

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENTCarlsbad Field Office
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.*Lease Serial No.
MNM0392082A**SUBMIT IN TRIPLICATE - Other instructions on reverse side.**

6. If Indian, Allottee or Tribe Name

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

8. Well Name and No.
HALLERTAU 5 FEDERAL 8H9. API Well No.
30-025-42666-00-X110. Field and Pool, or Exploratory
JENNINGS

11. County or Parish, and State

LEA COUNTY, NM

1. Type of Well

☒ Oil Well ☐ Gas Well ☐ Other

2. Name of Operator

CIMAREX ENERGY COMPANY OF CO

Contact: ARICKA EASTERLING

E-Mail: aeasterling@cimarex.com

3a. Address

202 S CHEYENNE AVE. SUITE 1000
TULSA, OK 74103

3b. Phone No. (include area code)

Ph: 918-560-7060

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

Sec 5 T26S R32E SWSW 500FSL 330FWL
32.035857 N Lat, 103.421711 W Lon

HOBBS OCD

MAY 05 2016

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	Change to Original A
	☐ Convert to Injection	☐ Plug Back	☐ Water Disposal	PD

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.)

Cimarex respectfully requests approval to change the original drilling plan for the above referenced well. This well was approved as a Bone Spring, however Cimarex is proposing to drill it as a Wolfcamp Gas Well.

Please see attached Drilling plan and Directional Plan & C-102 Plat.

**SEE ATTACHED FOR
CONDITIONS OF APPROVAL**

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

Electronic Submission #324497 verified by the BLM Well Information System
For CIMAREX ENERGY COMPANY OF CO, sent to the Hobbs
Committed to AFMSS for processing by LINDA JIMENEZ on 12/01/2015 (16LJ0232SE)

Name (Printed/Typed) ARICKA EASTERLING

Title REGULATORY ANALYST

Signature (Electronic Submission)

Date 11/23/2015

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By CHARLES NIMMER

Title PETROLEUM ENGINEER

Date 04/28/2016

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 Hobbs

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 ****

1. Geological Formations

TVD of target 11,910

Pilot Hole TD N/A

MD at TD 16,220

Deepest expected fresh water

Formation	Depth (TVD) from KB	Water/Mineral Bearing/Target Zone	Hazards
OSE Groundwater	275	N/A	
Rustler	1025	N/A	
Salt	1350	N/A	
Castille	2700	N/A	
Base Last Salt	4220	N/A	
Lamar	4435	N/A	
Delaware Group	4475	N/A	
Bone Spring	8520	Hydrocarbons	
Wolfcamp	11720	Hydrocarbons	
Wolfcamp X ss	11755	Hydrocarbons	
Wolfcamp Y ss	11870	Hydrocarbons	
Wolfcamp A-1 Shale	11895	Hydrocarbons	

2. Casing Program

Hole Size	Casing Depth From	Casing Depth To	Casing Size	Weight (lb/ft)	Grade	Conn.	SF Collapse	SF Burst	SF Tension
17 1/2	0	1225	13-3/8"	48.00	H-40/J-55 Hybrid	ST&C	1.32	3.09	5.48
12 1/4	0	4400	9-5/8"	40.00	J-55	LT&C	1.24	1.73	2.95
8 3/4	0	11387	7"	32.00	L-80	LT&C	1.58	1.66	1.76
8 3/4	11387	12185	7"	32.00	L-80	BT&C	1.51	1.48	44.51
6 1/8	11387	16220	4-1/2"	11.60	HCP-110	BT&C	1.19	1.44	60.49
BLM Minimum Safety Factor							1.125	1	1.6 Dry 1.8 Wet

All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.h

	Y or N
Is casing new? If used, attach certification as required in Onshore Order #1	Y
Does casing meet API specifications? If no, attach casing specification sheet.	Y
Is premium or uncommon casing planned? If yes attach casing specification sheet.	N
Does the above casing design meet or exceed BLM's minimum standards? If not provide justification (loading assumptions, casing design criteria).	Y
Will the intermediate pipe be kept at a minimum 1/3 fluid filled to avoid approaching the collapse pressure rating of the casing?	Y
Is well located within Capitan Reef?	N
If yes, does production casing cement tie back a minimum of 50' above the Reef?	N
Is well within the designated 4 string boundary.	N
Is well located in SOPA but not in R-111-P?	N
If yes, are the first 2 strings cemented to surface and 3rd string cement tied back 500' into previous casing?	N
Is well located in R-111-P and SOPA?	N
If yes, are the first three strings cemented to surface?	N
Is 2nd string set 100' to 600' below the base of salt?	N
Is well located in high Cave/Karst?	N
If yes, are there two strings cemented to surface?	N
(For 2 string wells) If yes, is there a contingency casing if lost circulation occurs?	N
Is well located in critical Cave/Karst?	N
If yes, are there three strings cemented to surface?	N

3. Cementing Program

Casing	# Sks	Wt. lb/gal	Yld ft ³ /sack	H ₂ O gal/sk	500# Comp. Strength (hours)	Slurry Description
Surface	594	13.50	1.72	9.15	15.5	Lead: Class C + Bentonite
	159	14.80	1.34	6.32	9.5	Tail: Class C + LCM
Intermediate	820	12.90	1.88	9.65	12	Lead: 35:65 (Poz:C) + Salt + Bentonite
	253	14.80	1.36	6.57	9.5	Tail: Class C + Retarder
Production	573	10.80	2.35	9.60	17:43	Lead: Tuned Light I Class H
	102	14.20	1.30	5.86	14:30	Tail: 50:50 (Poz:H) + Salt + Bentonite + Fluid Loss + Dispersant + SMS
Completion System	322	14.20	1.30	5.86	14:30	Tail: 50:50 (Poz:H) + Salt + Bentonite + Fluid Loss + Dispersant + SMS

Casing String	TOC	% Excess
Surface	0	45
Intermediate	0	44
Production	4200	23
Completion System	12185	10

4. Pressure Control Equipment

A variance is requested for the use of a diverter on the surface casing. See attached for schematic.					
BOP installed and tested before drilling which hole?	Size	Min Required WP	Type		Tested To
12 1/4	13 5/8	2M	Annular	X	50% of working pressure
			Blind Ram		2M
			Pipe Ram		
			Double Ram	X	
			Other		
8 3/4	13 5/8	3M 5M	Annular	X	50% of working pressure
			Blind Ram		5M 3M
			Pipe Ram		
			Double Ram	X	
			Other		
6 1/8	13 5/8	5M	Annular	X	50% of working pressure
			Blind Ram		5M
			Pipe Ram		
			Double Ram	X	
			Other		

BOP/BOPE will be tested by an independent service company to 250 psi low and the high pressure indicated above per Onshore Order 2 requirements. The System may be upgraded to a higher pressure but still tested to the working pressure listed in the table above. If the system is upgraded all the components installed will be functional and tested.

Pipe rams will be operationally checked each 24 hour period. Blind rams will be operationally checked on each trip out of the hole. These checks will be noted on the daily tour sheets. Other accessories to the BOP equipment will include a Kelly cock and floor safety valve (inside BOP) and choke lines and choke manifold. See attached schematics.

X	Formation integrity test will be performed per Onshore Order #2. On Exploratory wells or on that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.i.	
X	A variance is requested for the use of a flexible choke line from the BOP to Choke Manifold. See attached for specs and hydrostatic test chart.	
N	Are anchors required by manufacturer?	

5. Mud Program

Depth	Type	Weight (ppg)	Viscosity	Water Loss
0' to 1225'	FW Spud Mud	8.30 - 8.80	28	N/C
1225' to 4400'	Brine Water	9.50 - 10.00	30-32	N/C
4400' to 12185'	FW/Cut Brine	8.70 - 9.20	30-32	N/C
12185' to 16220'	Oil Based Mud	11.50 - 12.00	50-70	N/C

Sufficient mud materials to maintain mud properties and meet minimum lost circulation and weight increase requirements will be kept on location at all times.

What will be used to monitor the loss or gain of fluid?	PVT/Pason/Visual Monitoring
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6. Logging and Testing Procedures

Logging, Coring and Testing	
X	Will run GR/CNL from TD to surface (horizontal well – vertical portion of hole). Stated logs run will be in the Completion Report and submitted to the BLM.
	No logs are planned based on well control or offset log information.
	Drill stem test?
	Coring?

Additional Logs Planned	Interval
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7. Drilling Conditions

Condition	
BH Pressure at deepest TVD	5697 psi
Abnormal Temperature	No

Hydrogen Sulfide (H₂S) monitors will be installed prior to drilling out the surface shoe. If H₂S is detected in concentrations greater than 100 ppm, the operator will comply with the provisions of Onshore Oil and Gas Order #6. If Hydrogen Sulfide is encountered, measured values and formations will be provided to the BLM.

X	H ₂ S is present
X	H ₂ S plan is attached

8. Other Facets of Operation

DISTRICT I

1625 N. French Dr., Hobbs, NM 88240

DISTRICT II

1301 W. Grand Avenue, Artesia, NM 88210

DISTRICT III

1000 Rio Brazos Rd., Aztec, NM 87410

DISTRICT IV

1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy, Minerals and Natural Resources Department

Form C-102

Revised July 18, 2010

OIL CONSERVATION DIVISION

1220 South St. Francis Dr.
Santa Fe, New Mexico 87505

HOBBS OOD

Submit one copy to appropriate
District Office

MAY 05 2016

RECEIVED

AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number 30-025-42666	Pool Code 98065	Pool Name WC-0256-08 5283205N; UPPER WC Wildcat; Wolfcamp
Property Code 38778	Property Name HALLERTAU 5 FEDERAL	Well Number 8H
OGRID No. 162683	Operator Name CIMAREX ENERGY CO. OF COLORADO	Elevation 3271'

Surface Location

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
M	5	26 S	32 E		500	SOUTH	330	WEST	LEA

Bottom Hole Location If Different From Surface

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
D	5	26 S	32 E		330	NORTH	380	WEST	LEA

Dedicated Acres	Joint or Infill	Consolidation Code	Order No.
160			

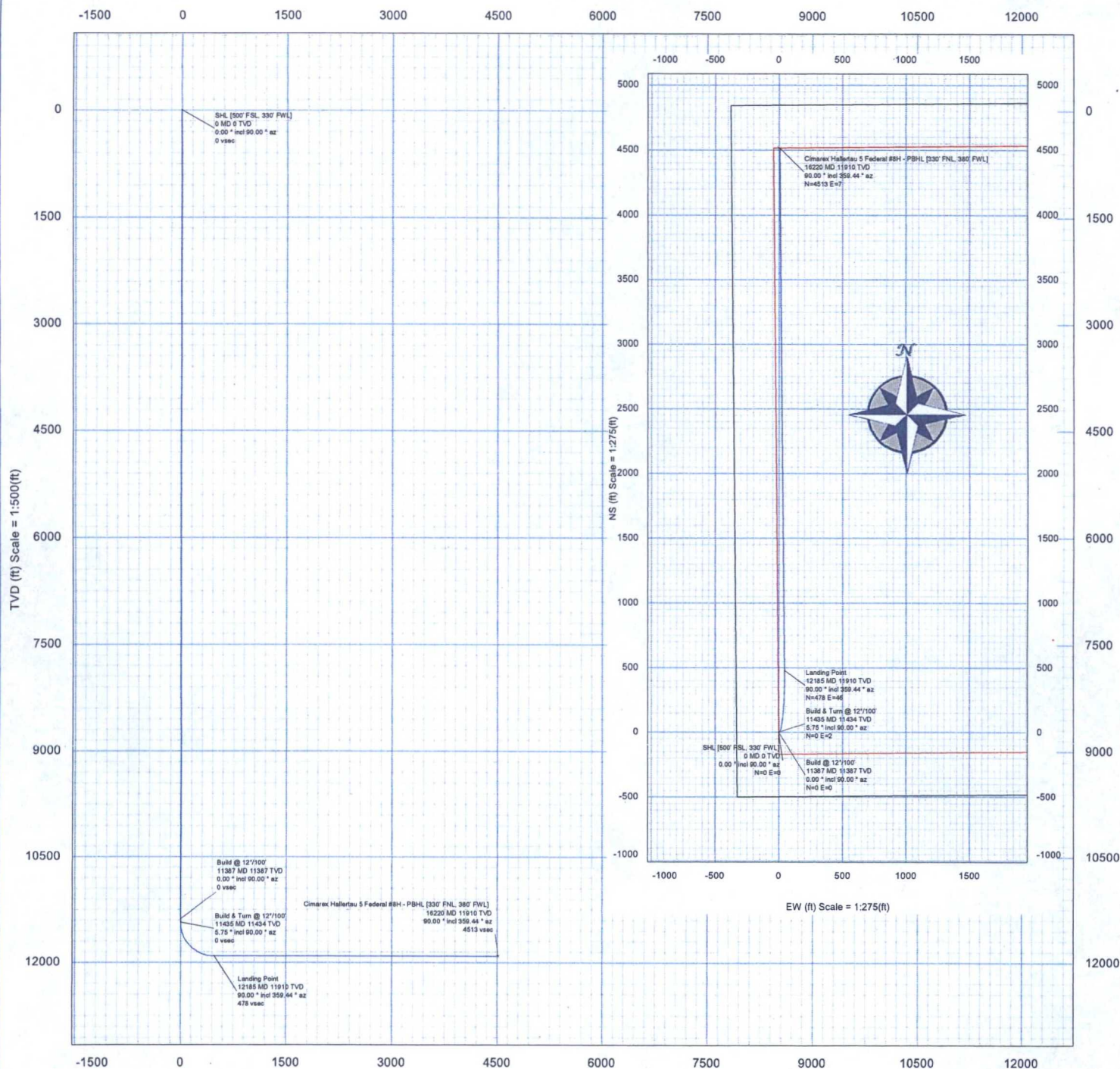
NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED
OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION

PROPOSED BOTTOM HOLE LOCATION Lot - N 32°04'43.23" Long - W 103°42'16.72" NMSPCE- N 392926.6 E 736058.3 (NAD-83) SURFACE LOCATION Lot - N 32°03'58.57" Long - W 103°42'17.11" NMSPCE- N 388413.7 E 736051.8 (NAD-83)	OPERATOR CERTIFICATION I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division. <i>Aricka Easterling</i> 11/23/2015 Signature Date Aricka Easterling Printed Name aeasterling@cimarex.com Email Address	
	SURVEYOR CERTIFICATION I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief. FEB 11 2016 Date Surveyed Signature & Seal of Professional Surveyor Gary L. Jones Certificate No. Gary L. Jones 7977 BASIN SURVEYS 25964	

MAY 05 2016

RECEIVED

Borehole:	Well:	Field:	Structure:
Original Borehole	Hallertau 5 Federal #8H	NM Lea County (NAD 83)	Cimarex Hallertau 5 Federal #8H
Gravity & Magnetic Parameters			
Model: HDGM 2015	Dip: 59.79°	Date: 18-Nov-2015	Surface Location
MagDec: 7.005°	FS: 48127.708mT	Gravity FS: 998.428mgm (9.80665 Based)	NAD83 New Mexico State Plane, Eastern Zone, US Feet
		Lat: N 32 3 56.57	Northings: 388413.78US
		Lon: W 103 42 17.11	Easting: 736051.88US
		Grid Conv: 0.3337°	Scale Fact: 0.99995261
		Plan: Rev2 JLP 18Nov2015	



Critical Points

Critical Point	MD	INCL	AZIM	TVD	VSEC	N(+)/S(-)	E(+)/W(-)	DLS
SHL [500' FSL, 330' FWL]	0.00	0.00	90.00	0.00	0.00	0.00	0.00	
Build @ 12°/100'	11386.84	0.00	90.00	11386.84	0.00	0.00	0.00	0.00
Build & Turn @ 12°/100'	11434.58	5.75	90.00	11434.48	0.00	0.00	2.40	12.00
Landing Point	12185.02	90.00	359.44	11910.00	477.97	477.91	45.85	12.00
Cimarex Hallertau 5 Federal #8H - PBHL [330' FNL, 380' FWL]	16220.43	90.00	359.44	11910.00	4513.13	4513.12	6.50	0.00

Cimarex Hallertau 5 Federal #8H Rev2 JLP 18Nov2015

Cimarex Hallertau 5 Federal #8H - PBHL

Cimarex Hallertau 5 Federal Lessee Lines

Cimarex Hallertau 5 Federal 330' HL

Grid North
Tot Corr (M=0.6, 6.71°)
Mag Dec (7.005°)
Grid Conv (0.334°)

CONTROLLED	
Drawn by	1 of 1
Copied by	18-Nov-2015
Date	
Client	
Client	
Office	
Office	
Copied by	

Cimarex Hallertau 5 Federal #8H Rev2 JLP 18Nov2015 Proposal Geodetic



Report

(Non-Def Plan)

Report Date: November 18, 2015 - 02:57 PM
Client: Cimarex
Field: NM Lea County (NAD 83)
Structure / Slot: Cimarex Hallertau 5 Federal #8H / Cimarex Hallertau 5 Federal #8H
Well: Cimarex Hallertau 5 Federal #8H
Borehole: Original Borehole
UWI / APH#: Unknown / Unknown
Survey Name: Cimarex Hallertau 5 Federal #8H Rev2 JLP 18Nov2015
Survey Date: November 18, 2015
Tort / AHD / DDI / ERD Ratio: 95,806' / 4522.980 ft / 5,771 / 0.380
Coordinate Reference System: NAD83 New Mexico State Plane, Eastern Zone, US Feet
Location Lat / Long: N 32° 3' 58.57270", W 103° 42' 17.10545"
Location Grid N/E Y/X: N 388413.700 RUS, E 736051.800 RUS
CRS Grid Convergence Angle: 0.3337°
Grid Scale Factor: 0.99995251
Version / Patch: 2.8.572.0

Survey / DLS Computation: Minimum Curvature / Lubinski
Vertical Section Azimuth: 0.083° (Grid North)
Vertical Section Origin: 0.000 ft, 0.000 ft
TVD Reference Datum: Ground Level
TVD Reference Elevation: 3271.000 ft above MSL
Seabed / Ground Elevation: 3271.000 ft above MSL
Magnetic Declination: 7.005°
Total Gravity Field Strength: 998.4279mgn (9.80665 Based)
Gravity Model: GARM
Total Magnetic Field Strength: 48127.708 nT
Magnetic Dip Angle: 59.790°
Declination Date: November 18, 2015
Magnetic Declination Model: HDGM 2015
North Reference: Grid North
Grid Convergence Used: 0.3337°
Total Corr Mag North->Grid North: 6.6709°
Local Coord Referenced To: Structure Reference Point

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
SHL [500' FSL, 330' FWL]	0.00	0.00	90.00	0.00	0.00	0.00	0.00	N/A	388413.70	736051.80	N 32 358.57 W 103 42 17.11	
	100.00	0.00	90.00	100.00	0.00	0.00	0.00	0.00	388413.70	736051.80	N 32 358.57 W 103 42 17.11	
	200.00	0.00	90.00	200.00	0.00	0.00	0.00	0.00	388413.70	736051.80	N 32 358.57 W 103 42 17.11	
	300.00	0.00	90.00	300.00	0.00	0.00	0.00	0.00	388413.70	736051.80	N 32 358.57 W 103 42 17.11	
	400.00	0.00	90.00	400.00	0.00	0.00	0.00	0.00	388413.70	736051.80	N 32 358.57 W 103 42 17.11	
	500.00	0.00	90.00	500.00	0.00	0.00	0.00	0.00	388413.70	736051.80	N 32 358.57 W 103 42 17.11	
	600.00	0.00	90.00	600.00	0.00	0.00	0.00	0.00	388413.70	736051.80	N 32 358.57 W 103 42 17.11	
	700.00	0.00	90.00	700.00	0.00	0.00	0.00	0.00	388413.70	736051.80	N 32 358.57 W 103 42 17.11	
	800.00	0.00	90.00	800.00	0.00	0.00	0.00	0.00	388413.70	736051.80	N 32 358.57 W 103 42 17.11	
	900.00	0.00	90.00	900.00	0.00	0.00	0.00	0.00	388413.70	736051.80	N 32 358.57 W 103 42 17.11	
	1000.00	0.00	90.00	1000.00	0.00	0.00	0.00	0.00	388413.70	736051.80	N 32 358.57 W 103 42 17.11	
	1100.00	0.00	90.00	1100.00	0.00	0.00	0.00	0.00	388413.70	736051.80	N 32 358.57 W 103 42 17.11	
	1200.00	0.00	90.00	1200.00	0.00	0.00	0.00	0.00	388413.70	736051.80	N 32 358.57 W 103 42 17.11	
	1300.00	0.00	90.00	1300.00	0.00	0.00	0.00	0.00	388413.70	736051.80	N 32 358.57 W 103 42 17.11	
	1400.00	0.00	90.00	1400.00	0.00	0.00	0.00	0.00	388413.70	736051.80	N 32 358.57 W 103 42 17.11	
	1500.00	0.00	90.00	1500.00	0.00	0.00	0.00	0.00	388413.70	736051.80	N 32 358.57 W 103 42 17.11	
	1600.00	0.00	90.00	1600.00	0.00	0.00	0.00	0.00	388413.70	736051.80	N 32 358.57 W 103 42 17.11	
	1700.00	0.00	90.00	1700.00	0.00	0.00	0.00	0.00	388413.70	736051.80	N 32 358.57 W 103 42 17.11	
	1800.00	0.00	90.00	1800.00	0.00	0.00	0.00	0.00	388413.70	736051.80	N 32 358.57 W 103 42 17.11	
	1900.00	0.00	90.00	1900.00	0.00	0.00	0.00	0.00	388413.70	736051.80	N 32 358.57 W 103 42 17.11	
	2000.00	0.00	90.00	2000.00	0.00	0.00	0.00	0.00	388413.70	736051.80	N 32 358.57 W 103 42 17.11	
	2100.00	0.00	90.00	2100.00	0.00	0.00	0.00	0.00	388413.70	736051.80	N 32 358.57 W 103 42 17.11	
	2200.00	0.00	90.00	2200.00	0.00	0.00	0.00	0.00	388413.70	736051.80	N 32 358.57 W 103 42 17.11	
	2300.00	0.00	90.00	2300.00	0.00	0.00	0.00	0.00	388413.70	736051.80	N 32 358.57 W 103 42 17.11	
	2400.00	0.00	90.00	2400.00	0.00	0.00	0.00	0.00	388413.70	736051.80	N 32 358.57 W 103 42 17.11	
	2500.00	0.00	90.00	2500.00	0.00	0.00	0.00	0.00	388413.70	736051.80	N 32 358.57 W 103 42 17.11	

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' '')	Longitude (E/W ° ' '')
Build @ 12°/100'	8500.00	0.00	90.00	8500.00	0.00	0.00	0.00	0.00	388413.70	736051.80	N 32 3 58.57 W 103 42 17.11	
	8600.00	0.00	90.00	8600.00	0.00	0.00	0.00	0.00	388413.70	736051.80	N 32 3 58.57 W 103 42 17.11	
	8700.00	0.00	90.00	8700.00	0.00	0.00	0.00	0.00	388413.70	736051.80	N 32 3 58.57 W 103 42 17.11	
	8800.00	0.00	90.00	8800.00	0.00	0.00	0.00	0.00	388413.70	736051.80	N 32 3 58.57 W 103 42 17.11	
	8900.00	0.00	90.00	8900.00	0.00	0.00	0.00	0.00	388413.70	736051.80	N 32 3 58.57 W 103 42 17.11	
	9000.00	0.00	90.00	9000.00	0.00	0.00	0.00	0.00	388413.70	736051.80	N 32 3 58.57 W 103 42 17.11	
	9100.00	0.00	90.00	9100.00	0.00	0.00	0.00	0.00	388413.70	736051.80	N 32 3 58.57 W 103 42 17.11	
	9200.00	0.00	90.00	9200.00	0.00	0.00	0.00	0.00	388413.70	736051.80	N 32 3 58.57 W 103 42 17.11	
	9300.00	0.00	90.00	9300.00	0.00	0.00	0.00	0.00	388413.70	736051.80	N 32 3 58.57 W 103 42 17.11	
	9400.00	0.00	90.00	9400.00	0.00	0.00	0.00	0.00	388413.70	736051.80	N 32 3 58.57 W 103 42 17.11	
Build & Turn @ 12°/100'	9500.00	0.00	90.00	9500.00	0.00	0.00	0.00	0.00	388413.70	736051.80	N 32 3 58.57 W 103 42 17.11	
	9600.00	0.00	90.00	9600.00	0.00	0.00	0.00	0.00	388413.70	736051.80	N 32 3 58.57 W 103 42 17.11	
	9700.00	0.00	90.00	9700.00	0.00	0.00	0.00	0.00	388413.70	736051.80	N 32 3 58.57 W 103 42 17.11	
	9800.00	0.00	90.00	9800.00	0.00	0.00	0.00	0.00	388413.70	736051.80	N 32 3 58.57 W 103 42 17.11	
	9900.00	0.00	90.00	9900.00	0.00	0.00	0.00	0.00	388413.70	736051.80	N 32 3 58.57 W 103 42 17.11	
	10000.00	0.00	90.00	10000.00	0.00	0.00	0.00	0.00	388413.70	736051.80	N 32 3 58.57 W 103 42 17.11	
	10100.00	0.00	90.00	10100.00	0.00	0.00	0.00	0.00	388413.70	736051.80	N 32 3 58.57 W 103 42 17.11	
	10200.00	0.00	90.00	10200.00	0.00	0.00	0.00	0.00	388413.70	736051.80	N 32 3 58.57 W 103 42 17.11	
	10300.00	0.00	90.00	10300.00	0.00	0.00	0.00	0.00	388413.70	736051.80	N 32 3 58.57 W 103 42 17.11	
	10400.00	0.00	90.00	10400.00	0.00	0.00	0.00	0.00	388413.70	736051.80	N 32 3 58.57 W 103 42 17.11	
Landing Point	10500.00	0.00	90.00	10500.00	0.00	0.00	0.00	0.00	388413.70	736051.80	N 32 3 58.57 W 103 42 17.11	
	10600.00	0.00	90.00	10600.00	0.00	0.00	0.00	0.00	388413.70	736051.80	N 32 3 58.57 W 103 42 17.11	
	10700.00	0.00	90.00	10700.00	0.00	0.00	0.00	0.00	388413.70	736051.80	N 32 3 58.57 W 103 42 17.11	
	10800.00	0.00	90.00	10800.00	0.00	0.00	0.00	0.00	388413.70	736051.80	N 32 3 58.57 W 103 42 17.11	
	10900.00	0.00	90.00	10900.00	0.00	0.00	0.00	0.00	388413.70	736051.80	N 32 3 58.57 W 103 42 17.11	
	11000.00	0.00	90.00	11000.00	0.00	0.00	0.00	0.00	388413.70	736051.80	N 32 3 58.57 W 103 42 17.11	
	11100.00	0.00	90.00	11100.00	0.00	0.00	0.00	0.00	388413.70	736051.80	N 32 3 58.57 W 103 42 17.11	
	11200.00	0.00	90.00	11200.00	0.00	0.00	0.00	0.00	388413.70	736051.80	N 32 3 58.57 W 103 42 17.11	
	11300.00	0.00	90.00	11300.00	0.00	0.00	0.00	0.00	388413.70	736051.80	N 32 3 58.57 W 103 42 17.11	
	11386.64	0.00	90.00	11386.64	0.00	0.00	0.00	0.00	388413.70	736051.80	N 32 3 58.57 W 103 42 17.11	
	11400.00	1.60	90.00	11400.00	0.00	0.00	0.19	12.00	388413.70	736051.99	N 32 3 58.57 W 103 42 17.10	
	11434.56	5.75	90.00	11434.48	0.00	0.00	2.40	12.00	388413.70	736054.20	N 32 3 58.57 W 103 42 17.08	
	11500.00	9.68	35.63	11499.39	4.49	4.48	8.90	12.00	388418.18	736060.70	N 32 3 58.62 W 103 42 17.00	
	11600.00	20.58	15.00	11595.84	28.40	28.38	18.38	12.00	388442.07	736070.17	N 32 3 58.85 W 103 42 16.89	
	11700.00	32.26	8.62	11685.26	71.94	71.90	26.96	12.00	388485.60	736078.76	N 32 3 59.28 W 103 42 16.79	
	11800.00	44.10	5.41	11763.73	133.20	133.15	34.26	12.00	388546.84	736086.06	N 32 3 59.89 W 103 42 16.70	
	11900.00	55.99	3.34	11827.84	209.50	209.45	39.98	12.00	388623.14	736091.78	N 32 4 0.64 W 103 42 16.63	
	12000.00	67.92	1.79	11874.78	297.52	297.46	43.85	12.00	388711.14	736095.65	N 32 4 1.51 W 103 42 16.58	
	12100.00	78.85	0.48	11902.49	393.33	393.33	45.71	12.00	388807.01	736097.51	N 32 4 2.46 W 103 42 16.55	
	12185.02	90.00	359.44	11910.00	477.97	477.91	45.65	12.00	388891.58	736097.45	N 32 4 3.30 W 103 42 16.54	
	12200.00	90.00	359.44	11910.00	492.95	492.89	45.50	0.00	388906.56	736097.30	N 32 4 3.45 W 103 42 16.54	
	12300.00	90.00	359.44	11910.00	592.94	592.88	44.53	0.00	389006.55	736096.33	N 32 4 4.44 W 103 42 16.55	
	12400.00	90.00	359.44	11910.00	692.94	692.88	43.56	0.00	389106.54	736095.36	N 32 4 5.43 W 103 42 16.55	
	12500.00	90.00	359.44	11910.00	792.93	792.87	42.59	0.00	389206.53	736094.39	N 32 4 6.42 W 103 42 16.56	
	12600.00	90.00	359.44	11910.00	892.93	892.87	41.62	0.00	389306.52	736093.42	N 32 4 7.41 W 103 42 16.56	
	12700.00	90.00	359.44	11910.00	992.92	992.86	40.65	0.00	389406.51	736092.45	N 32 4 8.39 W 103 42 16.57	
	12800.00	90.00	359.44	11910.00	1092.91	1092.86	39.68	0.00	389506.50	736091.48	N 32 4 9.38 W 103 42 16.57	
	12900.00	90.00	359.44	11910.00	1192.91	1192.85	38.71	0.00	389606.49	736090.51	N 32 4 10.37 W 103 42 16.57	
	13000.00	90.00	359.44	11910.00	1292.90	1292.85	37.74	0.00	389706.48	736089.54	N 32 4 11.36 W 103 42 16.58	
	13100.00	90.00	359.44	11910.00	1392.89	1392.84	36.77	0.00	389806.47	736088.57	N 32 4 12.35 W 103 42 16.58	
	13200.00	90.00	359.44	11910.00	1492.89	1492.84	35.80	0.00	389906.46	736087.60	N 32 4 13.34 W 103 42 16.59	
	13300.00	90.00	359.44	11910.00	1592.88	1592.83	34.83	0.00	390006.45	736086.63	N 32 4 14.33 W 103 42 16.59	
	13400.00	90.00	359.44	11910.00	1692.88	1692.83	33.86	0.00	390106.44	736085.66	N 32 4 15.32 W 103 42 16.60	
	13500.00	90.00	359.44	11910.00	1792.87	1792.82	32.89	0.00	390206.44	736084.69	N 32 4 16.31 W 103 42 16.60	
	13600.00	90.00	359.44	11910.00	1892.86	1892.82	31.92	0.00	390306.43	736083.72	N 32 4 17.30 W 103 42 16.61	
	13700.00	90.00	359.44	11910.00	1992.86	1992.81	30.95	0.00	390406.42	736082.75	N 32 4 18.29 W 103 42 16.61	
	13800.00	90.00	359.44	11910.00	2092.85	2092.81	29.98	0.00	390506.41	736081.78	N 32 4 19.28 W 103 42 16.62	

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
	13900.00	90.00	359.44	11910.00	2192.84	2192.81	29.01	0.00	390806.40	736080.81	N 32 4 20.27 W	103 42 16.62
	14000.00	90.00	359.44	11910.00	2292.84	2292.80	28.04	0.00	390706.39	736079.84	N 32 4 21.26 W	103 42 16.62
	14100.00	90.00	359.44	11910.00	2392.83	2392.80	27.07	0.00	390806.38	736078.87	N 32 4 22.25 W	103 42 16.63
	14200.00	90.00	359.44	11910.00	2492.83	2492.79	26.10	0.00	390906.37	736077.90	N 32 4 23.24 W	103 42 16.63
	14300.00	90.00	359.44	11910.00	2592.82	2592.79	25.13	0.00	391006.36	736076.93	N 32 4 24.23 W	103 42 16.64
	14400.00	90.00	359.44	11910.00	2692.81	2692.78	24.16	0.00	391106.35	736075.96	N 32 4 25.22 W	103 42 16.64
	14500.00	90.00	359.44	11910.00	2792.81	2792.78	23.19	0.00	391206.34	736074.99	N 32 4 26.21 W	103 42 16.65
	14600.00	90.00	359.44	11910.00	2892.80	2892.77	22.22	0.00	391306.33	736074.02	N 32 4 27.20 W	103 42 16.65
	14700.00	90.00	359.44	11910.00	2992.80	2992.77	21.25	0.00	391406.32	736073.05	N 32 4 28.19 W	103 42 16.66
	14800.00	90.00	359.44	11910.00	3092.79	3092.76	20.28	0.00	391506.31	736072.08	N 32 4 29.18 W	103 42 16.66
	14900.00	90.00	359.44	11910.00	3192.78	3192.76	19.31	0.00	391606.30	736071.11	N 32 4 30.16 W	103 42 16.66
	15000.00	90.00	359.44	11910.00	3292.78	3292.75	18.34	0.00	391706.29	736070.14	N 32 4 31.15 W	103 42 16.67
	15100.00	90.00	359.44	11910.00	3392.77	3392.75	17.37	0.00	391806.28	736069.17	N 32 4 32.14 W	103 42 16.67
	15200.00	90.00	359.44	11910.00	3492.76	3492.74	16.40	0.00	391906.27	736068.20	N 32 4 33.13 W	103 42 16.68
	15300.00	90.00	359.44	11910.00	3592.76	3592.74	15.43	0.00	392006.26	736067.23	N 32 4 34.12 W	103 42 16.68
	15400.00	90.00	359.44	11910.00	3692.75	3692.73	14.46	0.00	392106.25	736066.26	N 32 4 35.11 W	103 42 16.69
	15500.00	90.00	359.44	11910.00	3792.75	3792.73	13.49	0.00	392206.24	736065.29	N 32 4 36.10 W	103 42 16.69
	15600.00	90.00	359.44	11910.00	3892.74	3892.73	12.52	0.00	392306.23	736064.32	N 32 4 37.09 W	103 42 16.70
	15700.00	90.00	359.44	11910.00	3992.73	3992.72	11.55	0.00	392406.22	736063.35	N 32 4 38.08 W	103 42 16.70
	15800.00	90.00	359.44	11910.00	4092.73	4092.72	10.58	0.00	392506.21	736062.38	N 32 4 39.07 W	103 42 16.71
	15900.00	90.00	359.44	11910.00	4192.72	4192.71	9.61	0.00	392606.20	736061.41	N 32 4 40.06 W	103 42 16.71
	16000.00	90.00	359.44	11910.00	4292.71	4292.71	8.64	0.00	392706.19	736060.44	N 32 4 41.05 W	103 42 16.71
	16100.00	90.00	359.44	11910.00	4392.71	4392.70	7.67	0.00	392806.18	736059.47	N 32 4 42.04 W	103 42 16.72
	16200.00	90.00	359.44	11910.00	4492.70	4492.70	6.70	0.00	392906.17	736058.50	N 32 4 43.03 W	103 42 16.72
Cimarex Hallertau 5 Federal #8H - PBHL [330' FNL, 380' FWL]	16220.43	90.00	359.44	11910.00	4513.13	4513.12	6.50	0.00	392926.60	736058.30	N 32 4 43.23 W	103 42 16.72

Survey Type: Non-Def Plan

Survey Error Model: ISCWSA Rev 0 *** 3-D 95.000% Confidence 2.7955 sigma
Survey Program:

Description	Part	MD From (ft)	MD To (ft)	EOU Freq (ft)	Hole Size (in)	Casing Diameter (in)	Survey Tool Type	Borehole / Survey
	1	0.00	16220.427	1/100.000	30.000	30.000	SLB_UNKNOWN	Original Borehole / Cimarex Hallertau 5 Federal #8H Rev2