

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENTCarlsbad Field Office
OCD HobbsFORM 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.***SUBMIT IN TRIPLICATE - Other instructions on page 2**

1. Type of Well ☒ Oil Well ☐ Gas Well ☐ Other		5. Lease Serial No. NMNM113419
2. Name of Operator MARATHON OIL PERMIAN LLC Contact: MELISSA SZUDERA E-Mail: mszudera@marathonoil.com		6. If Indian, Allottee or Tribe Name
3a. Address 5555 SAN FELIPE STREET HOUSTON, TX 77056	3b. Phone No. (include area code) Ph: 713-296-3179	7. If Unit or CA/Agreement, Name and/or No.
4. Location of Well (Footage, Sec., T., R., M., or Survey Description) Sec 14 T25S R34E SWNW 2449FNL 612FWL 32.130901 N Lat, 103.446846 W Lon		8. Well Name and No. ENDER WIGGINS 14 WA FC 1H
		9. API Well No. 30-025-45187-00-X1
		10. Field and Pool or Exploratory Area PITCHFORK RANCH
		11. County or Parish, State LEA COUNTY, NM

12. CHECK THE APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

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

13. Describe Proposed or Completed Operation: Clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recomplate 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 recomplate 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.

Marathon Oil Permian LLC request to make the following changes to the approved APD:

-Change Well Name: 14
From: Ender Wiggins # WXY FC 1H
To: Ender Wiggins # WA FC 1H

-Change BHL:
From: 330' FNL 330' FWL
To: 100' FNL 330' FWL

-Change Set Depths on Production String, Int 2, Int 1 & Surface
-Revise cement volumes due to change in casing depths and yield.

-Change Int 1 casing weight

14. I hereby certify that the foregoing is true and correct. Electronic Submission #461061 verified by the BLM Well Information System For MARATHON OIL PERMIAN LLC, sent to the Hobbs Committed to AFMSS for processing by PRISCILLA PEREZ on 04/11/2019 (19PP1545SE)	
Name (Printed/Typed) MELISSA SZUDERA	Title REGULATORY COMPLIANCE REP
Signature (Electronic Submission)	Date 04/11/2019

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By DYLAN ROSSMANGO	Title PETROLEUM ENGINEER	Date 04/12/2019
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 Hobbs

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

(Instructions on page 2)

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

Additional data for EC transaction #461061 that would not fit on the form

32. Additional remarks, continued

Please see attachments.

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	² Pool Code 96694	³ Pool Name PITCHFORK RANCH WOLFCAMP SOUTH
⁴ Property Code	⁵ Property Name ENDER WIGGINS 14 WA FC	⁶ Well Number 1H
⁷ OGRID No. 372098	⁸ Operator Name MARATHON OIL PERMIAN LLC	⁹ Elevation 3332'

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
E	14	25S	34E		2449	NORTH	612	WEST	LEA

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
D	11	25S	34E		100	NORTH	330	WEST	LEA

¹² Dedicated Acres 480.0	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.

Defining Well 3

CORNER COORDINATES NAD 83, SPCS NM EAST
A - X: 814924.82' / Y: 420254.78'
B - X: 817573.89' / Y: 420269.32'
C - X: 817558.93' / Y: 412351.77'
D - X: 814985.84' / Y: 412337.40'

CORNER COORDINATES NAD 27, SPCS NM EAST
A - X: 773738.70' / Y: 420196.54'
B - X: 776387.92' / Y: 420211.03'
C - X: 776372.59' / Y: 412293.69'
D - X: 773809.54' / Y: 412278.35'

LAST TAKE POINT/BOTTOM HOLE LOCATION
100' FNL 330' FWL, SECTION 11
NAD 83, SPCS NM EAST
X: 815255.49' / Y: 420156.61'
LAT: 32.15189369N / LON: -103.44824506W
NAD 27, SPCS NM EAST
X: 774069.56' / Y: 420098.35'
LAT: 32.15186854N / LON: -103.44777551W

FIRST TAKE POINT
2539' FNL 330' FWL, SECTION 14
NAD 83, SPCS NM EAST
X: 815324.87' / Y: 412439.19'
LAT: 32.13077991N / LON: -103.44822583W
NAD 27, SPCS NM EAST
X: 774138.57' / Y: 412381.13'
LAT: 32.13065464N / LON: -103.44775757W

KICK OFF POINT
2539' FNL 330' FWL, SECTION 14
NAD 83, SPCS NM EAST
X: 815324.87' / Y: 412439.19'
LAT: 32.13077991N / LON: -103.44822583W
NAD 27, SPCS NM EAST
X: 774138.57' / Y: 412381.13'
LAT: 32.13065464N / LON: -103.44775757W

SURFACE HOLE LOCATION
2449' FNL 612' FWL, SECTION 14
NAD 83, SPCS NM EAST
X: 815606.38' / Y: 412530.63'
LAT: 32.13102488N / LON: -103.44731407W
NAD 27, SPCS NM EAST
X: 774420.08' / Y: 412472.57'
LAT: 32.13089961N / LON: -103.44684584W

PI
SECTION 10
SECTION 15

SHL
SECTION 11
SECTION 14

KOP/ FIRST TAKE
SHEET 1 OF 3
JOB No. R3816.002
REV 4 BM 11/12/2018

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 released 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: *Adrian Covarrubias* Date: 2/26/2019
Printed Name: Adrian Covarrubias
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.

NOVEMBER 13, 2018
Date of Survey
Signature and Seal of Professional Surveyor: *Lloyd P. Short*
Certificate Number: LLOYD P. SHORT 21653

Marathon Oil Permian, LLC

Ender Wiggins 14 WXY FC 1H

API# 30-025-45187

Lea County, New Mexico

Drilling Program Changes

1. Casing Changes:

- Change set depths on production string

String Type	Hole Size	Csg Size	Top Set MD	Bottom Set MD	Top Set TVD	Bottom Set TVD	Weight (lbs/ft)	Grade	Conn.	SF Collapse	SF Burst	SF Tension
Surface	<u>17 1/2</u>	<u>13 3/8</u>	<u>0</u>		<u>0</u>		<u>54.5</u>	<u>J55</u>	<u>STC</u>			
Intermediate I	<u>12 1/4</u>	<u>9 5/8</u>	<u>0</u>		<u>0</u>			<u>J55</u>	<u>LTC</u>			
Intermediate II	<u>8 3/4</u>	<u>7</u>	<u>0</u>		<u>0</u>		<u>29</u>	<u>P110</u>	<u>BTC</u>			
Production Liner	<u>6 1/8</u>	<u>4 1/2</u>		 20168		12762 12577	<u>13.5</u>	<u>P110</u>	<u>BTC</u>			

Minimum safety factors: Burst 1.125 Collapse 1.125 Tension 1.8 Wet/1.6 Dry

2. Cementing Program:

Changes:

- Revised cement volumes due to change in casing depths and yield

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity (lbs)	Yield (ft ³ /sk)	Density (ppg)	Slurry Volume (ft ³)	Excess (%)	Cement Type	Additives
Surface	Lead	-	0	■	■	1.73	13.5	■	100	Class C	3 lbm/sk granular LCM + 0.1250 lbm/sk Poly-E-Flake
Surface	Tail	-	■	■	■	■	14.8	■	■	Class C	■
Intermediate I	Lead	-	0	■	■	■	12.8	■	■	Class C	0.02 Gal/Sk Defoamer + 0.5% Extender + 1% Accelerator
Intermediate I	Tail	-	■	■	●	1.33	14.8	●	■	Class C	■
Intermediate II	Lead	-	■	■	■	■	11	■	70	Class C	0.65% retarder + 10% extender + 0.02 gal/sk defoamer + 2.0%
Intermediate II	Tail	-	■	■	■	■	■	195	30	Class H	3% extender + ■
Production Liner	Tail	-	■	■	■	1.22	14.5	■	30	Class H	0.1% retarder + 3.5% extender + ■

WELL DETAILS

N-S	+E-W	Northing	Easting	Latitude	Longitude
0.0	0.0	412472.57	774420.08	32° 7' 51.239 N	103° 26' 48.645 W

SECTION DETAILS

MD	Inc	Azi	TVD	+N-S	+E-W	Dleg	TFace	Vsect	Annotation
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
3500.0	0.00	0.00	3500.0	0.0	0.0	0.00	0.00	0.0	Start Nudge
3650.1	3.00	238.48	3650.1	-2.1	-3.4	2.00	238.48	-2.0	Hold
6859.4	3.00	238.48	6854.9	-89.9	-146.6	0.00	0.00	-88.4	Drop vertical
7009.5	0.00	0.00	7005.0	-92.0	-150.0	2.00	180.00	-90.4	Hold vertical
12167.1	0.00	0.00	12162.6	-92.0	-150.0	0.00	0.00	-90.4	KOP, Build and turn
12921.2	90.50	349.90	12640.0	382.1	-234.5	12.00	349.90	384.6	Landing point / Slight turn
13395.2	90.50	359.39	12635.9	853.5	-278.6	2.00	89.96	856.4	Hold
13481.2	90.50	359.39	12635.1	939.4	-279.6	0.00	0.00	942.3	
20168.2	90.50	359.39	12577.3	7625.8	-350.5	0.00	0.00	7629.1	TD at 20168.2

Project: Lea County, NM (NAD 27)
 Site: Ender Wiggins 14
 Well: WA FC 1H
 Wellbore: Wellbore #1
 Design: Plan 3
 Rig: PD 601

Map System: US State Plane 1927 (Exact solution)
 Datum: NAD 1927 (NADCON CONUS)
 Ellipsoid: Clarke 1866
 Zone Name: New Mexico East 3001



Azimuths to Grid North
 True North: -0.47°
 Magnetic North: 6.15°
 Magnetic Field
 Strength: 47812.7nT
 Dip Angle: 59.75°
 Date: 4/15/2019
 Model: HDGM_2019

CASING DETAILS

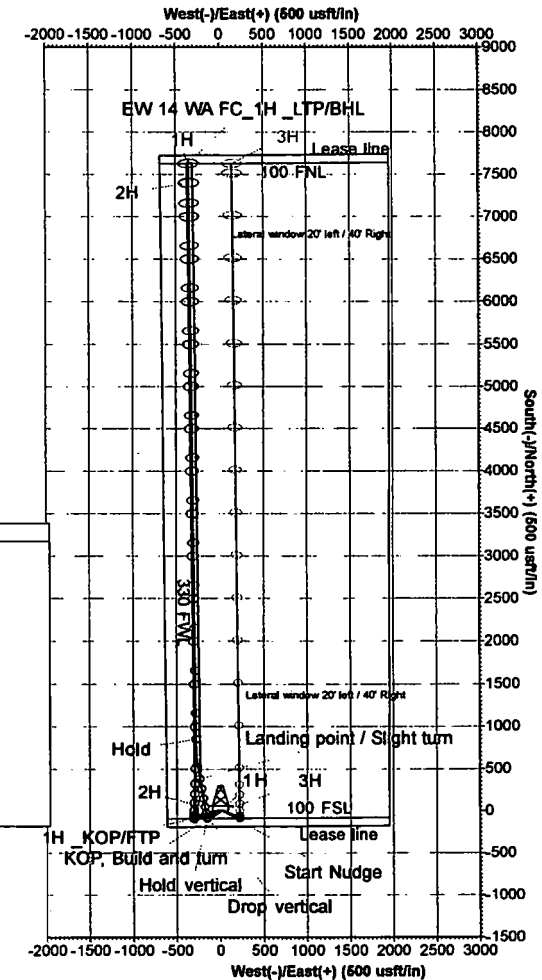
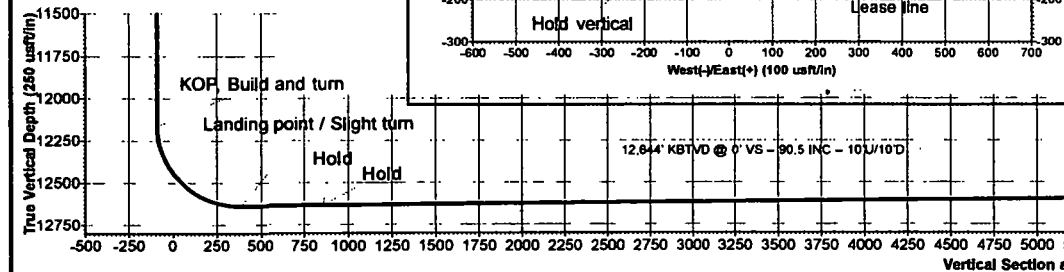
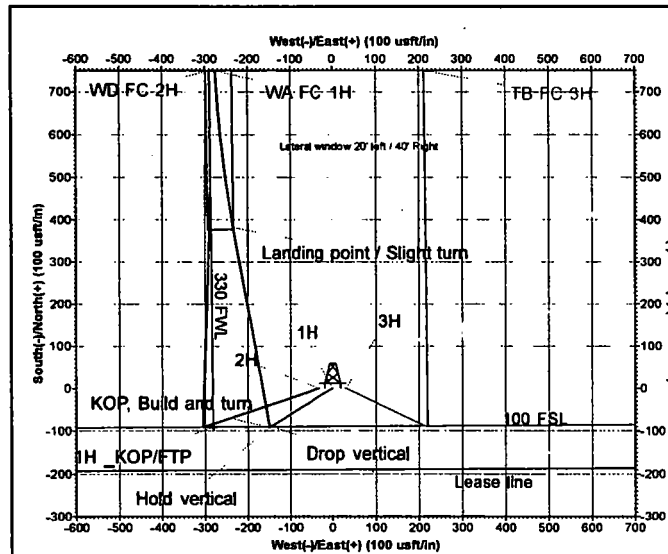
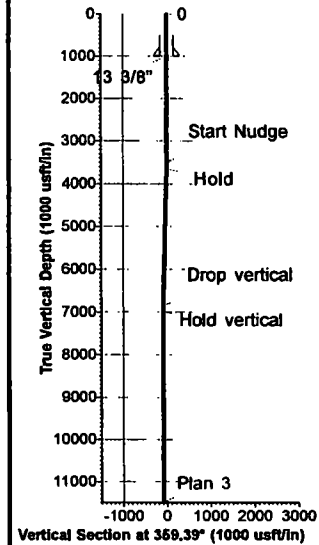
TVD	MD	Name	Size
1000.0	1000.0	13 3/8"	13-3/8"

DESIGN TARGET DETAILS

Name	TVD	+N-S	+E-W	Northing	Easting	Latitude	Longitude
EW 14 WA FC_1H_KOP/FTP	0.0	-91.4	-281.7	412381.13	774138.37	32° 7' 50.357 N	103° 26' 51.830 W
EW 14 WA FC_1H_LTP/BHL	0.0	7625.8	-350.5	420098.35	774069.56	32° 9' 6.727 N	103° 26' 51.992 W

FORMATION TOP DETAILS

TVDPath	MDPath	Formation	DipAngle	DipDir
861.0	861.0	Rusler	-0.50	358.48
1367.0	1367.0	Salado	-0.50	358.48
3508.0	3508.0	Castle	-0.50	358.48
5090.4	5090.4	Base Salt	-0.50	358.48
5374.4	5374.4	Lamar	-0.50	358.48
5408.4	5408.4	Bell Canyon Sa.	-0.50	358.48
6714.7	6714.7	Cherry Canyon Sa.	-0.50	358.48
6815.8	6820.3	Brushy Canyon Sa.	-0.50	358.48
9304.8	9309.3	Bone Spring	-0.50	358.48
9817.8	9822.3	Bone Spring Hard Lm.	-0.50	358.48
10351.8	10356.3	1st Bone Spg.	-0.50	358.48
10558.8	10563.3	Base 1st Bone Spg sand	-0.50	358.48
10929.8	10934.3	2nd Bone Spg sand	-0.50	358.48
11397.8	11402.3	Base 2nd Bone Spg sand	-0.50	358.48
11972.8	11977.3	3rd Bone Spg Sa.	-0.50	358.48
12353.4	12363.6	Lowered 3rd Bone Spring Sa.	-0.50	358.48
12426.1	12446.3	Wolfcamp	-0.50	358.48
12449.0	12474.3	Wolfcamp X Sa.	-0.50	358.48
12500.6	12542.7	Wolfcamp X Sa Base	-0.50	358.48
12535.3	12594.7	Wolfcamp Y Sa.	-0.50	358.48
12550.1	12618.2	Wolfcamp Y Target	-0.50	358.48
12568.8	12653.0	Wolfcamp A Shale	-0.50	358.48



Plan 3

Vertical Section at 359.39° (250 usft/in)

HALIBURTON | Berry Drilling

Marathon Oil Permian LLC

Lea County, NM (NAD 27) Ender Wiggins 14

API#

WA FC 1H

Wellbore #1

Plan: Plan 3

Sperry Drilling Services

Combo Report

10 April, 2019

Well Coordinates:

32° 7' 51.239 N
103° 26' 48.645 W

NAD 1927 (NADCON CONUS)

New Mexico East 3001

412,472.57 N

774,420.08 E

Ground Level: 3,332.00 usft

Local Coordinate Origin:

Viewing Datum:

TVDs to System:

North Reference:

Unit System:

Centered on Well WA FC 1H

GL+KB 25' @ 3357.0usft (PD 601)

N

Grid

API - US Survey Feet

Version: 5000.15 Build: 91

Report Version: Midcon Combo v1.13

HALLIBURTON

Plan Report for WA FC 1H - Plan 3

Measured Depth (usft)	Inclination (°)	Grid Azimuth (°)	Vertical Depth (usft)	Local Coordinates		Map Coordinates		Dogleg Rate (°/100usft)	Vertical Section (usft)	Toolface Angle (°)	Comments
				Northing (usft)	Easting (usft)	Northing (usft)	Easting (usft)				
0.0	0.00	0.00	0.0	0.00 N	0.00 E	412,472.57	774,420.08	0.00	0.0	0.00	
100.0	0.00	0.00	100.0	0.00 N	0.00 E	412,472.57	774,420.08	0.00	0.0	0.00	
200.0	0.00	0.00	200.0	0.00 N	0.00 E	412,472.57	774,420.08	0.00	0.0	0.00	
300.0	0.00	0.00	300.0	0.00 N	0.00 E	412,472.57	774,420.08	0.00	0.0	0.00	
400.0	0.00	0.00	400.0	0.00 N	0.00 E	412,472.57	774,420.08	0.00	0.0	0.00	
500.0	0.00	0.00	500.0	0.00 N	0.00 E	412,472.57	774,420.08	0.00	0.0	0.00	
600.0	0.00	0.00	600.0	0.00 N	0.00 E	412,472.57	774,420.08	0.00	0.0	0.00	
700.0	0.00	0.00	700.0	0.00 N	0.00 E	412,472.57	774,420.08	0.00	0.0	0.00	
800.0	0.00	0.00	800.0	0.00 N	0.00 E	412,472.57	774,420.08	0.00	0.0	0.00	
861.0	0.00	0.00	861.0	0.00 N	0.00 E	412,472.57	774,420.08	0.00	0.0	0.00	Rustler
900.0	0.00	0.00	900.0	0.00 N	0.00 E	412,472.57	774,420.08	0.00	0.0	0.00	
1,000.0	0.00	0.00	1,000.0	0.00 N	0.00 E	412,472.57	774,420.08	0.00	0.0	0.00	13 3/8"
1,100.0	0.00	0.00	1,100.0	0.00 N	0.00 E	412,472.57	774,420.08	0.00	0.0	0.00	
1,200.0	0.00	0.00	1,200.0	0.00 N	0.00 E	412,472.57	774,420.08	0.00	0.0	0.00	
1,300.0	0.00	0.00	1,300.0	0.00 N	0.00 E	412,472.57	774,420.08	0.00	0.0	0.00	
1,367.0	0.00	0.00	1,367.0	0.00 N	0.00 E	412,472.57	774,420.08	0.00	0.0	0.00	Salado
1,400.0	0.00	0.00	1,400.0	0.00 N	0.00 E	412,472.57	774,420.08	0.00	0.0	0.00	
1,500.0	0.00	0.00	1,500.0	0.00 N	0.00 E	412,472.57	774,420.08	0.00	0.0	0.00	
1,600.0	0.00	0.00	1,600.0	0.00 N	0.00 E	412,472.57	774,420.08	0.00	0.0	0.00	
1,700.0	0.00	0.00	1,700.0	0.00 N	0.00 E	412,472.57	774,420.08	0.00	0.0	0.00	
1,800.0	0.00	0.00	1,800.0	0.00 N	0.00 E	412,472.57	774,420.08	0.00	0.0	0.00	
1,900.0	0.00	0.00	1,900.0	0.00 N	0.00 E	412,472.57	774,420.08	0.00	0.0	0.00	
2,000.0	0.00	0.00	2,000.0	0.00 N	0.00 E	412,472.57	774,420.08	0.00	0.0	0.00	
2,100.0	0.00	0.00	2,100.0	0.00 N	0.00 E	412,472.57	774,420.08	0.00	0.0	0.00	
2,200.0	0.00	0.00	2,200.0	0.00 N	0.00 E	412,472.57	774,420.08	0.00	0.0	0.00	
2,300.0	0.00	0.00	2,300.0	0.00 N	0.00 E	412,472.57	774,420.08	0.00	0.0	0.00	
2,400.0	0.00	0.00	2,400.0	0.00 N	0.00 E	412,472.57	774,420.08	0.00	0.0	0.00	
2,500.0	0.00	0.00	2,500.0	0.00 N	0.00 E	412,472.57	774,420.08	0.00	0.0	0.00	
2,600.0	0.00	0.00	2,600.0	0.00 N	0.00 E	412,472.57	774,420.08	0.00	0.0	0.00	
2,700.0	0.00	0.00	2,700.0	0.00 N	0.00 E	412,472.57	774,420.08	0.00	0.0	0.00	
2,800.0	0.00	0.00	2,800.0	0.00 N	0.00 E	412,472.57	774,420.08	0.00	0.0	0.00	
2,900.0	0.00	0.00	2,900.0	0.00 N	0.00 E	412,472.57	774,420.08	0.00	0.0	0.00	
3,000.0	0.00	0.00	3,000.0	0.00 N	0.00 E	412,472.57	774,420.08	0.00	0.0	0.00	
3,100.0	0.00	0.00	3,100.0	0.00 N	0.00 E	412,472.57	774,420.08	0.00	0.0	0.00	
3,200.0	0.00	0.00	3,200.0	0.00 N	0.00 E	412,472.57	774,420.08	0.00	0.0	0.00	
3,300.0	0.00	0.00	3,300.0	0.00 N	0.00 E	412,472.57	774,420.08	0.00	0.0	0.00	

Plan Report for WA FC 1H - Plan 3

Measured Depth	Inclination	Grid Azimuth	Vertical Depth	Local Coordinates		Map Coordinates		Dogleg Rate	Vertical Section	Toolface Angle	Comments
(usft)	(°)	(°)	(usft)	Northing (usft)	Easting (usft)	Northing (usft)	Easting (usft)	(°/100usft)	(usft)	(°)	
3,400.0	0.00	0.00	3,400.0	0.00 N	0.00 E	412,472.57	774,420.08	0.00	0.0	0.00	
3,500.0	0.00	0.00	3,500.0	0.00 N	0.00 E	412,472.57	774,420.08	0.00	0.0	0.00	Start Nudge
3,566.0	1.32	238.48	3,566.0	0.40 S	0.65 W	412,472.17	774,419.43	2.00	-0.4	238.48	Castile
3,600.0	2.00	238.48	3,600.0	0.91 S	1.49 W	412,471.66	774,418.59	2.00	-0.9	0.00	
3,650.1	3.00	238.48	3,650.1	2.06 S	3.35 W	412,470.51	774,416.73	2.00	-2.0	0.00	Hold
3,700.0	3.00	238.48	3,699.9	3.42 S	5.58 W	412,469.15	774,414.50	0.00	-3.4	0.00	
3,800.0	3.00	238.48	3,799.7	6.16 S	10.04 W	412,466.41	774,410.04	0.00	-6.1	0.00	
3,900.0	3.00	238.48	3,899.6	8.90 S	14.51 W	412,463.67	774,405.57	0.00	-8.7	0.00	
4,000.0	3.00	238.48	3,999.5	11.64 S	18.97 W	412,460.93	774,401.11	0.00	-11.4	0.00	
4,100.0	3.00	238.48	4,099.3	14.38 S	23.44 W	412,458.19	774,396.64	0.00	-14.1	0.00	
4,200.0	3.00	238.48	4,199.2	17.11 S	27.90 W	412,455.46	774,392.18	0.00	-16.8	0.00	
4,300.0	3.00	238.48	4,299.0	19.85 S	32.37 W	412,452.72	774,387.71	0.00	-19.5	0.00	
4,400.0	3.00	238.48	4,398.9	22.59 S	36.83 W	412,449.98	774,383.25	0.00	-22.2	0.00	
4,500.0	3.00	238.48	4,498.8	25.33 S	41.30 W	412,447.24	774,378.78	0.00	-24.9	0.00	
4,600.0	3.00	238.48	4,598.6	28.07 S	45.76 W	412,444.50	774,374.32	0.00	-27.6	0.00	
4,700.0	3.00	238.48	4,698.5	30.81 S	50.23 W	412,441.76	774,369.85	0.00	-30.3	0.00	
4,800.0	3.00	238.48	4,798.4	33.55 S	54.69 W	412,439.02	774,365.39	0.00	-33.0	0.00	
4,900.0	3.00	238.48	4,898.2	36.28 S	59.16 W	412,436.29	774,360.92	0.00	-35.7	0.00	
5,000.0	3.00	238.48	4,998.1	39.02 S	63.62 W	412,433.55	774,356.46	0.00	-38.3	0.00	
5,092.4	3.00	238.48	5,090.4	41.55 S	67.75 W	412,431.02	774,352.33	0.00	-40.8	0.00	Base Salt
5,100.0	3.00	238.48	5,097.9	41.76 S	68.09 W	412,430.81	774,351.99	0.00	-41.0	0.00	
5,200.0	3.00	238.48	5,197.8	44.50 S	72.55 W	412,428.07	774,347.53	0.00	-43.7	0.00	
5,300.0	3.00	238.48	5,297.7	47.24 S	77.02 W	412,425.33	774,343.06	0.00	-46.4	0.00	
5,376.9	3.00	238.48	5,374.4	49.34 S	80.45 W	412,423.23	774,339.63	0.00	-48.5	0.00	Lamar
5,400.0	3.00	238.48	5,397.5	49.98 S	81.48 W	412,422.59	774,338.60	0.00	-49.1	0.00	
5,408.9	3.00	238.48	5,406.4	50.22 S	81.88 W	412,422.35	774,338.20	0.00	-49.3	0.00	Bell Canyon Ss.
5,500.0	3.00	238.48	5,497.4	52.72 S	85.95 W	412,419.85	774,334.13	0.00	-51.8	0.00	
5,600.0	3.00	238.48	5,597.3	55.45 S	90.41 W	412,417.12	774,329.67	0.00	-54.5	0.00	
5,700.0	3.00	238.48	5,697.1	58.19 S	94.88 W	412,414.38	774,325.20	0.00	-57.2	0.00	
5,800.0	3.00	238.48	5,797.0	60.93 S	99.34 W	412,411.64	774,320.74	0.00	-59.9	0.00	
5,900.0	3.00	238.48	5,896.8	63.67 S	103.81 W	412,408.90	774,316.27	0.00	-62.6	0.00	
6,000.0	3.00	238.48	5,996.7	66.41 S	108.27 W	412,406.16	774,311.81	0.00	-65.3	0.00	
6,100.0	3.00	238.48	6,096.6	69.15 S	112.74 W	412,403.42	774,307.34	0.00	-67.9	0.00	
6,200.0	3.00	238.48	6,196.4	71.89 S	117.20 W	412,400.68	774,302.88	0.00	-70.6	0.00	
6,300.0	3.00	238.48	6,296.3	74.62 S	121.67 W	412,397.95	774,298.41	0.00	-73.3	0.00	
6,400.0	3.00	238.48	6,396.2	77.36 S	126.13 W	412,395.21	774,293.95	0.00	-76.0	0.00	
6,500.0	3.00	238.48	6,496.0	80.10 S	130.60 W	412,392.47	774,289.48	0.00	-78.7	0.00	

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Measured Depth (usft)	Inclination (°)	Grid Azimuth (°)	Vertical Depth (usft)	Local Coordinates		Map Coordinates		Dogleg Rate (°/100usft)	Vertical Section (usft)	Toolface Angle (°)	Comments
				Northing (usft)	Easting (usft)	Northing (usft)	Easting (usft)				
6,600.0	3.00	238.48	6,595.9	82.84 S	135.06 W	412,389.73	774,285.02	0.00	-81.4	0.00	
6,700.0	3.00	238.48	6,695.7	85.58 S	139.53 W	412,386.99	774,280.55	0.00	-84.1	0.00	
6,719.0	3.00	238.48	6,714.7	86.10 S	140.38 W	412,386.47	774,279.70	0.00	-84.6	0.00	Cherry Canyon Ss.
6,800.0	3.00	238.48	6,795.6	88.32 S	143.99 W	412,384.25	774,276.09	0.00	-86.8	0.00	
6,859.4	3.00	238.48	6,854.9	89.94 S	146.65 W	412,382.63	774,273.43	0.00	-88.4	0.00	Drop vertical
6,900.0	2.19	238.48	6,895.5	90.91 S	148.21 W	412,381.66	774,271.87	2.00	-89.3	180.00	
7,009.5	0.00	0.00	7,005.0	92.00 S	150.00 W	412,380.57	774,270.08	2.00	-90.4	180.00	Hold vertical
7,100.0	0.00	0.00	7,095.5	92.00 S	150.00 W	412,380.57	774,270.08	0.00	-90.4	180.00	
7,200.0	0.00	0.00	7,195.5	92.00 S	150.00 W	412,380.57	774,270.08	0.00	-90.4	0.00	
7,300.0	0.00	0.00	7,295.5	92.00 S	150.00 W	412,380.57	774,270.08	0.00	-90.4	0.00	
7,400.0	0.00	0.00	7,395.5	92.00 S	150.00 W	412,380.57	774,270.08	0.00	-90.4	0.00	
7,500.0	0.00	0.00	7,495.5	92.00 S	150.00 W	412,380.57	774,270.08	0.00	-90.4	0.00	
7,600.0	0.00	0.00	7,595.5	92.00 S	150.00 W	412,380.57	774,270.08	0.00	-90.4	0.00	
7,700.0	0.00	0.00	7,695.5	92.00 S	150.00 W	412,380.57	774,270.08	0.00	-90.4	0.00	
7,800.0	0.00	0.00	7,795.5	92.00 S	150.00 W	412,380.57	774,270.08	0.00	-90.4	0.00	
7,900.0	0.00	0.00	7,895.5	92.00 S	150.00 W	412,380.57	774,270.08	0.00	-90.4	0.00	
8,000.0	0.00	0.00	7,995.5	92.00 S	150.00 W	412,380.57	774,270.08	0.00	-90.4	0.00	
8,020.3	0.00	0.00	8,015.8	92.00 S	150.00 W	412,380.57	774,270.08	0.00	-90.4	0.00	Brushy Canyon Ss.
8,100.0	0.00	0.00	8,095.5	92.00 S	150.00 W	412,380.57	774,270.08	0.00	-90.4	0.00	
8,200.0	0.00	0.00	8,195.5	92.00 S	150.00 W	412,380.57	774,270.08	0.00	-90.4	0.00	
8,300.0	0.00	0.00	8,295.5	92.00 S	150.00 W	412,380.57	774,270.08	0.00	-90.4	0.00	
8,400.0	0.00	0.00	8,395.5	92.00 S	150.00 W	412,380.57	774,270.08	0.00	-90.4	0.00	
8,500.0	0.00	0.00	8,495.5	92.00 S	150.00 W	412,380.57	774,270.08	0.00	-90.4	0.00	
8,600.0	0.00	0.00	8,595.5	92.00 S	150.00 W	412,380.57	774,270.08	0.00	-90.4	0.00	
8,700.0	0.00	0.00	8,695.5	92.00 S	150.00 W	412,380.57	774,270.08	0.00	-90.4	0.00	
8,800.0	0.00	0.00	8,795.5	92.00 S	150.00 W	412,380.57	774,270.08	0.00	-90.4	0.00	
8,900.0	0.00	0.00	8,895.5	92.00 S	150.00 W	412,380.57	774,270.08	0.00	-90.4	0.00	
9,000.0	0.00	0.00	8,995.5	92.00 S	150.00 W	412,380.57	774,270.08	0.00	-90.4	0.00	
9,100.0	0.00	0.00	9,095.5	92.00 S	150.00 W	412,380.57	774,270.08	0.00	-90.4	0.00	
9,200.0	0.00	0.00	9,195.5	92.00 S	150.00 W	412,380.57	774,270.08	0.00	-90.4	0.00	
9,300.0	0.00	0.00	9,295.5	92.00 S	150.00 W	412,380.57	774,270.08	0.00	-90.4	0.00	
9,309.3	0.00	0.00	9,304.8	92.00 S	150.00 W	412,380.57	774,270.08	0.00	-90.4	0.00	Bone Spring
9,400.0	0.00	0.00	9,395.5	92.00 S	150.00 W	412,380.57	774,270.08	0.00	-90.4	0.00	
9,500.0	0.00	0.00	9,495.5	92.00 S	150.00 W	412,380.57	774,270.08	0.00	-90.4	0.00	
9,600.0	0.00	0.00	9,595.5	92.00 S	150.00 W	412,380.57	774,270.08	0.00	-90.4	0.00	
9,622.3	0.00	0.00	9,617.8	92.00 S	150.00 W	412,380.57	774,270.08	0.00	-90.4	0.00	Bone Spring Hard Lm.
9,700.0	0.00	0.00	9,695.5	92.00 S	150.00 W	412,380.57	774,270.08	0.00	-90.4	0.00	

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Measured Depth (usft)	Inclination (°)	Grid Azimuth (°)	Vertical Depth (usft)	Local Coordinates		Map Coordinates		Dogleg Rate (°/100usft)	Vertical Section (usft)	Toolface Angle (°)	Comments
				Northing (usft)	Easting (usft)	Northing (usft)	Easting (usft)				
9,800.0	0.00	0.00	9,795.5	92.00 S	150.00 W	412,380.57	774,270.08	0.00	-90.4	0.00	
9,900.0	0.00	0.00	9,895.5	92.00 S	150.00 W	412,380.57	774,270.08	0.00	-90.4	0.00	
10,000.0	0.00	0.00	9,995.5	92.00 S	150.00 W	412,380.57	774,270.08	0.00	-90.4	0.00	
10,100.0	0.00	0.00	10,095.5	92.00 S	150.00 W	412,380.57	774,270.08	0.00	-90.4	0.00	
10,200.0	0.00	0.00	10,195.5	92.00 S	150.00 W	412,380.57	774,270.08	0.00	-90.4	0.00	
10,300.0	0.00	0.00	10,295.5	92.00 S	150.00 W	412,380.57	774,270.08	0.00	-90.4	0.00	
10,356.3	0.00	0.00	10,351.8	92.00 S	150.00 W	412,380.57	774,270.08	0.00	-90.4	0.00	1st Bone Spg.
10,400.0	0.00	0.00	10,395.5	92.00 S	150.00 W	412,380.57	774,270.08	0.00	-90.4	0.00	
10,500.0	0.00	0.00	10,495.5	92.00 S	150.00 W	412,380.57	774,270.08	0.00	-90.4	0.00	
10,563.3	0.00	0.00	10,558.8	92.00 S	150.00 W	412,380.57	774,270.08	0.00	-90.4	0.00	Base 1st Bone Spg sand
10,600.0	0.00	0.00	10,595.5	92.00 S	150.00 W	412,380.57	774,270.08	0.00	-90.4	0.00	
10,700.0	0.00	0.00	10,695.5	92.00 S	150.00 W	412,380.57	774,270.08	0.00	-90.4	0.00	
10,800.0	0.00	0.00	10,795.5	92.00 S	150.00 W	412,380.57	774,270.08	0.00	-90.4	0.00	
10,900.0	0.00	0.00	10,895.5	92.00 S	150.00 W	412,380.57	774,270.08	0.00	-90.4	0.00	
10,934.3	0.00	0.00	10,929.8	92.00 S	150.00 W	412,380.57	774,270.08	0.00	-90.4	0.00	2nd Bone Spg sand
11,000.0	0.00	0.00	10,995.5	92.00 S	150.00 W	412,380.57	774,270.08	0.00	-90.4	0.00	
11,100.0	0.00	0.00	11,095.5	92.00 S	150.00 W	412,380.57	774,270.08	0.00	-90.4	0.00	
11,200.0	0.00	0.00	11,195.5	92.00 S	150.00 W	412,380.57	774,270.08	0.00	-90.4	0.00	
11,300.0	0.00	0.00	11,295.5	92.00 S	150.00 W	412,380.57	774,270.08	0.00	-90.4	0.00	
11,400.0	0.00	0.00	11,395.5	92.00 S	150.00 W	412,380.57	774,270.08	0.00	-90.4	0.00	
11,402.3	0.00	0.00	11,397.8	92.00 S	150.00 W	412,380.57	774,270.08	0.00	-90.4	0.00	Base 2nd Bone Spg sand
11,500.0	0.00	0.00	11,495.5	92.00 S	150.00 W	412,380.57	774,270.08	0.00	-90.4	0.00	
11,600.0	0.00	0.00	11,595.5	92.00 S	150.00 W	412,380.57	774,270.08	0.00	-90.4	0.00	
11,700.0	0.00	0.00	11,695.5	92.00 S	150.00 W	412,380.57	774,270.08	0.00	-90.4	0.00	
11,800.0	0.00	0.00	11,795.5	92.00 S	150.00 W	412,380.57	774,270.08	0.00	-90.4	0.00	
11,900.0	0.00	0.00	11,895.5	92.00 S	150.00 W	412,380.57	774,270.08	0.00	-90.4	0.00	
11,977.3	0.00	0.00	11,972.8	92.00 S	150.00 W	412,380.57	774,270.08	0.00	-90.4	0.00	3rd Bone Spring Ss.
12,000.0	0.00	0.00	11,995.5	92.00 S	150.00 W	412,380.57	774,270.08	0.00	-90.4	0.00	
12,100.0	0.00	0.00	12,095.5	92.00 S	150.00 W	412,380.57	774,270.08	0.00	-90.4	0.00	
12,167.1	0.00	0.00	12,162.6	92.00 S	150.00 W	412,380.57	774,270.08	0.00	-90.4	0.00	KOP, Build and turn
12,175.0	0.94	349.90	12,170.5	91.94 S	150.01 W	412,380.63	774,270.07	11.94	-90.3	349.90	
12,200.0	3.94	349.90	12,195.4	90.89 S	150.20 W	412,381.68	774,269.88	12.00	-89.3	0.00	
12,225.0	6.94	349.90	12,220.3	88.55 S	150.61 W	412,384.02	774,269.47	12.00	-86.9	0.00	
12,250.0	9.94	349.90	12,245.0	84.94 S	151.26 W	412,387.63	774,268.82	12.00	-83.3	0.00	
12,275.0	12.94	349.90	12,269.5	80.06 S	152.13 W	412,392.51	774,267.95	12.00	-78.4	0.00	
12,300.0	15.94	349.90	12,293.7	73.92 S	153.22 W	412,398.65	774,266.86	12.00	-72.3	0.00	

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Measured Depth (usft)	Inclination (°)	Grid Azimuth (°)	Vertical Depth (usft)	Local Coordinates		Map Coordinates		Dogleg Rate (°/100usft)	Vertical Section (usft)	Toolface Angle (°)	Comments
				Northing (usft)	Easting (usft)	Northing (usft)	Easting (usft)				
12,325.0	18.94	349.90	12,317.6	66.54 S	154.54 W	412,406.03	774,265.54	12.00	-64.9	0.00	
12,350.0	21.94	349.90	12,341.0	57.94 S	156.07 W	412,414.63	774,264.01	12.00	-56.3	0.00	
12,363.5	23.56	349.90	12,353.4	52.81 S	156.98 W	412,419.76	774,263.10	12.00	-51.1	0.00	Lowered 3rd Bone Spring Ss.
12,375.0	24.95	349.90	12,364.0	48.15 S	157.81 W	412,424.42	774,262.27	12.00	-46.5	0.00	
12,400.0	27.95	349.90	12,386.3	37.19 S	159.76 W	412,435.38	774,260.32	12.00	-35.5	0.00	
12,425.0	30.95	349.90	12,408.1	25.09 S	161.92 W	412,447.48	774,258.16	12.00	-23.4	0.00	
12,446.3	33.50	349.90	12,426.1	13.92 S	163.91 W	412,458.65	774,256.17	12.00	-12.2	0.00	Wolfcamp
12,450.0	33.95	349.90	12,429.2	11.89 S	164.27 W	412,460.68	774,255.81	12.00	-10.1	0.00	
12,474.3	36.86	349.90	12,449.0	1.94 N	166.73 W	412,474.51	774,253.35	12.00	3.7	0.00	Wolfcamp X Ss.
12,475.0	36.95	349.90	12,449.6	2.38 N	166.81 W	412,474.95	774,253.27	12.00	4.2	0.00	
12,500.0	39.95	349.90	12,469.1	17.68 N	169.54 W	412,490.25	774,250.54	12.00	19.5	0.00	
12,525.0	42.95	349.90	12,487.9	33.97 N	172.44 W	412,506.54	774,247.84	12.00	35.8	0.00	
12,542.7	45.07	349.90	12,500.6	46.06 N	174.59 W	412,518.63	774,245.49	12.00	47.9	0.00	Wolfcamp X Ss.Base
12,550.0	45.95	349.90	12,505.7	51.21 N	175.51 W	412,523.78	774,244.57	12.00	53.1	0.00	
12,575.0	48.95	349.90	12,522.6	69.33 N	178.74 W	412,541.90	774,241.34	12.00	71.2	0.00	
12,594.7	51.31	349.90	12,535.3	84.22 N	181.39 W	412,556.79	774,238.69	12.00	86.1	0.00	Wolfcamp Y Ss.
12,600.0	51.95	349.90	12,538.5	88.31 N	182.12 W	412,560.88	774,237.96	12.00	90.2	0.00	
12,619.2	54.25	349.90	12,550.1	103.44 N	184.81 W	412,576.01	774,235.27	12.00	105.4	0.00	Wolfcamp Y Target
12,625.0	54.95	349.90	12,553.4	108.08 N	185.64 W	412,580.65	774,234.44	12.00	110.0	0.00	
12,650.0	57.95	349.90	12,567.2	128.59 N	189.29 W	412,601.16	774,230.79	12.00	130.6	0.00	
12,653.0	58.31	349.90	12,568.8	131.11 N	189.74 W	412,603.68	774,230.34	12.00	133.1	0.00	Wolfcamp A Shale
12,675.0	60.95	349.90	12,580.0	149.78 N	193.07 W	412,622.35	774,227.01	12.00	151.8	0.00	
12,700.0	63.95	349.90	12,591.5	171.60 N	196.95 W	412,644.17	774,223.13	12.00	173.7	0.00	
12,725.0	66.95	349.90	12,601.9	193.99 N	200.94 W	412,666.56	774,219.14	12.00	196.1	0.00	
12,750.0	69.95	349.90	12,611.1	216.88 N	205.02 W	412,689.45	774,215.06	12.00	219.0	0.00	
12,775.0	72.95	349.90	12,619.0	240.21 N	209.18 W	412,712.78	774,210.90	12.00	242.4	0.00	
12,800.0	75.95	349.90	12,625.7	263.92 N	213.40 W	412,736.49	774,206.68	12.00	266.2	0.00	
12,825.0	78.95	349.90	12,631.2	287.94 N	217.68 W	412,760.51	774,202.40	12.00	290.2	0.00	
12,850.0	81.95	349.90	12,635.3	312.21 N	222.00 W	412,784.78	774,198.08	12.00	314.6	0.00	
12,875.0	84.95	349.90	12,638.2	336.66 N	226.36 W	412,809.23	774,193.72	12.00	339.0	0.00	
12,900.0	87.95	349.90	12,639.7	361.22 N	230.73 W	412,833.79	774,189.35	12.00	363.7	0.00	
12,921.2	90.50	349.90	12,640.0	382.09 N	234.45 W	412,854.66	774,185.63	12.00	384.6	0.00	Landing point / Slight turn
13,000.0	90.50	351.48	12,639.3	459.84 N	247.20 W	412,932.41	774,172.88	2.00	462.4	89.80	
13,100.0	90.50	353.48	12,638.4	558.97 N	260.29 W	413,031.54	774,159.79	2.00	561.7	89.97	
13,200.0	90.50	355.48	12,637.6	658.50 N	269.90 W	413,131.07	774,150.18	2.00	661.3	89.99	
13,300.0	90.50	357.48	12,636.7	758.30 N	276.04 W	413,230.87	774,144.04	2.00	761.2	90.01	
13,395.2	90.50	359.39	12,635.9	853.46 N	278.64 W	413,326.03	774,141.44	2.00	856.4	90.02	Hold

Plan Report for WA FC 1H - Plan 3

Measured Depth (usft)	Inclination (°)	Grid Azimuth (°)	Vertical Depth (usft)	Local Coordinates		Map Coordinates		Dogleg Rate (°/100usft)	Vertical Section (usft)	Toolface Angle (°)	Comments
				Northing (usft)	Easting (usft)	Northing (usft)	Easting (usft)				
13,395.5	90.50	359.39	12,635.9	853.76 N	278.64 W	413,326.33	774,141.44	0.24	856.7	90.04	Hold
13,400.0	90.50	359.39	12,635.8	858.26 N	278.69 W	413,330.83	774,141.39	0.00	861.2	0.00	
13,481.2	90.50	359.39	12,635.1	939.41 N	279.55 W	413,411.98	774,140.53	0.00	942.3	0.00	
13,500.0	90.50	359.39	12,634.9	958.25 N	279.75 W	413,430.82	774,140.33	0.00	961.2	0.00	
13,600.0	90.50	359.39	12,634.1	1,058.24 N	280.82 W	413,530.81	774,139.26	0.00	1,061.2	0.00	
13,700.0	90.50	359.39	12,633.2	1,158.23 N	281.88 W	413,630.80	774,138.20	0.00	1,161.2	0.00	
13,800.0	90.50	359.39	12,632.3	1,258.22 N	282.95 W	413,730.79	774,137.13	0.00	1,261.2	0.00	
13,900.0	90.50	359.39	12,631.5	1,358.21 N	284.01 W	413,830.78	774,136.07	0.00	1,361.2	0.00	
14,000.0	90.50	359.39	12,630.6	1,458.20 N	285.08 W	413,930.77	774,135.00	0.00	1,461.2	0.00	
14,100.0	90.50	359.39	12,629.7	1,558.19 N	286.14 W	414,030.76	774,133.94	0.00	1,561.2	0.00	
14,200.0	90.50	359.39	12,628.8	1,658.18 N	287.20 W	414,130.75	774,132.88	0.00	1,661.1	0.00	
14,300.0	90.50	359.39	12,628.0	1,758.17 N	288.27 W	414,230.74	774,131.81	0.00	1,761.1	0.00	
14,400.0	90.50	359.39	12,627.1	1,858.16 N	289.33 W	414,330.73	774,130.75	0.00	1,861.1	0.00	
14,500.0	90.50	359.39	12,626.2	1,958.15 N	290.40 W	414,430.72	774,129.68	0.00	1,961.1	0.00	
14,600.0	90.50	359.39	12,625.3	2,058.15 N	291.46 W	414,530.72	774,128.62	0.00	2,061.1	0.00	
14,700.0	90.50	359.39	12,624.5	2,158.14 N	292.53 W	414,630.71	774,127.55	0.00	2,161.1	0.00	
14,800.0	90.50	359.39	12,623.6	2,258.13 N	293.59 W	414,730.70	774,126.49	0.00	2,261.1	0.00	
14,900.0	90.50	359.39	12,622.7	2,358.12 N	294.66 W	414,830.69	774,125.42	0.00	2,361.1	0.00	
15,000.0	90.50	359.39	12,621.9	2,458.11 N	295.72 W	414,930.68	774,124.36	0.00	2,461.1	0.00	
15,100.0	90.50	359.39	12,621.0	2,558.10 N	296.79 W	415,030.67	774,123.29	0.00	2,561.1	0.00	
15,200.0	90.50	359.39	12,620.1	2,658.09 N	297.85 W	415,130.66	774,122.23	0.00	2,661.1	0.00	
15,300.0	90.50	359.39	12,619.2	2,758.08 N	298.91 W	415,230.65	774,121.17	0.00	2,761.1	0.00	
15,400.0	90.50	359.39	12,618.4	2,858.07 N	299.98 W	415,330.64	774,120.10	0.00	2,861.1	0.00	
15,500.0	90.50	359.39	12,617.5	2,958.06 N	301.04 W	415,430.63	774,119.04	0.00	2,961.1	0.00	
15,600.0	90.50	359.39	12,616.6	3,058.05 N	302.11 W	415,530.62	774,117.97	0.00	3,061.1	0.00	
15,700.0	90.50	359.39	12,615.7	3,158.04 N	303.17 W	415,630.61	774,116.91	0.00	3,161.1	0.00	
15,800.0	90.50	359.39	12,614.9	3,258.03 N	304.24 W	415,730.60	774,115.84	0.00	3,261.1	0.00	
15,900.0	90.50	359.39	12,614.0	3,358.02 N	305.30 W	415,830.59	774,114.78	0.00	3,361.1	0.00	
16,000.0	90.50	359.39	12,613.1	3,458.01 N	306.37 W	415,930.58	774,113.71	0.00	3,461.1	0.00	
16,100.0	90.50	359.39	12,612.3	3,558.00 N	307.43 W	416,030.57	774,112.65	0.00	3,561.1	0.00	
16,200.0	90.50	359.39	12,611.4	3,657.99 N	308.50 W	416,130.56	774,111.58	0.00	3,661.1	0.00	
16,300.0	90.50	359.39	12,610.5	3,757.98 N	309.56 W	416,230.55	774,110.52	0.00	3,761.1	0.00	
16,400.0	90.50	359.39	12,609.6	3,857.97 N	310.63 W	416,330.54	774,109.45	0.00	3,861.1	0.00	
16,500.0	90.50	359.39	12,608.8	3,957.97 N	311.69 W	416,430.54	774,108.39	0.00	3,961.1	0.00	
16,600.0	90.50	359.39	12,607.9	4,057.96 N	312.75 W	416,530.53	774,107.33	0.00	4,061.1	0.00	
16,700.0	90.50	359.39	12,607.0	4,157.95 N	313.82 W	416,630.52	774,106.26	0.00	4,161.1	0.00	
16,800.0	90.50	359.39	12,606.1	4,257.94 N	314.88 W	416,730.51	774,105.20	0.00	4,261.0	0.00	

Plan Report for WA FC 1H - Plan 3

Measured Depth (usft)	Inclination (°)	Grid Azimuth (°)	Vertical Depth (usft)	Local Coordinates		Map Coordinates		Dogleg Rate (°/100usft)	Vertical Section (usft)	Toolface Angle (°)	Comments
				Northing (usft)	Easting (usft)	Northing (usft)	Easting (usft)				
16,900.0	90.50	359.39	12,605.3	4,357.93 N	315.95 W	416,830.50	774,104.13	0.00	4,361.0	0.00	
17,000.0	90.50	359.39	12,604.4	4,457.92 N	317.01 W	416,930.49	774,103.07	0.00	4,461.0	0.00	
17,100.0	90.50	359.39	12,603.5	4,557.91 N	318.08 W	417,030.48	774,102.00	0.00	4,561.0	0.00	
17,200.0	90.50	359.39	12,602.7	4,657.90 N	319.14 W	417,130.47	774,100.94	0.00	4,661.0	0.00	
17,300.0	90.50	359.39	12,601.8	4,757.89 N	320.21 W	417,230.46	774,099.87	0.00	4,761.0	0.00	
17,400.0	90.50	359.39	12,600.9	4,857.88 N	321.27 W	417,330.45	774,098.81	0.00	4,861.0	0.00	
17,500.0	90.50	359.39	12,600.0	4,957.87 N	322.34 W	417,430.44	774,097.74	0.00	4,961.0	0.00	
17,600.0	90.50	359.39	12,599.2	5,057.86 N	323.40 W	417,530.43	774,096.68	0.00	5,061.0	0.00	
17,700.0	90.50	359.39	12,598.3	5,157.85 N	324.47 W	417,630.42	774,095.61	0.00	5,161.0	0.00	
17,800.0	90.50	359.39	12,597.4	5,257.84 N	325.53 W	417,730.41	774,094.55	0.00	5,261.0	0.00	
17,900.0	90.50	359.39	12,596.5	5,357.83 N	326.59 W	417,830.40	774,093.49	0.00	5,361.0	0.00	
18,000.0	90.50	359.39	12,595.7	5,457.82 N	327.66 W	417,930.39	774,092.42	0.00	5,461.0	0.00	
18,100.0	90.50	359.39	12,594.8	5,557.81 N	328.72 W	418,030.38	774,091.36	0.00	5,561.0	0.00	
18,200.0	90.50	359.39	12,593.9	5,657.80 N	329.79 W	418,130.37	774,090.29	0.00	5,661.0	0.00	
18,300.0	90.50	359.39	12,593.1	5,757.79 N	330.85 W	418,230.36	774,089.23	0.00	5,761.0	0.00	
18,400.0	90.50	359.39	12,592.2	5,857.79 N	331.92 W	418,330.36	774,088.16	0.00	5,861.0	0.00	
18,500.0	90.50	359.39	12,591.3	5,957.78 N	332.98 W	418,430.35	774,087.10	0.00	5,961.0	0.00	
18,600.0	90.50	359.39	12,590.4	6,057.77 N	334.05 W	418,530.34	774,086.03	0.00	6,061.0	0.00	
18,700.0	90.50	359.39	12,589.6	6,157.76 N	335.11 W	418,630.33	774,084.97	0.00	6,161.0	0.00	
18,800.0	90.50	359.39	12,588.7	6,257.75 N	336.18 W	418,730.32	774,083.90	0.00	6,261.0	0.00	
18,900.0	90.50	359.39	12,587.8	6,357.74 N	337.24 W	418,830.31	774,082.84	0.00	6,361.0	0.00	
19,000.0	90.50	359.39	12,586.9	6,457.73 N	338.30 W	418,930.30	774,081.78	0.00	6,461.0	0.00	
19,100.0	90.50	359.39	12,586.1	6,557.72 N	339.37 W	419,030.29	774,080.71	0.00	6,561.0	0.00	
19,200.0	90.50	359.39	12,585.2	6,657.71 N	340.43 W	419,130.28	774,079.65	0.00	6,661.0	0.00	
19,300.0	90.50	359.39	12,584.3	6,757.70 N	341.50 W	419,230.27	774,078.58	0.00	6,761.0	0.00	
19,400.0	90.50	359.39	12,583.5	6,857.69 N	342.56 W	419,330.26	774,077.52	0.00	6,860.9	0.00	
19,500.0	90.50	359.39	12,582.6	6,957.68 N	343.63 W	419,430.25	774,076.45	0.00	6,960.9	0.00	
19,600.0	90.50	359.39	12,581.7	7,057.67 N	344.69 W	419,530.24	774,075.39	0.00	7,060.9	0.00	
19,700.0	90.50	359.39	12,580.8	7,157.66 N	345.76 W	419,630.23	774,074.32	0.00	7,160.9	0.00	
19,800.0	90.50	359.39	12,580.0	7,257.65 N	346.82 W	419,730.22	774,073.26	0.00	7,260.9	0.00	
19,900.0	90.50	359.39	12,579.1	7,357.64 N	347.89 W	419,830.21	774,072.19	0.00	7,360.9	0.00	
20,000.0	90.50	359.39	12,578.2	7,457.63 N	348.95 W	419,930.20	774,071.13	0.00	7,460.9	0.00	
20,100.0	90.50	359.39	12,577.3	7,557.62 N	350.02 W	420,030.19	774,070.06	0.00	7,560.9	0.00	
20,168.2	90.50	359.39	12,576.8	7,625.77 N	350.74 W	420,098.34	774,069.34	0.00	7,629.1	0.00	TD at 20168.2

Plan Report for WA FC 1H - Plan 3

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
3,500.0	3,500.0	0.0	0.0	Start Nudge
3,650.1	3,650.1	-2.1	-3.4	Hold
6,859.4	6,854.9	-89.9	-146.6	Drop vertical
7,009.5	7,005.0	-92.0	-150.0	Hold vertical
12,167.1	12,162.6	-92.0	-150.0	KOP, Build and turn
12,921.2	12,640.0	382.1	-234.4	Landing point / Slight turn
13,395.2	12,635.9	853.5	-278.6	Hold
13,395.5	12,635.9	853.8	-278.6	Hold
20,168.2	12,576.8	7,625.8	-350.7	TD at 20168.2

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (usft)
				+N/_S (usft)	+E/-W (usft)	
User	No Target (Freehand)	359.39	Slot	0.0	0.0	0.0

Survey tool program

From (usft)	To (usft)	Survey/Plan	Survey Tool
0.0	20,167.8	Plan 3	2_MWD+HRGM

Casing Details

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
1,000.0	1,000.0	13 3/8"	13-3/8	17-1/2

Plan Report for WA FC 1H - Plan 3

Formation Details

Measured Depth (usft)	Vertical Depth (usft)	TVDSS (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
861.0	861.0	-2,496.00	Rustler		-0.50	359.49
1,367.0	1,367.0	-1,990.00	Salado		-0.50	359.49
3,566.0	3,566.0	209.00	Castile		-0.50	359.49
5,092.4	5,090.0	1,733.00	Base Salt		-0.50	359.49
5,376.9	5,374.0	2,017.00	Lamar		-0.50	359.49
5,408.9	5,406.0	2,049.00	Bell Canyon Ss.		-0.50	359.49
6,719.0	6,714.0	3,357.00	Cherry Canyon Ss.		-0.50	359.49
8,020.3	8,015.0	4,658.00	Brushy Canyon Ss.		-0.50	359.49
9,309.3	9,304.0	5,947.00	Bone Spring		-0.50	359.49
9,622.3	9,617.0	6,260.00	Bone Spring Hard Lm.		-0.50	359.49
10,356.3	10,351.0	6,994.00	1st Bone Spg.		-0.50	359.49
10,563.3	10,558.0	7,201.00	Base 1st Bone Spg sand		-0.50	359.49
10,934.3	10,929.0	7,572.00	2nd Bone Spg sand		-0.50	359.49
11,402.3	11,397.0	8,040.00	Base 2nd Bone Spg sand		-0.50	359.49
11,977.3	11,972.0	8,615.00	3rd Bone Spring Ss.		-0.50	359.49
12,363.5	12,353.0	8,996.00	Lowered 3rd Bone Spring Ss.		-0.50	359.49
12,446.3	12,426.0	9,069.00	Wolfcamp		-0.50	359.49
12,474.3	12,449.0	9,092.00	Wolfcamp X Ss.		-0.50	359.49
12,542.7	12,501.0	9,144.00	Wolfcamp X Ss. Base		-0.50	359.49
12,594.7	12,536.0	9,179.00	Wolfcamp Y Ss.		-0.50	359.49
12,619.2	12,551.0	9,194.00	Wolfcamp Y Target		-0.50	359.49
12,653.0	12,570.0	9,213.00	Wolfcamp A Shale		-0.50	359.49

Design Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
EW 14 WA FC_1H_LTP/BHL ()	0.00	0.00	0.0	7,625.8	-350.5	420,098.35	774,069.56	32° 9' 6.727 N	103° 26' 51.992 W
- plan misses target center by 7633.8usft at 0.0usft MD (0.0 TVD, 0.0 N, 0.0 E)									
- Rectangle (sides W7,250.0 H60.0 D0.0)									
EW 14 WA FC_1H_KOP/FTP ()	0.00	0.00	0.0	-91.4	-281.7	412,381.13	774,138.37	32° 7' 50.357 N	103° 26' 51.930 W
- plan misses target center by 296.2usft at 0.0usft MD (0.0 TVD, 0.0 N, 0.0 E)									
- Point									

Plan Report for WA FC 1H - Plan 3

Directional Difficulty Index

Average Dogleg over Survey: 0.53 °/100usft

Maximum Dogleg over Survey:

12.00 °/100usft at 12,921.2
usft

Net Tortosity applicable to Plans: 0.53 °/100usft

Directional Difficulty Index:

6.400

Audit Info

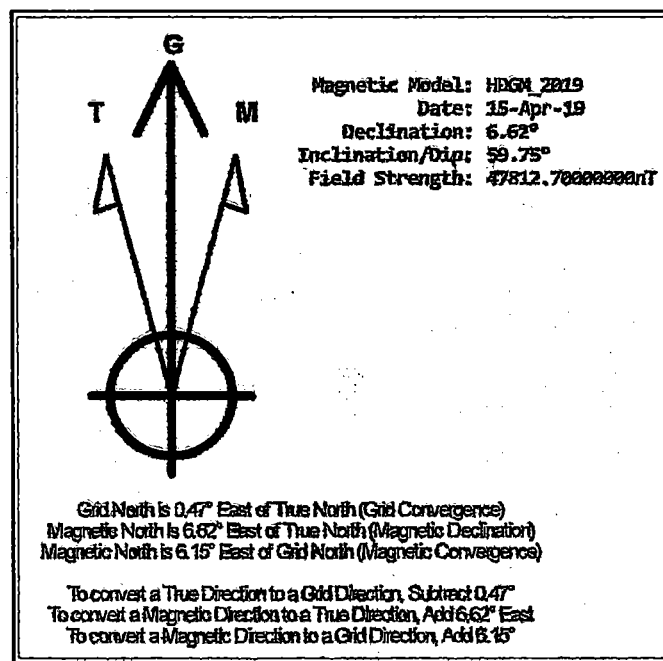
HALLIBURTON

All data is in US Feet unless otherwise stated. Directions and Coordinates are relative to Grid North Reference.
Vertical Depths are relative to GL+KB 25' @ 3357.0usft (PD 601). Northing and Easting are relative to WA FC 1H
Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 3001 using datum NAD 1927 (NADCON CONUS), ellipsoid Clarke 1866
Projection method is Transverse Mercator (Gauss-Kruger)
Central Meridian is 104° 20' 0.000 W°, Longitude Origin:0° 0' 0.000 E°, Latitude Origin:0° 0' 0.000 N°
False Easting: 500,000.00usft, False Northing: 0.00usft, Scale Reduction: 0.99999534

Grid Coordinates of Well: 412,472.57 usft N, 774,420.08 usft E
Geographical Coordinates of Well: 32° 07' 51.24" N, 103° 26' 48.65" W
Grid Convergence at Surface is: 0.47°

Based upon Minimum Curvature type calculations, at a Measured Depth of 20,168.15usft the Bottom Hole Displacement is 7,633.83usft in the Direction of 357.37° (Grid).

Magnetic Convergence at surface is: -6.15° (15 April 2019, . HDGM 2019)



**PECOS DISTRICT
DRILLING CONDITIONS OF APPROVAL
CHANGE TO APD – EC461061**

OPERATOR'S NAME:	MARATHON OIL PERMIAN LLC
LEASE NO.:	NMNM113419
WELL NAME & NO.:	ENDER WIGGINS 14 WA FC 1H
SURFACE HOLE FOOTAGE:	2449'/N & 612'/W
BOTTOM HOLE FOOTAGE:	100'/N & 330'/W
LOCATION:	SECTION 14, T25S, R34E, NMPM
COUNTY:	LEA, NEW MEXICO

H2S	☐ Yes	☒ No	
Potash	☒ None	☐ Secretary	☐ R-111-P
Cave/Karst Potential	☒ Low	☐ Medium	☐ High
Other	☒ Fluid Filled	☐ Cement Squeeze	☐ Pilot Hole
Special Requirements	☐ Water Disposal	☒ COM	☐ Unit

All other previous Conditions of Approval still apply.

A. CASING

1. The 13-3/8" surface casing shall be set at approximately **1000'** (a minimum of 25' into the Rustler Anhydrite and above the salt) and cemented to surface.
 - a. **If cement does not circulate to 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 **6 hours** after pumping cement, ideally between 8-10 hours after completing the cement job.
 - b. WOC time for a primary cement job will be a minimum of **8 hours** or **500 psi** compressive strength, whichever is greater. This is to include the lead cement.
 - c. If cement falls back, remedial cementing will be done prior to drilling out that string.
 - d. WOC time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 psi compressive strength, whichever is greater.
2. The 9-5/8" intermediate casing shall be cemented to surface.
 - a. **If cement does not circulate to surface**, see A.1.a, c & d.
 - b. **Operator shall keep at least 2/3 of this casing fluid-filled at all times to meet BLM collapse requirements.**
3. The 7" intermediate casing shall be cemented with at least 200 feet of tie-back into the previous casing string. Operator shall provide method of verification.

4. The 4-1/2" production liner shall be cemented with at least 200 feet of tie-back into the previous casing string. Operator shall provide method of verification.

B. SPECIAL REQUIREMENTS

1. The operator will submit a Communitization Agreement to the Carlsbad Field Office, 620 E Greene St. Carlsbad, New Mexico 88220, at least 90 days before the anticipated date of first production from a well subject to a spacing order issued by the New Mexico Oil Conservation Division. The Communitization Agreement will include the signatures of all working interest owners in all Federal and Indian leases subject to the Communitization Agreement (i.e., operating rights owners and lessees of record), or certification that the operator has obtained the written signatures of all such owners and will make those signatures available to the BLM immediately upon request.
2. The well sign on location shall include the surface and bottom hole lease numbers. When the Communitization Agreement number is known, it shall also be on the sign.

DR 4/12/2019