

Well Name: CROSSBOW WC FED
COM

Well Location: T23S / R27E / SEC 8 /
NENE / 32.3232477 / -104.2049856

County or Parish/State: EDDY /
NM

Well Number: 703H

Type of Well: CONVENTIONAL GAS
WELL

Allottee or Tribe Name:

Lease Number: NMNM91071

Unit or CA Name:

Unit or CA Number:

US Well Number: 3001548714

Operator: MARATHON OIL PERMIAN
LLC

Notice of Intent

Sundry ID: 2801193

Type of Submission: Notice of Intent

Type of Action: APD Change

Date Sundry Submitted: 07/16/2024

Time Sundry Submitted: 01:07

Date proposed operation will begin: 07/16/2024

Procedure Description: MRO Refile of sundry 2727445 to include omitted APD change details. Marathon Oil respectfully requests approval to make the following changes to the APD for the Crossbow WC Fed Com 703H: Change from a 4 string casing design to 3 string casing design, SHL, FT, LTP, BHL, TD MD/TVD, dedicated acreage SHL change: From: 1266 FNL & 377 FEL; To: 1266 FNL & 486 FEL, FTP change: From: 2211 FNL & 330 FEL; To: 1980 FNL & 330 FEL BHL/LTP Change: From: 2328 FNL & 330 FWL; To: 1980 FNL & 330 FWL MD change: From: 18791'; To: 18944' TVD change: From: 8903'; To: 8985' Dedicated Acreage change: From: 638.16; To: 1275.84 Drill Plan Change: Change of casing design from a 4 string to 3 string Plan. Please see attached drill plan for casing/cement design changes. Please see attached C-102, approved & proposed well pad diagram, drill plan and directional plan. No new disturbance.

NOI Attachments

Procedure Description

Crossbow_Well_Pad_Diagram_20240716130653.pdf

Crossbow_703H_Drill_Plan_20240716130636.pdf

Crossbow_703H_Dir_Survey_20240716130622.pdf

C_102_Crossbow_703H_20240716130605.pdf

Well Name: CROSSBOW / C FED COM	Well Location: T23S / R27E / SEC 8 / NENE / 32.3232477 / -104.2049856	County or Parish/State: EDDY / NM
Well Number: 703H	Type of Well: CONVENTIONAL GAS WELL	Allottee or Tribe Name:
Lease Number: NMNM91071	Unit or CA Name:	Unit or CA Number:
US Well Number: 3001548714	Operator: MARATHON OIL PERMIAN LLC	

Operator

I certify that the foregoing is true and correct. 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. Electronic submission of Sundry Notices through this system satisfies regulations requiring a

Operator Electronic Signature: KRYSTAL BARTHOLOMEW

Signed on: JUL 16, 2024 01:06 PM

Name: MARATHON OIL PERMIAN LLC

Title: Adv Regulatory Compliance Representative

Street Address: 990 TOWN AND COUNTRY BLVD

City: HOUSTON

State: TX

Phone: (713) 296-2539

Email address: KBARTHOLOMEW@MARATHONOIL.COM

Field

Representative Name:

Street Address:

City:

State:

Zip:

Phone:

Email address:

BLM Point of Contact

BLM POC Name: CHRISTOPHER WALLS

BLM POC Title: Petroleum Engineer

BLM POC Phone: 5752342234

BLM POC Email Address: cwalls@blm.gov

Disposition: Approved

Disposition Date: 09/23/2024

Signature: Chris Walls

Form 3160-5
(June 2019)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

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.

FORM APPROVED
OMB No. 1004-0137
Expires: October 31, 2021

5. Lease Serial No.
NMNM91071

6. If Indian, Allottee or Tribe Name

SUBMIT IN TRIPLICATE - Other instructions on page 2

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

2. Name of Operator
MARATHON OIL PERMIAN LLC

3a. Address 990 TOWN & COUNTRY BLVD, HOUSTON, TX 3b. Phone No. (include area code)
(713) 296-2113

4. Location of Well (Footage, Sec., T.,R.,M., or Survey Description)
SEC 8/T23S/R27E/NMP

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

8. Well Name and No.
CROSSBOW WC FED COM/703H

9. API Well No. 3001548714

10. Field and Pool or Exploratory Area
PURPLE SAGE/WOLFCAMP

11. Country or Parish, State
EDDY/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	
	☐ 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.)

MRO Refile of sundry 2727445 to include omitted APD change details.

Marathon Oil respectfully requests approval to make the following changes to the APD for the Crossbow WC Fed Com 703H: Change from a 4 string casing design to 3 string casing design, SHL, FT, LTP, BHL, TD MD/TVD, dedicated acreage

SHL change: From: 1266 FNL & 377 FEL; To: 1266 FNL & 486 FEL.
FTP change: From: 2211 FNL & 330 FEL; To: 1980 FNL & 330 FEL
BHL/LTP Change: From: 2328 FNL & 330 FWL; To: 1980 FNL & 330 FWL
MD change: From: 18791; To: 18944
TVD change: From: 8903; To: 8985
Dedicated Acreage change: From: 638.16; To: 1275.84
Drill Plan Change: Change of casing design from a 4 string to 3 string Plan. Please see attached drill plan for casing/cement design changes.

Continued on page 3 additional information

14. I hereby certify that the foregoing is true and correct. Name (Printed/Typed)
KRYSTAL BARTHOLOMEW / Ph: (713) 296-2539

Signature (Electronic Submission)

Title Adv Regulatory Compliance Representative

Date 07/16/2024

THE SPACE FOR FEDERAL OR STATE OFFICE USE

Approved by
CHRISTOPHER WALLS / Ph: (575) 234-2234 / Approved

Petroleum Engineer

Office CARLSBAD

Title

Date 09/23/2024

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.

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)

GENERAL INSTRUCTIONS

This form is designed for submitting proposals to perform certain well operations and reports of such operations when completed as indicated on Federal and Indian lands pursuant to applicable Federal law and regulations. Any necessary special instructions concerning the use of this form and the number of copies to be submitted, particularly with regard to local area or regional procedures and practices, are either shown below, will be issued by or may be obtained from the local Federal office.

SPECIFIC INSTRUCTIONS

Item 4 - Locations on Federal or Indian land should be described in accordance with Federal requirements. Consult the local Federal office for specific instructions.

Item 13: Proposals to abandon a well and subsequent reports of abandonment should include such special information as is required by the local Federal office. In addition, such proposals and reports should include reasons for the abandonment; data on any former or present productive zones or other zones with present significant fluid contents not sealed off by cement or otherwise; depths (top and bottom) and method of placement of cement plugs; mud or other material placed below, between and above plugs; amount, size, method of parting of any casing, liner or tubing pulled and the depth to the top of any tubing left in the hole; method of closing top of well and date well site conditioned for final inspection looking for approval of the abandonment. If the proposal will involve **hydraulic fracturing operations**, you must comply with 43 CFR 3162.3-3, including providing information about the protection of usable water. Operators should provide the best available information about all formations containing water and their depths. This information could include data and interpretation of resistivity logs run on nearby wells. Information may also be obtained from state or tribal regulatory agencies and from local BLM offices.

NOTICES

The privacy Act of 1974 and the regulation in 43 CFR 2.48(d) provide that you be furnished the following information in connection with information required by this application.

AUTHORITY: 30 U.S.C. 181 et seq., 351 et seq., 25 U.S.C. 396; 43 CFR 3160.

PRINCIPAL PURPOSE: The information is used to: (1) Evaluate, when appropriate, approve applications, and report completion of subsequent well operations, on a Federal or Indian lease; and (2) document for administrative use, information for the management, disposal and use of National Resource lands and resources, such as: (a) evaluating the equipment and procedures to be used during a proposed subsequent well operation and reviewing the completed well operations for compliance with the approved plan; (b) requesting and granting approval to perform those actions covered by 43 CFR 3162.3-2, 3162.3-3, and 3162.3-4; (c) reporting the beginning or resumption of production, as required by 43 CFR 3162.4-1(c) and (d) analyzing future applications to drill or modify operations in light of data obtained and methods used.

ROUTINE USES: Information from the record and/or the record will be transferred to appropriate Federal, State, local or foreign agencies, when relevant to civil, criminal or regulatory investigations or prosecutions in connection with congressional inquiries or to consumer reporting agencies to facilitate collection of debts owed the Government.

EFFECT OF NOT PROVIDING THE INFORMATION: Filing of this notice and report and disclosure of the information is mandatory for those subsequent well operations specified in 43 CFR 3162.3-2, 3162.3-3, 3162.3-4.

The Paperwork Reduction Act of 1995 requires us to inform you that:

The BLM collects this information to evaluate proposed and/or completed subsequent well operations on Federal or Indian oil and gas leases.

Response to this request is mandatory.

The BLM would like you to know that you do not have to respond to this or any other Federal agency-sponsored information collection unless it displays a currently valid OMB control number.

BURDEN HOURS STATEMENT: Public reporting burden for this form is estimated to average 8 hours per response, including the time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form. Direct comments regarding the burden estimate or any other aspect of this form to U.S. Department of the Interior, Bureau of Land Management (1004-0137), Bureau Information Collection Clearance Officer (WO-630), 1849 C St., N.W., Mail Stop 401 LS, Washington, D.C. 20240

Additional Information

Additional Remarks

Please see attached C-102, approved & proposed well pad diagram, drill plan and directional plan. No new disturbance.

Location of Well

0. SHL: NENE / 1266 FNL / 486 FEL / TWSP: 23S / RANGE: 27E / SECTION: 8 / LAT: 32.3232477 / LONG: -104.2049856 (TVD: 0 feet, MD: 0 feet)

PPP: SENE / 1980 FNL / 330 FEL / TWSP: 23S / RANGE: 27E / SECTION: 8 / LAT: 32.3206521 / LONG: -104.2049149 (TVD: 8804 feet, MD: 8898 feet)

PPP: LOT 2 / 2321 FNL / 1282 FWL / TWSP: 23S / RANGE: 27E / SECTION: 7 / LAT: 32.3202172 / LONG: -104.2335462 (TVD: 8997 feet, MD: 13894 feet)

BHL: LOT 2 / 1980 FNL / 330 FWL / TWSP: 23S / RANGE: 27E / SECTION: 7 / LAT: 32.3201763 / LONG: -104.2366287 (TVD: 8985 feet, MD: 18944 feet)

CONFIDENTIAL

Updated/Proposed WELL PAD PLAT

CROSSBOW FEDERAL 23-27-8

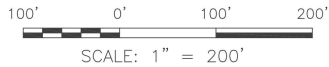
SEC. 8 TWP. 23-S RGE. 27-E

SURVEY: N.M.P.M.

COUNTY: EDDY

OPERATOR: MARATHON OIL PERMIAN LLC

U.S.G.S. TOPOGRAPHIC MAP: OTIS, N.M.



SECTION 8,
T-23-S, R-27-E

NAD 83		
A	E:(X)581293.58	LAT:32.32401646
	N:(Y)481633.51	LOn:-104.20398088
B	E:(X)581293.59	LAT:32.32264195
	N:(Y)481133.48	LOn:-104.20398280
C	E:(X)580703.59	LAT:32.32264389
	N:(Y)481133.48	LOn:-104.20589281
D	E:(X)580703.58	LAT:32.32401841
	N:(Y)481633.51	LOn:-104.20589092

NAD 27		
A	E:(X)540111.61	LAT:32.32389765
	N:(Y)481574.51	LOn:-104.20348034
B	E:(X)540111.61	LAT:32.32252313
	N:(Y)481074.50	LOn:-104.20348230
C	E:(X)539521.62	LAT:32.32252510
	N:(Y)481074.50	LOn:-104.20539224
D	E:(X)539521.62	LAT:32.32389962
	N:(Y)481574.52	LOn:-104.20539031

LINE	BEARING	DISTANCE
L1	S 00°00'07" E	500.03'
L2	S 89°59'59" W	590.00'
L3	N 00°00'07" W	500.03'
L4	N 89°59'59" E	590.00'

100' X 590'
TANK BATTERY SITE

PROPOSED WELL
PAD AREA
6.77 ACRES

SECTION 8 PROP. LEASE ROAD TOTAL =
100.94 FEET (6.12 RODS) 0.15 AC.

- 5/8" IRON ROD W/CAP FND.
FOR NE COR. OF SEC. 8

SECTION 8 PROP. LEASE ROAD
TOTAL = 84.42 FEET
(5.12 RODS) 0.13 AC.

SECTION 9,
T-23-S, R-27-E

— EXISTING WATERLINE

EXISTING OVERHEAD
POWER LINE

A tract of land being 6.77 acres. Said tract being located in Section 8, Township 23 South, Range 27 East, New Mexico Principal Meridian, Eddy County, New Mexico.

Being more particularly described by metes and bounds as follows:

BEGINNING at a point from which a 5/8 inch iron rod with cap found for the Northeast corner of said Section 8 bears N 05°44'18" E a distance of 993.07 feet.

THENCE

S 00°00'07" E a distance of 500.03 feet to the Southeast corner of this tract, and S 89°59'59" W a distance of 590.00 feet to the Southwest corner of this tract, and N 00°00'07" W a distance of 500.03 feet to the Northwest corner of this tract, and N 89°59'59" E a distance of 590.00 feet to the *PLACE OF BEGINNING*.

The total area of the herein described tract containing 6.77 acres of land.

All bearings and coordinates refer to NAD 83, New Mexico State Plane Coordinate System, East Zone, U.S. Survey Feet. (All bearings, distances, coordinates and areas are based on grid measurements utilizing a combined scale factor of 0.99976256 and a convergence angle of 0.06394665°.)

Title information furnished by Marathon Oil Permian LLC.

Reference accompanying Certificate of Survey prepared in conjunction with this legal description for easement.

STATE OF NEW MEXICO
COUNTY OF EDDY

I, David W. Myers, New Mexico Professional Surveyor No. 11403, do hereby certify that this easement survey plat and the actual survey on the ground upon which it is based were performed by me or under my direct supervision; that I am responsible for this survey; that this survey meets the minimum standards for surveying in New Mexico; and that it is true and correct to the best of my knowledge and belief. I further certify that this survey is not a land division or subdivision as defined in the New Mexico Subdivision Act and that this instrument is an easement survey plat crossing an existing tract or tracts.

APRIL 24, 2023

DAVID W. MYERS 11403



PLAT FOR A SURFACE SITE ON THE PROPERTY OF

E BAR Z, LLC

EDDY COUNTY, NEW MEXICO

1	04/12/2023	UPDATED WELLS	ASG	MWS
REV.	DATE	DESCRIPTION	BY	CHKD
SHEET 1 OF 1				
DRAWN BY: JCS				
DATE: 02/08/2023				
CHECKED BY: MWS				
		 510 TRENTON ST. WEST MONROE, LA 71291 (318) 323-6900		

MARATHON OIL PERMIAN, LLC.
DRILLING AND OPERATIONS PLAN



WELL NAME & NUMBER: **CROSSBOW WC FED COM 703H**
LOCATION: SECTION **8** TOWNSHIP **23S** RANGE **27E**
EDDY COUNTY, **NEW MEXICO**

Section 1: GEOLOGICAL FORMATIONS

Name of Surface Formation: Permian
Elevation: 3170 feet

Estimated Tops of Important Geological Markers:

Formation	TVD (ft)	MD (ft)	Elevation (ft SS)	Lithologies	Mineral Resources	Producing Formation?
Rustler	0	N/A	3170	Anhydrite	Brine	No
Salado	120	147	3050	Salt/Anhydrite	Brine	No
Castile	487	514	2683	Salt/Anhydrite	Brine	No
Base of Salt (BX)	1969	1996	1201	Salt/Anhydrite	Brine	No
Lamar	1969	1996	1201	Sandstone/Shale	None	No
Bell Canyon	2108	2135	1062	Sandstone	Oil	No
Cherry Canyon	2881	2908	289	Sandstone	Oil	No
Brushy Canyon	3910	3937	-740	Sandstone	Oil	No
Bone Spring Lime	5401	5428	-2231	Limestone	None	No
Upper Avalon Shale	5722	5749	-2552	Shale	Oil	Yes
1st Bone Spring Sand	6453	6480	-3283	Sandstone	Oil	Yes
2nd Bone Spring Carbonate	6680	6707	-3510	Limestone/Shale	None	No
2nd Bone Spring Sand	6930	6957	-3760	Sandstone	Oil	Yes
3rd Bone Spring Carbonate	7139	7166	-3969	Limestone	Oil	No
3rd Bone Spring Sand	8526	8553	-5356	Sandstone	Oil	Yes
Wolfcamp	8887	8914	-5717	Sandstone/Shale/Carbonates	Natural Gas / Oil	Yes
Wolfcamp A	9039	9066	-5869	Sandstone/Shale/Carbonates	Natural Gas / Oil	Yes
Wolfcamp B	9204	9231	-6034	Sandstone/Shale/Carbonates	Natural Gas / Oil	No
Wolfcamp C	9500	9527	-6330	Sandstone/Shale/Carbonates	Natural Gas / Oil	No
Wolfcamp D	9752	9779	-6582	Sandstone/Shale/Carbonates	Natural Gas / Oil	No

Section 2: BLOWOUT PREVENTER TESTING PROCEDURE

Pressure Rating (PSI): 10M
Rating Depth: 10000
Equipment: 13 5/8 BOP Annular (5,000 psi WP) and BOP Stack (10,000 psi WP) will be installed and tested before drilling all holes.

Requesting Variance? Yes
Variance Request: A variance is requested for the use of a flexible choke line from the BOP to Choke Manifold. See attached for specs and hydrostatic test chart.

Testing Procedure: BOP/BOPE will be tested to 250 psi low and a high of 100% WP for the Annular and 5,000psi for the BOP Stack before drilling the intermediate hole, 10,000psi for the BOP Stacking before drilling the production hole. Testing will be conducted by an independent service company per Onshore Order 2 requirements. The System may be upgraded to a higher pressure but still tested to the working pressure listed in the Equipment Description above. If the system is upgraded all the components installed will be functional and tested.
Pipe rams and Blind rams will be operationally checked on each trip out of the hole, but not to exceed more than once per day. These checks will be noted on the daily tour sheets. Other accessories to the BOP equipment will include a Kelly cock, full opening safety valve / inside BOP and choke lines and choke manifold. See attached schematics.
Formation integrity test will be performed per Onshore Order #2. On Exploratory wells or on that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.i. A multibowl wellhead is being used. The BOP will be tested per Onshore Order #2 after installation on the surface casing which will cover testing requirements for a maximum of 30 days. If any seal subject to test pressure is broken the system must be tested. See attached schematic.

Section 3:

CASING PROGRAM

String Type	Hole Size	Casing Size	Top Set MD	Bottom Set MD	Top Set TVD	Bottom Set TVD	Top Set MSL	Bottom Set MSL	Weight (lbs/ft)	Grade	Joint Type	Collapse SF	Burst SF	Joint SF Type	Joint SF	Body SF Type	Body SF
Surface	17.5	13.375	0	510	0	510	3170	2660	54.5	J55	BTC	5.22	1.81	BUOY	4.52	BUOY	4.52
Intermediate	12.25	9.625	0	8386	0	8339	3170	-5169	40	P110HC	BTC	1.20	1.42	BUOY	2.44	BUOY	2.44
Production	8.75	5.5	0	19228	0	8830	3170	-5660	23	P110EC	VAM Sprint TC	2.53	1.26	BUOY	2.22	BUOY	2.22
All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.h												Safety Factors will Meet or Exceed					

Casing Condition: New
Casing Standard: API
Tapered String? No

Yes or No	
Is casing new? If used, attach certification as required in Onshore Order #1.	Yes
Does casing meet API specifications? If no, attach casing specification sheet.	Yes
Is premium or uncommon casing planned? If yes attach casing specification sheet.	No
Does the above casing design meet or exceed BLM's minimum standards? If not provide justification (loading assumptions, casing design criteria).	Yes
Will the intermediate pipe be kept at a minimum 1/3 fluid filled to avoid approaching the collapse pressure rating of the casing?	Yes
Is well located within Capitan Reef?	No
If yes, does production casing cement tie back a minimum of 50' above the Reef?	
Is proposed well within the designated four string boundary?	
Is well located in R-111-P and SOPA?	No
If yes, are the first three strings cemented to surface?	
Is the second string set 100' to 600' below the base of salt?	
Is well located in SOPA but not in R-111-P?	No
If yes, are the first 2 strings cemented to surface and third string cement tied back 500' into previous casing?	
Is well located in high Cave/Karst?	No
If yes, are there two strings cemented to surface?	
If yes, is there a contingency casing if lost circulation occurs?	
Is well located in critical Cave/Karst?	No
If yes, are there three strings cemented to surface?	

Section 4:

CEMENT PROGRAM

String Type	Lead/Tail	Top MD	Bottom MD	Quantity (sks)	Yield (ft³/sks)	Density (ppg)	Slurry Volume (ft³)	Excess (%)	Cement Type	Additives
Surface	Lead	0	360	170	2.12	12.5	361	25	Class C	Extender,Accelerator,LCM
Surface	Tail	360	510	99	1.32	14.8	130	25	Class C	Accelerator
Intermediate	Lead	0	7886	1431	2.18	12.4	3119	25	Class C	Extender,Accelerator,LCM
Intermediate	Tail	7886	8386	147	1.33	14.8	196	25	Class C	Retarder
Production	Tail	8086	19228	2135	1.68	13	3586	25	Class H	Retarder, Extender, Fluid Loss, Suspension Agent

Stage tool depth(s) will be adjusted based on hole conditions and cement volumes will be adjusted proportionally. Stage tool will be set a minimum of 50 feet below previous casing and a minimum of 200 feet above current shoe. Lab reports with the 500 psi compressive strength time for the cement will be onsite for review.

Pilot Hole? No
Pilot Hole Depth: N/A
KOP Depth: N/A
Plugging Procedure for Pilot Hole: N/A

Plug Top	Plug Bottom	Excess (%)	Quantity (sx)	Density (ppg)	Yield (ft3/sks)	Water gal/sk	Slurry Description and Cement Type

Section 5: CIRCULATING MEDIUM

Mud System Type: Closed
Will an air or gas system be used? No

Describe what will be on location to control well or mitigate other conditions:
The necessary mud products for additional weight and fluid loss control will be on location at all times.

Describe the mud monitoring system utilized:
Losses or gains in the mud system will be monitored visually/manually as well as with an electronic PVT.

Circulating Medium Table:

Top Depth	Bottom Depth	Mud Type	Min. Weight (ppg)	Max Weight (ppg)
0	510	Water Based Mud	8.4	8.8
510	8386	Brine or Oil Based Mud	9.2	10.2
8386	19228	Oil Based Mud	10.5	12.5

Section 6: TESTING, LOGGING, CORING

List of production tests including testing procedures, equipment and safety measures:
GR from TD to surface (horizontal well - vertical portion of hole)

List of open and cased hole logs run in the well:
GR while drilling from Intermediate casing shoe to TD.

Coring operation description for the well:
Run gamma-ray (GR) and corrected neutron log (CNL) or analogous to surface for future development of the area, one per shared well pad not to exceed 200’ radial distance.

Section 7: ANTICIPATED PRESSURE

Anticipated Bottom Hole Pressure: 5753 PSI
Anticipated Bottom Hole Temperature: 195 °F
Anticipated Abnormal Pressure? No
Anticipated Abnormal Temperature? No

Potential Hazards:
H2S detection equipment will be in operation after drilling out the surface casing shoe until the production casing has been cemented. Breathing equipment will be on location from drilling out the surface shoe until production casing is cemented. If H2S is encountered the operator will comply with Onshore Order #6. Adequate flare lines will be installed off the mud/gas separator where gas may be flared safely. All personnel will be familiar with all aspects of safe operation of equipment being used to drill this well. See attached H2S Contingency Plan.

Section 8: OTHER INFORMATION

Auxiliary Well Control and Monitoring Equipment:
A Kelly cock will be in the drill string at all times. A full opening drill pipe stabbing valve having the appropriate connections will be on the rig floor unobstructed and readily accessible at all times.
Hydrogen Sulfide detection equipment will be in operation after drilling out the surface casing shoe until the production casing is cemented. Breathing equipment will be on location upon drilling the surface casing shoe until total depth is reached. If Hydrogen Sulfide is encountered, measured amounts and formations will be reported to the BLM.

Anticipated Starting Date and Duration of Operations:
Road and location construction will begin after the BLM has approved the APD. Anticipated spud date will be as soon as possible after BLM approval and as soon as a rig will be available. Move in operations and drilling is expected to take 30 days.

DRILL PLAN CHANGE REGISTER

CROSSBOW WC FED COM 703H
SECTION 8, TOWNSHIP 23S, RANGE 27E
EDDY COUNTY, NEW MEXICO

Original Document Date: Thursday, April 20, 2023
Prepared By: Matt McGaugh
Submitted By: Nicole Lee

Revised Date:	Monday, October 18, 2021	Submittal Date:	Monday, November 1, 2021
Revised By:	Court Nelson (Drilling Engineer)	Submittal Type:	NOI Change to AAPD Sundry Notice
	Matt Baker (Geologist)	Submitted By:	Melissa Szudera

Summary of Revisions:

Section	Description
2 - Casing	Removed second intermediate string
4 - Cement	Removed second intermediate string
5 - Mud	Removed second intermediate string

Revised Date:		Submittal Date:	
Revised By:		Submittal Type:	
		Submitted By:	

Summary of Revisions:

Section	Description

Revised Date:		Submittal Date:	
Revised By:		Submittal Type:	
		Submitted By:	

Summary of Revisions:

Section	Description

Revised Date:		Submittal Date:	
Revised By:		Submittal Type:	
		Submitted By:	

Summary of Revisions:

Section	Description

WELL DETAILS: Crossbow WC Fed Com 703H

+N+S	+E+W	Gl. @	Northing	Easting	WELL @ 3193.50mst (Cactus 171)	SECTION DETAILS	Latitude	Longitude
0.00	0.00	481294.48	539731.60	32° 19' 23.285 N	104° 12' 16.962 W			
MD	Inc	Azi	TVD	+N+S	+E+W	Dleg	TFace	Vsect
17305.00	90.29	270.49	8877.67	-645.89	-7795.53	0.00	0.000	7759.64
17378.00	90.29	270.49	8877.30	-645.27	-7868.52	0.00	0.000	7872.63
17548.13	91.12	270.90	8875.21	-637.28	-8038.41	2.64	79.306	8042.46
17903.96	91.80	265.54	8866.12	-635.91	-8393.62	2.64	86.738	8377.55
18295.96	91.80	265.54	8854.12	-665.60	-8774.28	0.00	0.000	8778.50
18489.73	91.80	266.62	8847.74	-674.20	-8977.92	2.00	89.948	8982.10
19215.15	91.80	268.62	8842.82	-579.02	-9702.87	0.00	0.000	9707.16

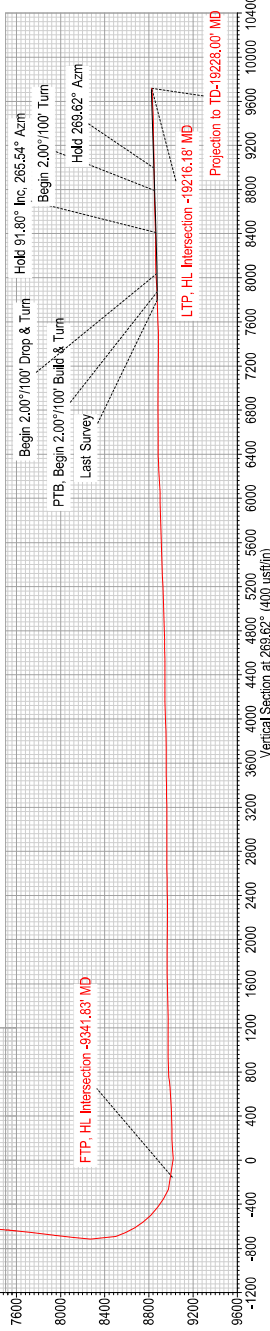
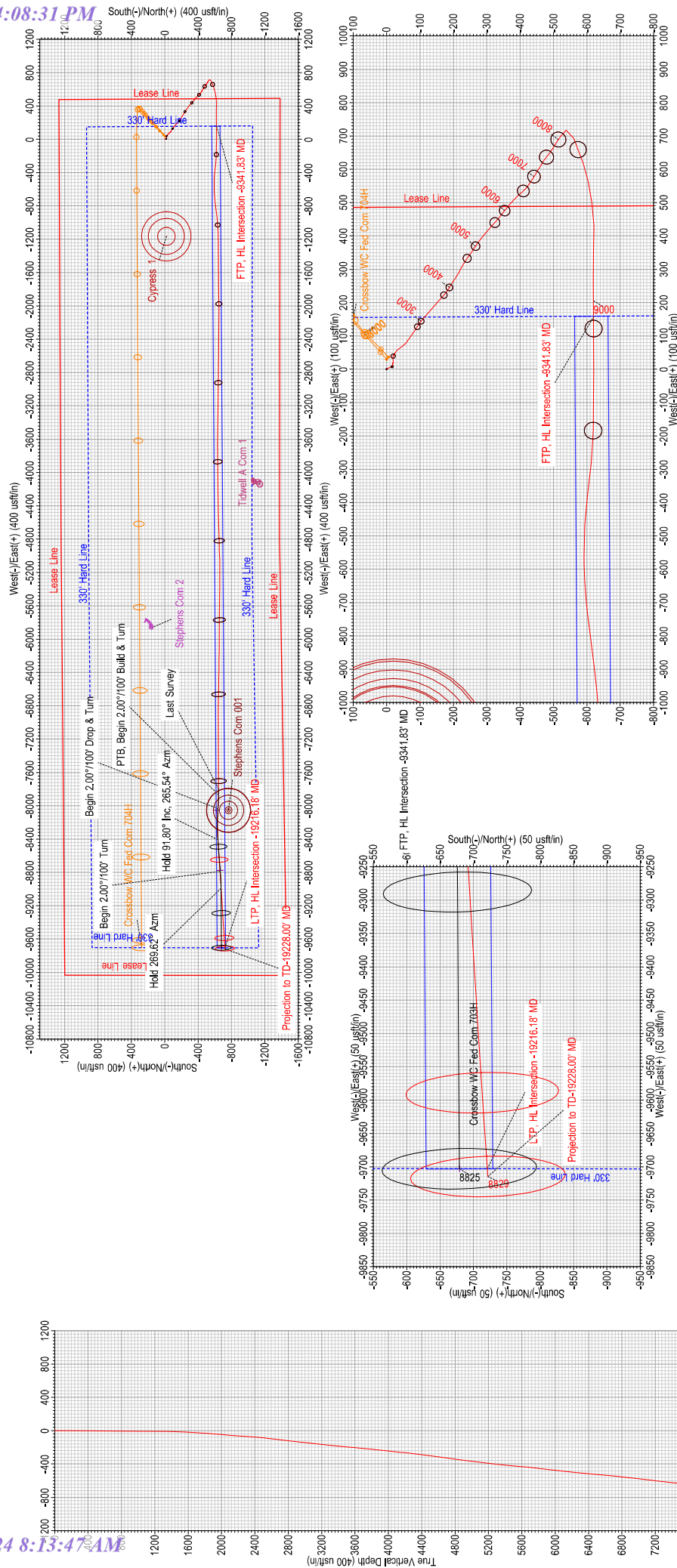
SURVEY PROGRAM

Depth From	Depth To	Survey/Plan	Tool
148.00	2382.00	MS MWD (Wellbore #1)	MWD+HRGM
2477.00	17305.00	MS MWD + FDIR (Wellbore #1)	MWD+IFR1+FDIR
17305.00	19215.15	Design #10 (Wellbore #1)	MWD+IFR1+FDIR

DESIGN TARGET DETAILS

MD	Inc	Zr/Au	TVD	+N/S	+E/W	Dlog	TFreq	VScat	Annotation	Name	TVD	+N/S	+E/W	Northing	Latitude	Longitude
17305.01	90.29	270.49	8877.67	-6515.88	-2795.53	0.00	0.00	7759.64	Last Survey	LTPBPH110_Crossbow 703H	8824.94	-679.02	-9702.87	480615.4	32° 13' 16.56" N	104° 14' 10.84" W
17348.01	90.29	270.49	8877.30	-6517.28	-2768.52	0.00	0.00	7802.63	PTS, Begin 2.00°/100' Build & Turn	T1 v10_Crossbow 703H	8878.81	-618.01	-9052.57	480676.47	32° 13' 17.25" N	104° 13' 50.91" W
17378.01	91.12	274.90	8875.21	-635.27	-8039.41	2.64	7.9	3036		T2 v10_Crossbow 703H	8954.12	-665.60	-8774.28	480628.88	32° 13' 16.71" N	104° 13' 59.26" W
17903.96	91.30	265.54	8866.12	-635.91	-8393.62	2.64	-85.7	388								
18285.96	91.30	265.54	8854.12	-665.60	-8774.28	0.00	0.00	8778.50								
18489.73	91.30	269.62	8847.72	-674.20	-8977.82	2.00	89.948	8982.10								
19215.15	91.30	289.62	8824.94	-679.02	-9702.87	0.00	0.00	9707.16								

Target Line: 9,130' TVD @ 0' VS; 91.8° INC; 0' U/ 20' D



Azimuths to Grid North
True North: -0.07°
Magnetic North: 6.90°
Magnetic Field
Strength: 47469.9nT
Dip Angle: 59.90°
Date: 5/26/2023
Model: IFR

To convert a Magnetic Direction to a Grid Direction, Add 6.904°
To convert a Magnetic Direction to a True Direction, Add 6.973° East
To convert a True Direction to a Grid Direction, Subtract 0.069°



Marathon Oil

**Eddy County, New Mexico (NAD 27)
Crossbow WC Fed Com (703H, 704H)
Crossbow WC Fed Com 703H**

Wellbore #1

Design: Surveys

Standard Survey Report

26 June, 2023





MS Directional Survey Report



Company:	Marathon Oil	Local Co-ordinate Reference:	Well Crossbow WC Fed Com 703H
Project:	Eddy County, New Mexico (NAD 27)	TVD Reference:	WELL @ 3193.50usft (Cactus 171)
Site:	Crossbow WC Fed Com (703H, 704H)	MD Reference:	WELL @ 3193.50usft (Cactus 171)
Well:	Crossbow WC Fed Com 703H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Surveys	Database:	EDM 5000.15 Conroe DB

Project	Eddy County, New Mexico (NAD 27)		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Site	Crossbow WC Fed Com (703H, 704H)		
Site Position:		Northing:	481,294.48 usft
From:	Map	Easting:	539,731.60 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 19' 23.265 N
		Longitude:	104° 12' 16.962 W

Well	Crossbow WC Fed Com 703H		
Well Position	+N/-S	0.00 usft	Northing: 481,294.48 usft
	+E/-W	0.00 usft	Easting: 539,731.60 usft
Position Uncertainty	0.00 usft	Wellhead Elevation:	usft
Grid Convergence:	0.069 °	Ground Level:	3,170.00 usft

Wellbore	Wellbore #1		
Magnetics	Model Name	Sample Date	Declination (°)
	IFR	5/26/2023	6.973
			Dip Angle (°) 59.905
			Field Strength (nT) 47,469.90

Design	Surveys		
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Audit Notes:			
Version:	1.0	Phase:	ACTUAL
		Tie On Depth:	0.00

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	269.62

Survey Program	Date	6/26/2023		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
148.00	2,382.00	MS MWD (Wellbore #1)	MWD+HRGM	OWSG MWD + HRGM
2,477.00	19,228.00	MS MWD + FDIR (Wellbore #1)	MWD+IFR1+FDIR	OWSG MWD + IFR1 + FDIR Correction

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
148.00	0.24	127.99	148.00	-0.19	0.24	-0.24	0.16	0.16	0.00	
239.00	0.54	149.96	239.00	-0.68	0.61	-0.60	0.36	0.33	24.14	
329.00	1.04	144.37	328.99	-1.71	1.30	-1.29	0.56	0.56	-6.21	
419.00	1.81	148.17	418.96	-3.58	2.52	-2.50	0.86	0.86	4.22	
505.00	2.07	153.77	504.91	-6.13	3.93	-3.88	0.37	0.30	6.51	
610.00	1.77	157.64	609.85	-9.33	5.38	-5.32	0.31	-0.29	3.69	
700.00	1.66	159.78	699.81	-11.84	6.36	-6.28	0.14	-0.12	2.38	
791.00	1.60	177.49	790.78	-14.34	6.87	-6.78	0.56	-0.07	19.46	



MS Directional Survey Report



Company:	Marathon Oil	Local Co-ordinate Reference:	Well Crossbow WC Fed Com 703H
Project:	Eddy County, New Mexico (NAD 27)	TVD Reference:	WELL @ 3193.50usft (Cactus 171)
Site:	Crossbow WC Fed Com (703H, 704H)	MD Reference:	WELL @ 3193.50usft (Cactus 171)
Well:	Crossbow WC Fed Com 703H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Surveys	Database:	EDM 5000.15 Conroe DB

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
882.00	0.76	149.50	881.76	-16.13	7.23	-7.13	1.09	-0.92	-30.76
973.00	0.20	116.74	972.75	-16.73	7.68	-7.57	0.66	-0.62	-36.00
1,066.00	0.08	19.07	1,065.75	-16.74	7.85	-7.74	0.24	-0.13	-105.02
1,158.00	0.03	296.38	1,157.75	-16.67	7.85	-7.74	0.09	-0.05	-89.88
1,251.00	0.81	116.44	1,250.75	-16.95	8.41	-8.30	0.90	0.84	-193.48
1,343.00	1.78	103.52	1,342.72	-17.57	10.39	-10.27	1.09	1.05	-14.04
1,438.00	1.87	86.19	1,437.68	-17.81	13.37	-13.25	0.59	0.09	-18.24
1,534.00	2.35	114.94	1,533.61	-18.54	16.71	-16.59	1.19	0.50	29.95
1,629.00	3.23	95.80	1,628.50	-19.63	21.14	-21.01	1.34	0.93	-20.15
1,723.00	3.30	82.21	1,722.35	-19.53	26.46	-26.33	0.82	0.07	-14.46
1,817.00	3.84	86.69	1,816.17	-18.98	32.28	-32.15	0.65	0.57	4.77
1,911.00	4.97	106.97	1,909.90	-19.99	39.32	-39.19	2.03	1.20	21.57
2,005.00	6.65	126.94	2,003.42	-24.45	47.56	-47.40	2.77	1.79	21.24
2,100.00	6.10	127.90	2,097.83	-30.86	55.94	-55.74	0.59	-0.58	1.01
2,193.00	6.90	146.15	2,190.24	-38.53	62.96	-62.70	2.37	0.86	19.62
2,288.00	6.78	145.08	2,284.57	-47.87	69.34	-69.03	0.18	-0.13	-1.13
2,382.00	6.17	129.54	2,377.97	-55.64	76.42	-76.05	1.97	-0.65	-16.53
2,477.00	6.13	126.91	2,472.43	-61.93	84.41	-84.00	0.30	-0.04	-2.77
2,571.00	8.12	124.83	2,565.70	-68.74	93.87	-93.42	2.13	2.12	-2.21
2,666.00	8.67	123.76	2,659.68	-76.55	105.33	-104.82	0.60	0.58	-1.13
2,761.00	8.27	124.29	2,753.64	-84.38	116.93	-116.37	0.43	-0.42	0.56
2,856.00	7.55	123.93	2,847.74	-91.71	127.75	-127.14	0.76	-0.76	-0.38
2,950.00	7.16	122.55	2,940.96	-98.31	137.82	-137.16	0.46	-0.41	-1.47
3,044.00	8.09	129.56	3,034.13	-105.67	147.85	-147.15	1.40	0.99	7.46
3,139.00	8.51	132.30	3,128.14	-114.66	158.21	-157.44	0.61	0.44	2.88
3,233.00	8.24	131.05	3,221.14	-123.77	168.43	-167.61	0.35	-0.29	-1.33
3,328.00	7.74	130.89	3,315.21	-132.43	178.40	-177.52	0.53	-0.53	-0.17
3,423.00	7.55	130.98	3,409.37	-140.71	187.95	-187.01	0.20	-0.20	0.09
3,517.00	7.22	131.43	3,502.59	-148.66	197.04	-196.05	0.36	-0.35	0.48
3,612.00	7.11	131.66	3,596.85	-156.52	205.91	-204.87	0.12	-0.12	0.24
3,706.00	6.85	131.79	3,690.15	-164.13	214.43	-213.34	0.28	-0.28	0.14
3,801.00	6.88	131.04	3,784.47	-171.64	222.95	-221.81	0.10	0.03	-0.79
3,895.00	7.49	125.73	3,877.73	-178.91	232.17	-230.98	0.96	0.65	-5.65
3,989.00	7.58	121.33	3,970.92	-185.71	242.44	-241.20	0.62	0.10	-4.68
4,083.00	7.11	121.42	4,064.15	-191.97	252.70	-251.42	0.50	-0.50	0.10
4,177.00	7.27	123.93	4,157.41	-198.32	262.60	-261.28	0.38	0.17	2.67
4,271.00	7.61	124.39	4,250.62	-205.16	272.67	-271.30	0.37	0.36	0.49
4,365.00	7.99	120.34	4,343.75	-211.97	283.44	-282.03	0.71	0.40	-4.31
4,460.00	9.14	118.61	4,437.69	-218.92	295.77	-294.31	1.24	1.21	-1.82
4,554.00	8.17	118.78	4,530.62	-225.71	308.18	-306.67	1.03	-1.03	0.18
4,649.00	8.95	121.62	4,624.56	-232.84	320.38	-318.83	0.93	0.82	2.99
4,743.00	9.72	125.00	4,717.31	-241.22	333.11	-331.50	1.01	0.82	3.60
4,838.00	9.18	124.87	4,811.02	-250.15	345.90	-344.23	0.57	-0.57	-0.14



MS Directional Survey Report



Company:	Marathon Oil	Local Co-ordinate Reference:	Well Crossbow WC Fed Com 703H
Project:	Eddy County, New Mexico (NAD 27)	TVD Reference:	WELL @ 3193.50usft (Cactus 171)
Site:	Crossbow WC Fed Com (703H, 704H)	MD Reference:	WELL @ 3193.50usft (Cactus 171)
Well:	Crossbow WC Fed Com 703H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Surveys	Database:	EDM 5000.15 Conroe DB

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,931.00	8.69	124.40	4,902.90	-258.36	357.78	-356.06	0.53	-0.53	-0.51
5,025.00	8.35	124.37	4,995.86	-266.23	369.27	-367.50	0.36	-0.36	-0.03
5,120.00	8.44	125.98	5,089.84	-274.22	380.61	-378.78	0.26	0.09	1.69
5,215.00	8.76	128.71	5,183.77	-282.84	391.90	-390.01	0.55	0.34	2.87
5,309.00	8.55	130.27	5,276.70	-291.83	402.81	-400.87	0.34	-0.22	1.66
5,404.00	8.12	130.09	5,370.70	-300.72	413.33	-411.33	0.45	-0.45	-0.19
5,498.00	7.34	131.00	5,463.84	-308.93	422.95	-420.89	0.84	-0.83	0.97
5,593.00	6.74	133.13	5,558.13	-316.73	431.59	-429.48	0.69	-0.63	2.24
5,688.00	6.90	132.27	5,652.46	-324.38	439.89	-437.72	0.20	0.17	-0.91
5,782.00	7.73	129.62	5,745.69	-332.20	448.93	-446.72	0.95	0.88	-2.82
5,876.00	7.85	127.43	5,838.82	-340.14	458.90	-456.63	0.34	0.13	-2.33
5,971.00	7.28	128.85	5,933.00	-347.86	468.74	-466.42	0.63	-0.60	1.49
6,066.00	8.32	129.09	6,027.11	-355.97	478.76	-476.39	1.10	1.09	0.25
6,161.00	8.50	129.97	6,121.09	-364.81	489.48	-487.05	0.23	0.19	0.93
6,255.00	7.82	131.57	6,214.14	-373.52	499.59	-497.10	0.76	-0.72	1.70
6,349.00	7.44	132.89	6,307.31	-381.90	508.83	-506.29	0.45	-0.40	1.40
6,443.00	7.79	137.49	6,400.48	-390.74	517.59	-514.99	0.75	0.37	4.89
6,539.00	8.24	139.14	6,495.54	-400.74	526.49	-523.82	0.53	0.47	1.72
6,633.00	7.02	136.46	6,588.71	-410.00	534.85	-532.12	1.35	-1.30	-2.85
6,726.00	6.75	130.45	6,681.04	-417.66	542.93	-540.15	0.83	-0.29	-6.46
6,821.00	8.22	125.48	6,775.23	-425.23	552.71	-549.88	1.69	1.55	-5.23
6,916.00	8.03	122.68	6,869.28	-432.75	563.82	-560.94	0.46	-0.20	-2.95
7,010.00	6.84	122.48	6,962.48	-439.30	574.07	-571.15	1.27	-1.27	-0.21
7,105.00	8.01	121.74	7,056.69	-445.82	584.47	-581.50	1.24	1.23	-0.78
7,199.00	8.80	121.92	7,149.67	-453.07	596.15	-593.13	0.84	0.84	0.19
7,294.00	7.96	120.72	7,243.66	-460.27	607.97	-604.90	0.90	-0.88	-1.26
7,388.00	6.91	119.52	7,336.87	-466.38	618.49	-615.38	1.13	-1.12	-1.28
7,483.00	6.53	125.82	7,431.22	-472.36	627.84	-624.69	0.87	-0.40	6.63
7,578.00	6.90	128.57	7,525.56	-479.08	636.68	-633.49	0.52	0.39	2.89
7,673.00	7.01	126.84	7,619.87	-486.11	645.78	-642.54	0.25	0.12	-1.82
7,767.00	7.04	124.01	7,713.16	-492.78	655.15	-651.86	0.37	0.03	-3.01
7,863.00	8.52	121.62	7,808.27	-499.80	666.08	-662.75	1.58	1.54	-2.49
7,959.00	8.27	121.67	7,903.25	-507.15	678.01	-674.63	0.26	-0.26	0.05
8,054.00	7.51	122.43	7,997.35	-514.07	689.07	-685.64	0.81	-0.80	0.80
8,148.00	7.82	130.70	8,090.51	-521.53	699.10	-695.63	1.22	0.33	8.80
8,242.00	7.56	132.11	8,183.66	-529.85	708.54	-705.01	0.34	-0.28	1.50
8,336.00	6.77	130.73	8,276.93	-537.61	717.32	-713.74	0.86	-0.84	-1.47
8,565.00	18.91	247.77	8,501.92	-560.76	692.88	-689.14	9.94	5.30	51.11
8,660.00	25.56	249.88	8,589.81	-573.65	659.35	-655.53	7.05	7.00	2.22
8,755.00	31.79	249.45	8,673.12	-589.50	616.63	-612.71	6.56	6.56	-0.45
8,850.00	39.44	259.39	8,750.35	-603.87	563.42	-559.40	10.08	8.05	10.46
8,944.00	45.43	260.66	8,819.70	-614.81	500.97	-496.88	6.44	6.37	1.35
9,039.00	51.23	269.00	8,882.89	-620.96	430.42	-426.30	8.95	6.11	8.78



MS Directional Survey Report



Company:	Marathon Oil	Local Co-ordinate Reference:	Well Crossbow WC Fed Com 703H
Project:	Eddy County, New Mexico (NAD 27)	TVD Reference:	WELL @ 3193.50usft (Cactus 171)
Site:	Crossbow WC Fed Com (703H, 704H)	MD Reference:	WELL @ 3193.50usft (Cactus 171)
Well:	Crossbow WC Fed Com 703H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Surveys	Database:	EDM 5000.15 Conroe DB

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
9,133.00	59.42	272.61	8,936.34	-619.76	353.22	-349.10	9.27	8.71	3.84
9,228.00	67.92	268.54	8,978.45	-619.01	268.18	-264.07	9.73	8.95	-4.28
9,341.83	78.93	269.42	9,010.87	-620.93	159.26	-155.14	9.70	9.67	0.77
FTP, HL Intersection -9341.83' MD									
9,511.00	95.30	270.62	9,019.36	-620.87	-9.12	13.23	9.70	9.68	0.71
9,586.00	89.78	271.04	9,016.03	-619.78	-84.00	88.11	7.38	-7.36	0.56
9,590.00	95.01	269.80	9,015.87	-619.75	-88.00	92.11	134.37	130.75	-31.00
9,686.00	90.09	271.25	9,011.60	-618.87	-183.87	187.97	5.34	-5.13	1.51
9,781.00	90.53	275.88	9,011.08	-612.96	-278.66	282.72	4.90	0.46	4.87
9,875.00	92.02	276.96	9,008.99	-602.46	-372.04	376.03	1.96	1.59	1.15
9,970.00	93.39	273.48	9,004.51	-593.82	-466.52	470.45	3.93	1.44	-3.66
10,064.00	93.43	269.69	8,998.91	-591.23	-560.30	564.21	4.02	0.04	-4.03
10,159.00	94.71	266.18	8,992.17	-594.64	-654.99	658.92	3.92	1.35	-3.69
10,222.00	95.41	263.90	8,986.61	-600.06	-717.50	721.47	3.77	1.11	-3.62
10,253.00	95.85	262.98	8,983.57	-603.59	-748.15	752.14	3.28	1.42	-2.97
10,347.00	90.84	262.58	8,978.09	-615.38	-841.22	845.28	5.35	-5.33	-0.43
10,441.00	90.09	263.93	8,977.32	-626.42	-934.56	938.69	1.64	-0.80	1.44
10,536.00	90.05	266.43	8,977.21	-634.40	-1,029.22	1,033.40	2.63	-0.04	2.63
10,630.00	90.09	268.51	8,977.09	-638.55	-1,123.12	1,127.33	2.21	0.04	2.21
10,724.00	89.78	268.33	8,977.20	-641.14	-1,217.08	1,221.31	0.38	-0.33	-0.19
10,819.00	91.32	269.64	8,976.29	-642.82	-1,312.06	1,316.29	2.13	1.62	1.38
10,913.00	90.57	269.42	8,974.74	-643.60	-1,406.04	1,410.28	0.83	-0.80	-0.23
11,008.00	92.33	270.66	8,972.33	-643.53	-1,501.01	1,505.24	2.27	1.85	1.31
11,102.00	90.93	269.76	8,969.66	-643.19	-1,594.96	1,599.19	1.77	-1.49	-0.96
11,197.00	90.49	269.76	8,968.48	-643.58	-1,689.96	1,694.19	0.46	-0.46	0.00
11,292.00	89.91	268.58	8,968.15	-644.96	-1,784.94	1,789.18	1.38	-0.61	-1.24
11,386.00	89.74	268.53	8,968.44	-647.33	-1,878.91	1,883.16	0.19	-0.18	-0.05
11,481.00	89.83	268.57	8,968.79	-649.73	-1,973.88	1,978.15	0.10	0.09	0.04
11,575.00	89.69	270.29	8,969.19	-650.67	-2,067.87	2,072.14	1.84	-0.15	1.83
11,671.00	89.69	270.29	8,969.71	-650.18	-2,163.87	2,168.13	0.00	0.00	0.00
11,765.00	90.09	270.45	8,969.89	-649.58	-2,257.87	2,262.13	0.46	0.43	0.17
11,861.00	90.53	270.80	8,969.37	-648.53	-2,353.86	2,358.11	0.59	0.46	0.36
11,956.00	91.06	270.98	8,968.05	-647.05	-2,448.84	2,453.08	0.59	0.56	0.19
12,050.00	90.49	270.62	8,966.78	-645.74	-2,542.82	2,547.05	0.72	-0.61	-0.38
12,145.00	90.62	270.47	8,965.86	-644.84	-2,637.81	2,642.03	0.21	0.14	-0.16
12,239.00	90.62	270.48	8,964.84	-644.06	-2,731.80	2,736.01	0.01	0.00	0.01
12,334.00	90.53	270.66	8,963.89	-643.11	-2,826.79	2,831.00	0.21	-0.09	0.19
12,429.00	89.87	270.87	8,963.56	-641.85	-2,921.78	2,925.98	0.73	-0.69	0.22
12,524.00	89.78	270.70	8,963.85	-640.54	-3,016.77	3,020.96	0.20	-0.09	-0.18
12,618.00	89.78	270.61	8,964.21	-639.47	-3,110.77	3,114.94	0.10	0.00	-0.10
12,713.00	90.44	270.94	8,964.03	-638.18	-3,205.76	3,209.92	0.78	0.69	0.35
12,808.00	91.19	271.08	8,962.67	-636.51	-3,300.73	3,304.88	0.80	0.79	0.15
12,903.00	91.67	271.07	8,960.30	-634.73	-3,395.69	3,399.82	0.51	0.51	-0.01
12,998.00	90.13	270.96	8,958.81	-633.05	-3,490.66	3,494.78	1.63	-1.62	-0.12



MS Directional Survey Report



Company:	Marathon Oil	Local Co-ordinate Reference:	Well Crossbow WC Fed Com 703H
Project:	Eddy County, New Mexico (NAD 27)	TVD Reference:	WELL @ 3193.50usft (Cactus 171)
Site:	Crossbow WC Fed Com (703H, 704H)	MD Reference:	WELL @ 3193.50usft (Cactus 171)
Well:	Crossbow WC Fed Com 703H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Surveys	Database:	EDM 5000.15 Conroe DB

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
13,092.00	90.09	270.36	8,958.63	-631.96	-3,584.65	3,588.76	0.64	-0.04	-0.64
13,187.00	89.87	268.74	8,958.66	-632.71	-3,679.64	3,683.76	1.72	-0.23	-1.71
13,282.00	89.87	268.98	8,958.88	-634.60	-3,774.62	3,778.75	0.25	0.00	0.25
13,377.00	93.12	270.24	8,956.40	-635.25	-3,869.58	3,873.70	3.67	3.42	1.33
13,471.00	92.42	270.46	8,951.86	-634.67	-3,963.46	3,967.59	0.78	-0.74	0.23
13,567.00	91.50	269.39	8,948.57	-634.80	-4,059.40	4,063.53	1.47	-0.96	-1.11
13,661.00	89.12	268.38	8,948.07	-636.63	-4,153.38	4,157.51	2.75	-2.53	-1.07
13,758.00	90.71	269.17	8,948.21	-638.70	-4,250.35	4,254.49	1.83	1.64	0.81
13,853.00	90.57	269.31	8,947.15	-639.96	-4,345.34	4,349.49	0.21	-0.15	0.15
13,949.00	90.27	268.86	8,946.45	-641.49	-4,441.32	4,445.48	0.56	-0.31	-0.47
14,044.00	90.22	268.27	8,946.04	-643.87	-4,536.29	4,540.46	0.62	-0.05	-0.62
14,139.00	90.97	268.61	8,945.05	-646.46	-4,631.25	4,635.44	0.87	0.79	0.36
14,233.00	90.00	267.50	8,944.26	-649.65	-4,725.19	4,729.39	1.57	-1.03	-1.18
14,327.00	92.95	269.03	8,941.84	-652.49	-4,819.10	4,823.32	3.53	3.14	1.63
14,423.00	91.41	268.16	8,938.19	-654.85	-4,915.00	4,919.24	1.84	-1.60	-0.91
14,519.00	91.19	268.08	8,936.01	-658.00	-5,010.92	5,015.18	0.24	-0.23	-0.08
14,614.00	92.38	269.08	8,933.05	-660.35	-5,105.85	5,110.11	1.64	1.25	1.05
14,709.00	92.29	270.71	8,929.18	-660.52	-5,200.76	5,205.03	1.72	-0.09	1.72
14,803.00	92.33	270.55	8,925.39	-659.49	-5,294.68	5,298.94	0.18	0.04	-0.17
14,897.00	92.02	270.72	8,921.82	-658.45	-5,388.61	5,392.86	0.38	-0.33	0.18
14,991.00	92.33	270.58	8,918.25	-657.38	-5,482.53	5,486.77	0.36	0.33	-0.15
15,086.00	91.58	270.79	8,915.01	-656.25	-5,577.47	5,581.70	0.82	-0.79	0.22
15,181.00	91.63	270.33	8,912.35	-655.32	-5,672.43	5,676.65	0.49	0.05	-0.48
15,276.00	92.02	270.40	8,909.33	-654.72	-5,767.38	5,771.59	0.42	0.41	0.07
15,370.00	91.67	270.21	8,906.30	-654.22	-5,861.33	5,865.54	0.42	-0.37	-0.20
15,464.00	90.40	269.71	8,904.60	-654.28	-5,955.31	5,959.52	1.45	-1.35	-0.53
15,559.00	92.42	270.31	8,902.26	-654.26	-6,050.28	6,054.48	2.22	2.13	0.63
15,655.00	93.21	270.88	8,897.55	-653.27	-6,146.15	6,150.35	1.01	0.82	0.59
15,749.00	93.43	270.46	8,892.11	-652.17	-6,239.99	6,244.18	0.50	0.23	-0.45
15,842.00	91.45	270.28	8,888.15	-651.57	-6,332.90	6,337.08	2.14	-2.13	-0.19
15,885.00	90.72	271.43	8,887.33	-650.93	-6,375.89	6,380.06	3.17	-1.70	2.67
15,980.00	89.93	271.29	8,886.79	-648.68	-6,470.86	6,475.02	0.84	-0.83	-0.15
16,076.00	90.41	271.04	8,886.51	-646.72	-6,566.84	6,570.98	0.56	0.50	-0.26
16,171.00	90.50	271.22	8,885.75	-644.85	-6,661.81	6,665.94	0.21	0.09	0.19
16,359.00	89.98	269.85	8,884.97	-643.10	-6,849.80	6,853.91	0.78	-0.28	-0.73
16,453.00	91.08	270.71	8,884.10	-642.64	-6,943.79	6,947.90	1.49	1.17	0.91
16,548.00	88.97	269.23	8,884.06	-642.69	-7,038.78	7,042.89	2.71	-2.22	-1.56
16,643.00	88.79	269.74	8,885.91	-643.54	-7,133.76	7,137.87	0.57	-0.19	0.54
16,738.00	89.14	269.83	8,887.63	-643.90	-7,228.75	7,232.86	0.38	0.37	0.09
16,832.00	89.63	270.40	8,888.64	-643.71	-7,322.74	7,326.85	0.80	0.52	0.61
16,927.00	89.98	269.60	8,888.96	-643.71	-7,417.74	7,421.84	0.92	0.37	-0.84
17,021.00	92.48	269.57	8,886.94	-644.39	-7,511.71	7,515.81	2.66	2.66	-0.03
17,116.00	92.48	269.66	8,882.83	-645.03	-7,606.61	7,610.73	0.09	0.00	0.09



MS Directional Survey Report



Company:	Marathon Oil	Local Co-ordinate Reference:	Well Crossbow WC Fed Com 703H
Project:	Eddy County, New Mexico (NAD 27)	TVD Reference:	WELL @ 3193.50usft (Cactus 171)
Site:	Crossbow WC Fed Com (703H, 704H)	MD Reference:	WELL @ 3193.50usft (Cactus 171)
Well:	Crossbow WC Fed Com 703H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Surveys	Database:	EDM 5000.15 Conroe DB

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
17,211.00	91.74	269.40	8,879.34	-645.80	-7,701.55	7,705.66	0.83	-0.78	-0.27
17,305.00	90.29	270.49	8,877.67	-645.89	-7,795.53	7,799.64	1.93	-1.54	1.16
17,400.00	92.79	271.40	8,875.12	-644.33	-7,890.47	7,894.57	2.80	2.63	0.96
17,494.00	94.02	272.47	8,869.53	-641.16	-7,984.25	7,988.33	1.73	1.31	1.14
17,589.00	92.18	273.24	8,864.40	-636.44	-8,078.99	8,083.03	2.10	-1.94	0.81
17,684.00	89.89	271.31	8,862.68	-632.67	-8,173.89	8,177.90	3.15	-2.41	-2.03
17,778.00	89.45	268.43	8,863.22	-632.88	-8,267.87	8,271.89	3.10	-0.47	-3.06
17,873.00	91.91	266.93	8,862.10	-636.72	-8,362.78	8,366.82	3.03	2.59	-1.58
17,968.00	92.26	267.00	8,858.64	-641.75	-8,457.58	8,461.65	0.38	0.37	0.07
18,062.00	91.38	266.53	8,855.65	-647.05	-8,551.39	8,555.49	1.06	-0.94	-0.50
18,157.00	91.08	266.22	8,853.61	-653.06	-8,646.17	8,650.31	0.45	-0.32	-0.33
18,251.00	91.08	266.33	8,851.84	-659.16	-8,739.96	8,744.14	0.12	0.00	0.12
18,346.00	90.95	266.27	8,850.16	-665.29	-8,834.75	8,838.96	0.15	-0.14	-0.06
18,440.00	90.11	265.48	8,849.29	-672.05	-8,928.50	8,932.76	1.23	-0.89	-0.84
18,534.00	90.90	266.03	8,848.46	-679.01	-9,022.23	9,026.54	1.02	0.84	0.59
18,630.00	90.95	266.86	8,846.91	-684.96	-9,118.04	9,122.38	0.87	0.05	0.86
18,724.00	91.43	267.00	8,844.96	-690.00	-9,211.88	9,216.25	0.53	0.51	0.15
18,819.00	90.73	266.44	8,843.17	-695.43	-9,306.71	9,311.11	0.94	-0.74	-0.59
18,914.00	90.73	266.50	8,841.96	-701.28	-9,401.52	9,405.96	0.06	0.00	0.06
19,008.00	92.48	266.37	8,839.33	-707.12	-9,495.30	9,499.78	1.87	1.86	-0.14
19,102.00	92.88	266.22	8,834.93	-713.19	-9,589.00	9,593.52	0.45	0.43	-0.16
19,155.00	92.44	266.05	8,832.47	-716.76	-9,641.82	9,646.36	0.89	-0.83	-0.32
19,216.18	92.44	266.05	8,829.87	-720.97	-9,702.80	9,707.37	0.00	0.00	0.00
LTP, HL Intersection -19216.18' MD									
19,228.00	92.44	266.05	8,829.36	-721.78	-9,714.58	9,719.15	0.00	0.00	0.00
Projection to TD-19228.00' MD									

Design Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
FTP	0.00	0.01	0.00	-619.74	159.27	480,674.74	539,890.87	32° 19' 17.130 N	104° 12' 15.114 W
- hit/miss target									
- Shape									
- actual wellpath misses target center by 639.88usft at 1.06usft MD (1.06 TVD, 0.00 N, 0.00 E)									
- Point									
LTP	0.00	0.00	0.00	-720.97	-9,702.80	480,573.51	530,028.80	32° 19' 16.231 N	104° 14' 10.047 W
- hit/miss target									
- Shape									
- actual wellpath misses target center by 8829.37usft at 19228.00usft MD (8829.36 TVD, -721.78 N, -9714.58 E)									
- Point									



MS Directional
Survey Report



Company:	Marathon Oil	Local Co-ordinate Reference:	Well Crossbow WC Fed Com 703H
Project:	Eddy County, New Mexico (NAD 27)	TVD Reference:	WELL @ 3193.50usft (Cactus 171)
Site:	Crossbow WC Fed Com (703H, 704H)	MD Reference:	WELL @ 3193.50usft (Cactus 171)
Well:	Crossbow WC Fed Com 703H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Surveys	Database:	EDM 5000.15 Conroe DB

Design Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment	
		+N/-S (usft)	+E/-W (usft)		
9,341.83	9,010.87	-620.93	159.26	FTP, HL Intersection -9341.83' MD	
19,216.18	8,829.87	-720.97	-9,702.80	LTP, HL Intersection -19216.18' MD	
19,228.00	8,829.36	-721.78	-9,714.58	Projection to TD-19228.00' MD	

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 98220	³ Pool Name PURPLE SAGE; WOLFCAMP GAS
⁴ Property Code	⁵ Property Name CROSSBOW WC FED COM	⁶ Well Number 703H
⁷ OGRID No. 372098	⁸ Operator Name MARATHON OIL PERMIAN LLC	⁹ Elevation 3171'

¹⁰ Surface Location

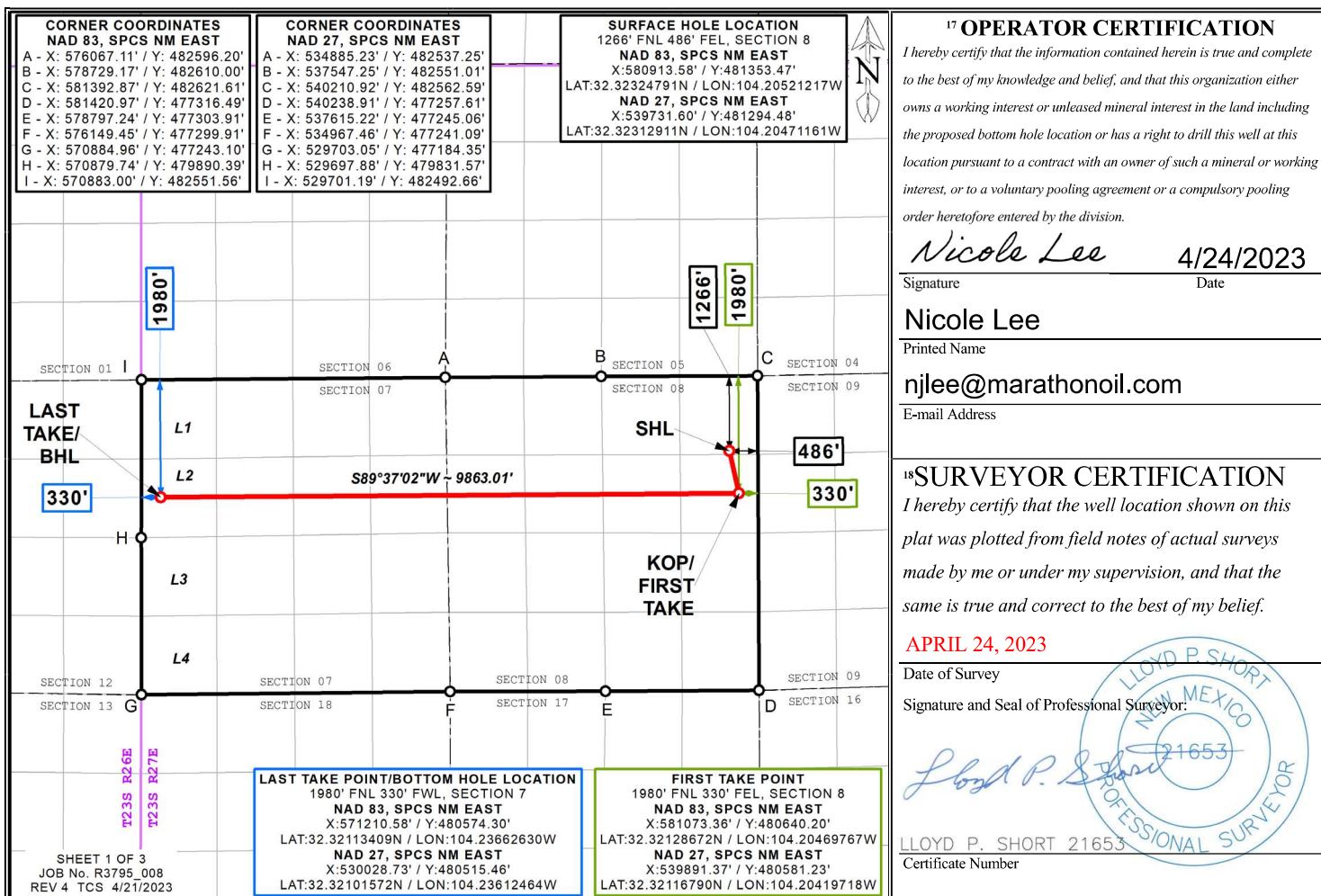
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
A	8	23S	27E		1266	NORTH	486	EAST	EDDY

¹¹ Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
L 2	7	23S	27E		1980	NORTH	330	WEST	EDDY

¹² Dedicated Acres 1275.84	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.



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Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

CONDITIONS

Action 396492

CONDITIONS

Operator: MARATHON OIL PERMIAN LLC 990 Town & Country Blvd. Houston, TX 77024	OGRID: 372098
	Action Number: 396492
	Action Type: [C-103] NOI Change of Plans (C-103A)

CONDITIONS

Created By	Condition	Condition Date
ward.rikala	All original COA's still apply. Additionally, if cement is not circulated to surface during cementing operations, then a CBL is required.	10/29/2024