

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.
NMNM100549

6. If Indian, Allottee or Tribe Name

SUBMIT IN TRIPLICATE - Other instructions on page 27. If Unit or CA/Agreement, Name and/or No.
NMNM1386188. Well Name and No.
HH SO 17 20 FED 002 6H9. API Well No.
30-015-45109-00-X110. Field and Pool or Exploratory Area
PURPLE SAGE-WOLFCAMP (GAS)11. County or Parish, State
EDDY COUNTY, NM

1. Type of Well

☐ Oil Well ☒ Gas Well ☐ Other2. Name of Operator
CHEVRON USA INCORPORATEDContact: LAURA BECERRA
E-Mail: LBECCERRA@CHEVRON.COM3a. Address
6301 DEAUVILLE BLVD
MIDLAND, TX 797063b. Phone No. (include area code)
Ph: 432-687-7655

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

Sec 17 T26S R27E NWNE 212FNL 1600FEL
32.049168 N Lat, 104.208900 W Lon**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 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 must 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 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 USA Inc respectfully requests the following changes to the original APD approved 7/6/2018:

FTP - From: 330' FNL, 750' FEL (LAT: 32.048836/LONG: -104.206154)
TO: 330' FNL, 330' FEL (LAT: 32.048832/LONG: -104.204798)LTP - From: 330' FSL, 750' FEL (LAT: 32.021367/LONG: -104.205927)
TO: 330' FSL, 330' FEL (LAT: 32.021365/LONG: -104.204571)BHL - From: 280' FSL, 750' FEL (LAT: 32.021230/LONG: -104.205926) ✓
TO: 25' FSL, 330' FEL (LAT: 32.020527/LONG: -104.204566)**Carlsbad Field Office**
OCD ArtesiaNM OIL CONSERVATION
ARTESIA DISTRICT

OCT 28 2019

SEE ADDITIONAL ROAs.

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

Electronic Submission #488013 verified by the BLM Well Information System
For CHEVRON USA INCORPORATED, sent to the Carlsbad
Committed to AFMSS for processing by PRISCILLA PEREZ on 10/15/2019 (20PP0119SE)

RECEIVED

Name (Printed/Typed) LAURA BECERRA

Title REGULATORY SPECIALIST

Signature (Electronic Submission)

Date 10/14/2019

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By NDUNGU KAMAU

Title PETROLEUM ENGINEER

Date 10/24/2019

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 **

RWP 10-30-19

Additional data for EC transaction #488013 that would not fit on the form

32. Additional remarks, continued

TVD/MD: 9,709'/20,044' to 9,720'/20,544'

We also propose to break test if able to finish the next hole section within 21 days of the previous full BOP test. Details attached.

Copies of revised certified plat, directional survey, and drilling plan with updated casing and cement details are attached.

Revisions to Operator-Submitted EC Data for Sundry Notice #488013

	Operator Submitted	BLM Revised (AFMSS)
Sundry Type:	APDCH NOI	APDCH NOI
Lease:	NMNM100549	NMNM100549
Agreement:		NMNM138618 (NMNM138618)
Operator:	CHEVRON USA INC 6301 DEAUVILLE BLVD MIDLAND, TX 79706 Ph: 432-687-7665	CHEVRON USA INCORPORATED 6301 DEAUVILLE BLVD MIDLAND, TX 79706 Ph: 432 687 7100
Admin Contact:	LAURA BECERRA REGULATORY SPECIALIST E-Mail: LBECERRA@CHEVRON.COM Ph: 432-687-7665	LAURA BECERRA REGULATORY SPECIALIST E-Mail: LBECERRA@CHEVRON.COM Ph: 432-687-7655
Tech Contact:	LAURA BECERRA REGULATORY SPECIALIST E-Mail: LBECERRA@CHEVRON.COM Ph: 432-687-7665	LAURA BECERRA REGULATORY SPECIALIST E-Mail: LBECERRA@CHEVRON.COM Ph: 432-687-7655
Location:		
State:	NM	NM
County:	EDDY	EDDY
Field/Pool:	PURPLE SAGE;WOLFCAMP (GAS)	PURPLE SAGE-WOLFCAMP (GAS)
Well/Facility:	HH SO 17 20 FED 002 6H Sec 17 T26S R27E Mer NMP NWNE 212FNL 1600FEL	HH SO 17 20 FED 002 6H Sec 17 T26S R27E NWNE 212FNL 1600FEL 32.049168 N Lat, 104.208900 W Lon

PECOS DISTRICT

DRILLING CONDITIONS OF APPROVAL

OPERATOR'S NAME:	CHEVRON USA INC
LEASE NO.:	NMNM100549
WELL NAME & NO.:	HH SO 17 20 FED 002 6H
SURFACE HOLE FOOTAGE:	330' FNL & 750' FEL
BOTTOM HOLE FOOTAGE	280' FSL & 750' FEL; Sec. 20
LOCATION:	Section 17, T. 26 S., R 27 E., NMPM
COUNTY:	Eddy County, New Mexico

COA

H2S	☐ Yes	☒ No	
Potash	☒ None	☐ Secretary	☐ R-111-P
Cave/Karst Potential	☐ Low	☐ Medium	☒ High
Cave/Karst Potential	☐ Critical		
Variance	☐ None	☒ Flex Hose	☐ Other
Wellhead	☐ Conventional	☒ Multibowl	☐ Both
Other	☒ 4 String Area	☐ Capitan Reef	☐ WIPP
Other	☐ Fluid Filled	☐ Cement Squeeze	☐ Pilot Hole
Special Requirements	☐ Water Disposal	☐ GOM	☐ Unit

Break Testing	☒ Yes	☐ No
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ALL PREVIOUS COAs STILL APPLY.

A. CASING

Primary Casing Design:

1. The 13-3/8 inch surface casing shall be set at approximately **450 feet** (a minimum of **70 feet (Eddy County)** into the Rustler Anhydrite and above the salt) and cemented to the surface.
 - a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.
 - b. Wait on cement (WOC) time for a primary cement job will be a minimum of **8 hours** or 500 pounds compressive strength, whichever is greater. (This is to include the lead cement)

- c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.
 - d. If cement falls back, remedial cementing will be done prior to drilling out that string.
2. The minimum required fill of cement behind the 9-5/8 inch intermediate casing is:
 - Cement to surface. If cement does not circulate see B.1.a, c-d above.
Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to cave/karst or potash.
- ❖ **In High Cave/Karst Areas if cement does not circulate to surface on the first two casing strings, the cement on the 3rd casing string must come to surface.**
3. The minimum required fill of cement behind the 7-5/8 inch 2nd intermediate liner is:
 - Cement should tie-back at least **200 feet** into previous casing string. Operator shall provide method of verification.
Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to cave/karst or potash.
4. The minimum required fill of cement behind the 5-1/2 inch production casing is:
 - Cement should tie-back at least **200 feet** into previous casing string. Operator shall provide method of verification.

B. PRESSURE CONTROL

1. **Variance approved to use flex line from BOP to choke manifold. Manufacturer's specification to be readily available. No external damage to flex line. Flex line to be installed as straight as possible (no hard bends).'**
2. Operator has proposed a multi-bowl wellhead assembly. This assembly will only be tested when installed on the surface casing. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **5000 (5M) psi**.
 - a. Wellhead shall be installed by manufacturer's representatives, submit documentation with subsequent sundry.
 - b. If the welding is performed by a third party, the manufacturer's representative shall monitor the temperature to verify that it does not exceed the maximum temperature of the seal.

- c. Manufacturer representative shall install the test plug for the initial BOP test.
- d. If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head shall be cut off, cementing operations performed and another wellhead installed.
- e. Whenever any seal subject to test pressure is broken, all the tests in OOGO2.III.A.2.i must be followed.

C. SPECIAL REQUIREMENT (S)

BOP Break Testing Variance (Note: For 5M BOP or less)

- While in transfer between wells, the BOPE shall be secured by the hydraulic carrier or cradle.
- Any well control event while drilling require notification to the BLM Petroleum Engineer prior to the commencement of any BOP Break Testing operations.
- A full BOP test is required prior to drilling the first deep intermediate hole section. If any subsequent hole interval is deeper than the first, a full BOP test will be required.

OTA10242019

Delaware Basin

Changes to APD/COA for Federal Well



Well Name:

Well Name		API #
HH SO 17 20 FED 002	6H	30-015-45109

Rig: Patterson 257

CVX CONTACT:

Hannah Wardo

MCBU D&C Engineer – Patterson 257

Chevron North America Exploration and Production Co.

MidContinent Business Unit

Office: (713) 372-9032

Cell: (832) 963-9814

Email: Hannah.wardo@chevron.com

Summary of Changes to original APD

Chevron USA Inc is requesting the following changes to the original APD approved 7/6/2018:

- FTP - From: 330' FNL, 750' FEL (LAT: 32.048836/LONG: -104.206154)
To: 330' FNL, 330' FEL (LAT: 32.048832/LONG: -104.204798)
- LTP - From: 330' FSL, 750' FEL (LAT: 32.021367/LONG: -104.205927)
To: 330' FSL, 330' FEL (LAT: 32.021365/LONG: -104.204571)
- BHL - From: 280' FSL, 750' FEL (LAT: 32.021230/LONG: -104.205926)
To: 25' FSL, 330' FEL (LAT: 32.020527/LONG: -104.204566)
- TVD/MD: 9,709'/20,044' to 9,720'/20,544'
- A variance from the Onshore Order 2 where it states "(A full BOP Test) shall be performed: when initially installed and whenever any seal subject to test pressure is broken." We propose to break test if able to finish the next hole section within 21 days of the previous full BOP test. Upon the first nipple up of the pad a full BOP test will be performed. A break test will consist of a 250 psi low / $\geq$ 5,000 psi high 10 min ea ~~test~~ against the connection that was broken when skidding the rig. A break test will not be performed on our last production section. A break test will only be performed on operations where BLM documentation states a 5M or less BOP can be utilized.

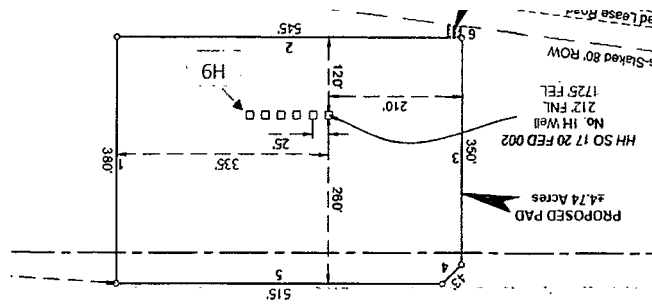
See drilling sequence below that indicates the potential hole sections break testing can be performed given they meet the above criteria.

Option 4 - skid after int 1 and int 2 drilled on each well; skid 5, 3, 1, 2, 5, 4

* = offline

Drilling Sequence & Slot Designation

HNM 26 27 Sec 17 20 Pad 93, Pkg 6							
	6H (WCC)	5H (WCA)	4H (WCD)	3H (WCA)	2H (WCC)	1H (WCA)	
Surface (drilled by surface rig)	X	X	X	X	X	X	
Int1	11	9	7	5	3	1	brine
Int2	12	10	8	6	4	2	cut brine
Production	17*	13*	18	14*	16	15	OBM
trailers							



District I
1625 N. French Dr., Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone: (575) 748-1283 Fax: (575) 748-9720
District III
1000 Rio Brazos Road, Aztec, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505
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

¹ API Number 30-015-45109	² Pool Code 98220	³ Pool Name PURPLE SAGE; WOLFCAMP (GAS)
⁴ Property Code 321650	⁵ Property Name HH SO 17 20 FED 002	⁶ Well Number 6H
⁷ OGRID No. 4323	⁸ Operator Name CHEVRON U.S.A. INC.	⁹ Elevation 3250'

¹⁰ Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
B	17	26 SOUTH	27 EAST, N.M.P.M.		212'	NORTH	1600'	EAST	EDDY

¹¹ 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	20	26 SOUTH	27 EAST, N.M.P.M.		25'	SOUTH	330'	EAST	EDDY

¹² Dedicated Acres 640	¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ Order No.
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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.

¹⁶ <table border="1"> <tr> <th colspan="2">PROPOSED FIRST TAKE POINT</th> </tr> <tr> <td>X= 539,977 NAD 27</td> </tr> <tr> <td>Y= 381,470</td> </tr> <tr> <td>LAT. 32.048710</td> </tr> <tr> <td>LONG. 104.204305</td> </tr> <tr> <td>X= 581,161 NAD83</td> </tr> <tr> <td>Y= 381,527</td> </tr> <tr> <td>LAT. 32.048832</td> </tr> <tr> <td>LONG. 104.204798</td> </tr> <tr> <th colspan="2">MID POINT</th> </tr> <tr> <td>X= 540,024 NAD 27</td> </tr> <tr> <td>Y= 376,475</td> </tr> <tr> <td>LAT. 32.034979</td> </tr> <tr> <td>LONG. 104.204172</td> </tr> <tr> <td>X= 581,208 NAD83</td> </tr> <tr> <td>Y= 376,532</td> </tr> <tr> <td>LAT. 32.035101</td> </tr> <tr> <td>LONG. 104.204665</td> </tr> <tr> <th colspan="2">PROPOSED LAST TAKE POINT</th> </tr> <tr> <td>X= 540,059 NAD 27</td> </tr> <tr> <td>Y= 371,479</td> </tr> <tr> <td>LAT. 32.021243</td> </tr> <tr> <td>LONG. 104.204079</td> </tr> <tr> <td>X= 581,243 NAD83</td> </tr> <tr> <td>Y= 371,535</td> </tr> <tr> <td>LAT. 32.021365</td> </tr> <tr> <td>LONG. 104.204571</td> </tr> </table>	PROPOSED FIRST TAKE POINT		X= 539,977 NAD 27	Y= 381,470	LAT. 32.048710	LONG. 104.204305	X= 581,161 NAD83	Y= 381,527	LAT. 32.048832	LONG. 104.204798	MID POINT		X= 540,024 NAD 27	Y= 376,475	LAT. 32.034979	LONG. 104.204172	X= 581,208 NAD83	Y= 376,532	LAT. 32.035101	LONG. 104.204665	PROPOSED LAST TAKE POINT		X= 540,059 NAD 27	Y= 371,479	LAT. 32.021243	LONG. 104.204079	X= 581,243 NAD83	Y= 371,535	LAT. 32.021365	LONG. 104.204571	<table border="1"> <tr> <th colspan="2">HH SO 17 20 FED 002 6H WELL</th> </tr> <tr> <td>X= 538,706 NAD 27</td> </tr> <tr> <td>Y= 381,591</td> </tr> <tr> <td>LAT. 32.049046</td> </tr> <tr> <td>LONG. 104.208406</td> </tr> <tr> <td>X= 579,890 NAD83</td> </tr> <tr> <td>Y= 381,647</td> </tr> <tr> <td>LAT. 32.049168</td> </tr> <tr> <td>LONG. 104.208899</td> </tr> <tr> <td colspan="2">ELEVATION +3250' NAVD 88</td> </tr> </table> <table border="1"> <tr> <th colspan="2">CORNER COORDINATES TABLE (NAD 27)</th> </tr> <tr> <td>A - Y=381810.94, X=534988.20</td> </tr> <tr> <td>B - Y=381799.23, X=540303.95</td> </tr> <tr> <td>C - Y=376480.27, X=535066.16</td> </tr> <tr> <td>D - Y=376474.90, X=540354.10</td> </tr> <tr> <td>E - Y=371149.70, X=535082.62</td> </tr> <tr> <td>F - Y=371148.59, X=540391.30</td> </tr> </table>	HH SO 17 20 FED 002 6H WELL		X= 538,706 NAD 27	Y= 381,591	LAT. 32.049046	LONG. 104.208406	X= 579,890 NAD83	Y= 381,647	LAT. 32.049168	LONG. 104.208899	ELEVATION +3250' NAVD 88		CORNER COORDINATES TABLE (NAD 27)		A - Y=381810.94, X=534988.20	B - Y=381799.23, X=540303.95	C - Y=376480.27, X=535066.16	D - Y=376474.90, X=540354.10	E - Y=371149.70, X=535082.62	F - Y=371148.59, X=540391.30		¹⁷ 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. Signature: Date: 9/18/2019 Printed Name: Laura Becerra E-mail Address: L.Becerra@Chevron.com
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			¹⁸ 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. Date of Survey: 06/15/2017 Signature and Seal of Professional Surveyor: Certificate Number: 22921 Date: 07/22/2019																																																		

RWP 10-30-19

Pad Summary

The table below lists all the wells for the given pad and their respective name and TVD's (ft) for their production target intervals:

Well Name(s)	Target TVD	Formation Desc.
HH SO 17 20 FED 002 1H	9,109	Wolfcamp A
HH SO 17 20 FED 002 2H	9,718	Wolfcamp C
HH SO 17 20 FED 002 3H	9,188	Wolfcamp A
HH SO 17 20 FED 002 4H	9,849	Wolfcamp D
HH SO 17 20 FED 002 5H	9,111	Wolfcamp A
HH SO 17 20 FED 002 6H	9,720	Wolfcamp C

1. FORMATION TOPS

The estimated tops of important geologic markers are as follows:

Elevation: 3275 ft

FORMATION	SUB-SEA TVD	TVD	MD	LITHOLOGIES	MIN. RESOURCES	PROD. FORMATION
Rustler	3275		-	ANHYD	N/A	
Salado	2630	645	645	SALT	N/A	
Lamar	1177	2,098	2,098	LIMESTONE	N/A	
Bell Canyon	1148	2,127	2,127	SAND STONE	N/A	
Cherry Canyon	325	2,950	2,950	SAND STONE	N/A	
Brushy Canyon	-791	4,066	4,066	SAND STONE	N/A	
Bone Spring Limestone	-2400	5,675	5,675	LIMESTONE	N/A	
Avalon	-2543	5,818	5,818	SHALE	Oil	
Top Bone Spring 1	-3324	6,599	6,599	SHALE	Oil	
Top Bone Spring 2	-3857	7,132	7,132	SHALE	Oil	
Top Bone Spring 3	-4973	8,248	8,248	SHALE	Oil	
WCA	-5579	8,854	8,854	SHALE	Oil	
WCB	-6047	9,322	9,514	SHALE	Oil	
WCC	-6376	9,651	10,014	SHALE	Oil	Yes

WELLBORE LOCATIONS	SUB-SEA TVD	RKB TVD	MD
SHL	3275	-	-
KOP	-5862	9,137	9,312
FTP	-6445	9,720	10,246
LTP	-6445	9,720	20,544

Bottom hole temperature: 150 degrees F

2. ESTIMATED DEPTH OF WATER, OIL, GAS & OTHER MINERAL BEARING FORMATIONS

The estimated depths at which the top and bottom of the anticipated water, oil, gas, or other mineral bearing formations are expected to be encountered are as follows:

Substance	Formation	Depth
Deepest Expected Base of Fresh Water		450
Water	Rustler	-
Water	Salado	645
Water	Lamar	2,098
Oil/Gas	Bell Canyon	2,127
Oil/Gas	Cherry Canyon	2,950
Oil/Gas	Brushy Canyon	4,066
Oil/Gas	Bone Spring Limestone	5,675
Oil/Gas	Avalon	5,818
Oil/Gas	Top Bone Spring 1	6,599
Oil/Gas	Top Bone Spring 2	7,132
Oil/Gas	Top Bone Spring 3	8,248
Oil/Gas	WCA	8,854

All shows of fresh water and minerals will be reported and protected.

3. BOP EQUIPMENT

Chevron will have a minimum of a 5,000 psi rig stack (see proposed schematic) for drill out below surface casing. The stack will be tested as specified in the attached testing requirements. Batch drilling of the surface, intermediate, and production will take place. A full BOP test will be performed per hole section, unless approval from BLM is received otherwise. Flex choke hose will be used for all wells on the pad (see attached specs and variance). BOP test will be conducted by a third party.

Chevron requests a variance to use a FMC Technologies UH-S Multibowl wellhead, which will be run through the rig floor on surface casing. BOPE will be nipped up and tested after cementing surface casing. Subsequent tests will be performed as needed, not to exceed 30 days. The field report from FMC Technologies and BOP test information will be provided in a subsequent report at the end of the well. Please see the attached wellhead schematic. An installation manual has been placed on file with the BLM office and remains unchanged from previous submittal. All tests performed by third party.

4. CASING PROGRAM

a. The proposed casing program will be as follows:

Purpose	From	To	Hole Size	Csg Size	Weight	Grade	Thread	Condition
Surface	0'	450'	17-1/2"	13-3/8"	54.5 #	J-55	STC/BTC	New
Intermediate	0'	2,100'	12-1/4"	9-5/8"	43.5 #	L-80	LTC	New
INT2 Liner	1,800'	9,100'	8-1/2"	7-5/8"	29.7 #	P-110	W-513	New
Production (Tapered String)	0'	8,600'	6-3/4"	5-1/2"	20.0 #	P-110	TXP-BTC	New
	0'	20,544'	6-3/4"	5"	18.0 #	P-110	W-521	New

TVD $\Rightarrow$ 9720'
MD $\Rightarrow$ 20,544'

- Plat
- Surface
- Ann.

Purpose	Hole Size	Casing Size	Top (MD)	Btm (MD)	Top (TVD)	Btm (TVD)	Top (SSTVD)	Btm (SSTVD)	Grade	Weight	Joint type
Surface	17-1/2"	13-3/8"	0'	450'	0'	450'	3,275'	2,825'	J-55	54.5 #	STC/BTC
Intermediate	12-1/4"	9-5/8"	0'	2,100'	0'	2,100'	3,275'	1,175'	L-80	43.5 #	LTC
Intermediate Liner	8-1/2"	7-5/8"	1,800'	9,100'	1,800'	9,100'	1,475'	-5,825'	P110	29.7 #	W-513
Production (Tapered String)	6-3/4"	5-1/2"	0'	8,600'	0'	8,600'	3,275'	-5,325'	P110	20.0 #	TXP-BTC
	6-3/4"	5"	8,600'	20,544'	8,600'	9,720'	-5,325'	-6,445'	P110	18.0 #	W-521

b. Casing design subject to revision based on geologic conditions encountered.

A "Worst Case" casing design for wells in a particular area is used below to calculate the Casing Safety Factors. If for any reason the

c. casing design for a particular well requires setting casing deeper than the following "worst case" design, then the Casing Safety Factors will be recalculated & sent to the BLM prior to drilling.

d. Chevron will fill casing at a minimum of every 20 jts (~840') while running for intermediate and production casing in order to maintain collapse SF.

SF Calculations based on the following "Worst Case" casing design:

Surface Casing:	450'	ftTVD
Intermediate Casing:	2,100'	ftTVD
INT2 Liner	9,100'	ftTVD
Production Casing:	20,544'	ftMD (10428' VS)

Casing String	Min SF Burst	Min SF Collapse	Min SF Tension	Min SF Tri-Axial
Surface	1.48	2.10	4.91	1.80
Intermediate	1.52	1.87	2.79	1.83
Intermediate	1.33	2.59	1.60	1.66
Production	1.10	1.39	1.61	1.32

The following worst case load cases were considered for calculation of the above Min. Safety Factors:

Burst Design	Surf	Int	Prod
Pressure Test- Surface, Int, Prod Csg			
P external: Mud weight above TOC, PP below	X	X	X
P internal: Test psi + next section heaviest mud in csg			
Displace to Gas- Surf Csg			
P external: Mud weight above TOC, PP below	X		
P internal: Dry Gas from Next Csg Point			
Gas over mud (60/40) - Int Csg			
P external: Mud weight above TOC, PP below		X	
P internal: 60% gas over 40% mud from hole TD PP			
Stimulation (Frac) Pressures- Prod Csg			
P external: Mud weight above TOC, PP below			X
P internal: Max inj pressure w/ heaviest injected fluid			
Tubing leak- Prod Csg (packer at KOP)			
P external: Mud weight above TOC, PP below			X
P internal: Leak just below surf, 8.45 ppg packer fluid			
Collapse Design	Surf	Int	Prod
Full Evacuation			
P external: Mud weight gradient	X	X	X
P internal: none			
Cementing- Surf, Int, Prod Csg			
P external: Wet cement	X	X	X
P internal: displacement fluid - water			
Tension Design	Surf	Int	Prod
100k lb overpull	X	X	X

5. **CEMENTING PROGRAM**

Slurry	Type	Top	Bottom	Sacks	Yield (cu ft/sk)	Density (ppg)	%Excess Open Hole	Water gal/sk	Volume cuft	Additives
Surface										
Tail	Class C	0'	450'	488	1.34	14.8	50	6.40	654	Extender, Antifoam, Retarder
Intermediate Csg.										
Lead	Class C	0'	1,100'	398	1.73	12.8	100	9.26	689	Extender, Antifoam, Retarder, Viscosifier
Tail	Class C	1,100'	2,100'	334	1.33	14.8	30	6.38	445	Extender, Antifoam, Retarder, Viscosifier
Intermediate 2 Csg.										
Lead	Class C	1,800'	8,600'	517	2.43	11.9	140	12.54	1256	Extender, Antifoam, Retarder, Viscosifier
Tail	Class C	8,600'	9,100'	43	1.335	14.8	50	6.29	58	Extender, Antifoam, Retarder, Viscosifier
Production										
Lead	Class H	8,600'	19,544'	1315	1.4	14.5	50	9.85	1841	Extender, Antifoam, Retarder, Viscosifier
Tail	Class H	19,544'	20,544'	78	2.16	15	50	9.22	168	Extender, Antifoam, Retarder, Viscosifier

1. Final cement volumes will be determined by caliper.
2. Surface casing shall have at least one centralizer installed on each of the bottom three joints starting with the shoe joint.
3. Production casing will have one solid body type centralizer on every joint in the lateral, then every other joint to KOP. Bowspring type centralizers will be run from KOP to intermediate casing and surface.

6. **MUD PROGRAM**

From	To	TVD Top	TVD Btm	Type	Weight	Viscosity	Filtrate
0'	450'	0'	880'	Fresh water mud	8.3 - 9.0	28-30	N/C
450'	2,100'	880'	2,100'	Brine/OBM	8.8 - 10.6	28-70	15-30
2,100'	9,100'	2,100'	9,100'	Cut Brine/OBM	8.8 - 10.0	28-70	15-30
9,100'	20,544'	9,100'	9,720'	OBM	9.5 - 13.0	50-70	10 - 25

A closed system will be used consisting of above ground steel tanks. All wastes accumulated during drilling operations will be contained in a portable trash cage and removed from location and deposited in an approved sanitary landfill. Sanitary wastes will be contained in a chemical porta-toilet and then hauled to an approved sanitary landfill.

All fluids and cuttings will be disposed of in accordance with New Mexico Oil Conservation Division rules and regulations. And transporting of E&P waste will follow EPA regulations and accompanying manifests.

A mud test shall be performed every 24 hours after mudding up to determine, as applicable: density, viscosity, gel strength, filtration, and pH.

Visual mud monitoring equipment shall be in place to detect volume changes indicating loss or gain of circulating fluid volume. When abnormal pressures are anticipated – a pit volume totalizer (PVT), stroke counter, and flow sensor will be used to detect volume changes indicating loss or gain of circulating fluid volume.

A weighting agent and lost circulating material (LCM) will be onsite to mitigate pressure or lost circulation as hole conditions dictate.

7. TESTING, LOGGING, AND CORING

The anticipated type and amount of testing, logging, and coring are as follows:

- a. Drill stem tests are not planned.
- b. The logging program will be as follows:

TYPE	Logs	Interval	Timing
Mudlogs	2 man mudlog	Surface casing shoe through prod hole TD	While drilling or circulating
LWD	MWD Gamma	Int. and Prod. Hole	While Drilling

- c. Conventional whole core samples are not planned.
- d. A directional survey will be run.

8. ABNORMAL PRESSURES AND HYDROGEN SULFIDE

- a. No abnormal pressure or temperatures are expected. Estimated BHP is: psi (MASP)
- b. Hydrogen sulfide gas is not anticipated. An H2S Contingency plan is attached with this APD in the event that H2S is encountered

PLANNED WELLPATH REPORT (CSV version)

Prepared by Baker Hughes, a GE company

Software System: WellArchitect® 5.1

REFERENCE WELLPATH IDENTIFICATION

Operator Chevron U.S.A. Inc.
 Area Eddy County, NM
 Field Purple Sage, Wolfcamp (Eddy Co., NM) NAD 27
 Facility HNM 26 27 Pkg 6 Pad 93
 Slot HH SO 17 20 Fed 002 No. 6H
 Well HH SO 17 20 Fed 002 No. 6H
 Wellbore HH SO 17 20 Fed 002 No. 6H PWB
 Wellpath HH SO 17 20 Fed 002 No. 6H Rev-A.0
 Sidetrack (none)

REPORT SETUP INFORMATION

Projection NAD27 / TM New Mexico SP, Eastern Zone (3001), US feet
 North Refe Grid
 Scale 0.999911
 Convergence 0.07° East
 Software S WellArchitect® 5.1
 User Moyagusa
 Report Ger 12/Sep/2019 at 13:44
 DataBase/ WA_HOU_Midland_Defn/ev1740.xml

Wellpath	Local North	Local East	Easting	Northing	Latitude	Longitude
	[ft]	[ft]	[US ft]	[US ft]		
Slot Location	0	125.01	538706	381591	32°02'56.5" 104°12'30.264"W	
Facility Ref			538581	381591	32°02'56.5" 104°12'31.716"W	
Field Refer			152400.3	0	30°59'42.8" 105°26'33.659"W	

WELLPATH DATUM

Calculation Minimum curvature
 Horizontal Slot
 Vertical Re Patterson 257 (KB)
 MD Refere Patterson 257 (KB)
 Field Vertic Mean Sea Level
 Patterson : 3278.00ft
 Patterson : 3278.00ft
 Patterson : 28.00ft
 Section Ori N 0.00, E 0.00 ft
 Section Azi 179.53°

WELLPATH DATA † = interpolated, ‡ = extrapolated station

	MD	Inclination	Azimuth	TVD	Vert Sect	North	East	Grid East	Grid North	Latitude	Longitude	DLS	Build Rate	Turn Rate	Comments
	[ft]	[°]	[°]	[ft]	[ft]	[ft]	[ft]	[US ft]	[US ft]			[°/100ft]	[°/100ft]	[°/100ft]	
†	0	0	21.5	0	0	0	0	0	538706	381591	32°02'56.5" 104°12'30.264"W	0	0	0	
	28	0	21.5	28	0	0	0	0	538706	381591	32°02'56.5" 104°12'30.264"W	0	0	0	
	169.4	0.5	21.5	169.4	-0.57	0.57	0.23	538706.2	381591.6	32°02'56.5" 104°12'30.264"W	0.35	0.35	15.21		
	259.4	1.4	12.5	259.38	-2.01	2.01	0.61	538706.6	381593	32°02'56.5" 104°12'30.264"W	1.01	1	-10		
	353.4	0.4	50.5	353.37	-3.33	3.34	1.11	538707.1	381594.3	32°02'56.6" 104°12'30.264"W	1.18	-1.06	40.43		
	414.4	0.4	49.5	414.37	-3.6	3.62	1.44	538707.4	381594.6	32°02'56.6" 104°12'30.264"W	0.01	0	-1.64	Tie On	
†	514.4	0.4	49.5	514.37	-4.05	4.07	1.97	538708	381595.1	32°02'56.6" 104°12'30.264"W	0	0	0		
	550	0.4	49.5	549.97	-4.21	4.23	2.16	538708.2	381595.2	32°02'56.6" 104°12'30.264"W	0	0	0	Drop to Ve	
	576.67	0	71.282	576.63	-4.27	4.29	2.23	538708.2	381595.3	32°02'56.6" 104°12'30.264"W	1.5	-1.5	-185.63	Hold Vertic	
†	614.4	0	71.282	614.37	-4.27	4.29	2.23	538708.2	381595.3	32°02'56.6" 104°12'30.264"W	0	0	0		
†	714.4	0	71.282	714.37	-4.27	4.29	2.23	538708.2	381595.3	32°02'56.6" 104°12'30.264"W	0	0	0		
†	814.4	0	71.282	814.37	-4.27	4.29	2.23	538708.2	381595.3	32°02'56.6" 104°12'30.264"W	0	0	0		
†	914.4	0	71.282	914.37	-4.27	4.29	2.23	538708.2	381595.3	32°02'56.6" 104°12'30.264"W	0	0	0		
†	1014.4	0	71.282	1014.37	-4.27	4.29	2.23	538708.2	381595.3	32°02'56.6" 104°12'30.264"W	0	0	0		
	1050.03	0	71.282	1050	-4.27	4.29	2.23	538708.2	381595.3	32°02'56.6" 104°12'30.264"W	0	0	0	Start Build	
†	1114.4	0.966	71.282	1114.36	-4.44	4.47	2.74	538708.7	381595.5	32°02'56.6" 104°12'30.264"W	1.5	1.5	110.74		
†	1214.4	2.466	71.282	1214.32	-5.38	5.43	5.58	538711.6	381596.4	32°02'56.6" 104°12'30.264"W	1.5	1.5	0		
†	1314.4	3.966	71.282	1314.16	-7.14	7.23	10.89	538716.9	381598.2	32°02'56.6" 104°12'30.264"W	1.5	1.5	0		
†	1414.4	5.466	71.282	1413.82	-9.71	9.86	18.67	538724.7	381600.9	32°02'56.6" 104°12'30.264"W	1.5	1.5	0		
†	1514.4	6.966	71.282	1513.22	-13.1	13.34	28.93	538734.9	381604.3	32°02'56.7" 104°12'29.9" W	1.5	1.5	0		
†	1614.4	8.466	71.282	1612.32	-17.3	17.65	41.64	538747.6	381608.7	32°02'56.7" 104°12'29.9" W	1.5	1.5	0		
†	1714.4	9.966	71.282	1711.02	-22.32	22.79	56.81	538762.8	381613.8	32°02'56.7" 104°12'29.9" W	1.5	1.5	0		
†	1814.4	11.466	71.282	1809.28	-28.14	28.75	74.42	538780.4	381619.8	32°02'56.8" 104°12'29.9" W	1.5	1.5	0		
†	1914.4	12.966	71.282	1907.01	-34.77	35.54	94.46	538800.5	381626.5	32°02'56.9" 104°12'29.9" W	1.5	1.5	0		
†	2014.4	14.466	71.282	2004.16	-42.19	43.15	116.91	538822.9	381634.2	32°02'56.9" 104°12'28.9" W	1.5	1.5	0		
	2050.03	15	71.282	2038.62	-45.03	46.06	125.5	538831.5	381637.1	32°02'57.0" 104°12'28.9" W	1.5	1.5	0	End Build	
†	2114.4	15	71.282	2100.79	-50.25	51.41	141.27	538847.3	381642.4	32°02'57.0" 104°12'28.9" W	0	0	0		
†	2214.4	15	71.282	2197.38	-58.35	59.71	165.79	538871.8	381650.7	32°02'57.1" 104°12'28.9" W	0	0	0		
†	2314.4	15	71.282	2293.98	-66.45	68.02	190.3	538896.3	381659	32°02'57.2" 104°12'28.9" W	0	0	0		

+	2414.4	15	71.282	2390.57	-74.56	76.32	214.81	538920.8	381667.3	32°02'57.3" 104°12'27.0"	0	0	0
+	2514.4	15	71.282	2487.16	-82.66	84.63	239.33	538945.3	381675.6	32°02'57.4" 104°12'27.0"	0	0	0
+	2614.4	15	71.282	2583.75	-90.77	92.94	263.84	538969.8	381683.9	32°02'57.4" 104°12'27.0"	0	0	0
+	2714.4	15	71.282	2680.35	-98.87	101.24	288.35	538994.3	381692.2	32°02'57.5" 104°12'26.9"	0	0	0
+	2814.4	15	71.282	2776.94	-106.98	109.55	312.87	539018.8	381700.5	32°02'57.6" 104°12'26.9"	0	0	0
+	2914.4	15	71.282	2873.53	-115.08	117.85	337.38	539043.4	381708.8	32°02'57.7" 104°12'26.9"	0	0	0
+	3014.4	15	71.282	2970.12	-123.19	126.16	361.89	539067.9	381717.2	32°02'57.8" 104°12'26.9"	0	0	0
+	3114.4	15	71.282	3066.72	-131.29	134.46	386.4	539092.4	381725.5	32°02'57.8" 104°12'25.9"	0	0	0
+	3214.4	15	71.282	3163.31	-139.39	142.77	410.92	539116.9	381733.8	32°02'57.9" 104°12'25.9"	0	0	0
+	3314.4	15	71.282	3259.9	-147.5	151.08	435.43	539141.4	381742.1	32°02'58.0" 104°12'25.9"	0	0	0
+	3414.4	15	71.282	3356.49	-155.6	159.38	459.94	539165.9	381750.4	32°02'58.1" 104°12'24.9"	0	0	0
+	3514.4	15	71.282	3453.09	-163.71	167.69	484.46	539190.4	381758.7	32°02'58.2" 104°12'24.9"	0	0	0
+	3614.4	15	71.282	3549.68	-171.81	175.99	508.97	539214.9	381767	32°02'58.3" 104°12'24.9"	0	0	0
+	3714.4	15	71.282	3646.27	-179.92	184.3	533.48	539239.4	381775.3	32°02'58.3" 104°12'24.9"	0	0	0
+	3814.4	15	71.282	3742.86	-188.02	192.61	558	539263.9	381783.6	32°02'58.4" 104°12'23.9"	0	0	0
+	3914.4	15	71.282	3839.46	-196.13	200.91	582.51	539288.5	381791.9	32°02'58.5" 104°12'23.9"	0	0	0
+	4014.4	15	71.282	3936.05	-204.23	209.22	607.02	539313	381800.2	32°02'58.6" 104°12'23.9"	0	0	0
+	4114.4	15	71.282	4032.64	-212.33	217.52	631.53	539337.5	381808.5	32°02'58.7" 104°12'22.9"	0	0	0
+	4214.4	15	71.282	4129.23	-220.44	225.83	656.05	539362	381816.8	32°02'58.7" 104°12'22.9"	0	0	0
+	4314.4	15	71.282	4225.83	-228.54	234.13	680.56	539386.5	381825.1	32°02'58.8" 104°12'22.9"	0	0	0
+	4414.4	15	71.282	4322.42	-236.65	242.44	705.07	539411	381833.4	32°02'58.9" 104°12'22.9"	0	0	0
+	4514.4	15	71.282	4419.01	-244.75	250.75	729.59	539435.5	381841.7	32°02'59.0" 104°12'21.9"	0	0	0
+	4614.4	15	71.282	4515.6	-252.86	259.05	754.1	539460	381850	32°02'59.1" 104°12'21.9"	0	0	0
+	4714.4	15	71.282	4612.2	-260.96	267.36	778.61	539484.5	381858.3	32°02'59.2" 104°12'21.9"	0	0	0
+	4814.4	15	71.282	4708.79	-269.07	275.66	803.13	539509.1	381866.6	32°02'59.2" 104°12'20.9"	0	0	0
+	4914.4	15	71.282	4805.38	-277.17	283.97	827.64	539533.6	381874.9	32°02'59.3" 104°12'20.9"	0	0	0
+	5014.4	15	71.282	4901.98	-285.28	292.28	852.15	539558.1	381883.3	32°02'59.4" 104°12'20.9"	0	0	0
+	5114.4	15	71.282	4998.57	-293.38	300.58	876.66	539582.6	381891.6	32°02'59.5" 104°12'20.9"	0	0	0
+	5214.4	15	71.282	5095.16	-301.48	308.89	901.18	539607.1	381899.9	32°02'59.6" 104°12'19.9"	0	0	0
+	5314.4	15	71.282	5191.75	-309.59	317.19	925.69	539631.6	381908.2	32°02'59.6" 104°12'19.9"	0	0	0
+	5414.4	15	71.282	5288.35	-317.69	325.5	950.2	539656.1	381916.5	32°02'59.7" 104°12'19.9"	0	0	0
+	5514.4	15	71.282	5384.94	-325.8	333.8	974.72	539680.6	381924.8	32°02'59.8" 104°12'18.9"	0	0	0
+	5614.4	15	71.282	5481.53	-333.9	342.11	999.23	539705.1	381933.1	32°02'59.9" 104°12'18.9"	0	0	0
+	5714.4	15	71.282	5578.12	-342.01	350.42	1023.74	539729.7	381941.4	32°03'00.0" 104°12'18.9"	0	0	0
+	5814.4	15	71.282	5674.72	-350.11	358.72	1048.25	539754.2	381949.7	32°03'00.1" 104°12'18.9"	0	0	0
+	5914.4	15	71.282	5771.31	-358.22	367.03	1072.77	539778.7	381958	32°03'00.1" 104°12'17.9"	0	0	0
+	6014.4	15	71.282	5867.9	-366.32	375.33	1097.28	539803.2	381966.3	32°03'00.2" 104°12'17.9"	0	0	0
+	6114.4	15	71.282	5964.49	-374.42	383.64	1121.79	539827.7	381974.6	32°03'00.3" 104°12'17.9"	0	0	0
+	6171.1	15	71.282	6019.26	-379.02	388.35	1135.69	539841.6	381979.3	32°03'00.3" 104°12'17.9"	0	0	0 Rotate/Drc
+	6214.4	14.675	71.282	6061.12	-382.49	391.91	1146.19	539852.1	381982.9	32°03'00.4" 104°12'16.9"	0.75	-0.75	0
+	6314.4	13.925	71.282	6158.02	-390.23	399.83	1169.59	539875.5	381990.8	32°03'00.5" 104°12'16.9"	0.75	-0.75	0
+	6414.4	13.175	71.282	6255.23	-397.56	407.35	1191.78	539897.7	381998.3	32°03'00.5" 104°12'16.9"	0.75	-0.75	0
+	6514.4	12.425	71.282	6352.75	-404.5	414.46	1212.76	539918.7	382005.4	32°03'00.6" 104°12'16.9"	0.75	-0.75	0
+	6614.4	11.675	71.282	6450.54	-411.04	421.16	1232.53	539938.4	382012.1	32°03'00.7" 104°12'15.9"	0.75	-0.75	0
+	6714.4	10.925	71.282	6548.6	-417.17	427.45	1251.09	539957	382018.4	32°03'00.7" 104°12'15.9"	0.75	-0.75	0
+	6814.4	10.175	71.282	6646.91	-422.91	433.33	1268.43	539974.3	382024.3	32°03'00.8" 104°12'15.9"	0.75	-0.75	0
+	6914.4	9.425	71.282	6745.45	-428.24	438.79	1284.56	539990.4	382029.8	32°03'00.8" 104°12'15.9"	0.75	-0.75	0
+	7014.4	8.675	71.282	6844.21	-433.16	443.84	1299.45	540005.3	382034.8	32°03'00.9" 104°12'15.9"	0.75	-0.75	0
+	7114.4	7.925	71.282	6943.16	-437.68	448.47	1313.13	540019	382039.4	32°03'00.9" 104°12'15.9"	0.75	-0.75	0
+	7214.4	7.175	71.282	7042.29	-441.8	452.69	1325.57	540031.5	382043.6	32°03'01.0" 104°12'14.9"	0.75	-0.75	0
+	7314.4	6.425	71.282	7141.59	-445.5	456.49	1336.78	540042.7	382047.4	32°03'01.0" 104°12'14.9"	0.75	-0.75	0
+	7414.4	5.675	71.282	7241.03	-448.81	459.87	1346.77	540052.6	382050.8	32°03'01.1" 104°12'14.9"	0.75	-0.75	0
+	7514.4	4.925	71.282	7340.6	-451.7	462.83	1355.52	540061.4	382053.8	32°03'01.1" 104°12'14.9"	0.75	-0.75	0
+	7614.4	4.175	71.282	7440.29	-454.18	465.38	1363.03	540068.9	382056.3	32°03'01.1" 104°12'14.9"	0.75	-0.75	0
+	7714.4	3.425	71.282	7540.07	-456.26	467.51	1369.31	540075.2	382058.5	32°03'01.1" 104°12'14.9"	0.75	-0.75	0
+	7814.4	2.675	71.282	7639.92	-457.92	469.21	1374.35	540080.2	382060.2	32°03'01.1" 104°12'14.9"	0.75	-0.75	0
+	7914.4	1.925	71.282	7739.84	-459.18	470.5	1378.15	540084	382061.5	32°03'01.2" 104°12'14.9"	0.75	-0.75	0
+	8014.4	1.175	71.282	7839.8	-460.03	471.37	1380.71	540086.6	382062.3	32°03'01.2" 104°12'14.9"	0.75	-0.75	0
+	8114.4	0.425	71.282	7939.79	-460.46	471.82	1382.03	540087.9	382062.8	32°03'01.2" 104°12'14.9"	0.75	-0.75	0
+	8171.1	0	195	7996.49	-460.53	471.88	1382.23	540088.1	382062.8	32°03'01.2" 104°12'14.9"	0.75	-0.75	-125.72 Hold Vertic
+	8214.4	0	195	8039.79	-460.53	471.88	1382.23	540088.1	382062.8	32°03'01.2" 104°12'14.9"	0	0	0
+	8314.4	0	195	8139.79	-460.53	471.88	1382.23	540088.1	382062.8	32°03'01.2" 104°12'14.9"	0	0	0
+	8414.4	0	195	8239.79	-460.53	471.88	1382.23	540088.1	382062.8	32°03'01.2" 104°12'14.9"	0	0	0
+	8514.4	0	195	8339.79	-460.53	471.88	1382.23	540088.1	382062.8	32°03'01.2" 104°12'14.9"	0	0	0
+	8614.4	0	195	8439.79	-460.53	471.88	1382.23	540088.1	382062.8	32°03'01.2" 104°12'14.9"	0	0	0
+	8714.4	0	195	8539.79	-460.53	471.88	1382.23	540088.1	382062.8	32°03'01.2" 104°12'14.9"	0	0	0
+	8814.4	0	195	8639.79	-460.53	471.88	1382.23	540088.1	382062.8	32°03'01.2" 104°12'14.9"	0	0	0
+	8914.4	0	195	8739.79	-460.53	471.88	1382.23	540088.1	382062.8	32°03'01.2" 104°12'14.9"	0	0	0
+	9014.4	0	195	8839.79	-460.53	471.88	1382.23	540088.1	382062.8	32°03'01.2" 104°12'14.9"	0	0	0
+	9114.4	0	195	8939.79	-460.53	471.88	1382.23	540088.1	382062.8	32°03'01.2" 104°12'14.9"	0	0	0
+	9214.4	0	195	9039.79	-460.53	471.88	1382.23	540088.1	382062.8	32°03'01.2" 104°12'14.9"	0	0	0
+	9312.33	0	195	9137.72	-460.53	471.88	1382.23	540088.1	382062.8	32°03'01.2" 104°12'14.9"	0	0	0 Curve KOP
+	9314.4	0.207	195	9139.79	-460.53	471.88	1382.23	540088.1	382062.8	32°03'01.2" 104°12'14.9"	10	10	-7960.63
+	9414.4	10.207	195	9239.25	-451.79	463.13	1379.89	540085.8	382054.1	32°03'01.1" 104°12'14.9"	10	10	0
+	9514.4	20.207	195	9335.63	-426.54	437.82	1373.1	540079	382028.8	32°03'00.8" 104°12'14.9"	10	10	0
+	9614.4	30.207	195	9425.99	-385.55	396.73	1362.1	540068	381987.7	32°03'00.4" 104°12'14.9"	10	10	0

†	9714.4	40.207	195	9507.6	-330.05	341.12	1347.19	540053.1	381932.1	32°02'59.9" 104°12'14.1"	10	10	0
†	9814.4	50.207	195	9577.96	-261.75	272.66	1328.85	540034.7	381863.6	32°02'59.2" 104°12'14.1"	10	10	0
	9912.33	60	195	9633.92	-184.43	195.17	1308.09	540014	381786.2	32°02'58.4" 104°12'15.1"	10	10	0 Cont. Build
†	9914.4	60.181	194.884	9634.95	-182.7	193.43	1307.62	540013.5	381784.4	32°02'58.4" 104°12'15.1"	10	8.74	-5.6
†	10014.4	69.025	189.708	9677.82	-94.69	105.26	1288.56	539994.4	381696.3	32°02'57.5" 104°12'15.1"	10	8.84	-5.18
†	10114.4	78.007	185.118	9706.18	0.18	10.29	1276.29	539982.2	381601.3	32°02'56.6" 104°12'15.1"	10	8.98	-4.59
†	10214.4	87.059	180.827	9719.17	99.03	-88.6	1271.2	539977.1	381502.4	32°02'55.6" 104°12'15.1"	10	9.05	-4.29
	10246.82	90	179.461	9720	131.43	-121.01	1271.12	539977	381470	32°02'55.3" 104°12'15.1"	10	9.07	-4.21 End Build/
†	10314.4	90	179.461	9720	199.01	-188.58	1271.75	539977.6	381402.4	32°02'54.6" 104°12'15.1"	0	0	0
†	10414.4	90	179.461	9720	299.01	-288.58	1272.69	539978.6	381302.5	32°02'53.6" 104°12'15.1"	0	0	0
†	10514.4	90	179.461	9720	399.01	-388.58	1273.63	539979.5	381202.5	32°02'52.7" 104°12'15.1"	0	0	0
†	10614.4	90	179.461	9720	499.01	-488.57	1274.57	539980.5	381102.5	32°02'51.7" 104°12'15.1"	0	0	0
†	10714.4	90	179.461	9720	599.01	-588.57	1275.52	539981.4	381002.5	32°02'50.7" 104°12'15.1"	0	0	0
†	10814.4	90	179.461	9720	699.01	-688.56	1276.46	539982.3	380902.5	32°02'49.7" 104°12'15.1"	0	0	0
†	10914.4	90	179.461	9720	799.01	-788.56	1277.4	539983.3	380802.5	32°02'48.7" 104°12'15.1"	0	0	0
†	11014.4	90	179.461	9720	899.01	-888.55	1278.34	539984.2	380702.5	32°02'47.7" 104°12'15.1"	0	0	0
†	11114.4	90	179.461	9720	999.01	-988.55	1279.28	539985.2	380602.5	32°02'46.7" 104°12'15.1"	0	0	0
†	11214.4	90	179.461	9720	1099.01	-1088.54	1280.22	539986.1	380502.6	32°02'45.7" 104°12'15.1"	0	0	0
†	11314.4	90	179.461	9720	1199.01	-1188.54	1281.16	539987	380402.6	32°02'44.7" 104°12'15.1"	0	0	0
†	11414.4	90	179.461	9720	1299.01	-1288.54	1282.1	539988	380302.6	32°02'43.8" 104°12'15.1"	0	0	0
†	11514.4	90	179.461	9720	1399.01	-1388.53	1283.04	539988.9	380202.6	32°02'42.8" 104°12'15.1"	0	0	0
†	11614.4	90	179.461	9720	1499.01	-1488.53	1283.98	539989.9	380102.6	32°02'41.8" 104°12'15.1"	0	0	0
†	11714.4	90	179.461	9720	1599.01	-1588.52	1284.92	539990.8	380002.6	32°02'40.8" 104°12'15.1"	0	0	0
†	11814.4	90	179.461	9720	1699.01	-1688.52	1285.87	539991.8	379902.6	32°02'39.8" 104°12'15.1"	0	0	0
†	11914.4	90	179.461	9720	1799.01	-1788.51	1286.81	539992.7	379802.7	32°02'38.8" 104°12'15.1"	0	0	0
†	12014.4	90	179.461	9720	1899.01	-1888.51	1287.75	539993.6	379702.7	32°02'37.8" 104°12'15.1"	0	0	0
†	12114.4	90	179.461	9720	1999.01	-1988.5	1288.69	539994.6	379602.7	32°02'36.8" 104°12'15.1"	0	0	0
†	12214.4	90	179.461	9720	2099.01	-2088.5	1289.63	539995.5	379502.7	32°02'35.8" 104°12'15.1"	0	0	0
†	12314.4	90	179.461	9720	2199.01	-2188.5	1290.57	539996.5	379402.7	32°02'34.8" 104°12'15.1"	0	0	0
†	12414.4	90	179.461	9720	2299.01	-2288.49	1291.51	539997.4	379302.7	32°02'33.9" 104°12'15.1"	0	0	0
†	12514.4	90	179.461	9720	2399.01	-2388.49	1292.45	539998.3	379202.7	32°02'32.9" 104°12'15.1"	0	0	0
†	12614.4	90	179.461	9720	2499.01	-2488.48	1293.39	539999.3	379102.7	32°02'31.9" 104°12'15.1"	0	0	0
†	12714.4	90	179.461	9720	2599.01	-2588.48	1294.33	540000.2	379002.8	32°02'30.9" 104°12'15.1"	0	0	0
†	12814.4	90	179.461	9720	2699.01	-2688.47	1295.27	540001.2	378902.8	32°02'29.9" 104°12'15.1"	0	0	0
†	12914.4	90	179.461	9720	2799.01	-2788.47	1296.22	540002.1	378802.8	32°02'28.9" 104°12'15.1"	0	0	0
†	13014.4	90	179.461	9720	2899.01	-2888.46	1297.16	540003	378702.8	32°02'27.9" 104°12'15.1"	0	0	0
†	13114.4	90	179.461	9720	2999.01	-2988.46	1298.1	540004	378602.8	32°02'26.9" 104°12'15.1"	0	0	0
†	13214.4	90	179.461	9720	3099.01	-3088.46	1299.04	540004.9	378502.8	32°02'25.9" 104°12'15.1"	0	0	0
†	13314.4	90	179.461	9720	3199.01	-3188.45	1299.98	540005.9	378402.8	32°02'25.0" 104°12'15.1"	0	0	0
†	13414.4	90	179.461	9720	3299.01	-3288.45	1300.92	540006.8	378302.9	32°02'24.0" 104°12'15.1"	0	0	0
†	13514.4	90	179.461	9720	3399.01	-3388.44	1301.86	540007.7	378202.9	32°02'23.0" 104°12'15.1"	0	0	0
†	13614.4	90	179.461	9720	3499.01	-3488.44	1302.8	540008.7	378102.9	32°02'22.0" 104°12'15.1"	0	0	0
†	13714.4	90	179.461	9720	3599.01	-3588.43	1303.74	540009.6	378002.9	32°02'21.0" 104°12'15.1"	0	0	0
†	13814.4	90	179.461	9720	3699.01	-3688.43	1304.68	540010.6	377902.9	32°02'20.0" 104°12'15.1"	0	0	0
†	13914.4	90	179.461	9720	3799.01	-3788.42	1305.62	540011.5	377802.9	32°02'19.0" 104°12'15.1"	0	0	0
†	14014.4	90	179.461	9720	3899.01	-3888.42	1306.57	540012.5	377702.9	32°02'18.0" 104°12'15.1"	0	0	0
†	14114.4	90	179.461	9720	3999.01	-3988.42	1307.51	540013.4	377603	32°02'17.0" 104°12'15.1"	0	0	0
†	14214.4	90	179.461	9720	4099.01	-4088.41	1308.45	540014.3	377503	32°02'16.0" 104°12'15.1"	0	0	0
†	14314.4	90	179.461	9720	4199.01	-4188.41	1309.39	540015.3	377403	32°02'15.1" 104°12'15.1"	0	0	0
†	14414.4	90	179.461	9720	4299.01	-4288.4	1310.33	540016.2	377303	32°02'14.1" 104°12'15.1"	0	0	0
†	14514.4	90	179.461	9720	4399.01	-4388.4	1311.27	540017.2	377203	32°02'13.1" 104°12'15.1"	0	0	0
†	14614.4	90	179.461	9720	4499.01	-4488.39	1312.21	540018.1	377103	32°02'12.1" 104°12'15.1"	0	0	0
†	14714.4	90	179.461	9720	4599.01	-4588.39	1313.15	540019	377003	32°02'11.1" 104°12'15.1"	0	0	0
†	14814.4	90	179.461	9720	4699.01	-4688.38	1314.09	540020	376903	32°02'10.1" 104°12'15.1"	0	0	0
†	14914.4	90	179.461	9720	4799.01	-4788.38	1315.03	540020.9	376803.1	32°02'09.1" 104°12'15.1"	0	0	0
†	15014.4	90	179.461	9720	4899.01	-4888.38	1315.97	540021.9	376703.1	32°02'08.1" 104°12'15.1"	0	0	0
†	15114.4	90	179.461	9720	4999.01	-4988.37	1316.91	540022.8	376603.1	32°02'07.1" 104°12'15.1"	0	0	0
†	15214.4	90	179.461	9720	5099.01	-5088.37	1317.86	540023.7	376503.1	32°02'06.2" 104°12'15.1"	0	0	0
	15242.5	90	179.461	9720	5127.11	-5116.47	1318.12	540024	376475	32°02'05.9" 104°12'15.1"	0	0	0 Start Turn
	15249.47	90	179.6	9720	5134.07	-5123.43	1318.18	540024.1	376468	32°02'05.8" 104°12'15.1"	2	0	0 End Turn
†	15314.4	90	179.6	9720	5199.01	-5188.36	1318.63	540024.5	376403.1	32°02'05.2" 104°12'15.1"	0	0	0
†	15414.4	90	179.6	9720	5299.01	-5288.36	1319.33	540025.2	376303.1	32°02'04.2" 104°12'15.1"	0	0	0
†	15514.4	90	179.6	9720	5399.01	-5388.36	1320.03	540025.9	376203.1	32°02'03.2" 104°12'15.1"	0	0	0
†	15614.4	90	179.6	9720	5499.01	-5488.36	1320.72	540026.6	376103.1	32°02'02.2" 104°12'14.1"	0	0	0
†	15714.4	90	179.6	9720	5599.01	-5588.35	1321.42	540027.3	376003.2	32°02'01.2" 104°12'14.1"	0	0	0
†	15814.4	90	179.6	9720	5699.01	-5688.35	1322.12	540028	375903.2	32°02'00.2" 104°12'14.1"	0	0	0
†	15914.4	90	179.6	9720	5799.01	-5788.35	1322.82	540028.7	375803.2	32°01'59.2" 104°12'14.1"	0	0	0
†	16014.4	90	179.6	9720	5899.01	-5888.35	1323.52	540029.4	375703.2	32°01'58.2" 104°12'14.1"	0	0	0
†	16114.4	90	179.6	9720	5999.01	-5988.34	1324.21	540030.1	375603.2	32°01'57.2" 104°12'14.1"	0	0	0
†	16214.4	90	179.6	9720	6099.01	-6088.34	1324.91	540030.8	375503.2	32°01'56.3" 104°12'14.1"	0	0	0
†	16314.4	90	179.6	9720	6199.01	-6188.34	1325.61	540031.5	375403.2	32°01'55.3" 104°12'14.1"	0	0	0
†	16414.4	90	179.6	9720	6299.01	-6288.34	1326.31	540032.2	375303.2	32°01'54.3" 104°12'14.1"	0	0	0
†	16514.4	90	179.6	9720	6399.01	-6388.33	1327	540032.9	375203.3	32°01'53.3" 104°12'14.1"	0	0	0
†	16614.4	90	179.6	9720	6499.01	-6488.33	1327.7	540033.6	375103.3	32°01'52.3" 104°12'14.1"	0	0	0
†	16714.4	90	179.6	9720	6599.01	-6588.33	1328.4	540034.3	375003.3	32°01'51.3" 104°12'14.1"	0	0	0
†	16814.4	90	179.6	9720	6699.01	-6688.33	1329.1	540035	374903.3	32°01'50.3" 104°12'14.1"	0	0	0

†	16914.4	90	179.6	9720	6799	-6788.33	1329.8	540035.7	374803.3	32°01'49.3" 104°12'14.1"	0	0	0
†	17014.4	90	179.6	9720	6899	-6888.32	1330.49	540036.4	374703.3	32°01'48.3" 104°12'14.1"	0	0	0
†	17114.4	90	179.6	9720	6999	-6988.32	1331.19	540037.1	374603.3	32°01'47.3" 104°12'14.1"	0	0	0
†	17214.4	90	179.6	9720	7099	-7088.32	1331.89	540037.8	374503.3	32°01'46.4" 104°12'14.1"	0	0	0
†	17314.4	90	179.6	9720	7199	-7188.32	1332.59	540038.5	374403.3	32°01'45.4" 104°12'14.1"	0	0	0
†	17414.4	90	179.6	9720	7299	-7288.31	1333.28	540039.2	374303.4	32°01'44.4" 104°12'14.1"	0	0	0
†	17514.4	90	179.6	9720	7399	-7388.31	1333.98	540039.9	374203.4	32°01'43.4" 104°12'14.1"	0	0	0
†	17614.4	90	179.6	9720	7499	-7488.31	1334.68	540040.6	374103.4	32°01'42.4" 104°12'14.1"	0	0	0
†	17714.4	90	179.6	9720	7599	-7588.31	1335.38	540041.3	374003.4	32°01'41.4" 104°12'14.1"	0	0	0
†	17814.4	90	179.6	9720	7699	-7688.3	1336.08	540042	373903.4	32°01'40.4" 104°12'14.1"	0	0	0
†	17914.4	90	179.6	9720	7799	-7788.3	1336.77	540042.7	373803.4	32°01'39.4" 104°12'14.1"	0	0	0
†	18014.4	90	179.6	9720	7899	-7888.3	1337.47	540043.4	373703.4	32°01'38.4" 104°12'14.1"	0	0	0
†	18114.4	90	179.6	9720	7999	-7988.3	1338.17	540044.1	373603.4	32°01'37.5" 104°12'14.1"	0	0	0
†	18214.4	90	179.6	9720	8099	-8088.29	1338.87	540044.7	373503.4	32°01'36.5" 104°12'14.1"	0	0	0
†	18314.4	90	179.6	9720	8199	-8188.29	1339.56	540045.4	373403.5	32°01'35.5" 104°12'14.1"	0	0	0
†	18414.4	90	179.6	9720	8299	-8288.29	1340.26	540046.1	373303.5	32°01'34.5" 104°12'14.1"	0	0	0
†	18514.4	90	179.6	9720	8399	-8388.29	1340.96	540046.8	373203.5	32°01'33.5" 104°12'14.1"	0	0	0
†	18614.4	90	179.6	9720	8499	-8488.28	1341.66	540047.5	373103.5	32°01'32.5" 104°12'14.1"	0	0	0
†	18714.4	90	179.6	9720	8599	-8588.28	1342.36	540048.2	373003.5	32°01'31.5" 104°12'14.1"	0	0	0
†	18814.4	90	179.6	9720	8699	-8688.28	1343.05	540048.9	372903.5	32°01'30.5" 104°12'14.1"	0	0	0
†	18914.4	90	179.6	9720	8799	-8788.28	1343.75	540049.6	372803.5	32°01'29.5" 104°12'14.1"	0	0	0
†	19014.4	90	179.6	9720	8899	-8888.27	1344.45	540050.3	372703.5	32°01'28.5" 104°12'14.1"	0	0	0
†	19114.4	90	179.6	9720	8999	-8988.27	1345.15	540051	372603.6	32°01'27.6" 104°12'14.1"	0	0	0
†	19214.4	90	179.6	9720	9099	-9088.27	1345.84	540051.7	372503.6	32°01'26.6" 104°12'14.1"	0	0	0
†	19314.4	90	179.6	9720	9199	-9188.27	1346.54	540052.4	372403.6	32°01'25.6" 104°12'14.1"	0	0	0
†	19414.4	90	179.6	9720	9299	-9288.26	1347.24	540053.1	372303.6	32°01'24.6" 104°12'14.1"	0	0	0
†	19514.4	90	179.6	9720	9399	-9388.26	1347.94	540053.8	372203.6	32°01'23.6" 104°12'14.1"	0	0	0
†	19614.4	90	179.6	9720	9499	-9488.26	1348.64	540054.5	372103.6	32°01'22.6" 104°12'14.1"	0	0	0
†	19714.4	90	179.6	9720	9599	-9588.26	1349.33	540055.2	372003.6	32°01'21.6" 104°12'14.1"	0	0	0
†	19814.4	90	179.6	9720	9699	-9688.25	1350.03	540055.9	371903.6	32°01'20.6" 104°12'14.1"	0	0	0
†	19914.4	90	179.6	9720	9799	-9788.25	1350.73	540056.6	371803.6	32°01'19.6" 104°12'14.1"	0	0	0
†	20014.4	90	179.6	9720	9899	-9888.25	1351.43	540057.3	371703.7	32°01'18.7" 104°12'14.1"	0	0	0
†	20114.4	90	179.6	9720	9999	-9988.25	1352.13	540058	371603.7	32°01'17.7" 104°12'14.1"	0	0	0
†	20214.4	90	179.6	9720	10099	-10088.24	1352.82	540058.7	371503.7	32°01'16.7" 104°12'14.1"	0	0	0
†	20314.4	90	179.6	9720	10199	-10188.24	1353.52	540059.4	371403.7	32°01'15.7" 104°12'14.1"	0	0	0
†	20414.4	90	179.6	9720	10299	-10288.24	1354.22	540060.1	371303.7	32°01'14.7" 104°12'14.1"	0	0	0
†	20514.4	90	179.6	9720	10399	-10388.24	1354.92	540060.8	371203.7	32°01'13.7" 104°12'14.1"	0	0	0
	20544.11	90	179.6	9720	10428.72	-10417.95	1355.12	540061	371174	32°01'13.4" 104°12'14.1"	0	0	0 PBHL (25'F

HOLE AND CASING SECTIONS Ref Wellbore: HH SO 17 20 Fed 002 No. 6H PWB Ref Wellpath: HH SO 17 20 Fed 002 No. 6H Rev-A.0

String/Diar	Start MD	End MD	Interval	Start TVD	End TVD	Start N/S	Start E/W	End N/S	End E/W
	[ft]	[ft]	[ft]	[ft]	[ft]	[ft]	[ft]	[ft]	[ft]
13.375in C:	28	444	416	28	443.97	0	0	3.75	1.59
9.625in Ca:	28	8425.61	8397.61	28	8251	0	0	471.88	1382.23
5.5in Casin	28	20544.11	20516.11	28	9720	0	0	-10417.95	1355.12

TARGETS

Name	MD	TVD	North	East	Grid East	Grid North	Latitude	Longitude	Shape	Comment
	[ft]	[ft]	[ft]	[ft]	[US ft]	[US ft]				
(1) HH SO 1	10246.82	9720	-121.01	1271.12	539977	381470	32°02'55.3" 104°12'15.1"		point	
HH SO 17 20 Fed 002		9720	-10112.92	1353.12	540059	371479	32°01'16.4" 104°12'14.1"		point	
(2) HH SO 1	15242.5	9720	-5116.47	1318.12	540024	376475	32°02'05.9" 104°12'15.1"		point	
(3) HH SO 1	20544.11	9720	-10417.95	1355.12	540061	371174	32°01'13.4" 104°12'14.1"		point	

SURVEY PROGRAM Ref Wellbore: HH SO 17 20 Fed 002 No. 6H PWB Ref Wellpath: HH SO 17 20 Fed 002 No. 6H Rev-A.0

Start MD End MD Pos Unc M Log Name/ Wellbore

	[ft]	[ft]	
28	414.4	OWSG MW	MWD Surv-HH SO 17 20 Fed 002 No. 6H AWB
414.4	8450	OWSG MWD	rev2 + Hf HH SO 17 20 Fed 002 No. 6H PWB
8450	21000	OWSG MWD	rev2 + Hf HH SO 17 20 Fed 002 No. 6H PWB

COMMENTS