Form 3160-5
(June 2015)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

Carlsbad Field Office
OCD Hobbs

FORM 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

HOBBS OCD
JUN 07 2019
RECEIVED

5. Lease Serial No.
NMNM113419

6. If Indian, Allottee or Tribe Name

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

1. Type of Well
☐ Oil Well ☒ Gas Well ☐ Other

8. Well Name and No.
ENDER WIGGINS 14 WD FC 2H

2. Name of Operator
MARATHON OIL PERMIAN LLC
Contact: MELISSA SZUDERA
E-Mail: mszudera@marathonoil.com

9. API Well No.
30-025-45189-00-X1

3a. Address
5555 SAN FELIPE STREET
HOUSTON, TX 77056

3b. Phone No. (include area code)
Ph: 713-296-3179

10. Field and Pool or Exploratory Area
FAIRVIEW MILLS-WOLFCAMP

4. Location of Well *(Footage, Sec., T., R., M., or Survey Description)*
Sec 14 T25S R34E SWNW 2449FNL 582FWL
32.130901 N Lat, 103.446945 W Lon

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 to Original APD
	☐ Change Plans	☐ Plug and Abandon	☐ Temporarily Abandon	
	☐ Convert to Injection	☐ Plug Back	☐ Water Disposal	

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 recomplete 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 recompletion 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 casing connections for 7-5/8? & 5-1/2? x 4-1/2? Tapered String
-Revised cement volumes due to change in casing depths and slurry yields
-Update wellhead reflecting casing

Please see attachments.

-Change all casing set depths
-Change Int 1 casing weight
-7 5/8" casing spec sheet emailed after submittal, see attached

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

Electronic Submission #461051 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 (19PP1544SE)

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.

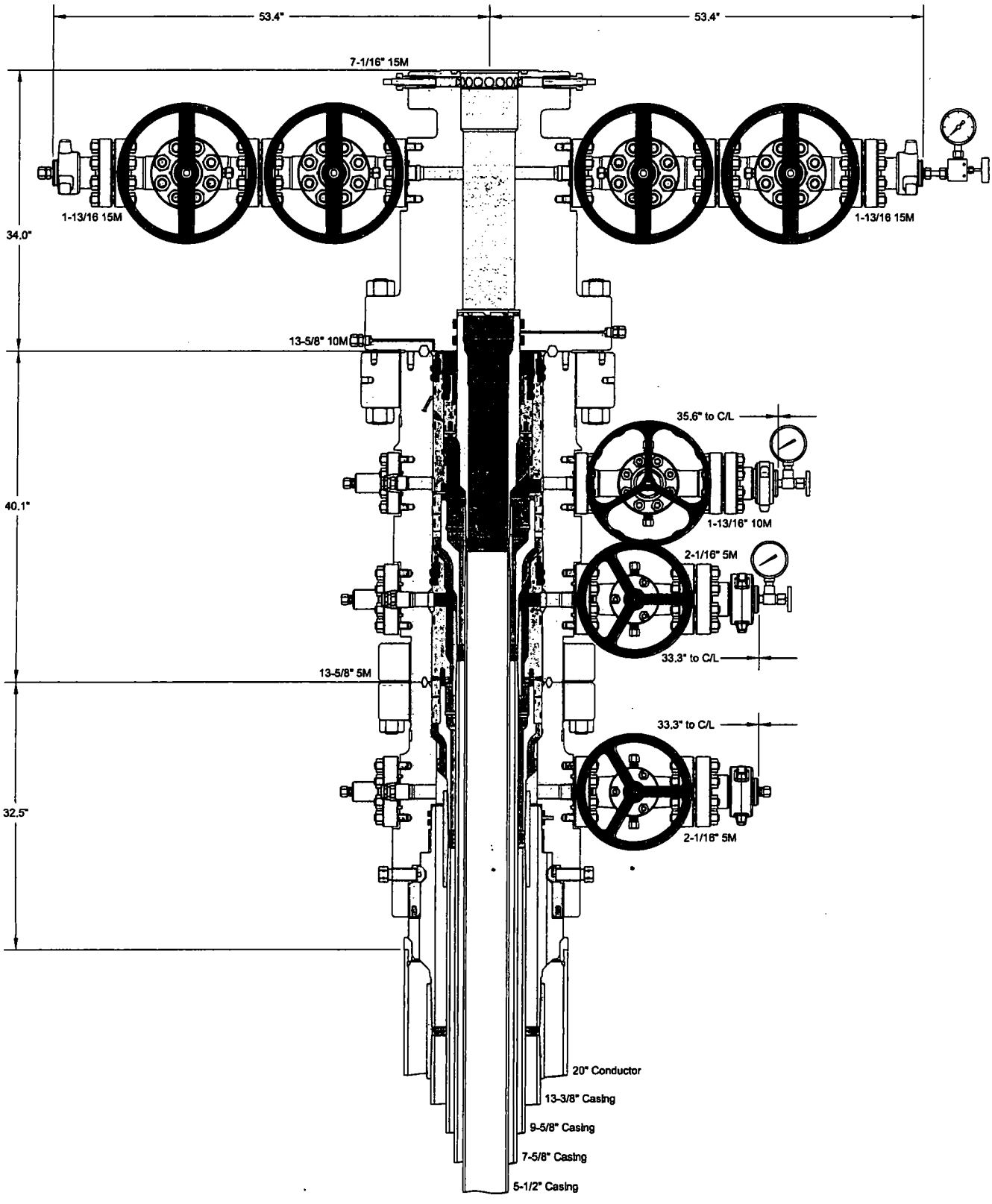
(Instructions on page 2)

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

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity (sks)	Yield (ft3/sks)	Density (ppg)	Slurry Volume (bbl)	Excess (%)	Cement Type	Additives
Surface	Lead	--	0	[redacted]	[redacted]	[redacted]	13.5	[redacted]	100	Class C	3 lbm/sk granular LCM + 0.1250 lbm/sk Poly-E-Flake
Surface	Tail	--	[redacted]	[redacted]	[redacted]	[redacted]	14.8	[redacted]	100	Class C	[redacted]
Intermediate I	Lead	--	0	4350	[redacted]	[redacted]	12.8	[redacted]	75	Class C	0.02 Gal/Sk Defoamer + 0.5% Extender + 1% Accelerator
Intermediate I	Tail	--	[redacted]	[redacted]	[redacted]	1.33	14.8	[redacted]	50	Class C	[redacted]
Intermediate II	Lead	--	[redacted]	[redacted]	[redacted]	[redacted]	11	[redacted]	70	Class C	0.85% retarder + 10% extender + 0.02 gal/sk defoamer + 2.0% Extender + 0.15% Viscosifier
Intermediate II	Tail	--	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	30	Class H	3% extender + 0.15% Dispersant + [redacted]
Production Casing	Lead	--	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Production Casing	Tail	--	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	30	Class H	0.3% fluid loss + 0.02% antifoam + 0.15% dispersant + 0.4% retarder + 0.02% viscosifier

3. Wellhead Changes:

Updated wellhead reflecting casing.



ALL DIMENSIONS APPROXIMATE

CACTUS WELLHEAD LLC	MARATHON OIL COMPANY HOBBS		
20" x 13-3/8" x 9-5/8" x 7-5/8" x 5-1/2" MBU-4T CFL Wellhead Sys. With 13-5/8" 10M x 7-1/16" 15M CTH-DBLHPS Tubing Head And 9-5/8" & 7-5/8" & 5-1/2" Mandrel Casing Hangers	DRAWN	DLE	16OCT18
	APPRV		
	DRAWING NO.	HBE0000007	

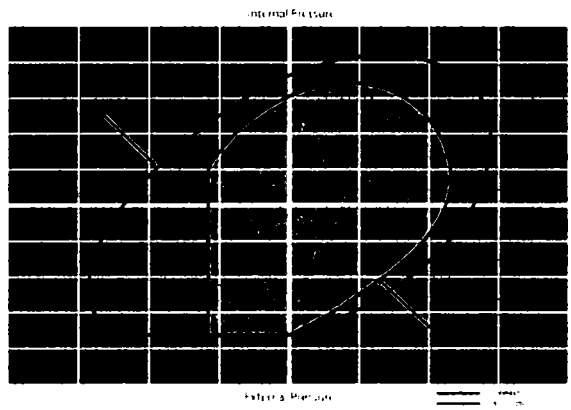
TECHNICAL DATA SHEET TMK UP SF 7.625 X 29.7 P110 HC

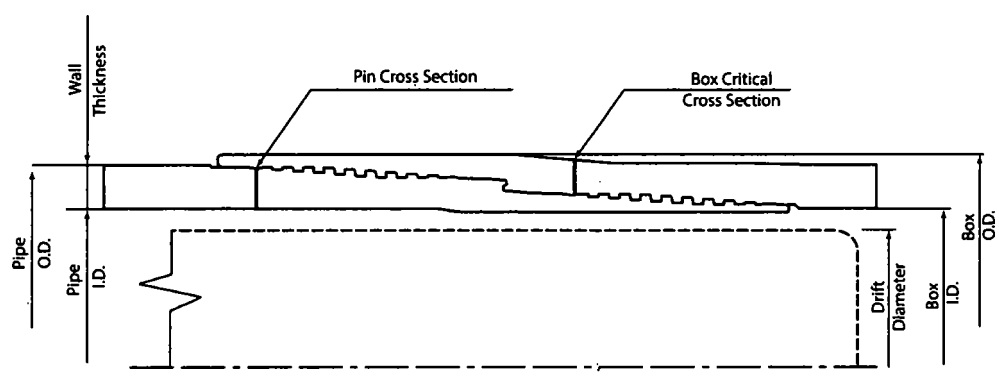
TUBULAR PARAMETERS	
Nominal OD, (inch)	7.625
Wall Thickness, (inch)	0.375
Pipe Grade	P110 HC
Drift	Standard

CONNECTION PARAMETERS	
Connection OD (inch)	7.79
Connection ID, (inch)	6.844
Make-Up Loss, (inch)	5.640
Connection Critical Area, (sq inch)	6.777
Yield Strength in Tension, (klbs)	835
Yeld Strength in Compression, (klbs)	835
Tension Efficiency	89%
Compression Efficiency	89%
Min. Internal Yield Pressure, (psi)	9 470
Collapse Pressure, (psi)	6 150
Uniaxial Bending (deg/100ft)	58.8

MAKE-UP TORQUES	
Yield Torque, (ft-lb)	30 100
Minimum Make-Up Torque, (ft-lb)	20 000
Optimum Make-Up Torque, (ft-lb)	22 000
Maximum Make-Up Torque, (ft-lb)	24 200

PIPE BODY PROPERTIES	
PE Weight, (lbs/ft)	29.04
Nominal Weight, (lbs/ft)	29.70
Nominal ID, (inch)	6.875
Drift Diameter, (inch)	6.750
Nominal Pipe Body Area, (sq inch)	8.541
Yield Strength in Tension, (klbs)	939
Min. Internal Yield Pressure, (psi)	9 470
Collapse Pressure, (psi)	6 150





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PERFORMANCE DATA

TMK UP ULTRA™ SF **5.500 in** **23.00 lbs/ft** **P110 HC**

Technical Data Sheet

Tubular Parameters

Size	5.500	in	Minimum Yield	110,000	psi
Nominal Weight	23.00	lbs/ft	Minimum Tensile	125,000	psi
Grade	P110 HC		Yield Load	729,000	lbs
PE Weight	22.54	lbs/ft	Tensile Load	828,000	lbs
Wall Thickness	0.415	in	Min. Internal Yield Pressure	14,530	psi
Nominal ID	4.670	in	Collapse Pressure	15,990	psi
Drift Diameter	4.545	in			
Nom. Pipe Body Area	6.630	in²			

Connection Parameters

Connection OD	5.696	in
Connection ID	4.626	in
Make-Up Loss	5.441	in
Critical Section Area	6.110	in²
Tension Efficiency	91.9	%
Compression Efficiency	91.9	%
Yield Load In Tension	670,000	lbs
Min. Internal Yield Pressure	14,530	psi
Collapse Pressure	15,990	psi
Uniaxial Bending	84	°/ 100 ft

Make-Up Torques

Min. Make-Up Torque	12,800	ft-lbs
Opt. Make-Up Torque	14,100	ft-lbs
Max. Make-Up Torque	15,500	ft-lbs
Operating Torque	16,405	ft-lbs
Yield Torque	19,300	ft-lbs

Printed on: October-02-2018

IPSCO

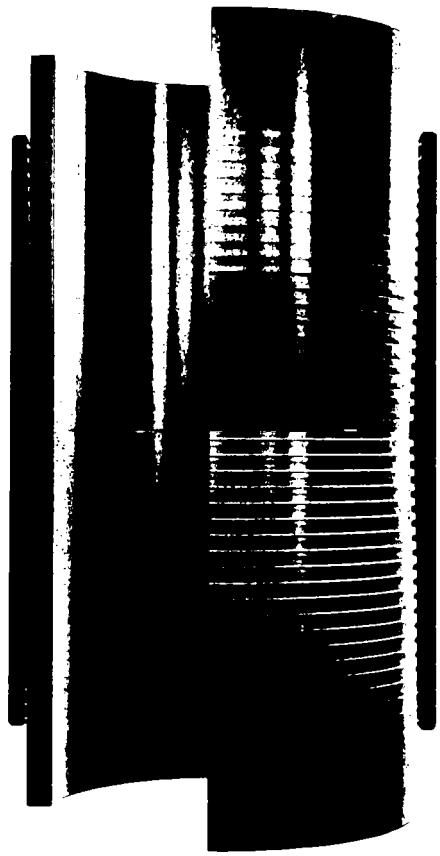
PERFORMANCE DATA

TMK UP™ BPN **4.500 in** **15.10 lbs/ft** **P110 HC**

Technical Data Sheet

Tubular Parameters

Size	4.500	in	Minimum Yield	110,000	psi
Nominal Weight	15.10	lbs/ft	Minimum Tensile	125,000	psi
Grade	P110 HC		Yield Load	485,000	lbs
PE Weight	15.00	lbs/ft	Tensile Load	551,000	lbs
Wall Thickness	0.337	in	Min. Internal Yield Pressure	14,420	psi
Nominal ID	3.826	in	Collapse Pressure	15,770	psi
Drift Diameter	3.701	in			
Nom Pipe Body Area	4.407	in²			



Connection Parameters

Connection OD	5.250	in
Connection ID	3.826	in
Make-Up Loss	3.938	in
Critical Section Area	4.407	in²
Tension Efficiency	100.0	%
Compression Efficiency	100.0	%
Yield Load In Tension	485,000	lbs
Min. Internal Yield Pressure	14.420	psi
Collapse Pressure	15,770	psi
Uniaxial Bending	112	°/ 100 ft

Make-Up Torques

Min. Make-Up Torque	4.100	ft-lbs
Opt. Make-Up Torque	9.600	ft-lbs
Max Make-Up Torque	12,300	ft-lbs
Operating Torque	15,470	ft-lbs
Yield Torque	18,200	ft-lbs

Printed on: October-02-2018

IPSCO

Marathon Oil

Marathon Oil Permian LLC

GL+KB 25' @ 3356.0usft (PD 601)

GL=3331.0

Project: Lea County, NM (NAD 27)
Site: Ender Wiggins 14
Well: WD FC 2H
Wellbore: Wellbore #1
Design: Plan 1
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: 8.15°

Magnetic Field
Strength: 47812.7nT
Dip Angle: 59.75°
Date: 4/15/2019
Model: HDGM_2019

WELL DETAILS

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.0	0.0	412472.66	774390.11	32° 7' 51.242 N	103° 26' 48.994 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	
2500.0	0.00	0.00	2500.0	0.0	0.0	0.00	0.00	0.0	Start Nudge
2650.0	3.00	251.50	2649.9	-1.2	-3.7	2.00	251.50	-1.2	Hold
8040.5	3.00	251.50	8033.1	-90.8	-271.3	0.00	0.00	-88.4	Drop vertical
8190.5	0.00	0.00	8183.0	-92.0	-275.0	2.00	180.00	-89.6	Hold vertical
13336.5	0.00	0.00	13329.0	-92.0	-275.0	0.00	0.00	-89.6	KOP, Build and turn
14090.7	90.50	1.85	13806.4	389.4	-259.5	12.00	1.85	391.6	Landing point
14208.4	90.50	359.50	13805.4	507.0	-258.1	2.00	-90.01	509.3	Hold
21097.6	90.50	359.50	13745.4	7395.7	-318.6	0.00	0.00	7398.2	TD at 21097.59

CASING DETAILS

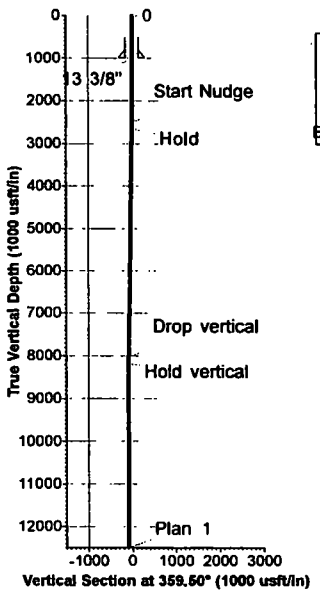
TVD	MD	Name	Size
1000.0	1000.0	13 3/8"	13-3/8

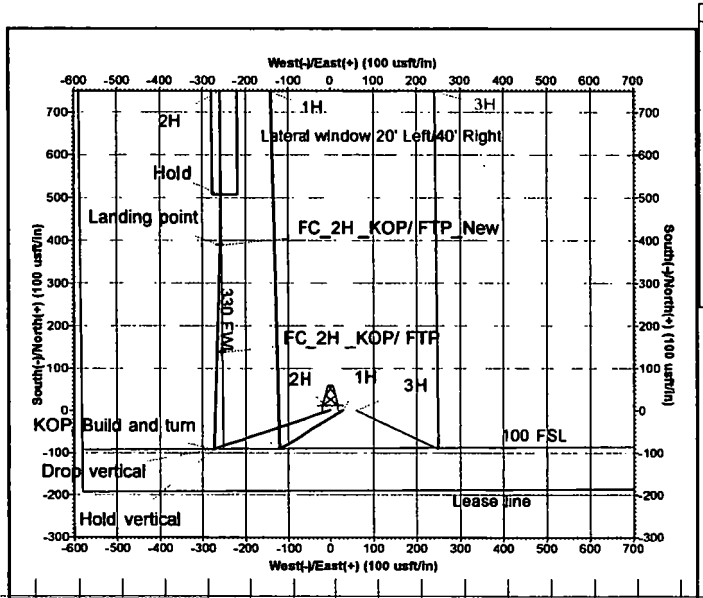
DESIGN TARGET DETAILS

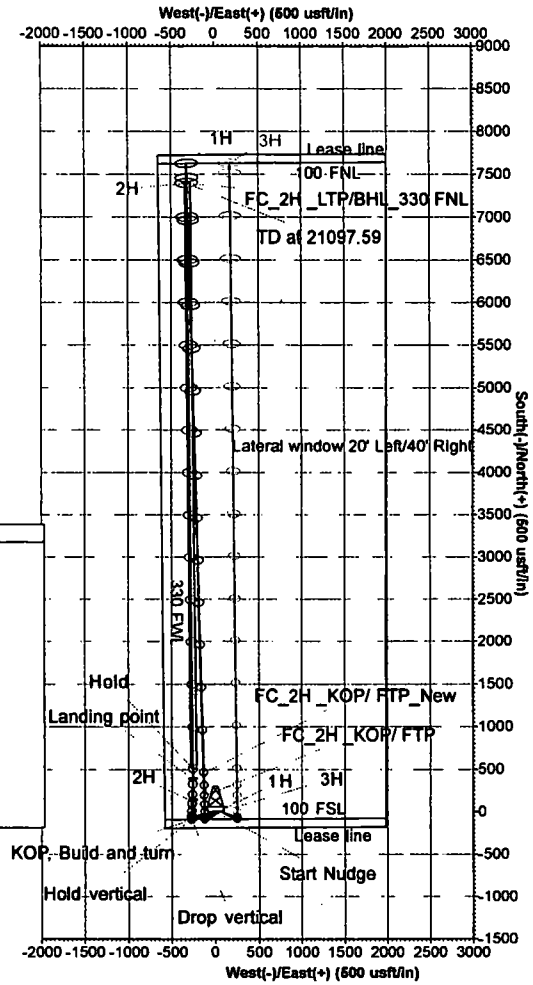
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
EW 14 WXY FC_2H _KOP/ FTP	0.0	137.8	-255.5	412610.44	774134.58	32° 7' 52.626 N	103° 26' 51.952 W
EW 14 WXY FC_2H _KOP/ FTP_New	0.0	389.4	-259.4	412862.04	774130.66	32° 7' 55.116 N	103° 26' 51.973 W
EW 14 WXY FC_2H _LTP/BHL_330 FNL	0.0	7395.7	-318.6	419868.39	774071.53	32° 9' 4.451 N	103° 26' 51.991 W

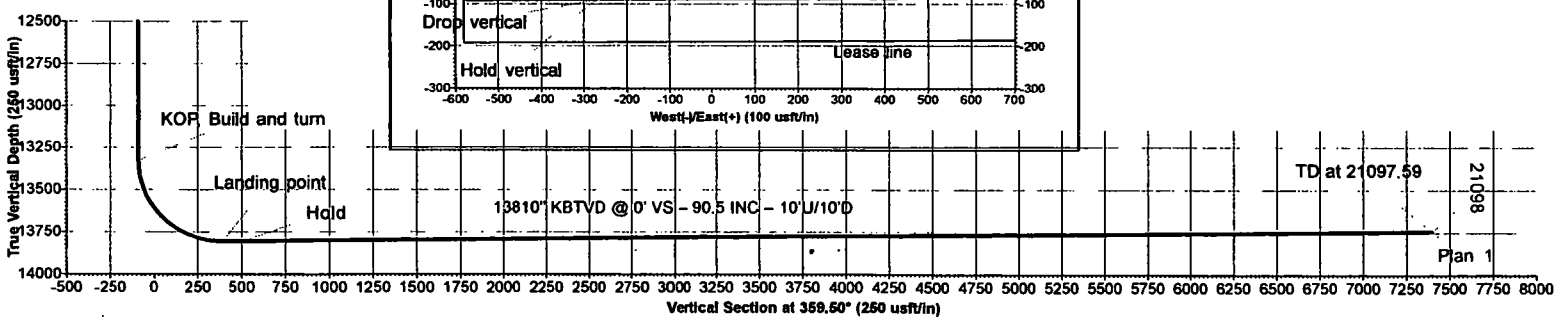
FORMATION TOP DETAILS

TVDPath	MDPath	Formation	DipAngle	DipDir
861.0	861.0	Rustler	-0.50	359.49
1367.0	1367.0	Salado	-0.50	359.49
3566.1	3567.8	Castle	-0.50	359.49
5090.4	5093.8	Base Salt	-0.50	359.49
5374.4	5378.2	Lamar	-0.50	359.49
5408.4	5410.3	Bell Canyon Ss.	-0.50	359.49
6714.6	6720.2	Cherry Canyon Ss.	-0.50	359.49
8015.8	8023.2	Brushy Canyon Ss.	-0.50	359.49
9304.8	9312.3	Bone Spring	-0.50	359.49
9817.8	9828.3	Bone Spring Hard Lm.	-0.50	359.49
10351.8	10359.3	1st Bone Spg.	-0.50	359.49
10556.8	10568.3	Base 1st Bone Spg sand	-0.50	359.49
10829.8	10937.3	2nd Bone Spg sand	-0.50	359.49
11397.8	11405.3	Base 2nd Bone Spg sand	-0.50	359.49
11972.8	11980.3	3rd Bone Spring Ss.	-0.50	359.49
12353.8	12361.3	Lowered 3rd Bone Spring Ss.	-0.50	359.49
12426.8	12434.3	Wolfcamp	-0.50	359.49
12448.8	12457.3	Wolfcamp X Ss.	-0.50	359.49
12501.8	12509.3	Wolfcamp X Ss.Base	-0.50	359.49
12536.8	12544.3	Wolfcamp Y Ss.	-0.50	359.49
12551.8	12559.3	Wolfcamp Y Target	-0.50	359.49
12570.8	12578.3	Wolfcamp A Shale	-0.50	359.49









HALLIBURTON Sperry Drilling

Marathon Oil Permian LLC

Lea County, NM (NAD 27) Ender Wiggins 14

API#

WD FC 2H

Wellbore #1

Plan: Plan 1

Sperry Drilling Services

Combo Report

08 April, 2019

Well Coordinates:	32.13090054 -103.44694265	NAD 1927 (NADCON CONUS) New Mexico East 3001 412,472.66 N 774,390.11 E

Ground Level: 3,331.00 usft

Local Coordinate Origin:	Centered on Well WD FC 2H
Viewing Datum:	GL+KB 25' @ 3356.00usft (PD 601)
TVDs to System:	N
North Reference:	**Grid**
Unit System:	Midcon (2 decimal)

Version: 5000.15 Build: 91

Report Version: Midcon Combo v1.13

HALLIBURTON

HALLIBURTON

Plan Report for WD FC 2H - Plan 1

Measured Depth (usft)	Inclination (°)	Grid Azimuth (°)	Vertical Depth (usft)	Local Coordinates Northing (usft)	Local Coordinates Easting (usft)	Map Coordinates Northing (usft)	Map Coordinates Easting (usft)	Dogleg Rate (°/100usft)	Vertical Section (usft)	Toolface Angle (°)	Comments
0.00	0.00	0.00	0.00	0.00 N	0.00 E	412,472.66	774,390.11	0.00	0.00	0.00	
100.00	0.00	0.00	100.00	0.00 N	0.00 E	412,472.66	774,390.11	0.00	0.00	0.00	
200.00	0.00	0.00	200.00	0.00 N	0.00 E	412,472.66	774,390.11	0.00	0.00	0.00	
300.00	0.00	0.00	300.00	0.00 N	0.00 E	412,472.66	774,390.11	0.00	0.00	0.00	
400.00	0.00	0.00	400.00	0.00 N	0.00 E	412,472.66	774,390.11	0.00	0.00	0.00	
500.00	0.00	0.00	500.00	0.00 N	0.00 E	412,472.66	774,390.11	0.00	0.00	0.00	
600.00	0.00	0.00	600.00	0.00 N	0.00 E	412,472.66	774,390.11	0.00	0.00	0.00	
700.00	0.00	0.00	700.00	0.00 N	0.00 E	412,472.66	774,390.11	0.00	0.00	0.00	
800.00	0.00	0.00	800.00	0.00 N	0.00 E	412,472.66	774,390.11	0.00	0.00	0.00	
861.00	0.00	0.00	861.00	0.00 N	0.00 E	412,472.66	774,390.11	0.00	0.00	0.00	Rustler
900.00	0.00	0.00	900.00	0.00 N	0.00 E	412,472.66	774,390.11	0.00	0.00	0.00	
1,000.00	0.00	0.00	1,000.00	0.00 N	0.00 E	412,472.66	774,390.11	0.00	0.00	0.00	13 3/8"
1,100.00	0.00	0.00	1,100.00	0.00 N	0.00 E	412,472.66	774,390.11	0.00	0.00	0.00	
1,200.00	0.00	0.00	1,200.00	0.00 N	0.00 E	412,472.66	774,390.11	0.00	0.00	0.00	
1,300.00	0.00	0.00	1,300.00	0.00 N	0.00 E	412,472.66	774,390.11	0.00	0.00	0.00	
1,367.00	0.00	0.00	1,367.00	0.00 N	0.00 E	412,472.66	774,390.11	0.00	0.00	0.00	Salado
1,400.00	0.00	0.00	1,400.00	0.00 N	0.00 E	412,472.66	774,390.11	0.00	0.00	0.00	
1,500.00	0.00	0.00	1,500.00	0.00 N	0.00 E	412,472.66	774,390.11	0.00	0.00	0.00	
1,600.00	0.00	0.00	1,600.00	0.00 N	0.00 E	412,472.66	774,390.11	0.00	0.00	0.00	
1,700.00	0.00	0.00	1,700.00	0.00 N	0.00 E	412,472.66	774,390.11	0.00	0.00	0.00	
1,800.00	0.00	0.00	1,800.00	0.00 N	0.00 E	412,472.66	774,390.11	0.00	0.00	0.00	
1,900.00	0.00	0.00	1,900.00	0.00 N	0.00 E	412,472.66	774,390.11	0.00	0.00	0.00	
2,000.00	0.00	0.00	2,000.00	0.00 N	0.00 E	412,472.66	774,390.11	0.00	0.00	0.00	
2,100.00	0.00	0.00	2,100.00	0.00 N	0.00 E	412,472.66	774,390.11	0.00	0.00	0.00	
2,200.00	0.00	0.00	2,200.00	0.00 N	0.00 E	412,472.66	774,390.11	0.00	0.00	0.00	
2,300.00	0.00	0.00	2,300.00	0.00 N	0.00 E	412,472.66	774,390.11	0.00	0.00	0.00	
2,400.00	0.00	0.00	2,400.00	0.00 N	0.00 E	412,472.66	774,390.11	0.00	0.00	0.00	
2,500.00	0.00	0.00	2,500.00	0.00 N	0.00 E	412,472.66	774,390.11	0.00	0.00	0.00	Start Nudge
2,600.00	2.00	251.50	2,599.98	0.55 S	1.65 W	412,472.11	774,388.46	2.00	-0.54	251.50	
2,650.01	3.00	251.50	2,649.94	1.25 S	3.72 W	412,471.41	774,386.39	2.00	-1.21	0.00	Hold
2,700.00	3.00	251.50	2,699.86	2.08 S	6.20 W	412,470.58	774,383.91	0.00	-2.02	0.00	
2,800.00	3.00	251.50	2,799.73	3.74 S	11.17 W	412,468.92	774,378.94	0.00	-3.64	0.00	
2,900.00	3.00	251.50	2,899.59	5.40 S	16.13 W	412,467.26	774,373.98	0.00	-5.26	0.00	
3,000.00	3.00	251.50	2,999.45	7.06 S	21.10 W	412,465.60	774,369.01	0.00	-6.87	0.00	
3,100.00	3.00	251.50	3,099.31	8.72 S	26.06 W	412,463.94	774,364.05	0.00	-8.49	0.00	
3,200.00	3.00	251.50	3,199.18	10.38 S	31.02 W	412,462.28	774,359.09	0.00	-10.11	0.00	

Plan Report for WD FC 2H - Plan 1

Measured Depth (usft)	Inclination (°)	Grid Azimuth (°)	Vertical Depth (usft)	Local Coordinates Northing (usft)	Local Coordinates Easting (usft)	Map Coordinates Northing (usft)	Map Coordinates Easting (usft)	Dogleg Rate (°/100usft)	Vertical Section (usft)	Toolface Angle (°)	Comments
3,300.00	3.00	251.50	3,299.04	12.04 S	35.99 W	412,460.62	774,354.12	0.00	-11.72	0.00	
3,400.00	3.00	251.50	3,398.90	13.70 S	40.95 W	412,458.96	774,349.16	0.00	-13.34	0.00	
3,500.00	3.00	251.50	3,498.77	15.36 S	45.91 W	412,457.30	774,344.20	0.00	-14.96	0.00	
3,567.47	3.00	251.50	3,566.14	16.48 S	49.26 W	412,456.18	774,340.85	0.00	-16.05	0.00	Castile
3,600.00	3.00	251.50	3,598.63	17.02 S	50.88 W	412,455.64	774,339.23	0.00	-16.58	0.00	
3,700.00	3.00	251.50	3,698.49	18.68 S	55.84 W	412,453.98	774,334.27	0.00	-18.19	0.00	
3,800.00	3.00	251.50	3,798.36	20.34 S	60.80 W	412,452.32	774,329.31	0.00	-19.81	0.00	
3,900.00	3.00	251.50	3,898.22	22.00 S	65.77 W	412,450.66	774,324.34	0.00	-21.43	0.00	
4,000.00	3.00	251.50	3,998.08	23.66 S	70.73 W	412,449.00	774,319.38	0.00	-23.04	0.00	
4,100.00	3.00	251.50	4,097.94	25.32 S	75.69 W	412,447.34	774,314.42	0.00	-24.66	0.00	
4,200.00	3.00	251.50	4,197.81	26.98 S	80.66 W	412,445.68	774,309.45	0.00	-26.28	0.00	
4,300.00	3.00	251.50	4,297.67	28.64 S	85.62 W	412,444.02	774,304.49	0.00	-27.90	0.00	
4,400.00	3.00	251.50	4,397.53	30.30 S	90.58 W	412,442.36	774,299.53	0.00	-29.51	0.00	
4,500.00	3.00	251.50	4,497.40	31.96 S	95.55 W	412,440.70	774,294.56	0.00	-31.13	0.00	
4,600.00	3.00	251.50	4,597.26	33.63 S	100.51 W	412,439.03	774,289.60	0.00	-32.75	0.00	
4,700.00	3.00	251.50	4,697.12	35.29 S	105.47 W	412,437.37	774,284.64	0.00	-34.36	0.00	
4,800.00	3.00	251.50	4,796.98	36.95 S	110.44 W	412,435.71	774,279.67	0.00	-35.98	0.00	
4,900.00	3.00	251.50	4,896.85	38.61 S	115.40 W	412,434.05	774,274.71	0.00	-37.60	0.00	
5,000.00	3.00	251.50	4,996.71	40.27 S	120.36 W	412,432.39	774,269.75	0.00	-39.22	0.00	
5,093.77	3.00	251.50	5,090.36	41.82 S	125.02 W	412,430.84	774,265.09	0.00	-40.73	0.00	Base Salt
5,100.00	3.00	251.50	5,096.57	41.93 S	125.33 W	412,430.73	774,264.78	0.00	-40.83	0.00	
5,200.00	3.00	251.50	5,196.44	43.59 S	130.29 W	412,429.07	774,259.82	0.00	-42.45	0.00	
5,300.00	3.00	251.50	5,296.30	45.25 S	135.25 W	412,427.41	774,254.86	0.00	-44.07	0.00	
5,378.20	3.00	251.50	5,374.40	46.55 S	139.13 W	412,426.11	774,250.98	0.00	-45.33	0.00	Lamar
5,400.00	3.00	251.50	5,396.16	46.91 S	140.22 W	412,425.75	774,249.89	0.00	-45.68	0.00	
5,410.25	3.00	251.50	5,406.40	47.08 S	140.73 W	412,425.58	774,249.38	0.00	-45.85	0.00	Bell Canyon Ss.
5,500.00	3.00	251.50	5,496.03	48.57 S	145.18 W	412,424.09	774,244.93	0.00	-47.30	0.00	
5,600.00	3.00	251.50	5,595.89	50.23 S	150.14 W	412,422.43	774,239.97	0.00	-48.92	0.00	
5,700.00	3.00	251.50	5,695.75	51.89 S	155.11 W	412,420.77	774,235.00	0.00	-50.53	0.00	
5,800.00	3.00	251.50	5,795.61	53.55 S	160.07 W	412,419.11	774,230.04	0.00	-52.15	0.00	
5,900.00	3.00	251.50	5,895.48	55.21 S	165.03 W	412,417.45	774,225.08	0.00	-53.77	0.00	
6,000.00	3.00	251.50	5,995.34	56.87 S	170.00 W	412,415.79	774,220.11	0.00	-55.39	0.00	
6,100.00	3.00	251.50	6,095.20	58.53 S	174.96 W	412,414.13	774,215.15	0.00	-57.00	0.00	
6,200.00	3.00	251.50	6,195.07	60.19 S	179.92 W	412,412.47	774,210.19	0.00	-58.62	0.00	
6,300.00	3.00	251.50	6,294.93	61.85 S	184.89 W	412,410.81	774,205.22	0.00	-60.24	0.00	
6,400.00	3.00	251.50	6,394.79	63.51 S	189.85 W	412,409.15	774,200.26	0.00	-61.85	0.00	
6,500.00	3.00	251.50	6,494.65	65.17 S	194.81 W	412,407.49	774,195.30	0.00	-63.47	0.00	

Plan Report for WD FC 2H - Plan 1

Measured Depth (usft)	Inclination (°)	Grid Azimuth (°)	Vertical Depth (usft)	Local Coordinates Northing (usft)	Local Coordinates Easting (usft)	Map Coordinates Northing (usft)	Map Coordinates Easting (usft)	Dogleg Rate (°/100usft)	Vertical Section (usft)	Toolface Angle (°)	Comments
6,600.00	3.00	251.50	6,594.52	66.83 S	199.78 W	412,405.83	774,190.33	0.00	-65.09	0.00	
6,700.00	3.00	251.50	6,694.38	68.50 S	204.74 W	412,404.16	774,185.37	0.00	-66.71	0.00	
6,720.23	3.00	251.50	6,714.58	68.83 S	205.75 W	412,403.83	774,184.36	0.00	-67.03	0.00	Cherry Canyon Ss.
6,800.00	3.00	251.50	6,794.24	70.16 S	209.70 W	412,402.50	774,180.41	0.00	-68.32	0.00	
6,900.00	3.00	251.50	6,894.11	71.82 S	214.67 W	412,400.84	774,175.44	0.00	-69.94	0.00	
7,000.00	3.00	251.50	6,993.97	73.48 S	219.63 W	412,399.18	774,170.48	0.00	-71.56	0.00	
7,100.00	3.00	251.50	7,093.83	75.14 S	224.59 W	412,397.52	774,165.52	0.00	-73.17	0.00	
7,200.00	3.00	251.50	7,193.70	76.80 S	229.56 W	412,395.86	774,160.55	0.00	-74.79	0.00	
7,300.00	3.00	251.50	7,293.56	78.46 S	234.52 W	412,394.20	774,155.59	0.00	-76.41	0.00	
7,400.00	3.00	251.50	7,393.42	80.12 S	239.48 W	412,392.54	774,150.63	0.00	-78.03	0.00	
7,500.00	3.00	251.50	7,493.28	81.78 S	244.45 W	412,390.88	774,145.66	0.00	-79.64	0.00	
7,600.00	3.00	251.50	7,593.15	83.44 S	249.41 W	412,389.22	774,140.70	0.00	-81.26	0.00	
7,700.00	3.00	251.50	7,693.01	85.10 S	254.38 W	412,387.56	774,135.73	0.00	-82.88	0.00	
7,800.00	3.00	251.50	7,792.87	86.76 S	259.34 W	412,385.90	774,130.77	0.00	-84.49	0.00	
7,900.00	3.00	251.50	7,892.74	88.42 S	264.30 W	412,384.24	774,125.81	0.00	-86.11	0.00	
8,000.00	3.00	251.50	7,992.60	90.08 S	269.27 W	412,382.58	774,120.84	0.00	-87.73	0.00	
8,023.20	3.00	251.50	8,015.77	90.47 S	270.42 W	412,382.19	774,119.69	0.00	-88.10	0.00	Brushy Canyon Ss.
8,040.52	3.00	251.50	8,033.06	90.75 S	271.28 W	412,381.91	774,118.83	0.00	-88.38	0.00	Drop vertical
8,100.00	1.81	251.50	8,092.49	91.55 S	273.64 W	412,381.11	774,116.47	2.00	-89.15	180.00	
8,190.53	0.00	0.00	8,183.00	92.00 S	275.00 W	412,380.66	774,115.11	2.00	-89.60	180.00	Hold vertical
8,200.00	0.00	0.00	8,192.47	92.00 S	275.00 W	412,380.66	774,115.11	0.00	-89.60	0.00	
8,300.00	0.00	0.00	8,292.47	92.00 S	275.00 W	412,380.66	774,115.11	0.00	-89.60	0.00	
8,400.00	0.00	0.00	8,392.47	92.00 S	275.00 W	412,380.66	774,115.11	0.00	-89.60	0.00	
8,500.00	0.00	0.00	8,492.47	92.00 S	275.00 W	412,380.66	774,115.11	0.00	-89.60	0.00	
8,600.00	0.00	0.00	8,592.47	92.00 S	275.00 W	412,380.66	774,115.11	0.00	-89.60	0.00	
8,700.00	0.00	0.00	8,692.47	92.00 S	275.00 W	412,380.66	774,115.11	0.00	-89.60	0.00	
8,800.00	0.00	0.00	8,792.47	92.00 S	275.00 W	412,380.66	774,115.11	0.00	-89.60	0.00	
8,900.00	0.00	0.00	8,892.47	92.00 S	275.00 W	412,380.66	774,115.11	0.00	-89.60	0.00	
9,000.00	0.00	0.00	8,992.47	92.00 S	275.00 W	412,380.66	774,115.11	0.00	-89.60	0.00	
9,100.00	0.00	0.00	9,092.47	92.00 S	275.00 W	412,380.66	774,115.11	0.00	-89.60	0.00	
9,200.00	0.00	0.00	9,192.47	92.00 S	275.00 W	412,380.66	774,115.11	0.00	-89.60	0.00	
9,300.00	0.00	0.00	9,292.47	92.00 S	275.00 W	412,380.66	774,115.11	0.00	-89.60	0.00	
9,312.31	0.00	0.00	9,304.78	92.00 S	275.00 W	412,380.66	774,115.11	0.00	-89.60	0.00	Bone Spring
9,400.00	0.00	0.00	9,392.47	92.00 S	275.00 W	412,380.66	774,115.11	0.00	-89.60	0.00	
9,500.00	0.00	0.00	9,492.47	92.00 S	275.00 W	412,380.66	774,115.11	0.00	-89.60	0.00	
9,600.00	0.00	0.00	9,592.47	92.00 S	275.00 W	412,380.66	774,115.11	0.00	-89.60	0.00	
9,625.31	0.00	0.00	9,617.78	92.00 S	275.00 W	412,380.66	774,115.11	0.00	-89.60	0.00	Bone Spring Hard Lm.

Plan Report for WD FC 2H - Plan 1

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9,700.00	0.00	0.00	9,692.47	92.00 S	275.00 W	412,380.66	774,115.11	0.00	-89.60	0.00	
9,800.00	0.00	0.00	9,792.47	92.00 S	275.00 W	412,380.66	774,115.11	0.00	-89.60	0.00	
9,900.00	0.00	0.00	9,892.47	92.00 S	275.00 W	412,380.66	774,115.11	0.00	-89.60	0.00	
10,000.00	0.00	0.00	9,992.47	92.00 S	275.00 W	412,380.66	774,115.11	0.00	-89.60	0.00	
10,100.00	0.00	0.00	10,092.47	92.00 S	275.00 W	412,380.66	774,115.11	0.00	-89.60	0.00	
10,200.00	0.00	0.00	10,192.47	92.00 S	275.00 W	412,380.66	774,115.11	0.00	-89.60	0.00	
10,300.00	0.00	0.00	10,292.47	92.00 S	275.00 W	412,380.66	774,115.11	0.00	-89.60	0.00	
10,359.31	0.00	0.00	10,351.78	92.00 S	275.00 W	412,380.66	774,115.11	0.00	-89.60	0.00	1st Bone Spg.
10,400.00	0.00	0.00	10,392.47	92.00 S	275.00 W	412,380.66	774,115.11	0.00	-89.60	0.00	
10,500.00	0.00	0.00	10,492.47	92.00 S	275.00 W	412,380.66	774,115.11	0.00	-89.60	0.00	
10,566.31	0.00	0.00	10,558.78	92.00 S	275.00 W	412,380.66	774,115.11	0.00	-89.60	0.00	Base 1st Bone Spg sand
10,600.00	0.00	0.00	10,592.47	92.00 S	275.00 W	412,380.66	774,115.11	0.00	-89.60	0.00	
10,700.00	0.00	0.00	10,692.47	92.00 S	275.00 W	412,380.66	774,115.11	0.00	-89.60	0.00	
10,800.00	0.00	0.00	10,792.47	92.00 S	275.00 W	412,380.66	774,115.11	0.00	-89.60	0.00	
10,900.00	0.00	0.00	10,892.47	92.00 S	275.00 W	412,380.66	774,115.11	0.00	-89.60	0.00	
10,937.31	0.00	0.00	10,929.78	92.00 S	275.00 W	412,380.66	774,115.11	0.00	-89.60	0.00	2nd Bone Spg sand
11,000.00	0.00	0.00	10,992.47	92.00 S	275.00 W	412,380.66	774,115.11	0.00	-89.60	0.00	
11,100.00	0.00	0.00	11,092.47	92.00 S	275.00 W	412,380.66	774,115.11	0.00	-89.60	0.00	
11,200.00	0.00	0.00	11,192.47	92.00 S	275.00 W	412,380.66	774,115.11	0.00	-89.60	0.00	
11,300.00	0.00	0.00	11,292.47	92.00 S	275.00 W	412,380.66	774,115.11	0.00	-89.60	0.00	
11,400.00	0.00	0.00	11,392.47	92.00 S	275.00 W	412,380.66	774,115.11	0.00	-89.60	0.00	
11,405.31	0.00	0.00	11,397.78	92.00 S	275.00 W	412,380.66	774,115.11	0.00	-89.60	0.00	Base 2nd Bone Spg sand
11,500.00	0.00	0.00	11,492.47	92.00 S	275.00 W	412,380.66	774,115.11	0.00	-89.60	0.00	
11,600.00	0.00	0.00	11,592.47	92.00 S	275.00 W	412,380.66	774,115.11	0.00	-89.60	0.00	
11,700.00	0.00	0.00	11,692.47	92.00 S	275.00 W	412,380.66	774,115.11	0.00	-89.60	0.00	
11,800.00	0.00	0.00	11,792.47	92.00 S	275.00 W	412,380.66	774,115.11	0.00	-89.60	0.00	
11,900.00	0.00	0.00	11,892.47	92.00 S	275.00 W	412,380.66	774,115.11	0.00	-89.60	0.00	
11,980.31	0.00	0.00	11,972.78	92.00 S	275.00 W	412,380.66	774,115.11	0.00	-89.60	0.00	3rd Bone Spring Ss.
12,000.00	0.00	0.00	11,992.47	92.00 S	275.00 W	412,380.66	774,115.11	0.00	-89.60	0.00	
12,100.00	0.00	0.00	12,092.47	92.00 S	275.00 W	412,380.66	774,115.11	0.00	-89.60	0.00	
12,200.00	0.00	0.00	12,192.47	92.00 S	275.00 W	412,380.66	774,115.11	0.00	-89.60	0.00	
12,300.00	0.00	0.00	12,292.47	92.00 S	275.00 W	412,380.66	774,115.11	0.00	-89.60	0.00	
12,361.31	0.00	0.00	12,353.78	92.00 S	275.00 W	412,380.66	774,115.11	0.00	-89.60	0.00	Lowered 3rd Bone Spring Ss.
12,400.00	0.00	0.00	12,392.47	92.00 S	275.00 W	412,380.66	774,115.11	0.00	-89.60	0.00	
12,434.31	0.00	0.00	12,426.78	92.00 S	275.00 W	412,380.66	774,115.11	0.00	-89.60	0.00	Wolfcamp
12,457.31	0.00	0.00	12,449.78	92.00 S	275.00 W	412,380.66	774,115.11	0.00	-89.60	0.00	Wolfcamp X Ss.

Plan Report for WD FC 2H - Plan 1

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12,500.00	0.00	0.00	12,492.47	92.00 S	275.00 W	412,380.66	774,115.11	0.00	-89.60	0.00	
12,509.31	0.00	0.00	12,501.78	92.00 S	275.00 W	412,380.66	774,115.11	0.00	-89.60	0.00	Wolfcamp X Ss.Base
12,544.31	0.00	0.00	12,536.78	92.00 S	275.00 W	412,380.66	774,115.11	0.00	-89.60	0.00	Wolfcamp Y Ss.
12,559.31	0.00	0.00	12,551.78	92.00 S	275.00 W	412,380.66	774,115.11	0.00	-89.60	0.00	Wolfcamp Y Target
12,578.31	0.00	0.00	12,570.78	92.00 S	275.00 W	412,380.66	774,115.11	0.00	-89.60	0.00	Wolfcamp A Shale
12,600.00	0.00	0.00	12,592.47	92.00 S	275.00 W	412,380.66	774,115.11	0.00	-89.60	0.00	
12,700.00	0.00	0.00	12,692.47	92.00 S	275.00 W	412,380.66	774,115.11	0.00	-89.60	0.00	
12,800.00	0.00	0.00	12,792.47	92.00 S	275.00 W	412,380.66	774,115.11	0.00	-89.60	0.00	
12,900.00	0.00	0.00	12,892.47	92.00 S	275.00 W	412,380.66	774,115.11	0.00	-89.60	0.00	
13,000.00	0.00	0.00	12,992.47	92.00 S	275.00 W	412,380.66	774,115.11	0.00	-89.60	0.00	
13,100.00	0.00	0.00	13,092.47	92.00 S	275.00 W	412,380.66	774,115.11	0.00	-89.60	0.00	
13,200.00	0.00	0.00	13,192.47	92.00 S	275.00 W	412,380.66	774,115.11	0.00	-89.60	0.00	
13,300.00	0.00	0.00	13,292.47	92.00 S	275.00 W	412,380.66	774,115.11	0.00	-89.60	0.00	
13,336.53	0.00	0.00	13,329.00	92.00 S	275.00 W	412,380.66	774,115.11	0.00	-89.60	0.00	KOP, Build and turn
13,350.00	1.62	1.85	13,342.47	91.81 S	274.99 W	412,380.85	774,115.12	12.00	-89.41	1.85	
13,375.00	4.62	1.85	13,367.43	90.45 S	274.95 W	412,382.21	774,115.16	12.00	-88.05	0.00	
13,400.00	7.62	1.85	13,392.29	87.79 S	274.86 W	412,384.87	774,115.25	12.00	-85.39	0.00	
13,425.00	10.62	1.85	13,416.97	83.83 S	274.74 W	412,388.83	774,115.37	12.00	-81.43	0.00	
13,450.00	13.62	1.85	13,441.41	78.59 S	274.57 W	412,394.07	774,115.54	12.00	-76.19	0.00	
13,475.00	16.62	1.85	13,465.54	72.07 S	274.36 W	412,400.59	774,115.75	12.00	-69.67	0.00	
13,500.00	19.62	1.85	13,489.30	64.30 S	274.11 W	412,408.36	774,116.00	12.00	-61.91	0.00	
13,525.00	22.62	1.85	13,512.62	55.30 S	273.81 W	412,417.36	774,116.30	12.00	-52.91	0.00	
13,550.00	25.62	1.85	13,535.43	45.09 S	273.48 W	412,427.57	774,116.63	12.00	-42.70	0.00	
13,575.00	28.62	1.85	13,557.68	33.70 S	273.12 W	412,438.96	774,116.99	12.00	-31.32	0.00	
13,600.00	31.62	1.85	13,579.31	21.17 S	272.71 W	412,451.49	774,117.40	12.00	-18.79	0.00	
13,625.00	34.62	1.85	13,600.24	7.52 S	272.27 W	412,465.14	774,117.84	12.00	-5.14	0.00	
13,650.00	37.62	1.85	13,620.43	7.21 N	271.80 W	412,479.87	774,118.31	12.00	9.58	0.00	
13,675.00	40.62	1.85	13,639.83	22.97 N	271.29 W	412,495.63	774,118.82	12.00	25.34	0.00	
13,700.00	43.62	1.85	13,658.37	39.73 N	270.75 W	412,512.39	774,119.36	12.00	42.09	0.00	
13,725.00	46.62	1.85	13,676.01	57.43 N	270.17 W	412,530.09	774,119.94	12.00	59.79	0.00	
13,750.00	49.62	1.85	13,692.70	76.03 N	269.57 W	412,548.69	774,120.54	12.00	78.38	0.00	
13,775.00	52.62	1.85	13,708.39	95.48 N	268.94 W	412,568.14	774,121.17	12.00	97.82	0.00	
13,800.00	55.62	1.85	13,723.04	115.72 N	268.29 W	412,588.38	774,121.82	12.00	118.06	0.00	
13,825.00	58.62	1.85	13,736.61	136.70 N	267.61 W	412,609.36	774,122.50	12.00	139.03	0.00	
13,850.00	61.62	1.85	13,749.07	158.36 N	266.91 W	412,631.02	774,123.20	12.00	160.69	0.00	
13,875.00	64.62	1.85	13,760.37	180.65 N	266.19 W	412,653.31	774,123.92	12.00	182.97	0.00	
13,900.00	67.62	1.85	13,770.49	203.49 N	265.46 W	412,676.15	774,124.65	12.00	205.80	0.00	

Plan Report for WD FC 2H - Plan 1

Measured Depth (usft)	Inclination (°)	Grid Azimuth (°)	Vertical Depth (usft)	Local Coordinates Northing (usft)	Local Coordinates Easting (usft)	Map Coordinates Northing (usft)	Map Coordinates Easting (usft)	Dogleg Rate (°/100usft)	Vertical Section (usft)	Toolface Angle (°)	Comments
13,925.00	70.62	1.85	13,779.40	226.84 N	264.70 W	412,699.50	774,125.41	12.00	229.14	0.00	
13,950.00	73.62	1.85	13,787.08	250.61 N	263.93 W	412,723.27	774,126.18	12.00	252.91	0.00	
13,975.00	76.62	1.85	13,793.50	274.76 N	263.15 W	412,747.42	774,126.96	12.00	277.05	0.00	
14,000.00	79.62	1.85	13,798.65	299.21 N	262.36 W	412,771.87	774,127.75	12.00	301.49	0.00	
14,025.00	82.62	1.85	13,802.51	323.89 N	261.57 W	412,796.55	774,128.54	12.00	326.16	0.00	
14,050.00	85.62	1.85	13,805.07	348.75 N	260.76 W	412,821.41	774,129.35	12.00	351.01	0.00	
14,075.00	88.62	1.85	13,806.33	373.70 N	259.96 W	412,846.36	774,130.15	12.00	375.95	0.00	
14,090.69	90.50	1.85	13,806.45	389.38 N	259.45 W	412,862.04	774,130.66	12.00	391.63	0.00	Landing point
14,100.00	90.50	1.66	13,806.37	398.68 N	259.17 W	412,871.34	774,130.94	2.00	400.93	-89.94	
14,208.35	90.50	359.50	13,805.42	507.02 N	258.07 W	412,979.68	774,132.04	2.00	509.25	-90.01	Hold
14,300.00	90.50	359.50	13,804.62	598.66 N	258.87 W	413,071.32	774,131.24	0.00	600.90	-90.03	
14,400.00	90.50	359.50	13,803.75	698.65 N	259.75 W	413,171.31	774,130.36	0.00	700.89	0.00	
14,500.00	90.50	359.50	13,802.88	798.65 N	260.63 W	413,271.31	774,129.48	0.00	800.89	0.00	
14,600.00	90.50	359.50	13,802.01	898.64 N	261.51 W	413,371.30	774,128.60	0.00	900.89	0.00	
14,700.00	90.50	359.50	13,801.14	998.63 N	262.39 W	413,471.29	774,127.72	0.00	1,000.88	0.00	
14,800.00	90.50	359.50	13,800.27	1,098.62 N	263.27 W	413,571.28	774,126.84	0.00	1,100.88	0.00	
14,900.00	90.50	359.50	13,799.40	1,198.61 N	264.14 W	413,671.27	774,125.97	0.00	1,200.87	0.00	
15,000.00	90.50	359.50	13,798.52	1,298.61 N	265.02 W	413,771.27	774,125.09	0.00	1,300.87	0.00	
15,100.00	90.50	359.50	13,797.65	1,398.60 N	265.90 W	413,871.26	774,124.21	0.00	1,400.87	0.00	
15,200.00	90.50	359.50	13,796.78	1,498.59 N	266.78 W	413,971.25	774,123.33	0.00	1,500.86	0.00	
15,300.00	90.50	359.50	13,795.91	1,598.58 N	267.66 W	414,071.24	774,122.45	0.00	1,600.86	0.00	
15,400.00	90.50	359.50	13,795.04	1,698.58 N	268.54 W	414,171.24	774,121.57	0.00	1,700.86	0.00	
15,500.00	90.50	359.50	13,794.17	1,798.57 N	269.41 W	414,271.23	774,120.70	0.00	1,800.85	0.00	
15,600.00	90.50	359.50	13,793.30	1,898.56 N	270.29 W	414,371.22	774,119.82	0.00	1,900.85	0.00	
15,700.00	90.50	359.50	13,792.43	1,998.55 N	271.17 W	414,471.21	774,118.94	0.00	2,000.84	0.00	
15,800.00	90.50	359.50	13,791.56	2,098.55 N	272.05 W	414,571.21	774,118.06	0.00	2,100.84	0.00	
15,900.00	90.50	359.50	13,790.69	2,198.54 N	272.93 W	414,671.20	774,117.18	0.00	2,200.84	0.00	
16,000.00	90.50	359.50	13,789.81	2,298.53 N	273.81 W	414,771.19	774,116.30	0.00	2,300.83	0.00	
16,100.00	90.50	359.50	13,788.94	2,398.52 N	274.68 W	414,871.18	774,115.43	0.00	2,400.83	0.00	
16,200.00	90.50	359.50	13,788.07	2,498.52 N	275.56 W	414,971.18	774,114.55	0.00	2,500.82	0.00	
16,300.00	90.50	359.50	13,787.20	2,598.51 N	276.44 W	415,071.17	774,113.67	0.00	2,600.82	0.00	
16,400.00	90.50	359.50	13,786.33	2,698.50 N	277.32 W	415,171.16	774,112.79	0.00	2,700.82	0.00	
16,500.00	90.50	359.50	13,785.46	2,798.49 N	278.20 W	415,271.15	774,111.91	0.00	2,800.81	0.00	
16,600.00	90.50	359.50	13,784.59	2,898.48 N	279.08 W	415,371.14	774,111.03	0.00	2,900.81	0.00	
16,700.00	90.50	359.50	13,783.72	2,998.48 N	279.95 W	415,471.14	774,110.16	0.00	3,000.81	0.00	
16,800.00	90.50	359.50	13,782.85	3,098.47 N	280.83 W	415,571.13	774,109.28	0.00	3,100.80	0.00	
16,900.00	90.50	359.50	13,781.97	3,198.46 N	281.71 W	415,671.12	774,108.40	0.00	3,200.80	0.00	

Plan Report for WD FC 2H - Plan 1

Measured Depth (usft)	Inclination (°)	Grid Azimuth (°)	Vertical Depth (usft)	Local Coordinates Northing (usft)	Local Coordinates Easting (usft)	Map Coordinates Northing (usft)	Map Coordinates Easting (usft)	Dogleg Rate (°/100usft)	Vertical Section (usft)	Toolface Angle (°)	Comments
17,000.00	90.50	359.50	13,781.10	3,298.45 N	282.59 W	415,771.11	774,107.52	0.00	3,300.79	0.00	
17,100.00	90.50	359.50	13,780.23	3,398.45 N	283.47 W	415,871.11	774,106.64	0.00	3,400.79	0.00	
17,200.00	90.50	359.50	13,779.36	3,498.44 N	284.35 W	415,971.10	774,105.76	0.00	3,500.79	0.00	
17,300.00	90.50	359.50	13,778.49	3,598.43 N	285.22 W	416,071.09	774,104.89	0.00	3,600.78	0.00	
17,400.00	90.50	359.50	13,777.62	3,698.42 N	286.10 W	416,171.08	774,104.01	0.00	3,700.78	0.00	
17,500.00	90.50	359.50	13,776.75	3,798.42 N	286.98 W	416,271.08	774,103.13	0.00	3,800.78	0.00	
17,600.00	90.50	359.50	13,775.88	3,898.41 N	287.86 W	416,371.07	774,102.25	0.00	3,900.77	0.00	
17,700.00	90.50	359.50	13,775.01	3,998.40 N	288.74 W	416,471.06	774,101.37	0.00	4,000.77	0.00	
17,800.00	90.50	359.50	13,774.13	4,098.39 N	289.62 W	416,571.05	774,100.49	0.00	4,100.76	0.00	
17,900.00	90.50	359.50	13,773.26	4,198.39 N	290.49 W	416,671.05	774,099.62	0.00	4,200.76	0.00	
18,000.00	90.50	359.50	13,772.39	4,298.38 N	291.37 W	416,771.04	774,098.74	0.00	4,300.76	0.00	
18,100.00	90.50	359.50	13,771.52	4,398.37 N	292.25 W	416,871.03	774,097.86	0.00	4,400.75	0.00	
18,200.00	90.50	359.50	13,770.65	4,498.36 N	293.13 W	416,971.02	774,096.98	0.00	4,500.75	0.00	
18,300.00	90.50	359.50	13,769.78	4,598.35 N	294.01 W	417,071.01	774,096.10	0.00	4,600.75	0.00	
18,400.00	90.50	359.50	13,768.91	4,698.35 N	294.89 W	417,171.01	774,095.22	0.00	4,700.74	0.00	
18,500.00	90.50	359.50	13,768.04	4,798.34 N	295.76 W	417,271.00	774,094.35	0.00	4,800.74	0.00	
18,600.00	90.50	359.50	13,767.17	4,898.33 N	296.64 W	417,370.99	774,093.47	0.00	4,900.73	0.00	
18,700.00	90.50	359.50	13,766.29	4,998.32 N	297.52 W	417,470.98	774,092.59	0.00	5,000.73	0.00	
18,800.00	90.50	359.50	13,765.42	5,098.32 N	298.40 W	417,570.98	774,091.71	0.00	5,100.73	0.00	
18,900.00	90.50	359.50	13,764.55	5,198.31 N	299.28 W	417,670.97	774,090.83	0.00	5,200.72	0.00	
19,000.00	90.50	359.50	13,763.68	5,298.30 N	300.16 W	417,770.96	774,089.95	0.00	5,300.72	0.00	
19,100.00	90.50	359.50	13,762.81	5,398.29 N	301.03 W	417,870.95	774,089.08	0.00	5,400.71	0.00	
19,200.00	90.50	359.50	13,761.94	5,498.29 N	301.91 W	417,970.95	774,088.20	0.00	5,500.71	0.00	
19,300.00	90.50	359.50	13,761.07	5,598.28 N	302.79 W	418,070.94	774,087.32	0.00	5,600.71	0.00	
19,400.00	90.50	359.50	13,760.20	5,698.27 N	303.67 W	418,170.93	774,086.44	0.00	5,700.70	0.00	
19,500.00	90.50	359.50	13,759.33	5,798.26 N	304.55 W	418,270.92	774,085.56	0.00	5,800.70	0.00	
19,600.00	90.50	359.50	13,758.46	5,898.26 N	305.43 W	418,370.92	774,084.68	0.00	5,900.70	0.00	
19,700.00	90.50	359.50	13,757.58	5,998.25 N	306.30 W	418,470.91	774,083.81	0.00	6,000.69	0.00	
19,800.00	90.50	359.50	13,756.71	6,098.24 N	307.18 W	418,570.90	774,082.93	0.00	6,100.69	0.00	
19,900.00	90.50	359.50	13,755.84	6,198.23 N	308.06 W	418,670.89	774,082.05	0.00	6,200.68	0.00	
20,000.00	90.50	359.50	13,754.97	6,298.22 N	308.94 W	418,770.88	774,081.17	0.00	6,300.68	0.00	
20,100.00	90.50	359.50	13,754.10	6,398.22 N	309.82 W	418,870.88	774,080.29	0.00	6,400.68	0.00	
20,200.00	90.50	359.50	13,753.23	6,498.21 N	310.70 W	418,970.87	774,079.41	0.00	6,500.67	0.00	
20,300.00	90.50	359.50	13,752.36	6,598.20 N	311.57 W	419,070.86	774,078.54	0.00	6,600.67	0.00	
20,400.00	90.50	359.50	13,751.49	6,698.19 N	312.45 W	419,170.85	774,077.66	0.00	6,700.67	0.00	
20,500.00	90.50	359.50	13,750.62	6,798.19 N	313.33 W	419,270.85	774,076.78	0.00	6,800.66	0.00	

Plan Report for WD FC 2H - Plan 1

Measured Depth (usft)	Inclination (°)	Grid Azimuth (°)	Vertical Depth (usft)	Local Coordinates Northing (usft)	Local Coordinates Easting (usft)	Map Coordinates Northing (usft)	Map Coordinates Easting (usft)	Dogleg Rate (°/100usft)	Vertical Section (usft)	Toolface Angle (°)	Comments
20,600.00	90.50	359.50	13,749.74	6,898.18 N	314.21 W	419,370.84	774,075.90	0.00	6,900.66	0.00	
20,700.00	90.50	359.50	13,748.87	6,998.17 N	315.09 W	419,470.83	774,075.02	0.00	7,000.65	0.00	
20,800.00	90.50	359.50	13,748.00	7,098.16 N	315.97 W	419,570.82	774,074.14	0.00	7,100.65	0.00	
20,900.00	90.50	359.50	13,747.13	7,198.16 N	316.84 W	419,670.82	774,073.27	0.00	7,200.65	0.00	
21,000.00	90.50	359.50	13,746.26	7,298.15 N	317.72 W	419,770.81	774,072.39	0.00	7,300.64	0.00	
21,097.59	90.50	359.50	13,745.41	7,395.73 N	318.58 W	419,868.39	774,071.53	0.00	7,398.23	0.00	TD at 21097.59

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
2,500.00	2,500.00	0.00	0.00	Start Nudge
2,650.01	2,649.94	-1.25	-3.72	Hold
8,040.52	8,033.06	-90.75	-271.28	Drop vertical
8,190.53	8,183.00	-92.00	-275.00	Hold vertical
13,336.53	13,329.00	-92.00	-275.00	KOP, Build and turn
14,090.69	13,806.45	389.38	-259.45	Landing point
14,208.35	13,805.42	507.02	-258.07	Hold
21,097.59	13,745.41	7,395.73	-318.58	TD at 21097.59

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin +N/_S (usft)	Origin +E/-W (usft)	Start TVD (usft)
User	No Target (Freehand)	359.50	Slot	0.00	0.00	0.00

Survey tool program

From (usft)	To (usft)	Survey/Plan	Survey Tool
0.00	21,097.59	Plan 1	2_MWD

Casing Details

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
1,000.00	1,000.00	13 3/8"	13-3/8	17-1/2

Plan Report for WD FC 2H - Plan 1

Formation Details

Measured Depth (usft)	Vertical Depth (usft)	TVDSS (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
861.00	861.00	-2,495.00	Rustler		-0.50	359.49
1,367.00	1,367.00	-1,989.00	Salado		-0.50	359.49
3,567.47	3,566.00	210.00	Castile		-0.50	359.49
5,093.77	5,090.00	1,734.00	Base Salt		-0.50	359.49
5,378.20	5,374.00	2,018.00	Lamar		-0.50	359.49
5,410.25	5,406.00	2,050.00	Bell Canyon Ss.		-0.50	359.49
6,720.23	6,714.00	3,358.00	Cherry Canyon Ss.		-0.50	359.49
8,023.20	8,015.00	4,659.00	Brushy Canyon Ss.		-0.50	359.49
9,312.31	9,304.00	5,948.00	Bone Spring		-0.50	359.49
9,625.31	9,617.00	6,261.00	Bone Spring Hard Lm.		-0.50	359.49
10,359.31	10,351.00	6,995.00	1st Bone Spg.		-0.50	359.49
10,566.31	10,558.00	7,202.00	Base 1st Bone Spg sand		-0.50	359.49
10,937.31	10,929.00	7,573.00	2nd Bone Spg sand		-0.50	359.49
11,405.31	11,397.00	8,041.00	Base 2nd Bone Spg sand		-0.50	359.49
11,980.31	11,972.00	8,616.00	3rd Bone Spring Ss.		-0.50	359.49
12,361.31	12,353.00	8,997.00	Lowered 3rd Bone Spring Ss.		-0.50	359.49
12,434.31	12,426.00	9,070.00	Wolfcamp		-0.50	359.49
12,457.31	12,449.00	9,093.00	Wolfcamp X Ss.		-0.50	359.49
12,509.31	12,501.00	9,145.00	Wolfcamp X Ss.Base		-0.50	359.49
12,544.31	12,536.00	9,180.00	Wolfcamp Y Ss.		-0.50	359.49
12,559.31	12,551.00	9,195.00	Wolfcamp Y Target		-0.50	359.49
12,578.31	12,570.00	9,214.00	Wolfcamp A Shale		-0.50	359.49

Plan Report for WD FC 2H - Plan 1

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
EW 14 WXY FC_2H _KOP/ FTP_New ()									
	0.00	0.00	0.00	389.38	-259.45	412,862.04	774,130.66	32.13197670	-103.44777035
- plan misses target center by 467.90usft at 0.00usft MD (0.00 TVD, 0.00 N, 0.00 E)									
- Point									
EW 14 WXY FC_2H _KOP/ FTP ()									
	0.00	0.00	0.00	137.78	-255.53	412,610.44	774,134.58	32.13128504	-103.44776437
- plan misses target center by 290.31usft at 0.00usft MD (0.00 TVD, 0.00 N, 0.00 E)									
- Point									
EW 14 WXY FC_2H _LTP/BHL_330 FNL ()									
	0.00	0.00	0.00	7,395.73	-318.58	419,868.39	774,071.53	32.15123641	-103.44777524
- plan misses target center by 7402.59usft at 0.00usft MD (0.00 TVD, 0.00 N, 0.00 E)									
- Point									

Directional Difficulty Index

Average Dogleg over Survey:	0.47 °/100usft	Maximum Dogleg over Survey:	12.00 °/100usft at 14,090.69 usft
Net Tortousity applicable to Plans:	0.47 °/100usft	Directional Difficulty Index:	6.373

Audit Info

North Reference Sheet for Ender Wiggins 14 - WD FC 2H - Wellbore #1

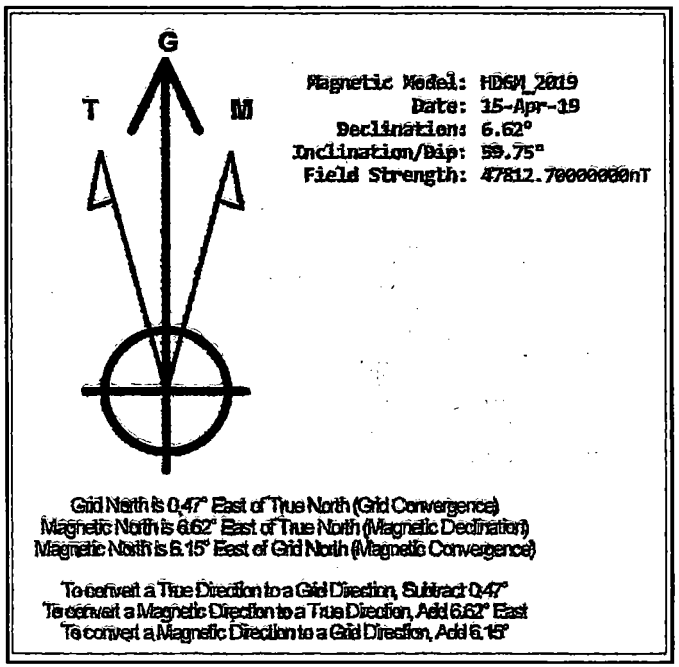
All data is in US Feet unless otherwise stated. Directions and Coordinates are relative to Grid North Reference.
Vertical Depths are relative to GL+KB 25' @ 3356.00usft (PD 601). Northing and Easting are relative to WD FC 2H

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 -104.33333333°, Longitude Origin:0.00000000°, Latitude Origin:0.00000000°
False Easting: 500,000.00usft, False Northing: 0.00usft, Scale Reduction: 0.99999532

Grid Coordinates of Well: 412,472.66 usft N, 774,390.11 usft E
Geographical Coordinates of Well: 32° 07' 51.24" N, 103° 26' 48.99" W
Grid Convergence at Surface is: 0.47°

Based upon Minimum Curvature type calculations, at a Measured Depth of 21,097.59usft
the Bottom Hole Displacement is 7,402.59usft in the Direction of 357.53° (Grid).

Magnetic Convergence at surface is: -6.15° (15 April 2019, , HDGM_2019)



PECOS DISTRICT
DRILLING CONDITIONS OF APPROVAL
CHANGE TO APD – EC461051

OPERATOR'S NAME:	**MARATHON OIL PERMIAN LLC**
LEASE NO.:	**NMNM113419**
WELL NAME & NO.:	**ENDER WIGGINS 14 WD FC 2H**
SURFACE HOLE FOOTAGE:	**2449'/N & 582'/W**
BOTTOM HOLE FOOTAGE	**330'/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"** intermdiate casing shall be cemented with at least 200 feet of tie-back into the previous casing string. Operator shall provide method of verification.

a. **Operator shall keep at least 1/3 of this casing fluid-filled at all times to meet BLM collapse requirements.**

4. The **5-1/2"& 4-1/2"** tapered production casing 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