-5.34
2,467.00	2.48	144.90	2,466.34	-49.03	-14.42	-48.87	0.68	0.61	-9.77
2,561.00	1.65	142.56	2,560.27	-51.77	-12.43	-51.63	0.89	-0.88	-2.49
2,753.00	1.29	122.70	2,752.21	-55.13	-8.93	-55.03	0.32	-0.19	-10.34
2,943.00	0.31	235.92	2,942.20	-56.57	-7.56	-56.49	0.76	-0.52	59.59
3,134.00	0.40	273.34	3,133.19	-56.82	-8.65	-56.73	0.13	0.05	19.59
3,324.00	0.45	256.63	3,323.19	-56.96	-10.04	-56.84	0.07	0.03	-8.79
3,515.00	1.59	350.23	3,514.16	-54.52	-11.22	-54.39	0.88	0.60	49.01
3,704.00	1.51	347.77	3,703.09	-49.50	-12.19	-49.37	0.06	-0.04	-1.30
3,895.00	1.86	347.80	3,894.01	-44.01	-13.38	-43.86	0.18	0.18	0.02
4,085.00	0.59	66.35	4,083.97	-40.60	-13.13	-40.46	0.97	-0.67	41.34
4,275.00	0.85	71.97	4,273.96	-39.78	-10.90	-39.66	0.14	0.14	2.96
4,464.00	0.77	71.33	4,462.94	-38.94	-8.36	-38.84	0.04	-0.04	-0.34
4,656.00	0.73	66.92	4,654.92	-38.04	-6.01	-37.98	0.04	-0.02	-2.30
4,844.00	0.71	68.14	4,842.91	-37.14	-3.83	-37.10	0.01	-0.01	0.65
5,034.00	1.01	102.56	5,032.89	-37.07	-1.10	-37.05	0.31	0.16	18.12
5,224.00	0.95	113.96	5,222.86	-38.07	1.97	-38.09	0.11	-0.03	6.00
5,413.00	0.93	122.29	5,411.83	-39.53	4.70	-39.57	0.07	-0.01	4.41
5,603.00	0.91	340.06	5,601.82	-38.93	5.49	-38.99	0.92	-0.01	-74.86
5,792.00	0.99	340.26	5,790.80	-35.98	4.43	-36.03	0.04	0.04	0.11
5,981.00	1.07	340.88	5,979.77	-32.78	3.30	-32.81	0.04	0.04	0.33
6,171.00	1.09	346.07	6,169.73	-29.35	2.28	-29.37	0.05	0.01	2.73
6,360.00	0.82	343.83	6,358.71	-26.30	1.47	-26.32	0.14	-0.14	-1.19
6,551.00	0.54	4.65	6,549.69	-24.10	1.16	-24.11	0.19	-0.15	10.90
6,740.00	0.20	333.55	6,738.69	-22.91	1.09	-22.92	0.20	-0.18	-16.46
6,930.00	0.59	266.39	6,928.68	-22.68	-0.04	-22.68	0.29	0.21	-35.35
7,121.00	1.55	254.77	7,119.65	-23.42	-3.51	-23.38	0.51	0.50	-6.08
7,311.00	1.17	289.33	7,309.60	-23.45	-7.82	-23.36	0.47	-0.20	18.19
7,502.00	0.70	314.88	7,500.57	-21.98	-10.49	-21.87	0.32	-0.25	13.38
7,690.00	0.81	288.72	7,688.56	-20.74	-12.56	-20.61	0.19	0.06	-13.91
7,886.00	0.87	311.68	7,884.54	-19.31	-14.98	-19.15	0.17	0.03	11.71
7,917.00	4.23	329.17	7,915.50	-18.17	-15.74	-18.00	11.00	10.84	56.42
7,949.00	9.02	327.17	7,947.28	-15.05	-17.71	-14.86	14.98	14.97	-6.25
7,981.00	11.83	328.84	7,978.75	-10.13	-20.77	-9.91	8.83	8.78	5.22
8,013.00	13.16	325.96	8,009.99	-4.31	-24.51	-4.04	4.59	4.16	-9.00
8,044.00	16.66	323.96	8,039.94	2.21	-29.10	2.53	11.41	11.29	-8.45
8,076.00	20.44	319.73	8,070.28	10.19	-35.41	10.57	12.53	11.81	-13.22
8,108.00	24.28	316.01	8,099.86	19.19	-43.59	19.66	12.78	12.00	-11.63
8,140.00	27.83	315.13	8,128.61	29.22	-53.44	29.80	11.16	11.09	-2.75
8,171.00	31.63	315.33	8,155.52	40.13	-64.26	40.83	12.26	12.26	0.65
8,203.00	36.48	316.17	8,182.03	52.97	-76.75	53.80	15.23	15.16	2.63
8,235.00	39.99	316.11	8,207.16	67.25	-90.48	68.22	10.97	10.97	-0.19

Survey Report

Company: Chevron
 Project: Eddy County, NM (NAD27 NME)
 Site: Rustler Bluff 19 24 29 Federal
 Well: 3H
 Wellbore: Wellbore #1 Job 1412116
 Design: Surveys (Ensign 767)

Local Co-ordinate Reference: Well 3H
 TVD Reference: RKB @ 2949.00usft (Ensign 767)
 IMD Reference: RKB @ 2949.00usft (Ensign 767)
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature
 Database: Compass 5000 GCR

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
8,266.00	42.56	315.97	8,230.45	81.97	-104.67	83.09	8.30	8.29	-0.45
8,296.00	46.81	318.53	8,251.78	97.46	-118.97	98.74	15.38	14.17	8.53
8,328.00	51.32	320.90	8,272.74	115.91	-134.58	117.36	15.16	14.09	7.41
WB1 Final Phoenix Survey									
8,383.00	54.91	330.30	8,305.80	152.18	-159.31	153.89	15.14	6.53	17.09
WB1 Projection to TD									

Survey Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
467.00	466.94	-5.35	-3.58	WB1 First Phoenix Survey
8,328.00	8,272.74	115.91	-134.58	WB1 Final Phoenix Survey
8,383.00	8,305.80	152.18	-159.31	WB1 Projection to TD

Checked By: _____ Approved By: _____ Date: _____

Phoenix Technology Services SURVEY DATA CERTIFICATION



PHOENIX JOB NUMBER

1412116

OPERATOR

Chevron

WELL NAME

Rustler Bluff 19 24 29 Federal 3H

COUNTY & STATE

Eddy County, New Mexico

API WELL NUMBER

30-015-42593

PROPOSED DIRECTION

5:21

TIE-IN DATA						
MEASURED DEPTH	VERTICAL DEPTH	INCLIN	AZIMUTH	N-S COORD	E-W COORD	DATA SOURCE
7,311.00 ft	7309.60 ft	1.17°	289.33°	23.45 ft S	7.82 ft W	Phoenix MWD

FIRST SURVEY DATE	FIRST SURVEY DEPTH	INCLIN	AZIMUTH
13-Nov-14	7,507.00 ft	0.92°	320.12°

SURVEY INSTRUMENT
TYPE

Phoenix MWD

LAST SURVEY DATE	LAST SURVEY DEPTH	INCLIN	AZIMUTH
21-Nov-14	12,997.00 ft	86.64°	3.01°

TO THE BEST OF MY KNOWLEDGE I
CERTIFY THIS SURVEY DATA TO BE
TRUE AND CORRECT.

PROJECTED TD SURVEY DATE	PROJECTED TD SURVEY DEPTH	INCLIN	AZIMUTH
21-Nov-14	13,058.00 ft	85.96°	3.95°

Benjamin J. Maulding

PRINT YOUR NAME ABOVE

Benjamin J. Maulding

SIGN YOUR NAME ABOVE

11/22/2014

TODAY'S DATE

MAGNETIC DECLINATION OR TOTAL GRID

TOTAL CORRECTION USED

7.39

DECLINATION OR GRID

GRID

MWD SUPERVISOR 1

Ben Maulding

MWD SUPERVISOR 2

Joe Owens

DIRECTIONAL DRILLER 1

John Barnett

DIRECTIONAL DRILLER 2

Carl Oetken

12329 Cutten Rd., Houston, Texas 777066

(713)337-0600 (Voice), (713)337-0599 (Fax)

Chevron

Eddy County, NM (NAD27 NME)

Rustler Bluff 19 24 29 Federal

3H

Wellbore #2 Job #1412116

Survey: Phoenix MWD Surveys

Standard Survey Report

22 November, 2014

Survey Report

Company: Chevron
Project: Eddy County, NM (NAD27 NME)
Site: Rustler Bluff 19 24 29 Federal
Well: 3H
Wellbore: Wellbore #2 Job #1412116
Design: Surveys (Ensign 767)

Local Co-ordinate Reference: Well 3H
TVD Reference: RKB @ 2949.00usft (Ensign 767)
MD Reference: RKB @ 2949.00usft (Ensign 767)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: Compass 5000 GCR

Project: Eddy County, NM (NAD27 NME)
Map System: US State Plane 1927 (Exact solution) **System Datum:** Mean Sea Level
Geo Datum: NAD 1927 (NADCON CONUS)
Map Zone: New Mexico East 3001

Site: Rustler Bluff 19 24 29 Federal

Site Position: Northing: 435,360.00 usft **Latitude:** 32° 11' 47.58064 N
From: Map Easting: 594,822.00 usft **Longitude:** 104° 1' 36.46420 W
Position Uncertainty: 0.00 usft **Slot Radius:** 13-3/16 " **Grid Convergence:** 0.16 °

Well: 3H
Well Position: +N-S 0.00 usft **Northing:** 435,360.00 usft **Latitude:** 32° 11' 47.58064 N
 +E-W 0.00 usft **Easting:** 594,822.00 usft **Longitude:** 104° 1' 36.46420 W
Position Uncertainty: 0.00 usft **Wellhead Elevation:** 0.00 usft **Ground Level:** 2,918.00 usft

Wellbore: Wellbore #2 Job #1412116

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2014	10/24/2014	7.55	59.99	48,170

Design: Surveys (Ensign 767)

Audit Notes:
Version: 1.0 **Phase:** ACTUAL **Tie On Depth:** 7,311.00
Vertical Section: Depth From (TVD) (usft) +N-S (usft) +E-W (usft) Direction (°)
 0.00 0.00 0.00 5.21

Survey Program: Date: 11/22/2014

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
467.00	7,311.00	Phoenix MWD Surveys (Wellbore #1 Job 1	PHX+MWD+BGGM	PHX+MWD+BGGM v3: standard declination
7,507.00	13,058.00	Phoenix MWD Surveys (Wellbore #2 Job #	PHX+MWD+BGGM	PHX+MWD+BGGM v3: standard declination

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N-S (usft)	+E-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
7,311.00	1.17	289.33	7,309.60	-23.45	-7.82	-24.06	0.00	0.00	0.00
Tie-in to WB1									
7,507.00	0.92	320.12	7,505.57	-21.58	-10.72	-22.46	0.31	-0.13	15.71
WB2 First Phoenix Survey									
7,542.00	1.78	338.56	7,540.56	-20.87	-11.11	-21.79	2.67	2.46	46.97
7,633.00	9.38	19.51	7,631.08	-12.57	-9.20	-13.35	8.97	8.35	47.20
7,697.00	9.30	15.81	7,694.23	-2.67	-6.05	-3.21	0.95	-0.13	-5.78
7,792.00	9.42	24.48	7,787.97	11.79	-0.73	11.67	1.49	0.13	9.13
7,887.00	8.66	36.95	7,881.80	24.58	6.79	25.10	2.21	-0.60	13.13

Survey Report

Company: Chevron
 Project: Eddy County, NM (NAD27 NME)
 Site: Rustler Bluff 19 24 29 Federal
 Well: 3H
 Wellbore: Wellbore #2 Job #1412116
 Design: Surveys (Ensign 767)

Local Co-ordinate Reference:
 TVD Reference:
 MD Reference:
 North Reference:
 Survey Calculation Method:
 Database:

Well 3H
 RKB @ 2949.00usft (Ensign 767)
 RKB @ 2949.00usft (Ensign 767)
 Grid
 Minimum Curvature
 Compass 5000 GCR

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
7,919.00	8.22	34.72	7,913.45	28.39	9.54	29.14	1.71	-1.38	-6.97
7,951.00	9.53	35.06	7,945.07	32.44	12.37	33.42	4.10	4.09	1.06
7,982.00	11.87	35.29	7,975.53	37.14	15.68	38.41	7.55	7.55	0.74
8,014.00	15.01	31.53	8,006.65	43.36	19.75	44.97	10.18	9.81	-11.75
8,046.00	17.64	27.07	8,037.36	51.21	24.13	53.19	9.10	8.22	-13.94
8,077.00	20.32	23.29	8,068.67	60.34	28.39	62.67	9.51	8.65	-12.19
8,109.00	23.54	24.15	8,096.35	71.28	33.20	74.00	10.11	10.06	2.69
8,141.00	26.10	26.61	8,125.39	83.40	38.97	86.60	8.62	8.00	7.69
8,173.00	29.47	27.38	8,153.70	96.69	45.75	100.44	10.59	10.53	2.41
8,204.00	33.81	27.19	8,180.09	111.14	53.20	115.51	14.00	14.00	-0.61
8,236.00	37.87	25.88	8,206.02	127.90	61.56	132.96	12.91	12.69	-4.09
8,268.00	41.98	26.57	8,230.56	146.32	70.84	152.13	12.92	12.84	2.16
8,298.00	45.63	25.64	8,252.21	164.97	79.77	171.53	12.35	12.17	-3.10
8,329.00	49.40	25.15	8,273.14	185.62	89.57	192.98	12.22	12.16	-1.58
8,361.00	51.98	23.73	8,293.41	208.16	99.80	216.36	8.76	8.06	-4.44
8,392.00	55.64	23.26	8,311.71	231.10	109.77	240.11	11.87	11.81	-1.52
8,424.00	59.64	23.00	8,328.84	255.95	120.39	265.83	12.52	12.50	-0.81
8,456.00	61.15	22.91	8,344.64	281.57	131.24	292.32	4.73	4.72	-0.28
8,487.00	63.28	22.84	8,359.09	306.84	141.90	318.45	6.87	6.87	-0.23
8,519.00	65.62	22.26	8,372.89	333.50	152.97	346.01	7.49	7.31	-1.81
8,551.00	67.68	22.08	8,385.58	360.70	164.05	374.11	6.46	6.44	-0.56
8,583.00	71.09	21.73	8,396.84	388.49	175.23	402.80	10.71	10.66	-1.09
8,614.00	74.14	21.55	8,406.10	415.99	186.13	431.17	9.85	9.84	-0.58
8,646.00	77.80	21.03	8,413.86	444.91	197.40	460.99	11.55	11.44	-1.63
8,678.00	82.60	20.21	8,419.31	474.41	208.50	491.39	15.21	15.00	-2.56
8,771.00	90.67	19.53	8,424.76	561.65	240.03	581.13	8.71	8.68	-0.73
8,866.00	90.31	19.47	8,423.95	651.20	271.74	673.19	0.38	-0.38	-0.06
8,961.00	90.22	20.94	8,423.51	740.35	304.55	764.95	1.55	-0.09	1.55
9,056.00	89.64	20.38	8,423.62	829.24	338.07	856.51	0.85	-0.61	-0.59
9,151.00	88.69	18.84	8,425.01	918.72	369.95	948.51	1.90	-1.00	-1.62
9,245.00	88.18	15.45	8,427.58	1,008.49	397.64	1,040.43	3.65	-0.54	-3.61
9,340.00	87.17	12.30	8,431.43	1,100.63	420.40	1,134.26	3.48	-1.06	-3.32
9,434.00	87.65	10.59	8,435.68	1,192.66	439.04	1,227.60	1.89	0.51	-1.82
9,528.00	87.84	8.62	8,439.38	1,285.27	454.71	1,321.25	2.10	0.20	-2.10
9,623.00	88.38	5.47	8,442.51	1,379.49	466.35	1,416.14	3.36	0.57	-3.32
9,717.00	89.24	3.68	8,444.46	1,473.17	473.85	1,510.11	2.11	0.91	-1.90
9,812.00	89.72	1.80	8,445.33	1,568.05	478.39	1,605.01	2.04	0.51	-1.98
9,907.00	89.97	358.58	8,445.58	1,663.04	478.70	1,699.63	3.40	0.26	-3.39
10,001.00	91.01	357.30	8,444.78	1,756.97	475.32	1,792.87	1.75	1.11	-1.36
10,095.00	89.86	357.21	8,444.07	1,850.86	470.82	1,885.96	1.23	-1.22	-0.10
10,190.00	90.89	357.40	8,443.44	1,945.75	466.35	1,980.06	1.10	1.08	0.20
10,284.00	91.20	356.95	8,441.73	2,039.62	461.72	2,073.12	0.58	0.33	-0.48
10,379.00	91.48	357.93	8,439.51	2,134.49	457.48	2,167.22	1.07	0.29	1.03

Survey Report

Company: Chevron
 Project: Eddy County, NM (NAD27 NME)
 Site: Rustler Bluff 19 24 29 Federal
 Well: 3H
 Wellbore: Wellbore #2 Job #1412116
 Design: Surveys (Ensign 767)

Local Co-ordinate Reference: Well 3H
 TVD Reference: RKB @ 2949.00usft (Ensign 767)
 MD Reference: RKB @ 2949.00usft (Ensign 767)
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature
 Database: Compass 5000 GCR

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
10,474.00	91.18	358.69	8,437.30	2,229.43	454.68	2,261.50	0.86	-0.32	0.80
10,569.00	91.18	358.93	8,435.35	2,324.39	452.71	2,355.89	0.25	0.00	0.25
10,664.00	91.17	358.51	8,433.40	2,419.34	450.59	2,450.26	0.44	-0.01	-0.44
10,759.00	90.70	358.32	8,431.85	2,514.29	447.96	2,544.58	0.53	-0.49	-0.20
10,855.00	89.24	356.01	8,431.90	2,610.17	443.21	2,639.63	2.85	-1.52	-2.41
10,950.00	89.58	356.72	8,432.88	2,704.97	437.19	2,733.49	0.83	0.36	0.75
11,044.00	89.19	356.65	8,433.89	2,798.81	431.75	2,826.45	0.42	-0.41	-0.07
11,140.00	89.78	358.01	8,434.75	2,894.70	427.28	2,921.54	1.54	0.61	1.42
11,235.00	89.55	358.60	8,435.30	2,989.65	424.47	3,015.85	0.67	-0.24	0.62
11,330.00	90.00	358.28	8,435.68	3,084.62	421.89	3,110.18	0.58	0.47	-0.34
11,425.00	91.85	359.18	8,434.14	3,179.58	419.78	3,204.56	2.17	1.95	0.95
11,521.00	91.71	359.06	8,431.16	3,275.52	418.31	3,299.97	0.19	-0.15	-0.13
11,616.00	90.42	358.85	8,429.40	3,370.48	416.57	3,394.39	1.38	-1.36	-0.22
11,711.00	91.48	359.14	8,427.84	3,465.45	414.91	3,488.81	1.14	1.09	0.31
11,805.00	90.59	358.66	8,426.16	3,559.42	413.10	3,582.23	1.06	-0.93	-0.51
11,901.00	90.14	359.80	8,425.55	3,655.41	411.81	3,677.70	1.28	-0.47	1.19
11,994.00	90.50	2.00	8,425.03	3,748.39	413.27	3,770.43	2.40	0.39	2.37
12,088.00	91.23	2.06	8,423.61	3,842.32	416.60	3,864.28	0.78	0.78	0.06
12,184.00	90.98	2.47	8,421.76	3,938.23	420.40	3,960.13	0.50	-0.26	0.43
12,278.00	90.67	3.25	8,420.40	4,032.10	425.09	4,054.04	0.89	-0.33	0.83
12,372.00	89.78	2.79	8,420.03	4,125.97	430.04	4,147.97	1.07	-0.95	-0.49
12,468.00	89.72	2.86	8,420.45	4,221.85	434.77	4,243.89	0.10	-0.06	0.07
12,562.00	89.92	1.86	8,420.75	4,315.77	438.64	4,337.77	1.08	0.21	-1.06
12,658.00	89.22	1.43	8,421.47	4,411.72	441.40	4,433.58	0.86	-0.73	-0.45
12,754.00	88.99	0.97	8,422.97	4,507.69	443.41	4,529.33	0.54	-0.24	-0.48
12,849.00	88.35	1.37	8,425.17	4,602.65	445.35	4,624.07	0.79	-0.67	0.42
12,944.00	87.23	2.19	8,428.84	4,697.53	448.29	4,718.83	1.46	-1.18	0.86
12,997.00	86.64	3.01	8,431.67	4,750.40	450.69	4,771.70	1.90	-1.11	1.55
WB2 Final Phoenix Survey									
13,058.00	85.96	3.95	8,435.61	4,811.15	454.39	4,832.54	1.90	-1.11	1.54
WB2 Projection to TD									

Survey Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
7,311.00	7,309.60	-23.45	-7.82	Tie-in to WB1
7,507.00	7,505.57	-21.58	-10.72	WB2 First Phoenix Survey
12,997.00	8,431.67	4,750.40	450.69	WB2 Final Phoenix Survey
13,058.00	8,435.61	4,811.15	454.39	WB2 Projection to TD

Checked By: _____

Approved By: _____

Date: _____