

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENTFORM APPROVED
OMB NO. 1004-0137
Expires: January 31, 2018**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.
NMNM114968

6. If Indian, Allottee or Tribe Name

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

SUBMIT IN TRIPLICATE - Other instructions on page 2

1. Type of Well

☐ Oil Well ☒ Gas Well ☐ Other2. Name of Operator
CHEVRON USA INCORPORATEDContact: DORIAN K FUENTES
E-Mail: DJVO@CHEVRON.COM3a. Address
6301 DEAUVILLE BLVD
MIDLAND, TX 797063b. Phone No. (include area code)
Ph: 432-687-7631

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

Sec 35 T25S R27E NESE 2414FSL 475FEL
32.085573 N Lat, 104.153763 W Lon8. Well Name and No.
HH CE 35 2 FED COM 006 5H9. API Well No.
30-015-44345-00-X110. Field and Pool or Exploratory Area
PURPLE SAGE-WOLFCAMP (GAS)11. County or Parish, State
EDDY COUNTY, NM

12. CHECK THE 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	☐ Hydraulic Fracturing	☐ 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 recomple 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 must be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recomple in a new interval, a Form 3160-4 must be filed once testing has been completed. Final Abandonment Notices must be filed only after all requirements, including reclamation, have been completed and the operator has determined that the site is ready for final inspection.

Chevron respectfully request a variance from the original directional plan, which will change the first/last points, and the bottom hole location. The original directional plan was bi-directional (N&S), but with the updated targets given by CVX geologist, the well path will be drilled to the South.

BC 12-20-17
Accepted for record - NMOCD

Chevron also respectfully request the well name & number change from HH CE 35 2 FED 65 to HH CE 35 2 FED 006 5H as referenced on the Sundry.

BHL from 280 N & 750 E to 180 S & 330 E
FTP from 330 N & 750 E to 2651 S & 330 E
LTP from 2640 S & 850 E to 330 S & 330 E

Carlsbad Field Office
OCD ArtesiaNM OIL CONSERVATION
ARTESIA DISTRICT

DEC 19 2017

RECEIVED

Revised 2s

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

Electronic Submission #386744 verified by the BLM Well Information System
For CHEVRON USA INCORPORATED, sent to the Carlsbad
Committed to AFMSS for processing by PRISCILLA PEREZ on 10/02/2017 (18PP0018SE)

Name (Printed/Typed) DORIAN K FUENTES

Title REGULATORY SPECIALIST

Signature (Electronic Submission)

Date 08/30/2017

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By ZOTA STEVENS

Title PETROLEUM ENGINEER

Date 11/19/2017

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 Carlsbad

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.

(Instructions on page 2)

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

Additional data for EC transaction #386744 that would not fit on the form

32. Additional remarks, continued

Please refer to the attached. \

Should questions arise, please contact me @ djvo@chevron.com or Rod @ 281-413-9794.

Delaware Basin Changes to APD for Federal Well



HH CE 35 2 FED 006	1H	30-015-44347
HH CE 35 2 FED 006	2H	30-015- 44346
HH CE 35 2 FED 006	3H	30-015- 44350
HH CE 35 2 FED 006	4H	30-015- 44349
HH CE 35 2 FED 006	5H	30-015- 44345
HH CE 35 2 FED 006	6H	30-015- 44348

CHEVRON CONTACT:

RODERICK MILLIGAN
DRILLING ENGINEER
1400 SMITH ST.
HOUSTON, TX 77002

DESK: HOU140/43-130
CELL: 281-413-9794
EMAIL: RODERICK.MILLIGAN@CHEVRON.COM

District I
1220 S. St. Francis Dr., Santa Fe, NM 87501
Phone (505) 476-3460 Fax (505) 476-3462

District II
811 S. First St., Santa Fe, NM 87501
Phone (505) 476-3460 Fax (505) 476-3462

District III
1000 Rio Blvd., Santa Fe, NM 87501
Phone (505) 476-3460 Fax (505) 476-3462

District IV
1220 S. St. Francis Dr., Santa Fe, NM 87501
Phone (505) 476-3460 Fax (505) 476-3462

State of New Mexico
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-102
Revised August 1, 2011
Submit one copy to appropriate
District Office

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number 30-015-44345	Pool Code 98720	Pool Name Purple Sage; W. Camp (Gas)
Property Code 318938	Property Name HHCE 35 02 FED 006	Well Number 5H
OGRID No. 4323	Operator Name CHEVRON U.S.A. INC.	Elevation 3145'

Surface Location

UL or lot no	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
1	35	25 SOUTH	27 EAST, N.M.P.M.		2414'	SOUTH	475'	EAST	EDDY

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
P	2	26 SOUTH	27 EAST, N.M.P.M.		180'	SOUTH	330'	EAST	EDDY

Dedicated Acreage 6.40	Joint or Infill	Consolidation Code	Comments
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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

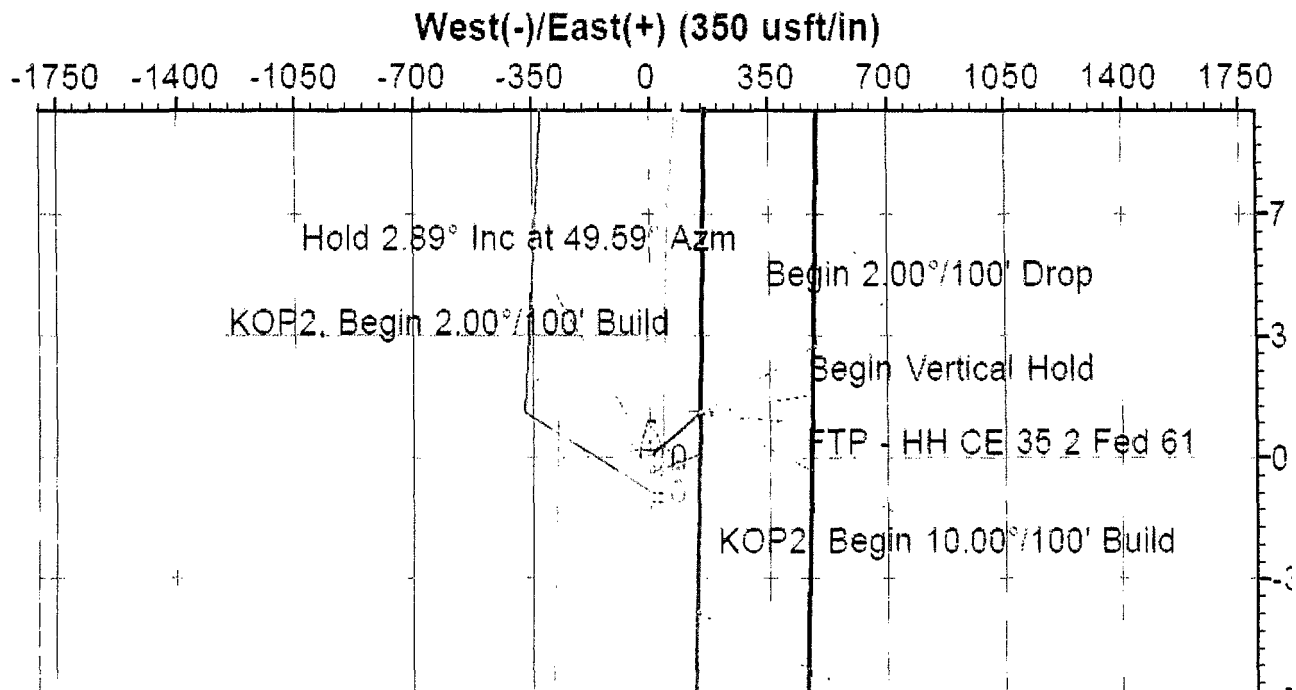
PROPOSED FIRST TAKE POINT X= 555,916 NAD 27 Y= 395,094 LAT 32 086101 LONG 104 152789 X= 555,916 NAD83 Y= 395,152 LAT 32 086224 LONG 104 153279 MID POINT X= 555,868 NAD 27 Y= 392,443 LAT 32 078813 LONG 104 152955 X= 597,005 NAD83 Y= 392,500 LAT 32 078935 LONG 104 153447 PROPOSED LAST TAKE POINT X= 555,821 NAD 27 Y= 387,446 LAT 32 065077 LONG 104 153134 X= 597,005 NAD83 Y= 387,503 LAT 32 065199 LONG 104 153625	HHCE 35 02 FED 006 ND 5H X= 555,767 NAD 27 Y= 394,857 LAT 32 085450 LONG 104 153271 X= 596,951 NAD83 Y= 394,915 LAT 32 085513 LONG 104 153763 ELEVATION +3145' NAVD 88 CORNER COORDINATES TABLE (NAD 27) A Y=397833.25 X=553702.88 B Y=397744.31 X=556293.47 C Y=392440.48 X=553545.40 D Y=392443.15 X=556198.44 E Y=387033.94 X=553461.53 F Y=387127.21 X=556148.35 PROPOSED BOTTOM HOLE LOCATION X= 555,820 NAD 27 Y= 387,296 LAT 32 064864 LONG 104 153139 X= 597,004 NAD83 Y= 387,353 LAT 32 064786 LONG 104 153631	OPERATOR CERTIFICATION I hereby certify that the well location shown on this plat was plotted from field actual surveys made by me or under my supervision, and that the same is true and correct to the best of my knowledge. Date: 11-10-2016 Survey Signature: <i>[Signature]</i> Printed Name: Robert J. [Name] Email Address: [Email] Professional Surveyor: 822-2017 Certificate Number: 23006
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Summary of Changes to Directional Plan Submission

Chevron respectfully request a variance from the original directional plan, which will change the first take points/last take points.

Directional Plan – Section 35

Summary: The original directional plan was bi-directional (north & south), but with the updated targets given by Chevron geologist, the well path will be drilled to the south.



Chevron respectfully request a variance from the original directional plan, to drill all six wells to the south.



Project: Eddy County, NM (NAD27 NME)
Site: HH CE 35 02 Fed 006
Well: 5H
Wellbore: OH
Design: Plan 3 11-06-17
Rig:

PHOENIX

TECHNOLOGY SERVICES

Asimuth to Grid North
True North: -0.10°
Magnetic North: 7.20°
Magnetic Field
Strength: 47990.5nT
Dip Angle: 59.83°
Date: 12/02/2017
Model: HDGM

WELL DETAILS

Ground Level:	3145.00
Wellhead:	3145.00
Wellbore:	3145.00
Well:	3145.00
Wellbore:	3145.00

SECTION DETAILS

Sec	MD	Inc	Az	TVD	+N-S	-E-W	Deg	True	Target	Annotation
1	2000.00	0.00	0.00	2000.00	0.00	0.00	0.00	0.00	0.00	KOP1, Begin 2.00°/100' Build
2	2181.48	3.63	11.91	2181.36	5.62	1.19	2.00	11.91	-5.61	Hold 3.63° Inc at 11.91° Az
3	5826.07	3.63	11.91	5818.64	231.38	48.81	0.00	0.00	-231.03	Begin 2.00°/100' Drop
4	6007.55	0.00	0.00	6000.00	237.00	50.00	2.00	180.00	-236.64	Begin Vertical Hold
5	8792.25	0.00	0.00	8784.70	237.00	50.00	2.00	180.00	-236.64	KOP2, Begin 10.00°/100' Build
6	9884.44	90.22	178.90	9857.65	237.00	50.00	2.00	180.00	-236.64	Hold 90.22° Inc at 178.90° Az
7	11782.81	90.12	180.51	11743.75	237.00	50.00	2.00	180.00	-236.64	Hold 90.12° Inc at 180.51° Az
8	14643.52	90.12	180.51	14604.40	237.00	50.00	2.00	180.00	-236.64	Hold 90.12° Inc at 180.51° Az
9	14643.52	90.12	180.51	14604.40	237.00	50.00	2.00	180.00	-236.64	Hold 90.12° Inc at 180.51° Az
10	14643.52	90.12	180.51	14604.40	237.00	50.00	2.00	180.00	-236.64	Hold 90.12° Inc at 180.51° Az
11	14643.52	90.12	180.51	14604.40	237.00	50.00	2.00	180.00	-236.64	Hold 90.12° Inc at 180.51° Az
12	16918.03	90.20	180.55	16868.83	237.00	50.00	2.00	180.00	-236.64	Hold 90.20° Inc at 180.55° Az

DESIGN TARGET DETAILS

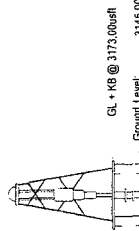
Name	TVD	+N-S	-E-W	Deg	True	Target
BHLV3 - HH CE 35 02 Fed 006 SH	9335.00	-7561.00	53.00	387295.00	555820.00	
LTPV3 - HH CE 35 02 Fed 006 SH	9335.00	-7411.00	54.00	387448.00	555821.00	
MPV3 - HH CE 35 02 Fed 006 SH	9335.00	-7345.36	59.68	389511.64	555865.68	
FTPV3 - HH CE 35 02 Fed 006 SH	9390.00	-237.00	145.00	395094.00	555915.00	

FORMATION TOP DETAILS

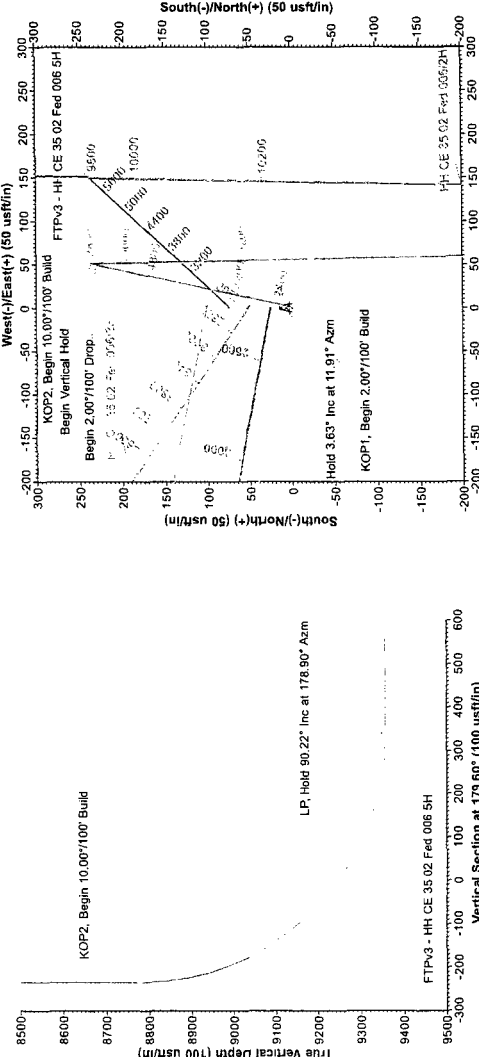
No formation data is available

LEGEND

- 3H, OH, Plan 3 11-06-17 V0
- 6H, OH, Plan 3 11-06-17 V0
- 2H, OH, Plan 3 11-06-17 V0
- 4H, OH, Plan 3 11-06-17 V0
- 1H, OH, Plan 3 11-06-17 V0
- Plan 3 11-06-17



KOP1, Begin 2.00°/100' Build
Hold 3.63° Inc at 11.91° Az



FORMATION TOP DETAILS

No formation data is available

LEGEND

- 3H, OH, Plan 3 11-06-17 V0
- 6H, OH, Plan 3 11-06-17 V0
- 2H, OH, Plan 3 11-06-17 V0
- 4H, OH, Plan 3 11-06-17 V0
- 1H, OH, Plan 3 11-06-17 V0
- Plan 3 11-06-17

FORMATION TOP DETAILS

No formation data is available

LEGEND

- 3H, OH, Plan 3 11-06-17 V0
- 6H, OH, Plan 3 11-06-17 V0
- 2H, OH, Plan 3 11-06-17 V0
- 4H, OH, Plan 3 11-06-17 V0
- 1H, OH, Plan 3 11-06-17 V0
- Plan 3 11-06-17



Phoenix Technology Services LP

Planning Report



Database: Compass 5000 GCR
Company: Chevron
Project: Eddy County, NM (NAD27 NME)
Site: HH CE 35 02 Fed 006
Well: 5H
Wellbore: OH
Design: Plan 3 11-06-17

Local Co-ordinate Reference: Well 5H
TVD Reference: GL + KB @ 3173.00usft
MD Reference: GL + KB @ 3173.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature

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 HH CE 35 02 Fed 006

Site Position:		Northing:	394,831.98 usft	Latitude:	32° 5' 7.37145 N
From:	Map	Easting:	555,766.00 usft	Longitude:	104° 9' 11.78281 W
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.10 °

Well	5H				
Well Position	+N/-S	25.01 usft	Northing:	394,857.00 usft	Latitude: 32° 5' 7.61899 N
	+E/-W	1.00 usft	Easting:	555,767.00 usft	Longitude: 104° 9' 11.77071 W
Position Uncertainty	0.00 usft		Wellhead Elevation:	0.00 usft	Ground Level: 3,145.00 usft

Wellbore OH

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	12/6/2017	7.30	59.83	47,991

Design Plan 3 11-06-17

Audit Notes:

Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction
	(usft)	(usft)	(usft)	(°)
	0.00	0.00	0.00	179.60

Plan Sections

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,181.48	3.63	11.91	2,181.36	5.62	1.19	2.00	2.00	0.00	11.91	
5,826.07	3.63	11.91	5,818.64	231.38	48.81	0.00	0.00	0.00	0.00	
6,007.55	0.00	0.00	6,000.00	237.00	50.00	2.00	-2.00	0.00	180.00	
8,792.25	0.00	0.00	8,784.70	237.00	50.00	0.00	0.00	0.00	0.00	
9,694.44	90.22	178.90	9,357.65	-338.04	61.06	10.00	10.00	19.83	178.90	
11,702.15	90.22	178.90	9,350.00	-2,345.36	99.68	0.00	0.00	0.00	0.00	MPv3 - HH CE 35 C
11,782.81	90.12	180.51	9,349.77	-2,426.02	100.10	2.00	-0.13	2.00	93.66	
14,643.52	90.12	180.51	9,344.00	-5,286.61	74.74	0.00	0.00	0.00	0.00	IP1 - HH CE 35 02
14,648.27	90.20	180.55	9,343.99	-5,291.35	74.70	2.00	1.82	0.84	24.79	
16,918.03	90.20	180.55	9,336.00	-7,561.00	53.00	0.00	0.00	0.00	0.00	BHLv3 - HH CE 35



Phoenix Technology Services LP

Planning Report



Database: Compass 5000 GCR
Company: Chevron
Project: Eddy County, NM (NAD27 NME)
Site: HH CE 35 02 Fed 006
Well: 5H
Wellbore: OH
Design: Plan 3 11-06-17

Local Co-ordinate Reference: Well 5H
TVD Reference: GL + KB @ 3173.00usft
MD Reference: GL + KB @ 3173.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Planned 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)
9,100.00	30.77	178.90	9,077.86	156.33	51.55	-155.97	10.00	10.00	0.00
9,200.00	40.77	178.90	9,158.89	97.96	52.67	-97.59	10.00	10.00	0.00
9,300.00	50.77	178.90	9,228.55	26.40	54.05	-26.02	10.00	10.00	0.00
9,400.00	60.77	178.90	9,284.72	-56.16	55.64	56.55	10.00	10.00	0.00
9,500.00	70.77	178.90	9,325.70	-147.22	57.39	147.62	10.00	10.00	0.00
9,600.00	80.77	178.90	9,350.25	-244.01	59.25	244.42	10.00	10.00	0.00
9,694.44	90.22	178.90	9,357.65	-338.04	61.06	338.46	10.00	10.00	0.00
LP, Hold 90.22° Inc at 178.90° Azm									
9,700.00	90.22	178.90	9,357.63	-343.60	61.17	344.02	0.00	0.00	0.00
9,800.00	90.22	178.90	9,357.25	-443.58	63.09	444.01	0.00	0.00	0.00
9,900.00	90.22	178.90	9,356.87	-543.56	65.02	544.00	0.00	0.00	0.00
10,000.00	90.22	178.90	9,356.49	-643.54	66.94	643.99	0.00	0.00	0.00
10,100.00	90.22	178.90	9,356.11	-743.52	68.86	743.98	0.00	0.00	0.00
10,200.00	90.22	178.90	9,355.73	-843.50	70.79	843.98	0.00	0.00	0.00
10,300.00	90.22	178.90	9,355.35	-943.48	72.71	943.97	0.00	0.00	0.00
10,400.00	90.22	178.90	9,354.96	-1,043.46	74.63	1,043.96	0.00	0.00	0.00
10,500.00	90.22	178.90	9,354.58	-1,143.44	76.56	1,143.95	0.00	0.00	0.00
10,600.00	90.22	178.90	9,354.20	-1,243.42	78.48	1,243.94	0.00	0.00	0.00
10,700.00	90.22	178.90	9,353.82	-1,343.40	80.40	1,343.94	0.00	0.00	0.00
10,800.00	90.22	178.90	9,353.44	-1,443.39	82.33	1,443.93	0.00	0.00	0.00
10,900.00	90.22	178.90	9,353.06	-1,543.37	84.25	1,543.92	0.00	0.00	0.00
11,000.00	90.22	178.90	9,352.68	-1,643.35	86.17	1,643.91	0.00	0.00	0.00
11,100.00	90.22	178.90	9,352.30	-1,743.33	88.10	1,743.90	0.00	0.00	0.00
11,200.00	90.22	178.90	9,351.91	-1,843.31	90.02	1,843.89	0.00	0.00	0.00
11,300.00	90.22	178.90	9,351.53	-1,943.29	91.94	1,943.89	0.00	0.00	0.00
11,400.00	90.22	178.90	9,351.15	-2,043.27	93.87	2,043.88	0.00	0.00	0.00
11,500.00	90.22	178.90	9,350.77	-2,143.25	95.79	2,143.87	0.00	0.00	0.00
11,600.00	90.22	178.90	9,350.39	-2,243.23	97.72	2,243.86	0.00	0.00	0.00
11,700.00	90.22	178.90	9,350.01	-2,343.21	99.64	2,343.85	0.00	0.00	0.00
11,702.15	90.22	178.90	9,350.00	-2,345.36	99.68	2,346.00	0.00	0.00	0.00
Begin 2.00°/100' Drop & Turn									
11,782.81	90.12	180.51	9,349.77	-2,426.02	100.10	2,426.66	2.00	-0.13	2.00
Hold 90.12° Inc at 180.51° Azm									
11,800.00	90.12	180.51	9,349.73	-2,443.21	99.95	2,443.85	0.00	0.00	0.00
11,900.00	90.12	180.51	9,349.53	-2,543.20	99.06	2,543.84	0.00	0.00	0.00
12,000.00	90.12	180.51	9,349.33	-2,643.20	98.17	2,643.82	0.00	0.00	0.00
12,100.00	90.12	180.51	9,349.13	-2,743.20	97.29	2,743.81	0.00	0.00	0.00
12,200.00	90.12	180.51	9,348.92	-2,843.19	96.40	2,843.80	0.00	0.00	0.00
12,300.00	90.12	180.51	9,348.72	-2,943.19	95.51	2,943.78	0.00	0.00	0.00
12,400.00	90.12	180.51	9,348.52	-3,043.18	94.63	3,043.77	0.00	0.00	0.00
12,500.00	90.12	180.51	9,348.32	-3,143.18	93.74	3,143.76	0.00	0.00	0.00
12,600.00	90.12	180.51	9,348.12	-3,243.17	92.85	3,243.75	0.00	0.00	0.00
12,700.00	90.12	180.51	9,347.92	-3,343.17	91.97	3,343.73	0.00	0.00	0.00
12,800.00	90.12	180.51	9,347.72	-3,443.17	91.08	3,443.72	0.00	0.00	0.00
12,900.00	90.12	180.51	9,347.51	-3,543.16	90.20	3,543.71	0.00	0.00	0.00
13,000.00	90.12	180.51	9,347.31	-3,643.16	89.31	3,643.69	0.00	0.00	0.00
13,100.00	90.12	180.51	9,347.11	-3,743.15	88.42	3,743.68	0.00	0.00	0.00
13,200.00	90.12	180.51	9,346.91	-3,843.15	87.54	3,843.67	0.00	0.00	0.00
13,300.00	90.12	180.51	9,346.71	-3,943.15	86.65	3,943.66	0.00	0.00	0.00
13,400.00	90.12	180.51	9,346.51	-4,043.14	85.76	4,043.64	0.00	0.00	0.00
13,500.00	90.12	180.51	9,346.30	-4,143.14	84.88	4,143.63	0.00	0.00	0.00
13,600.00	90.12	180.51	9,346.10	-4,243.13	83.99	4,243.62	0.00	0.00	0.00
13,700.00	90.12	180.51	9,345.90	-4,343.13	83.10	4,343.60	0.00	0.00	0.00



Phoenix Technology Services LP

Planning Report



Database: Compass 5000 GCR
Company: Chevron
Project: Eddy County, NM (NAD27 NME)
Site: HH CE 35 02 Fed 006
Well: 5H
Wellbore: OH
Design: Plan 3 11-06-17

Local Co-ordinate Reference: Well 5H
TVD Reference: GL + KB @ 3173.00usft
MD Reference: GL + KB @ 3173.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Design Targets

Target Name

- hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
BHLv3 - HH CE 35 02 - plan hits target center - Point	0.00	0.00	9,336.00	-7,561.00	53.00	387,296.00	555,820.00	32° 3' 52.79015 N 104° 9' 11.30142 W	
LTPv3 - HH CE 35 02 - plan misses target center by 0.44usft at 16768.02usft MD (9336.53 TVD, -7411.00 N, 54.43 E) - Point	0.00	0.00	9,336.49	-7,411.00	54.00	387,446.00	555,821.00	32° 3' 54.27462 N 104° 9' 11.28689 W	
IP1 - HH CE 35 02 Fe - plan hits target center - Point	0.00	0.00	9,344.00	-5,286.61	74.74	389,570.39	555,841.74	32° 4' 15.29847 N 104° 9' 11.00462 W	
MPv3 - HH CE 35 02 - plan hits target center - Point	0.00	0.00	9,350.00	-2,345.36	99.68	392,511.64	555,866.68	32° 4' 44.40635 N 104° 9' 10.65763 W	
FTPv3 - HH CE 35 02 - plan misses target center by 257.45usft at 9242.03usft MD (9189.69 TVD, 69.37 N, 53.22 E) - Point	0.00	0.00	9,360.00	237.00	149.00	395,094.00	555,916.00	32° 5' 9.96201 N 104° 9' 10.03414 W	

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
2,000.00	2,000.00	0.00	0.00	KOP1, Begin 2.00°/100' Build
2,181.48	2,181.36	5.62	1.19	Hold 3.63° Inc at 11.91° Azm
5,826.07	5,818.64	231.38	48.81	Begin 2.00°/100' Drop
6,007.55	6,000.00	237.00	50.00	Begin Vertical Hold
8,792.25	8,784.70	237.00	50.00	KOP2, Begin 10.00°/100' Build
9,694.44	9,357.65	-338.04	61.06	LP, Hold 90.22° Inc at 178.90° Azm
11,702.15	9,350.00	-2,345.36	99.68	Begin 2.00°/100' Drop & Turn
11,782.81	9,349.77	-2,426.02	100.10	Hold 90.12° Inc at 180.51° Azm
14,643.52	9,344.00	-5,286.61	74.74	Begin 2.00°/100' Build & Turn
14,648.26	9,343.99	-5,291.35	74.70	Hold 90.20° Inc at 180.55° Azm
16,918.03	9,336.00	-7,561.00	53.00	TD at 16918.03

Directional Plot

PROPERTY NAME HH CE 35 2 FED 006
WELL NUMBER 5H
GL 3144
KB 3172

Comment	MD (FT)	INC (DEG)	AZIMUTH (GN)	AZIMUTH (TN)	DX	DY	DXTN	DYTN	TVD (FT)	DLS (DEG/100)	X	Y	Z
KOP	0	0	5.03583363	5.4856259	0.30961985	0.00243288	0.3097289	2.20E-06	0	0	1902577.91	1647066.46	3172
	126.425	0	5.03583363	5.4856259	0.30961985	0.00243288	0.3097289	2.20E-06	129.425	0	1902577.91	1647066.46	3043.575
	162.016654	1.06775176	5.03583363	5.4856259	0.33872053	0.33267625	0.34143138	0.330113	165.014594	3	1902577.94	1647066.79	3007.98541
	197.608308	2.13550352	5.03583363	5.4856259	0.42601247	1.32329167	0.43652776	1.32033074	200.591826	3	1902578.03	1647067.78	2972.40817
	233.199962	3.20325528	5.03583363	5.4856259	0.57145535	2.97393511	0.5949851	2.97031154	236.144348	3	1902578.17	1647069.43	2936.85565
	268.791617	4.27100704	5.03583363	5.4856259	0.77502866	5.28403335	0.81674829	5.27948241	271.659806	3	1902578.38	1647071.74	2901.34019
	304.382271	5.33875588	5.03583363	5.4856259	1.0366317	8.25276411	1.10174035	8.24704138	307.125868	3	1902578.64	1647074.71	2865.87413
	8763.34182	5.33875588	5.03583363	5.4856259	70.1010982	792.01945	76.3412209	791.699037	8729.38632	0	1902647.7	1647859.48	-5556.3893
	8789.81901	2.71138122	9.97470359	10.4244959	70.3176847	793.662989	76.5723282	793.54141	8755.79897	10	1902647.92	1647860.32	-5582.799
	8816.29621	0.47054056	87.241857	87.6916493	70.5347028	794.484916	76.7943135	794.161813	8782.2656	10	1902648.14	1647860.94	-5609.2656
	8842.7734	2.68679709	169.856202	170.305994	70.751749	793.863902	77.0067028	793.55692	8808.73273	10	1902648.35	1647860.34	-5635.7327
	8869.2506	5.29365495	174.920664	175.370356	70.9693398	792.061231	77.2090426	791.734019	8835.14382	10	1902648.57	1647858.52	-5662.1438
	8895.72779	7.53437682	176.625595	177.075388	71.1840129	789.020794	77.400901	788.691005	8861.44245	10	1902648.79	1647855.48	-5688.4425
	8922.20498	17.482356	177.932159	179.3983077	71.3983077	784.769083	78.168982	784.436376	8887.5726	10	1902649	1647851.23	-5714.5726
	8948.68218	13.2241887	177.999344	178.449137	71.6107667	779.315177	77.7515579	778.878217	8913.47635	10	1902649.21	1647845.77	-5740.4763
	8975.15937	15.8704896	178.346403	178.796196	71.8209362	772.670719	77.9096078	772.331178	8939.10442	10	1902649.42	1647839.13	-5766.1044
	9001.63557	18.5171888	178.596392	179.046184	72.0283675	764.849897	78.0556804	764.508455	8954.39611	10	1902649.63	1647831.31	-5791.3961
	9028.11376	21.1641368	178.785741	179.235534	72.3251777	755.869408	78.1894638	755.521754	8989.29541	10	1902649.83	1647822.33	-5816.2954
	9054.59096	23.8112506	178.934692	179.384484	72.4332506	745.748428	78.3106725	745.396258	9013.76115	10	1902650.03	1647812.21	-5840.7611
	9081.06815	26.4594802	179.055391	179.505183	72.629838	734.508567	78.4190475	734.151588	9037.7291	10	1902650.23	1647800.97	-5864.7291
	9107.54534	29.105794	179.15557	179.605362	72.8218599	722.173821	78.5143576	721.81175	9061.15209	10	1902650.42	1647788.83	-5886.1521
	9134.02254	31.7531709	179.240384	179.690176	73.0092062	708.770528	76.5963992	708.403094	9083.9801	10	1902650.61	1647775.23	-5910.9801
	9160.49973	34.4005961	179.313406	179.763198	73.191177	694.327306	76.6649971	693.954247	9106.1644	10	1902650.79	1647760.79	-5933.1644
	9186.97693	37.0480592	179.377189	179.826982	73.3674838	678.874982	76.7200048	678.496059	9127.65762	10	1902650.97	1647745.33	-5954.6576
	9213.45412	39.6955525	179.43351	179.883402	73.5377502	662.446579	76.761305	662.061537	9148.41307	10	1902651.14	1647728.91	-5975.4139
	9239.93132	42.3430703	179.484076	179.933868	73.7016125	645.077144	76.7888095	644.685769	9168.39853	10	1902651.3	1647711.54	-5995.3985
	9266.40851	44.990608	179.529668	179.97945	73.858721	626.803773	76.8024595	626.405856	9187.53985	10	1902651.46	1647693.26	-6014.5398
	9292.88571	47.6381622	179.571229	180.021021	74.00874	607.665481	76.8022258	607.260826	9205.82605	10	1902651.61	1647674.12	-6032.826
	9319.3629	50.2857303	179.609426	180.059218	74.1513492	587.703131	76.788109	587.291558	9223.20637	10	1902651.75	1647654.16	-6050.2084
	9345.84069	52.83331	179.644798	180.09458	74.2862442	566.956346	76.7601392	566.540687	9239.64971	10	1902651.89	1647633.42	-6066.6497
	9372.31729	55.5802954	179.677762	180.127574	74.4131369	545.478415	76.7183762	545.05252	9255.11495	10	1902652.01	1647611.84	-6082.115
	9398.79446	58.2284672	179.70674	180.158532	74.5317563	523.396204	76.6629031	522.872937	9269.57111	10	1902652.13	1647589.77	-6096.5711
	9425.27168	60.878102	179.737974	180.187766	74.6416492	500.490052	76.5938563	500.042293	9282.96728	10	1902652.24	1647566.95	-6109.9673
	9451.74887	63.5237128	179.765739	180.215532	74.7431804	477.078676	76.5113652	476.63032	9295.23462	10	1902652.34	1647543.54	-6122.3546
	9478.22607	66.1713265	179.792255	180.242047	74.8355336	453.12208	76.4156121	452.66902	9306.58738	10	1902652.44	1647519.58	-6133.5874
	9504.70326	68.8189451	179.817709	180.267501	74.9187116	428.671357	76.3068013	428.20755	9318.72095	10	1902652.52	1647495.13	-6143.7209
	9531.18045	71.4665731	179.842267	180.292059	74.9925367	405.77877	76.1851652	405.367183	9325.71380	10	1902652.59	1647470.24	-6152.7138
	9557.65765	74.1142002	179.866075	180.315867	75.0588518	378.497448	76.0509534	378.017992	9333.54693	10	1902652.66	1647444.96	-6160.5469
	9584.13484	76.7618298	179.885264	180.339056	75.1115181	352.861272	77.9044826	352.394045	9340.20342	10	1902652.71	1647419.34	-6167.2034
	9610.61204	79.4094615	179.911955	180.361747	75.1564203	326.985233	77.7460234	326.490001	9345.66913	10	1902652.78	1647393.44	-6172.6691
	9637.09823	82.0570945	179.934256	180.384048	75.1914521	300.864523	77.5759802	300.361236	9349.93238	10	1902652.79	1647367.32	-6176.9324
	9663.56643	84.7047232	179.956271	180.406064	75.2165686	274.574414	77.3946201	274.062515	9352.9641	10	1902652.82	1647341.03	-6179.9841
	9690.04362	87.3523544	179.979099	180.427891	75.2316862	248.171638	77.2024023	247.65295	9354.81773	10	1902652.83	1647314.63	-6181.8177
	9716.52081	90	179.999834	180.449625	75.2367826	221.712368	76.9937172	221.185954	9355.42836	10	1902652.84	1647288.17	-6182.4284
	9721.9207	90.0382349	179.946466	180.398258	75.239513	216.314217	76.958657	215.786215	9355.42836	1	1902652.84	1647262.77	-6182.429
	9727.32059	90.0164697	179.893099	180.342891	75.2468715	210.916071	76.9250264	210.386442	9355.42783	1	1902652.85	1647237.37	-6182.4278
	12367.3724	90.0164697	179.893099	180.342891	80.1692791	-2428.283	61.1255257	-2429.618	9354.65894	0	1902657.77	1644638.18	-6181.6689
	12375.2314	89.9991423	179.969755	180.419547	80.1788704	-2436.1395	61.0732355	-2437.4769	9354.66787	1	1902657.78	1644630.32	-6181.6679
	12383.0903	89.9818149	180.04641	180.496203	80.1775508	-2443.9959	61.0104328	-2445.3355	9354.66918	1	1902657.78	1644622.46	-6181.6692
	17350.1654	89.9818149	180.04641	180.496203	76.1407361	-7408.4936	17.9941022	-7412.244	9356.24568	0	1902650.74	1633656.57	-6150.2457
	17300.1654	89.9818149	180.04641	180.496203	76.0165999	-7565.4455	16.6950633	-7562.2394	9356.25326	0	1902650.52	1633659.07	-6183.2933

#REF!

13 3/8 Segment	surface csg in a #/ft	17 1/2 Grade	inch hole. Coupling	Joint	<u>Design Factors</u>		SURFACE		
"A"	54.50	K 55	ST&C	22.30	Collapse	Burst	Length	Weight	
"B"					5.56	0.61	450	24,525	
w/8.4#/g mud, 30min Sfc Csg Test psig: 1,500				Tail Cmt	does	circ to sfc.	Totals:	450 24,525	
<u>Comparison of Proposed to Minimum Required Cement Volumes</u>									
Hole	Annular	1 Stage	1 Stage	Min	1 Stage	Drilling	Calc	Req'd	Min Dist
Size	Volume	Cmt Sx	CuFt Cmt	Cu Ft	% Excess	Mud Wt	MASP	BOPE	Hole-Cplg
17 1/2	0.6946	356	473	367	29	8.70	2466	3M	1.56

Burst Frac Gradient(s) for Segment(s) A, B = , b All > 0.70, OK.

9 5/8 Segment	casing inside the #/ft	Grade	13 3/8	Coupling	Joint	Design Factors		INTERMEDIATE	
"A"	43.50	L 80		LT&C	2.07	Collapse	Burst	Length	Weight
"B"						1.29	1.04	9,015	392,153
w/8.4#/g mud, 30min Sfc Csg Test psig:							Totals:	9,015	392,153
The cement volume(s) are intended to achieve a top of					0	ft from surface or a		450	overlap.
Hole Size	Annular Volume	1 Stage Cmt Sx	1 Stage CuFt Cmt	Min Cu Ft	1 Stage % Excess	Drilling Mud Wt	Calc MASP	Req'd BOPE	Min Dist Hole-Cplg
12 1/4	0.3132	look v	0	2864		9.50	4008	5M	0.81
D V Tool(s):			2100				sum of sx	Σ CuFt	Σ % excess
by stage %			91	22			2361	5004	75
Class 'H' tail cmt yld = 1.20									

Tajl cmt									
5 1/2	casing inside the	9 5/8	-		<u>Design Factors</u>		PRODUCTION		
Segment	#/ft	Grade	Coupling	Joint	Collapse	Burst	Length	Weight	
"A"	20.00	P 110	BUTT	3.43	1.94	2.08	8,792	175,840	
"B"	20.00	P 110	BUTT	8.00	1.67	2.09	8,108	162,160	
w/8.4#/g mud, 30min Sfc Csg Test psig: 1,934							Totals:	16,900 338,000	
B would be				58.92	1.83	if it were a vertical wellbore.			
No Pilot Hole Planned		MTD	Max VTD	Csg VTD	Curve KOP	Dogleg ^a	Severity ^a	MEOC	
		16900	9336	9336	8792	90	10	9694	
The cement volume(s) are intended to achieve a top of				7015	ft from surface or a		2000	overlap.	
Hole	Annular	1 Stage	1 Stage	Min	1 Stage	Drilling	Calc	Req'd	Min Dist
Size	Volume	Cmt Sx	CuFt Cmt	Cu Ft	% Excess	Mud Wt	MASP	BOPE	Hole-Cplg
8 3/4	0.2526	2950	3544	2503	42	12.50			1.33