

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.
NMNM138618

1. Type of Well

☐ Oil Well ☒ Gas Well ☐ Other8. Well Name and No.
HH SO 17 20 FED 002 5H

2. Name of Operator

CHEVRON USA INCORPORATED

Contact: LAURA BECERRA

E-Mail: LBECERRA@CHEVRON.COM

9. API Well No.

30-015-45108-00-X1

3a. Address

6301 DEAUVILLE BLVD
MIDLAND, TX 79706

3b. Phone No. (include area code)

Ph: 432-687-7655

10. Field and Pool or Exploratory Area
PURPLE SAGE-WOLFCAMP (GAS)

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

Sec 17 T26S R27E NWNE 212FNL 1625FEL
32.049164 N Lat, 104.208488 W Lon

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☐ Subsequent Report☐ Final Abandonment Notice☐ Acidize☐ Alter Casing☐ Casing Repair☐ Change Plans☐ Convert to Injection☐ Deepen☐ Hydraulic Fracturing☐ New Construction☐ Plug and Abandon☐ Plug Back☐ Production (Start/Resume)☐ Reclamation☐ Recomplete☐ Temporarily Abandon☐ Water Disposal☐ Water Shut-Off☐ Well Integrity☒ Other
Change to Original A
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 recompleate 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 recompleation 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, 1,590' FEL (LAT: 32.048844/LONG: -104.208865)
TO: 330' FNL, 330' FEL (LAT: 32.048832/LONG: -104.204798)LTP - From: 330' FSL, 1,590' FEL (LAT: 32.021370/LONG: -104.208637)
TO: 330' FSL, 330' FEL (LAT: 32.021365/LONG: -104.204571)BHL - From: 280' FSL, 1,590' FEL (LAT: 32.021233/LONG: -104.208636)
TO: 25' FSL, 330' FEL (LAT: 32.020527/LONG: -104.204566)

TVD/MD: 9,709'/20,044' to 9,111'/19,898'

Carlsbad Field Office
OCD Artesia*See additional COAs*

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

Electronic Submission #487989 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 (20PP0118SE)

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 10/25/2019

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 *****RW 10-30-19*

Additional data for EC transaction #487989 that would not fit on the form

32. Additional remarks, continued

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 #487989

	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 5H Sec 17 T26S R27E Mer NMP NWNE 212FNL 1625FEL	HH SO 17 20 FED 002 5H Sec 17 T26S R27E NWNE 212FNL 1625FEL 32.049164 N Lat, 104.208488 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 5H
SURFACE HOLE FOOTAGE:	212' FNL & 1625' FEL
BOTTOM HOLE FOOTAGE:	25' FSL & 330' 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	☐ COM	☐ 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.

OTA10252019

Delaware Basin

Changes to APD/COA for Federal Well



Well Name:

Well Name		API #
HH SO 17 20 FED 002	5H	30-015-45108

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, 1,590' FEL (LAT: 32.048844/LONG: -104.208865)
To: 330' FNL, 330' FEL (LAT: 32.048832/LONG: -104.204798)
- LTP - From: 330' FSL, 1,590' FEL (LAT: 32.021370/LONG: -104.208637)
To: 330' FSL, 330' FEL (LAT: 32.021365/LONG: -104.204571)
- BHL - From: 280' FSL, 1,590' FEL (LAT: 32.021233/LONG: -104.208636)
To: 25' FSL, 330' FEL (LAT: 32.020527/LONG: -104.204566)
- TVD/MD: 9,709'/20,044' to 9,111'/19,898'
- 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.

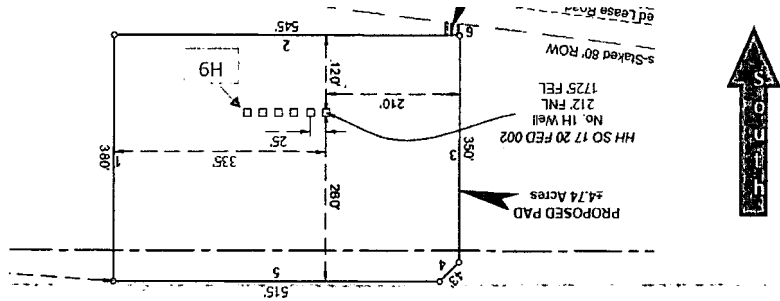
Option 4' - skid after int.1 and int.2 drilled on each well, skid 5' 3' 1' 2' 5' 4'

* = 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	↑ South
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 30-015-45108	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 5H
⁷ OGRID No. 4323	⁸ Operator Name CHEVRON U.S.A. INC.	⁹ Elevation 3249'

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	1625'	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 HH SO 17 20 FED 002 5H WELL X= 538,681' Y= 381,531' LAT. 32.049046° N LONG. 104.208486° W ELEV. -3249' NAVD88 X= 579,865' Y= 381,647' LAT. 32.049168° N LONG. 104.208980° W PROPOSED FIRST TAKE POINT X= 539,977' Y= 381,470' LAT. 32.048710° N LONG. 104.204305° W X= 581,161' Y= 381,527' LAT. 32.048832° N LONG. 104.204798° W PROPOSED MID POINT X= 540,024' Y= 376,475' LAT. 32.034979° N LONG. 104.204172° W X= 581,208' Y= 376,532' LAT. 32.035101° N LONG. 104.204665° W PROPOSED LAST TAKE POINT X= 540,059' Y= 371,479' LAT. 32.021243° N LONG. 104.204079° W X= 581,243' Y= 371,535' LAT. 32.021365° N LONG. 104.204571° W 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 PROPOSED BOTTOM HOLE LOCATION X= 540,061' Y= 371,174' LAT. 32.020405° N LONG. 104.204073° W X= 581,245' Y= 371,230' LAT. 32.020527° N LONG. 104.204566° W	Sec. 17 Proposed First Take Point 330' FNL, 330' FEL Sec. 20 Proposed Last Take Point 330' FSL, 330' FEL	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. <i>[Signature]</i> 9/18/2019 Signature Date Laura Becerra Printed Name L.Becerra@Chevron.com E-mail Address 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. 06/15/2017 Date of Survey Signature and Seal of Professional Surveyor: <i>[Signature]</i> Steven M. Coleman PROFESSIONAL SURVEYOR NEW MEXICO 22921 Certificate Number 07/22/2019
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RWP10-30-19

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	-5836	9,111	9,601	SHALE	Oil	Yes

WELLBORE LOCATIONS	SUB-SEA TVD	RKB TVD	MD
SHL	3275	-	-
KOP	-5263	8,538	8,701
FTP	-5836	9,111	9,601
LTP	-5836	9,111	19,898

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	9,111

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'	8,400'	8-1/2"	7-5/8"	29.7 #	P-110	W-513	New
Production (Tapered String)	0'	7,900'	6-3/4"	5-1/2"	20.0 #	P-110	TXP-BTC	New
	0'	19,898'	6-3/4"	5"	18.0 #	P-110	W-521	New

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'	8,400'	1,800'	8,400'	1,475'	-5,125'	P110	29.7 #	W-513
Production (Tapered String)	6-3/4"	5-1/2"	0'	7,900'	0'	7,900'	3,275'	-4,625'	P110	20.0 #	TXP-BTC
	6-3/4"	5"	7,900'	19,898'	7,900'	9,111'	-4,625'	-5,836'	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	8,400'	ftTVD
Production Casing:	19,898'	ftMD (10,428' 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 P internal: Test psi + next section heaviest mud in csg	X	X	X
Displace to Gas- Surf Csg P external: Mud weight above TOC, PP below P internal: Dry Gas from Next Csg Point	X		
Gas over mud (60/40) - Int Csg P external: Mud weight above TOC, PP below P internal: 60% gas over 40% mud from hole TD PP		X	
Stimulation (Frac) Pressures- Prod Csg P external: Mud weight above TOC, PP below P internal: Max inj pressure w/ heaviest injected fluid			X
Tubing leak- Prod Csg (packer at KOP) P external: Mud weight above TOC, PP below P internal: Leak just below surf, 8.45 ppg packer fluid			X
Collapse Design	Surf	Int	Prod
Full Evacuation P external: Mud weight gradient P internal: none	X	X	X
Cementing- Surf, Int, Prod Csg P external: Wet cement P internal: displacement fluid - water	X	X	X
Tension Design	Surf	Int	Prod
100k lb overpull	X	X	X

5. CEMENTING PROGRAM

Slurry	Type	Top	Bottom	Sacks	Yield	Density	%Excess	Water	Volume	Additives
Surface					(cu ft/sk)	(ppg)	Open Hole	gal/sk	cuft	
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'	7,900'	464	2.43	11.9	140	12.54	1127	Extender, Antifoam, Retarder, Viscosifier
Tail	Class C	7,900'	8,400'	43	1.335	14.8	50	6.29	58	Extender, Antifoam, Retarder, Viscosifier
Production										
Lead	Class H	7,900'	18,898'	1006	1.84	13.2	50	9.85	1850	Extender, Antifoam, Retarder, Viscosifier
Tail	Class H	18,898'	19,898'	77	2.18	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'	8,400'	2,100'	8,400'	Cut Brine/OBM	8.8 - 10.0	28-70	15-30
8,400'	19,898'	8,400'	9,111'	OBM	9.5 - 12.0	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. 5H
Well HH SO 17 20 Fed 002 No. 5H
Wellbore HH SO 17 20 Fed 002 No. 5H PWB
Wellpath HH SO 17 20 Fed 002 No. 5H 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
Convergen 0.07° East
Software S WellArchitect® 5.1
User Moyagusa
Report Ger 27/Aug/2019 at 11:27
DataBase/ WA_HOU_Midland_Defn/ev1530.xml

WELLPATH	Local North	Local East	Easting	Northing	Latitude	Longitude
	[ft]	[ft]	[US ft]	[US ft]		
Slot Locati	0	100.01	538681	381591	32°02'56.5	104°12'30.554"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 Ref: Patterson 257 (KB)
MD Refere: Patterson 257 (KB)
Field Vertic Mean Sea Level
Patterson : 3277.00ft
Patterson : 3277.00ft
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	132.5	0	0	0	0	0	538681	381591	32°02'56.5	104°12'30.	0	0	0	
	28	0	132.5	28	0	0	0	0	538681	381591	32°02'56.5	104°12'30.	0	0	0	
	169.4	0.1	132.5	169.4	0.08	-0.08	0.09	538681.1	381590.9	32°02'56.5	104°12'30.	0.07	0.07	93.71		
	259.4	0.3	185.5	259.4	0.37	-0.37	0.13	538681.1	381590.6	32°02'56.5	104°12'30.	0.28	0.22	58.89		
	353.4	0.4	164.5	353.4	0.93	-0.93	0.19	538681.2	381590.1	32°02'56.5	104°12'30.	0.17	0.11	-22.34		
	413.4	0.1	223.5	413.4	1.17	-1.17	0.21	538681.2	381589.8	32°02'56.5	104°12'30.	0.6	-0.5	98.33	Tie On	
+	513.4	0.1	223.5	513.4	1.3	-1.3	0.09	538681.1	381589.7	32°02'56.5	104°12'30.	0	0	0		
	550	0.1	223.5	550	1.35	-1.34	0.05	538681.1	381589.7	32°02'56.5	104°12'30.	0	0	0	Drop to Vertical	
	556.67	0	180	556.66	1.35	-1.35	0.04	538681	381589.7	32°02'56.5	104°12'30.	1.5	-1.5	2047.5	Hold Vertical	
+	613.4	0	180	613.4	1.35	-1.35	0.04	538681	381589.7	32°02'56.5	104°12'30.	0	0	0		
+	713.4	0	180	713.4	1.35	-1.35	0.04	538681	381589.7	32°02'56.5	104°12'30.	0	0	0		
+	813.4	0	180	813.4	1.35	-1.35	0.04	538681	381589.7	32°02'56.5	104°12'30.	0	0	0		
+	913.4	0	180	913.4	1.35	-1.35	0.04	538681	381589.7	32°02'56.5	104°12'30.	0	0	0		
	950	0	180	950	1.35	-1.35	0.04	538681	381589.7	32°02'56.5	104°12'30.	0	0	0	Start Build	
+	1013.4	0.951	180	1013.39	1.88	-1.88	0.04	538681	381589.1	32°02'56.5	104°12'30.	1.5	1.5	283.93		
+	1113.4	2.451	180	1113.35	4.84	-4.84	0.04	538681	381586.2	32°02'56.5	104°12'30.	1.5	1.5	0		
	1150	3	180	1149.91	6.58	-6.58	0.04	538681	381584.4	32°02'56.5	104°12'30.	1.5	1.5	0	Cont. Build/Start Turn	
+	1213.4	2.65	161.953	1213.23	9.64	-9.64	0.5	538681.5	381581.4	32°02'56.4	104°12'30.	1.5	-0.55	-28.47		
+	1313.4	2.752	129.764	1313.12	13.39	-13.37	3.06	538684.1	381577.6	32°02'56.4	104°12'30.	1.5	0.1	-32.19		
+	1413.4	3.552	106.346	1412.98	15.84	-15.78	7.88	538688.9	381575.2	32°02'56.4	104°12'30.	1.5	0.8	-23.42		
+	1513.4	4.708	92.904	1512.72	16.98	-16.86	14.95	538696	381574.2	32°02'56.4	104°12'30.	1.5	1.16	-13.44		
+	1613.4	6.017	85.006	1612.28	16.81	-16.61	24.27	538705.3	381574.4	32°02'56.4	104°12'30.	1.5	1.31	-7.9		
+	1713.4	7.399	79.982	1711.59	15.32	-15.03	35.83	538716.8	381576	32°02'56.4	104°12'30.	1.5	1.38	-5.02		
+	1813.4	8.819	76.549	1810.59	12.53	-12.13	49.63	538730.6	381578.9	32°02'56.4	104°12'29.	1.5	1.42	-3.43		
+	1913.4	10.262	74.069	1909.21	8.44	-7.9	65.65	538746.6	381583.1	32°02'56.4	104°12'29.	1.5	1.44	-2.48		
+	2013.4	11.719	72.197	2007.37	3.04	-2.35	83.89	538764.9	381588.7	32°02'56.5	104°12'29.	1.5	1.46	-1.87		
+	2113.4	13.186	70.735	2105.01	-3.66	4.52	104.32	538785.3	381595.5	32°02'56.6	104°12'29.	1.5	1.47	-1.46		
+	2213.4	14.659	69.561	2202.07	-11.66	12.7	126.95	538807.9	381603.7	32°02'56.6	104°12'29.	1.5	1.47	-1.17		
	2236.48	15	69.323	2224.39	-13.69	14.78	132.48	538813.5	381605.8	32°02'56.7	104°12'29.	1.5	1.48	-1.03	End Build/Turn	
+	2313.4	15	69.323	2298.68	-20.57	21.81	151.11	538832.1	381612.8	32°02'56.7	104°12'28.	0	0	0		
+	2413.4	15	69.323	2395.28	-29.51	30.95	175.32	538856.3	381621.9	32°02'56.8	104°12'28.	0	0	0		
+	2513.4	15	69.323	2491.87	-38.45	40.08	199.53	538880.5	381631.1	32°02'56.9	104°12'28.	0	0	0		
+	2613.4	15	69.323	2588.46	-47.39	49.22	223.75	538904.7	381640.2	32°02'57.0	104°12'27.	0	0	0		
+	2713.4	15	69.323	2685.05	-56.33	58.36	247.96	538928.9	381649.4	32°02'57.1	104°12'27.	0	0	0		

+	2813.4	15	69.323	2781.65	-65.27	67.5	272.18	538953.2	381658.5	32°02'57.2	104°12'27.0	0	0	0
+	2913.4	15	69.323	2878.24	-74.21	76.64	296.39	538977.4	381667.6	32°02'57.3	104°12'27.0	0	0	0
+	3013.4	15	69.323	2974.83	-83.15	85.78	320.61	539001.6	381676.8	32°02'57.4	104°12'26.0	0	0	0
+	3113.4	15	69.323	3071.42	-92.09	94.92	344.82	539025.8	381685.9	32°02'57.5	104°12'26.0	0	0	0
+	3213.4	15	69.323	3168.02	-101.03	104.06	369.04	539050.0	381695.1	32°02'57.5	104°12'26.0	0	0	0
+	3313.4	15	69.323	3264.61	-109.97	113.2	393.25	539074.2	381704.2	32°02'57.6	104°12'25.0	0	0	0
+	3413.4	15	69.323	3361.2	-118.91	122.34	417.47	539098.4	381713.3	32°02'57.7	104°12'25.0	0	0	0
+	3513.4	15	69.323	3457.79	-127.85	131.48	441.68	539122.6	381722.5	32°02'57.8	104°12'25.0	0	0	0
+	3613.4	15	69.323	3554.39	-136.79	140.61	465.9	539146.9	381731.6	32°02'57.9	104°12'25.0	0	0	0
+	3713.4	15	69.323	3650.98	-145.73	149.75	490.11	539171.1	381740.7	32°02'58.0	104°12'24.0	0	0	0
+	3813.4	15	69.323	3747.57	-154.67	158.89	514.33	539195.3	381749.9	32°02'58.1	104°12'24.0	0	0	0
+	3913.4	15	69.323	3844.17	-163.61	168.03	538.54	539219.5	381759	32°02'58.2	104°12'24.0	0	0	0
+	4013.4	15	69.323	3940.76	-172.55	177.17	562.75	539243.7	381768.2	32°02'58.3	104°12'24.0	0	0	0
+	4113.4	15	69.323	4037.35	-181.49	186.31	586.97	539267.9	381777.3	32°02'58.4	104°12'23.0	0	0	0
+	4213.4	15	69.323	4133.94	-190.43	195.45	611.18	539292.1	381786.4	32°02'58.4	104°12'23.0	0	0	0
+	4313.4	15	69.323	4230.54	-199.37	204.59	635.4	539316.3	381795.6	32°02'58.5	104°12'23.0	0	0	0
+	4413.4	15	69.323	4327.13	-208.31	213.73	659.61	539340.6	381804.7	32°02'58.6	104°12'22.0	0	0	0
+	4513.4	15	69.323	4423.72	-217.25	222.87	683.83	539364.8	381813.9	32°02'58.7	104°12'22.0	0	0	0
+	4613.4	15	69.323	4520.31	-226.19	232	708.04	539389	381823	32°02'58.8	104°12'22.0	0	0	0
+	4713.4	15	69.323	4616.91	-235.13	241.14	732.26	539413.2	381832.1	32°02'58.9	104°12'22.0	0	0	0
+	4813.4	15	69.323	4713.5	-244.07	250.28	756.47	539437.4	381841.3	32°02'59.0	104°12'21.0	0	0	0
+	4913.4	15	69.323	4810.09	-253.01	259.42	780.69	539461.6	381850.4	32°02'59.1	104°12'21.0	0	0	0
+	5013.4	15	69.323	4906.68	-261.95	268.56	804.9	539485.8	381859.5	32°02'59.2	104°12'21.0	0	0	0
+	5113.4	15	69.323	5003.28	-270.89	277.7	829.12	539510	381868.7	32°02'59.3	104°12'20.0	0	0	0
+	5213.4	15	69.323	5099.87	-279.83	286.84	853.33	539534.3	381877.8	32°02'59.3	104°12'20.0	0	0	0
+	5313.4	15	69.323	5196.46	-288.77	295.98	877.55	539558.5	381887	32°02'59.4	104°12'20.0	0	0	0
+	5413.4	15	69.323	5293.05	-297.71	305.12	901.76	539582.7	381896.1	32°02'59.5	104°12'20.0	0	0	0
+	5513.4	15	69.323	5389.65	-306.65	314.26	925.97	539606.9	381905.2	32°02'59.6	104°12'19.0	0	0	0
+	5613.4	15	69.323	5486.24	-315.59	323.4	950.19	539631.1	381914.4	32°02'59.7	104°12'19.0	0	0	0
+	5713.4	15	69.323	5582.83	-324.53	332.53	974.4	539655.3	381923.5	32°02'59.8	104°12'19.0	0	0	0
+	5813.4	15	69.323	5679.42	-333.47	341.67	998.62	539679.5	381932.6	32°02'59.9	104°12'18.0	0	0	0
+	5913.4	15	69.323	5776.02	-342.41	350.81	1022.83	539703.7	381941.8	32°03'00.0	104°12'18.0	0	0	0
+	6013.4	15	69.323	5872.61	-351.35	359.95	1047.05	539728	381950.9	32°03'00.1	104°12'18.0	0	0	0
	6013.98	15	69.323	5873.17	-351.4	360	1047.19	539728.1	381951	32°03'00.1	104°12'18.0	0	0	0 Rotate/Drop
+	6113.4	14.254	69.323	5969.37	-360.08	368.87	1070.68	539751.6	381959.8	32°03'00.2	104°12'18.0	0.75	-0.75	0
+	6213.4	13.504	69.323	6066.45	-368.36	377.34	1093.12	539774	381968.3	32°03'00.2	104°12'17.0	0.75	-0.75	0
+	6313.4	12.754	69.323	6163.83	-376.21	385.36	1114.37	539795.3	381976.3	32°03'00.3	104°12'17.0	0.75	-0.75	0
+	6413.4	12.004	69.323	6261.51	-383.61	392.93	1134.43	539815.3	381983.9	32°03'00.4	104°12'17.0	0.75	-0.75	0
+	6513.4	11.254	69.323	6359.45	-390.58	400.05	1153.29	539834.2	381991	32°03'00.5	104°12'17.0	0.75	-0.75	0
+	6613.4	10.504	69.323	6457.65	-397.09	406.71	1170.95	539851.8	381997.7	32°03'00.5	104°12'16.0	0.75	-0.75	0
+	6713.4	9.754	69.323	6556.09	-403.17	412.92	1187.4	539868.3	382003.9	32°03'00.6	104°12'16.0	0.75	-0.75	0
+	6813.4	9.004	69.323	6654.76	-408.8	418.68	1202.65	539883.5	382009.6	32°03'00.6	104°12'16.0	0.75	-0.75	0
+	6913.4	8.254	69.323	6753.62	-413.98	423.98	1216.68	539897.6	382014.9	32°03'00.7	104°12'16.0	0.75	-0.75	0
+	7013.4	7.504	69.323	6852.68	-418.72	428.82	1229.51	539910.4	382019.8	32°03'00.7	104°12'16.0	0.75	-0.75	0
+	7113.4	6.754	69.323	6951.91	-423	433.2	1241.12	539922	382024.2	32°03'00.8	104°12'16.0	0.75	-0.75	0
+	7213.4	6.004	69.323	7051.29	-426.84	437.12	1251.52	539932.4	382028.1	32°03'00.8	104°12'16.0	0.75	-0.75	0
+	7313.4	5.254	69.323	7150.8	-430.23	440.59	1260.69	539941.6	382031.6	32°03'00.9	104°12'15.0	0.75	-0.75	0
+	7413.4	4.504	69.323	7250.44	-433.17	443.59	1268.65	539949.5	382034.6	32°03'00.9	104°12'15.0	0.75	-0.75	0
+	7513.4	3.754	69.323	7350.18	-435.66	446.13	1275.39	539956.3	382037.1	32°03'00.9	104°12'15.0	0.75	-0.75	0
+	7613.4	3.004	69.323	7450.01	-437.69	448.21	1280.9	539961.8	382039.2	32°03'00.9	104°12'15.0	0.75	-0.75	0
+	7713.4	2.254	69.323	7549.9	-439.28	449.83	1285.2	539966.1	382040.8	32°03'01.0	104°12'15.0	0.75	-0.75	0
+	7813.4	1.504	69.323	7649.84	-440.41	450.99	1288.26	539969.2	382042	32°03'01.0	104°12'15.0	0.75	-0.75	0
+	7913.4	0.754	69.323	7749.82	-441.09	451.69	1290.11	539971	382042.7	32°03'01.0	104°12'15.0	0.75	-0.75	0
+	8013.4	0.004	69.323	7849.82	-441.32	451.92	1290.73	539971.6	382042.9	32°03'01.0	104°12'15.0	0.75	-0.75	0
	8013.98	0	179.461	7850.4	-441.32	451.92	1290.73	539971.6	382042.9	32°03'01.0	104°12'15.0	0.75	-0.75	-11992.8 Hold Vertical
+	8113.4	0	179.461	7949.82	-441.32	451.92	1290.73	539971.6	382042.9	32°03'01.0	104°12'15.0	0	0	0
+	8213.4	0	179.461	8049.82	-441.32	451.92	1290.73	539971.6	382042.9	32°03'01.0	104°12'15.0	0	0	0
+	8313.4	0	179.461	8149.82	-441.32	451.92	1290.73	539971.6	382042.9	32°03'01.0	104°12'15.0	0	0	0
+	8413.4	0	179.461	8249.82	-441.32	451.92	1290.73	539971.6	382042.9	32°03'01.0	104°12'15.0	0	0	0
+	8513.4	0	179.461	8349.82	-441.32	451.92	1290.73	539971.6	382042.9	32°03'01.0	104°12'15.0	0	0	0
+	8613.4	0	179.461	8449.82	-441.32	451.92	1290.73	539971.6	382042.9	32°03'01.0	104°12'15.0	0	0	0
	8701.62	0	179.461	8538.04	-441.32	451.92	1290.73	539971.6	382042.9	32°03'01.0	104°12'15.0	0	0	0 Curve KOP
+	8713.4	1.178	179.461	8549.82	-441.2	451.8	1290.73	539971.6	382042.8	32°03'01.0	104°12'15.0	10	10	1523.53
+	8813.4	11.178	179.461	8649.11	-430.45	441.05	1290.83	539971.7	382032	32°03'00.9	104°12'15.0	10	10	0
+	8913.4	21.178	179.461	8745.03	-402.62	413.23	1291.09	539972	382004.2	32°03'00.6	104°12'15.0	10	10	0
+	9013.4	31.178	179.461	8834.66	-358.56	369.17	1291.51	539972.4	381960.1	32°03'00.2	104°12'15.0	10	10	0
+	9113.4	41.178	179.461	8915.28	-299.61	310.22	1292.06	539972.9	381901.2	32°02'59.6	104°12'15.0	10	10	0
+	9213.4	51.178	179.461	8984.43	-227.55	238.16	1292.74	539973.6	381829.1	32°02'58.9	104°12'15.0	10	10	0
+	9313.4	61.178	179.461	9040.02	-144.58	155.19	1293.52	539974.4	381746.2	32°02'58.0	104°12'15.0	10	10	0
+	9413.4	71.178	179.461	9080.36	-53.21	63.83	1294.38	539975.3	381654.8	32°02'57.1	104°12'15.0	10	10	0
+	9513.4	81.178	179.461	9104.22	43.77	-33.14	1295.29	539976.2	381557.9	32°02'56.2	104°12'15.0	10	10	0
	9601.62	90	179.461	9111	131.64	-121.01	1296.12	539977	381470	32°02'55.3	104°12'15.0	10	10	0 End Build
+	9613.4	90	179.461	9111	143.42	-132.79	1296.23	539977.1	381458.2	32°02'55.2	104°12'15.0	0	0	0
+	9713.4	90	179.461	9111	243.42	-232.79	1297.17	539978.1	381358.2	32°02'54.2	104°12'15.0	0	0	0
+	9813.4	90	179.461	9111	343.42	-332.78	1298.11	539979	381258.3	32°02'53.2	104°12'15.0	0	0	0
+	9913.4	90	179.461	9111	443.42	-432.78	1299.05	539979.9	381158.3	32°02'52.2	104°12'15.0	0	0	0
+	10013.4	90	179.461											

+	10513.4	90	179.461	9111	1043.42	-1032.75	1304.7	539985.6	380558.3	32°02'46.3	104°12'15.0	0	0	0
+	10613.4	90	179.461	9111	1143.42	-1132.75	1305.64	539986.5	380458.4	32°02'45.3	104°12'15.0	0	0	0
+	10713.4	90	179.461	9111	1243.42	-1232.74	1306.58	539987.5	380358.4	32°02'44.3	104°12'15.0	0	0	0
+	10813.4	90	179.461	9111	1343.42	-1332.74	1307.52	539988.4	380258.4	32°02'43.3	104°12'15.0	0	0	0
+	10913.4	90	179.461	9111	1443.42	-1432.73	1308.46	539989.3	380158.4	32°02'42.3	104°12'15.0	0	0	0
+	11013.4	90	179.461	9111	1543.42	-1532.73	1309.4	539990.3	380058.4	32°02'41.3	104°12'15.0	0	0	0
+	11113.4	90	179.461	9111	1643.42	-1632.72	1310.34	539991.2	379958.4	32°02'40.3	104°12'15.0	0	0	0
+	11213.4	90	179.461	9111	1743.42	-1732.72	1311.28	539992.2	379858.4	32°02'39.4	104°12'15.0	0	0	0
+	11313.4	90	179.461	9111	1843.42	-1832.71	1312.22	539993.1	379758.5	32°02'38.4	104°12'15.0	0	0	0
+	11413.4	90	179.461	9111	1943.42	-1932.71	1313.17	539994.1	379658.5	32°02'37.4	104°12'15.0	0	0	0
+	11513.4	90	179.461	9111	2043.42	-2032.71	1314.11	539995	379558.5	32°02'36.4	104°12'15.0	0	0	0
+	11613.4	90	179.461	9111	2143.42	-2132.7	1315.05	539995.9	379458.5	32°02'35.4	104°12'15.0	0	0	0
+	11713.4	90	179.461	9111	2243.42	-2232.7	1315.99	539996.9	379358.5	32°02'34.4	104°12'15.0	0	0	0
+	11813.4	90	179.461	9111	2343.42	-2332.69	1316.93	539997.8	379258.5	32°02'33.4	104°12'15.0	0	0	0
+	11913.4	90	179.461	9111	2443.42	-2432.69	1317.87	539998.8	379158.5	32°02'32.4	104°12'15.0	0	0	0
+	12013.4	90	179.461	9111	2543.42	-2532.68	1318.81	539999.7	379058.6	32°02'31.4	104°12'15.0	0	0	0
+	12113.4	90	179.461	9111	2643.42	-2632.68	1319.75	540000.6	378958.6	32°02'30.5	104°12'15.0	0	0	0
+	12213.4	90	179.461	9111	2743.42	-2732.67	1320.69	540001.6	378858.6	32°02'29.5	104°12'15.0	0	0	0
+	12313.4	90	179.461	9111	2843.42	-2832.67	1321.63	540002.5	378758.6	32°02'28.5	104°12'15.0	0	0	0
+	12413.4	90	179.461	9111	2943.42	-2932.67	1322.57	540003.5	378658.6	32°02'27.5	104°12'15.0	0	0	0
+	12513.4	90	179.461	9111	3043.42	-3032.66	1323.52	540004.4	378558.6	32°02'26.5	104°12'15.0	0	0	0
+	12613.4	90	179.461	9111	3143.42	-3132.66	1324.46	540005.3	378458.6	32°02'25.5	104°12'15.0	0	0	0
+	12713.4	90	179.461	9111	3243.42	-3232.65	1325.4	540006.3	378358.6	32°02'24.5	104°12'15.0	0	0	0
+	12813.4	90	179.461	9111	3343.42	-3332.65	1326.34	540007.2	378258.7	32°02'23.5	104°12'15.0	0	0	0
+	12913.4	90	179.461	9111	3443.42	-3432.64	1327.28	540008.2	378158.7	32°02'22.5	104°12'15.0	0	0	0
+	13013.4	90	179.461	9111	3543.42	-3532.64	1328.22	540009.1	378058.7	32°02'21.5	104°12'15.0	0	0	0
+	13113.4	90	179.461	9111	3643.42	-3632.63	1329.16	540010	377958.7	32°02'20.6	104°12'15.0	0	0	0
+	13213.4	90	179.461	9111	3743.42	-3732.63	1330.1	540011	377858.7	32°02'19.6	104°12'15.0	0	0	0
+	13313.4	90	179.461	9111	3843.42	-3832.63	1331.04	540011.9	377758.7	32°02'18.6	104°12'15.0	0	0	0
+	13413.4	90	179.461	9111	3943.42	-3932.62	1331.98	540012.9	377658.7	32°02'17.6	104°12'15.0	0	0	0
+	13513.4	90	179.461	9111	4043.42	-4032.62	1332.92	540013.8	377558.8	32°02'16.6	104°12'15.0	0	0	0
+	13613.4	90	179.461	9111	4143.42	-4132.61	1333.86	540014.7	377458.8	32°02'15.6	104°12'15.0	0	0	0
+	13713.4	90	179.461	9111	4243.42	-4232.61	1334.81	540015.7	377358.8	32°02'14.6	104°12'15.0	0	0	0
+	13813.4	90	179.461	9111	4343.42	-4332.6	1335.75	540016.6	377258.8	32°02'13.6	104°12'15.0	0	0	0
+	13913.4	90	179.461	9111	4443.42	-4432.6	1336.69	540017.6	377158.8	32°02'12.6	104°12'15.0	0	0	0
+	14013.4	90	179.461	9111	4543.42	-4532.6	1337.63	540018.5	377058.8	32°02'11.7	104°12'15.0	0	0	0
+	14113.4	90	179.461	9111	4643.41	-4632.59	1338.57	540019.5	376958.8	32°02'10.7	104°12'15.0	0	0	0
+	14213.4	90	179.461	9111	4743.41	-4732.59	1339.51	540020.4	376858.9	32°02'09.7	104°12'15.0	0	0	0
+	14313.4	90	179.461	9111	4843.41	-4832.58	1340.45	540021.3	376758.9	32°02'08.7	104°12'15.0	0	0	0
+	14413.4	90	179.461	9111	4943.41	-4932.58	1341.39	540022.3	376658.9	32°02'07.7	104°12'15.0	0	0	0
+	14513.4	90	179.461	9111	5043.41	-5032.57	1342.33	540023.2	376558.9	32°02'06.7	104°12'15.0	0	0	0
+	14597.3	90	179.461	9111	5127.31	-5116.47	1343.12	540024	376475	32°02'05.9	104°12'15.0	0	0	0
+	14604.26	90	179.6	9111	5134.28	-5123.43	1343.18	540024.1	376468	32°02'05.8	104°12'15.0	2	0	0
+	14613.4	90	179.6	9111	5143.41	-5132.57	1343.24	540024.1	376458.9	32°02'05.7	104°12'15.0	0	0	0
+	14713.4	90	179.6	9111	5243.41	-5232.57	1343.94	540024.8	376358.9	32°02'04.7	104°12'15.0	0	0	0
+	14813.4	90	179.6	9111	5343.41	-5332.56	1344.64	540025.5	376258.9	32°02'03.7	104°12'15.0	0	0	0
+	14913.4	90	179.6	9111	5443.41	-5432.56	1345.34	540026.2	376158.9	32°02'02.7	104°12'14.0	0	0	0
+	15013.4	90	179.6	9111	5543.41	-5532.56	1346.03	540026.9	376059	32°02'01.8	104°12'14.0	0	0	0
+	15113.4	90	179.6	9111	5643.41	-5632.56	1346.73	540027.6	375959	32°02'00.8	104°12'14.0	0	0	0
+	15213.4	90	179.6	9111	5743.41	-5732.55	1347.43	540028.3	375859	32°01'59.8	104°12'14.0	0	0	0
+	15313.4	90	179.6	9111	5843.41	-5832.55	1348.13	540029	375759	32°01'58.8	104°12'14.0	0	0	0
+	15413.4	90	179.6	9111	5943.41	-5932.55	1348.83	540029.7	375659	32°01'57.8	104°12'14.0	0	0	0
+	15513.4	90	179.6	9111	6043.41	-6032.55	1349.52	540030.4	375559	32°01'56.8	104°12'14.0	0	0	0
+	15613.4	90	179.6	9111	6143.41	-6132.54	1350.22	540031.1	375459	32°01'55.8	104°12'14.0	0	0	0
+	15713.4	90	179.6	9111	6243.41	-6232.54	1350.92	540031.8	375359	32°01'54.8	104°12'14.0	0	0	0
+	15813.4	90	179.6	9111	6343.41	-6332.54	1351.62	540032.5	375259	32°01'53.8	104°12'14.0	0	0	0
+	15913.4	90	179.6	9111	6443.41	-6432.54	1352.31	540033.2	375159.1	32°01'52.8	104°12'14.0	0	0	0
+	16013.4	90	179.6	9111	6543.41	-6532.53	1353.01	540033.9	375059.1	32°01'51.9	104°12'14.0	0	0	0
+	16113.4	90	179.6	9111	6643.41	-6632.53	1353.71	540034.6	374959.1	32°01'50.9	104°12'14.0	0	0	0
+	16213.4	90	179.6	9111	6743.41	-6732.53	1354.41	540035.3	374859.1	32°01'49.9	104°12'14.0	0	0	0
+	16313.4	90	179.6	9111	6843.41	-6832.53	1355.11	540036	374759.1	32°01'48.9	104°12'14.0	0	0	0
+	16413.4	90	179.6	9111	6943.41	-6932.52	1355.8	540036.7	374659.1	32°01'47.9	104°12'14.0	0	0	0
+	16513.4	90	179.6	9111	7043.41	-7032.52	1356.5	540037.4	374559.1	32°01'46.9	104°12'14.0	0	0	0
+	16613.4	90	179.6	9111	7143.41	-7132.52	1357.2	540038.1	374459.1	32°01'45.9	104°12'14.0	0	0	0
+	16713.4	90	179.6	9111	7243.41	-7232.52	1357.9	540038.8	374359.1	32°01'44.9	104°12'14.0	0	0	0
+	16813.4	90	179.6	9111	7343.41	-7332.52	1358.6	540039.5	374259.2	32°01'43.9	104°12'14.0	0	0	0
+	16913.4	90	179.6	9111	7443.41	-7432.51	1359.29	540040.2	374159.2	32°01'43.0	104°12'14.0	0	0	0
+	17013.4	90	179.6	9111	7543.41	-7532.51	1359.99	540040.9	374059.2	32°01'42.0	104°12'14.0	0	0	0
+	17113.4	90	179.6	9111	7643.41	-7632.51	1360.69	540041.6	373959.2	32°01'41.0	104°12'14.0	0	0	0
+	17213.4	90	179.6	9111	7743.41	-7732.51	1361.39	540042.3	373859.2	32°01'40.0	104°12'14.0	0	0	0
+	17313.4	90	179.6	9111	7843.41	-7832.5	1362.08	540043	373759.2	32°01'39.0	104°12'14.0	0	0	0
+	17413.4	90	179.6	9111	7943.41	-7932.5	1362.78	540043.7	373659.2	32°01'38.0	104°12'14.0	0	0	0
+	17513.4	90	179.6	9111	8043.41	-8032.5	1363.48	540044.4	373559.2	32°01'37.0	104°12'14.0	0	0	0
+	17613.4	90	179.6	9111	8143.41	-8132.5	1364.18	540045.1	373459.3	32°01'36.0	104°12'14.0	0	0	0
+	17713.4	90	179.6	9111	8243.41	-8232.49	1364.88	540045.8	373359.3	32°01'35.0	104°12'14.0	0	0	0
+	17813.4	90	179.6	9111	8343.41	-8332.49	1365.57	540046.5	373259.3	32°01'34.0	104°12'14.0	0	0	0
+	17913.4	90	179.6	9111	8443.41	-8432.49	1366.27	540047.2	373159.3	32°01'33.1	104°12'14.0	0	0	0
+	18013.4	90	179.6	9111	8543.41	-8532.49	1366.97							

†	18413.4	90	179.6	9111	8943.41	-8932.48	1369.76	540050.6	372659.3	32°01'28.1	104°12'14.0	0	0	0
†	18513.4	90	179.6	9111	9043.41	-9032.47	1370.46	540051.3	372559.4	32°01'27.1	104°12'14.0	0	0	0
†	18613.4	90	179.6	9111	9143.41	-9132.47	1371.16	540052	372459.4	32°01'26.1	104°12'14.0	0	0	0
†	18713.4	90	179.6	9111	9243.41	-9232.47	1371.85	540052.7	372359.4	32°01'25.1	104°12'14.0	0	0	0
†	18813.4	90	179.6	9111	9343.41	-9332.47	1372.55	540053.4	372259.4	32°01'24.2	104°12'14.0	0	0	0
†	18913.4	90	179.6	9111	9443.41	-9432.46	1373.25	540054.1	372159.4	32°01'23.2	104°12'14.0	0	0	0
†	19013.4	90	179.6	9111	9543.41	-9532.46	1373.95	540054.8	372059.4	32°01'22.2	104°12'14.0	0	0	0
†	19113.4	90	179.6	9111	9643.41	-9632.46	1374.64	540055.5	371959.4	32°01'21.2	104°12'14.0	0	0	0
†	19213.4	90	179.6	9111	9743.41	-9732.46	1375.34	540056.2	371859.4	32°01'20.2	104°12'14.0	0	0	0
†	19313.4	90	179.6	9111	9843.41	-9832.45	1376.04	540056.9	371759.4	32°01'19.2	104°12'14.0	0	0	0
†	19413.4	90	179.6	9111	9943.41	-9932.45	1376.74	540057.6	371659.5	32°01'18.2	104°12'14.0	0	0	0
†	19513.4	90	179.6	9111	10043.41	-10032.5	1377.44	540058.3	371559.5	32°01'17.2	104°12'14.0	0	0	0
†	19613.4	90	179.6	9111	10143.41	-10132.5	1378.13	540059	371459.5	32°01'16.2	104°12'14.0	0	0	0
†	19713.4	90	179.6	9111	10243.41	-10232.4	1378.83	540059.7	371359.5	32°01'15.2	104°12'14.0	0	0	0
†	19813.4	90	179.6	9111	10343.41	-10332.4	1379.53	540060.4	371259.5	32°01'14.3	104°12'14.0	0	0	0
	19898.91	90	179.6	9111	10428.92	-10418	1380.13	540061	371174	32°01'13.4	104°12'14.0	0	0	0 PBHL (25'F 3

HOLE AND CASING SECTIONS Ref Wellbore: HH SO 17 20 Fed 002 No. 5H PWB Ref Wellpath: HH SO 17 20 Fed 002 No. 5H Rev-A.0

String/Dian	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 Ci	28	443	415	28	443	0	0	-1.21	0.17
9.625in Ca:	28	8413.58	8385.58	28	8250	0	0	451.92	1290.73
5.5in Casing:	28	19898.91	19870.91	28	9111	0	0	-10418	1380.13

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	9601.62	9111	-121.01	1296.12	539977	381470	32°02'55.3	104°12'15.0	point	
HH SO 17 20 Fed 002 N		9111	-10112.9	1378.13	540059	371479	32°01'16.4	104°12'14.0	point	
(2) HH SO 1	14597.3	9111	-5116.47	1343.12	540024	376475	32°02'05.9	104°12'15.0	point	
(3) HH SO 1	19898.91	9111	-10418	1380.13	540061	371174	32°01'13.4	104°12'14.0	point	

SURVEY PROGRAM Ref Wellbore: HH SO 17 20 Fed 002 No. 5H PWB Ref Wellpath: HH SO 17 20 Fed 002 No. 5H Rev-A.0

Start MD	End MD	Pos Unc	Mi Log Name/ Wellbore
(ft)	(ft)		
28	413.4		OWSG MW MWD Surv: HH SO 17 20 Fed 002 No. 5H AWB
413.4	8400		OWSG MWD rev2 + HF HH SO 17 20 Fed 002 No. 5H PWB
8400	21000		OWSG MWD rev2 + HF HH SO 17 20 Fed 002 No. 5H PWB

COMMENTS