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Form 3160-3
(June 2015)

EMNRD-OCD ARTESIA

FORM APPROVED
OMB No. 1004-0137
Expires: January 31, 2018UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

1a. Type of work: ☒ DRILL ☐ REENTER		5. Lease Serial No. NMNM032636	
1b. Type of Well: ☒ Oil Well ☐ Gas Well ☐ Other		6. If Indian, Allottee or Tribe Name	
1c. Type of Completion: ☐ Hydraulic Fracturing ☒ Single Zone ☐ Multiple Zone		7. If Unit or CA Agreement, Name and No.	
2. Name of Operator KAISER FRANCIS OIL COMPANY		8. Lease Name and Well No. MOSAIC FED 24193BS 1H 327121	
3a. Address 6733 S. Yale Ave. Tulsa OK 74121	3b. Phone No. (include area code) (918)491-0000	9. API Well No. 30 015 4681	
4. Location of Well (Report location clearly and in accordance with any State requirements. *) At surface NWNW / 1105 FNL / 186 FWL / LAT 32.2952319 / LONG -104.0490537 At proposed prod. zone NENE / 660 FNL / 100 FEL / LAT 32.2960299 / LONG -104.0158571		10. Field and Pool, or Exploratory CULEBRA BLUFF / BONE SPRING SOU	
11. Sec., T. R. M. or Blk. and Survey or Area SEC 24 / T23S / R28E / NMP		12. County or Parish EDDY	
13. State NM		14. Distance in miles and direction from nearest town or post office* 3 miles	
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) 186 feet	16. No of acres in lease 1040.32	17. Spacing, Unit dedicated to this well 320	
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. 30 feet	19. Proposed Depth 9593 feet / 19754 feet	20. BLM/BIA Bond No. in file FED: WYB000055	
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 2987 feet	22. Approximate date work will start* 06/01/2019	23. Estimated duration 40 days	
24. Attachments			
The following, completed in accordance with the requirements of Onshore Oil and Gas Order No. 1, and the Hydraulic Fracturing rule per 43 CFR 3162.3-3 (as applicable)			
1. Well plat certified by a registered surveyor.		4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above).	
2. A Drilling Plan.		5. Operator certification.	
3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO must be filed with the appropriate Forest Service Office).		6. Such other site specific information and/or plans as may be requested by the BLM.	
25. Signature (Electronic Submission)	Name (Printed/Typed) Stormi Davis / Ph: (575)308-3765	Date 03/18/2019	
Title Regulatory Analyst			
Approved by (Signature) (Electronic Submission)	Name (Printed/Typed) Cody Layton / Ph: (575)234-5959	Date 01/27/2020	
Title Assistant Field Manager Lands & Minerals			
Office CARLSBAD			
Application approval 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.			
Conditions of approval, if any, are attached.			
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.			

APPROVED WITH CONDITIONS
Approval Date: 01/27/2020

(Continued on page 2)

*(Instructions on page 2)

KS 2-10-20

Review and Appeal Rights

A person contesting a decision shall request a State Director review. This request must be filed within 20 working days of receipt of the Notice with the appropriate State Director (see 43 CFR 3165.3). The State Director review decision may be appealed to the Interior Board of Land Appeals, 801 North Quincy Street, Suite 300, Arlington, VA 22203 (see 43 CFR 3165.4). Contact the above listed Bureau of Land Management office for further information.

CONFIDENTIAL

**PECOS DISTRICT
DRILLING OPERATIONS
CONDITIONS OF APPROVAL**

OPERATOR'S NAME:	Kaiser Francis Oil Company
LEASE NO.:	NMNM032636
WELL NAME & NO.:	Mosaic Fed 2419 3BS 1H
SURFACE HOLE FOOTAGE:	1105' FNL & 186' FWL
BOTTOM HOLE FOOTAGE:	660' FNL & 100' FEL
LOCATION:	Section 24, T 23S, R 28E, NMPM
COUNTY:	Eddy County, New Mexico

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

A. HYDROGEN SULFIDE

1. Hydrogen Sulfide (H2S) monitors shall be installed prior to drilling out the surface shoe. If H2S is detected in concentrations greater than 100 ppm, the Hydrogen Sulfide area shall meet Onshore Order 6 requirements, which includes equipment and personnel/public protection items. If Hydrogen Sulfide is encountered, provide measured values and formations to the BLM.

B. CASING

1. The 13-3/8" surface casing shall be set at approximately **500'** (a minimum of 75' 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.
 - 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 the shoe.
 - 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 **10-3/4"** intermediate casing shall be set at approximately **2850'** and cemented to surface.
 - a. **If cement does not circulate to surface**, see B.1.a, c & d.
 - b. Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to cave/karst or potash.
 - c. This casing must be kept at least 1/3 full at all times in order to meet BLM collapse requirements.
 - d. This casing is utilizing a specialty coupling clearance with OD **11-1/4"**.
3. The **7-5/8"** intermediate casing shall be cemented with at least **200' tie-back** into the previous casing. Operator shall provide method of verification.
 - a. In Medium Cave/Karst, if cement does not circulate to surface on the first two casing strings, the cement on the 3rd casing string must come to surface.
4. The **5-1/2"** production casing shall be cemented with at least **200' tie-back** into the previous casing. Operator shall provide method of verification.

C. PRESSURE CONTROL

1. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **5000 (5M) psi**.
2. Required safety valves, with appropriate wrenches and subs for the drill string being utilized, will be in the open position and accessible on the rig floor.

D. SPECIAL REQUIREMENTS

1. 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.
 - a. 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 1/6/2020

GENERAL REQUIREMENTS

1. The BLM is to be notified in advance for a representative to witness:
 - a. Spudding the well (minimum of 24 hours)
 - b. Setting and/or Cementing of all casing strings (minimum of 4 hours)
 - c. BOP/BOPE tests (minimum of 4 hours)
 - ☒ Eddy County: Call the Carlsbad Field Office, (575) 361-2822
 - ☒ Lea County: Call the Hobbs Field Station, (575) 393-3612
2. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval.
 - a. In the event the operator has proposed to drill multiple wells utilizing a skid/walking rig. Operator shall secure the wellbore on the current well, after installing and testing the wellhead, by installing a blind flange of like pressure rating to the wellhead and a pressure gauge that can be monitored while drilling is performed on the other well(s).
 - b. When the operator proposes to set surface casing with Spudder Rig:
 - i. Notify the BLM when moving in and removing the Spudder Rig.
 - ii. Notify the BLM when moving in the 2nd Rig. Rig to be moved in within 90 days of notification that Spudder Rig has left the location.
 - iii. BOP/BOPE test to be conducted per Onshore Oil and Gas Order No. 2 as soon as 2nd Rig is rigged up on well.
3. Floor controls are required for 3M or Greater systems. These controls will be on the rig floor, unobstructed, readily accessible to the driller and will be operational at all times during drilling and/or completion activities. Rig floor is defined as the area immediately around the rotary table; the area immediately above the substructure on which the draw works are located, this does not include the dog house or stairway area.
4. The record of the drilling rate along with the GR/N well log run from TD to surface (horizontal well – vertical portion of hole) shall be available upon request. The Rustler top and top and bottom of Salt are to be recorded on the Completion Report.

A. CASING

1. Changes to the approved APD casing program need prior approval if the items substituted are of lesser grade or different casing size or are Non-API. The Operator can exchange the components of the proposal with that of superior strength (i.e. changing from J-55 to N-80, or from 36# to 40#). Changes to the approved cement program need prior approval if the altered cement plan has less volume or strength or if the changes are substantial (i.e. Multistage tool, ECP, etc.). The initial wellhead installed on the well will remain on the well with spools used as needed.
2. Wait on cement (WOC) for Potash Areas: After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the

following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi for all cement blends, 2) until cement has been in place at least 24 hours. WOC time will be recorded in the driller's log. The casing integrity test can be done (prior to the cement setting up) immediately after bumping the plug.

3. Wait on cement (WOC) for Water Basin: After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi at the shoe, 2) until cement has been in place at least 8 hours. WOC time will be recorded in the driller's log. See individual casing strings for details regarding lead cement slurry requirements. The casing integrity test can be done (prior to the cement setting up) immediately after bumping the plug.
4. Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. Have well-specific cement details onsite prior to pumping the cement for each casing string.
5. No pea gravel permitted for remedial or fall back remedial without prior authorization from the BLM engineer.
6. On the portion of well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Formation at the shoe shall be tested to a minimum of the mud weight equivalent anticipated to control the formation pressure to the next casing depth or at total depth of the well. This test shall be performed before drilling more than 20 feet of new hole.
7. If hardband drill pipe is rotated inside casing, returns will be monitored for metal. If metal is found in samples, drill pipe will be pulled and rubber protectors which have a larger diameter than the tool joints of the drill pipe will be installed prior to continuing drilling operations.
8. Whenever a casing string is cemented in the R-111-P potash area, the NMOCD requirements shall be followed.

B. PRESSURE CONTROL

1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API RP 53 Sec. 17.
2. If a variance is approved for a flexible hose to be installed from the BOP to the choke manifold, the following requirements apply: The flex line must meet the requirements of API 16C. Check condition of flexible line from BOP to choke manifold, replace if exterior is damaged or if line fails test. Line to be as straight as possible with no hard bends and is to be anchored according to Manufacturer's requirements. The flexible hose can be exchanged with a hose of equal size and equal or greater pressure rating. Anchor requirements, specification sheet and hydrostatic pressure test certification matching the hose in service, to be onsite for review. These documents shall be posted in the company man's trailer and on the rig floor.
3. If the operator has proposed a multi-bowl wellhead assembly in the APD. The following requirements must be met:

- a. Wellhead shall be installed by manufacturer's representatives, submit documentation with subsequent sundry.
 - b. If the welding is performed by a third party, the manufacturer's representative shall monitor the temperature to verify that it does not exceed the maximum temperature of the seal.
 - c. Manufacturer representative shall install the test plug for the initial BOP test.
 - d. If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head shall be cut off, cementing operations performed and another wellhead installed.
 - e. Whenever any seal subject to test pressure is broken, all the tests in Onshore Order 2 III.A.2.i must be followed.
5. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the BOP/BOPE tests.
- a. In a water basin, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. The casing cut-off and BOP installation can be initiated four hours after installing the slips, which will be approximately six hours after bumping the plug. For those casing strings not using slips, the minimum wait time before cut-off is eight hours after bumping the plug. BOP/BOPE testing can begin after cut-off or once cement reaches 500 psi compressive strength (including lead when specified), whichever is greater. However, if the float does not hold, cut-off cannot be initiated until cement reaches 500 psi compressive strength (including lead when specified).
 - b. In potash areas, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. For all casing strings, casing cut-off and BOP installation can be initiated at twelve hours after bumping the plug. However, **no tests** shall commence until the cement has had a minimum of 24 hours setup time, except the casing pressure test which can be initiated immediately after bumping the plug (only applies to single-stage cement jobs).
 - c. The tests shall be done by an independent service company utilizing a test plug. The results of the test shall be made available upon request.
 - d. The test shall be run on a 5000 psi chart for a 2-3M BOP/BOP, on a 10000 psi chart for a 5M BOP/BOPE and on a 15000 psi chart for a 10M BOP/BOPE. If a linear chart is used, it shall be a one hour chart. A circular chart shall have a maximum 2 hour clock. If a twelve hour or twenty-four hour chart is used, tester shall make a notation that it is run with a two hour clock.
 - e. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes. This test shall be performed prior to the test at full stack pressure.
 - f. BOP/BOPE must be tested within 500 feet of the top of the Wolfcamp formation if the time between the setting of the intermediate casing and reaching this depth

exceeds 20 days. This test does not exclude the test prior to drilling out the casing shoe as per Onshore Order No. 2.

C. DRILLING MUD

1. Mud system monitoring equipment, with derrick floor indicators and visual and audio alarms, shall be operating before drilling into the Wolfcamp formation, and shall be used until production casing is run and cemented.

D. WASTE MATERIAL AND FLUIDS

1. All waste (i.e. drilling fluids, trash, salts, chemicals, sewage, gray water, etc.) created as a result of drilling operations and completion operations shall be safely contained and disposed of properly at a waste disposal facility. No waste material or fluid shall be disposed of on the well location or surrounding area.
2. Porto-johns and trash containers will be on-location during fracturing operations or any other crew-intensive operations.



U.S. Department of the Interior
BUREAU OF LAND MANAGEMENT

Operator Certification Data Report

01/29/2020

Operator Certification

I hereby certify that I, or someone under my direct supervision, have inspected the drill site and access route proposed herein; that I am familiar with the conditions which currently exist; that I have full knowledge of state and Federal laws applicable to this operation; that the statements made in this APD package are, to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed in conformity with this APD package and the terms and conditions under which it is approved. I also certify that I, or the company I represent, am responsible for the operations conducted under this application. These statements are subject to the provisions of 18 U.S.C. 1001 for the filing of false statements.

NAME: Stormi Davis

Title: Regulatory Analyst

Street Address: 106 W. Riverside Drive

City: Carlsbad

State: NM

Signed on: 03/18/2019

Phone: (575)308-3765

Zip: 88220

Email address: nmogrservices@gmail.com

Field Representative

Representative Name:

Street Address: P.O. Box 21468

City: Tulsa

State: OK

Zip: 74121-1468

Phone: (918)527-5260

Email address:



U.S. Department of the Interior
BUREAU OF LAND MANAGEMENT

Application Data Report

01/29/2020

APD ID: 10400039840

Submission Date: 03/18/2019

Highlighted data
reflects the most
recent changes

Operator Name: KAISER FRANCIS OIL COMPANY

Well Name: MOSAIC FED 2419 3BS

Well Number: 1H

[Show Final Text](#)

Well Type: OIL WELL

Well Work Type: Drill

Section 1 - General

APD ID: 10400039840

Tie to previous NOS? N

Submission Date: 03/18/2019

BLM Office: CARLSBAD

User: Stormi Davis

Title: Regulatory Analyst

Federal/Indian APD: FED

Is the first lease penetrated for production Federal or Indian? FED

Lease number: NMNM032636

Lease Acres: 1040.32

Surface access agreement in place?

Allotted?

Reservation:

Agreement in place? NO

Federal or Indian agreement:

Agreement number:

Agreement name:

Keep application confidential? YES

Permitting Agent? NO

APD Operator: KAISER FRANCIS OIL COMPANY

Operator letter of designation:

Operator Info

Operator Organization Name: KAISER FRANCIS OIL COMPANY

Operator Address: 6733 S. Yale Ave.

Operator PO Box: PO Box 21468

Zip: 74121

Operator City: Tulsa

State: OK

Operator Phone: (918)491-0000

Operator Internet Address:

Section 2 - Well Information

Well in Master Development Plan? NO

Master Development Plan name:

Well in Master SUPO? NO

Master SUPO name:

Well in Master Drilling Plan? NO

Master Drilling Plan name:

Well Name: MOSAIC FED 2419 3BS

Well Number: 1H

Well API Number:

Field/Pool or Exploratory? Field and Pool

Field Name: CULEBRA BLUFF

Pool Name: BONE SPRING
SOUTH

Is the proposed well in an area containing other mineral resources? NATURAL GAS,OIL

Operator Name: KAISER FRANCIS OIL COMPANY

Well Name: MOSAIC FED 2419 3BS

Well Number: 1H

Is the proposed well in an area containing other mineral resources? NATURAL GAS,OIL

Is the proposed well in a Helium production area? N Use Existing Well Pad? NO New surface disturbance?

Type of Well Pad: MULTIPLE WELL

Multiple Well Pad Name:

Number: 1

Well Class: HORIZONTAL

MOSAIC FED 2419

Number of Legs: 1

Well Work Type: Drill

Well Type: OIL WELL

Describe Well Type:

Well sub-Type: EXPLORATORY (WILDCAT)

Describe sub-type:

Distance to town: 3 Miles

Distance to nearest well: 30 FT

Distance to lease line: 186 FT

Reservoir well spacing assigned acres Measurement: 320 Acres

Well plat: Mosaic_Fed_2419_3BS_1H_C102_20190313152656.pdf

Mosaic_Fed_2419_3BS_1H_Pymt_Rec_20190318152100.pdf

Well work start Date: 06/01/2019

Duration: 40 DAYS

Section 3 - Well Location Table

Survey Type: RECTANGULAR

Describe Survey Type:

Datum: NAD83

Vertical Datum: NAVD88

Survey number: 6881

Reference Datum:

Wellbore	NS-Foot	NS Indicator	EW-Foot	EW Indicator	Twsp	Range	Section	Aliquot/Lot/Tract	Latitude	Longitude	County	State	Meridian	Lease Type	Lease Number	Elevation	MD	TVD	Will this well produce from this lease?
SHL Leg #1	110 5	FNL	186	FW L	23S	28E	24	Aliquot NWN W	32.29523 19	- 104.0490 537	EDD Y	NEW MEXI CO	NEW MEXI CO	F	FEE	298 7	0	0	
KOP Leg #1	110 5	FNL	186	FW L	23S	28E	24	Aliquot NWN W	32.29647 69	- 104.0494 453	EDD Y	NEW MEXI CO	NEW MEXI CO	F	FEE	- 598 5	900 0	897 2	

Operator Name: KAISER FRANCIS OIL COMPANY

Well Name: MOSAIC FED 2419 3BS

Well Number: 1H

Wellbore	NS-Foot	NS Indicator	EW-Foot	EW Indicator	Twsp	Range	Section	Aliquot/Lot/Tract	Latitude	Longitude	County	State	Meridian	Lease Type	Lease Number	Elevation	MD	TVD	Will this well produce from this lease?
PPP Leg #1-1	660	FNL	1320	FEL	23S	28E	24	Aliquot NENE	32.2962944	- 104.0364212	EDD Y	NEW MEXI CO	NEW MEXI CO	F	NMNM 134866	- 6606	13410	9593	
PPP Leg #1-2	660	FNL	0	FW L	23S	29E	19	Aliquot NWN W	32.2962352	- 104.0322144	EDD Y	NEW MEXI CO	NEW MEXI CO	F	FEE	- 6606	14730	9593	
PPP Leg #1-3	660	FNL	2640	FW L	23S	28E	24	Aliquot NWNE	32.2963537	- 104.0406276	EDD Y	NEW MEXI CO	NEW MEXI CO	F	NMNM 032636	- 6606	12090	9593	
PPP Leg #1-4	660	FNL	100	FW L	23S	28E	24	Aliquot NWN W	32.2964559	- 104.0493359	EDD Y	NEW MEXI CO	NEW MEXI CO	F	FEE	- 6473	9550	9460	
EXIT Leg #1	660	FNL	100	FEL	23S	29E	19	Aliquot NENE	32.2960299	- 104.0158571	EDD Y	NEW MEXI CO	NEW MEXI CO	F	FEE	- 6606	19754	9593	
BHL Leg #1	660	FNL	100	FEL	23S	29E	19	Aliquot NENE	32.2960299	- 104.0158571	EDD Y	NEW MEXI CO	NEW MEXI CO	F	FEE	- 6606	19754	9593	



U.S. Department of the Interior
BUREAU OF LAND MANAGEMENT

Drilling Plan Data Report

01/29/2020

APD ID: 10400039840

Submission Date: 03/18/2019

Highlighted data
reflects the most
recent changes

Operator Name: KAISER FRANCIS OIL COMPANY

Well Name: MOSAIC FED 2419 3BS

Well Number: 1H

[Show Final Text](#)

Well Type: OIL WELL

Well Work Type: Drill

Section 1 - Geologic Formations

Formation ID	Formation Name	Elevation	True Vertical Depth	Measured Depth	Lithologies	Mineral Resources	Producing Formation
415067	---	2987	0	0		NONE	N
415072	DELAWARE	336	2651	2651		NATURAL GAS, OIL	N
415074	CHERRY CANYON	-394	3381	3381		NATURAL GAS, OIL	N
415075	BRUSHY CANYON	-1779	4766	4766		NATURAL GAS, OIL	N
415076	BONE SPRING	-3279	6266	6266		NATURAL GAS, OIL	N
415077	FIRST BONE SPRING SAND	-4329	7316	7316		NATURAL GAS, OIL	N
415078	BONE SPRING 2ND	-5099	8086	8086		NATURAL GAS, OIL	N
415081	BONE SPRING 3RD	-6354	9341	9341		NATURAL GAS, OIL	Y
415082	WOLFCAMP	-6604	9591	9591		NATURAL GAS, OIL	N

Section 2 - Blowout Prevention

Pressure Rating (PSI): 5M

Rating Depth: 18000

Equipment: A 10M system will be installed according to Onshore Order #2 consisting of an Annular Preventer, BOP with two rams and a blind ram. BOP will be equipped with 2 side outlets (choke side shall be a minimum 3" line, and kill side will be a minimum 2" line). Kill line will be installed with (2) valves and a check valve (2" min) of proper pressure rating for the system. Remote kill line (2" min) will be installed and ran to the outer edge of the substructure and be unobstructed. A manual and hydraulic valve (3" min) will be installed on the choke line, 3 chokes will be used with one being remotely controlled. Fill up line will be installed above the uppermost preventer. Pressure gauge of proper pressure rating will be installed on choke manifold. Upper and lower kelly cocks will be utilized with handles readily available in plain sight. A float sub will be available at all times. All connections subject to well pressure will be flanged, welded, or clamped.

Requesting Variance? YES

Variance request: Flex Hose Variance

Testing Procedure: BOP/BOPE will be tested by an independent service company to 250 psi low and the high pressure indicated above per Onshore Order 2 requirements. The System may be upgraded to a higher pressure but still tested to the working pressure listed in the table above. If the system is upgraded all of the components installed will be functional and tested.

Operator Name: KAISER FRANCIS OIL COMPANY

Well Name: MOSAIC FED 2419 3BS

Well Number: 1H

Choke Diagram Attachment:

Mosaic_Fed_2419_3BS_1H_Choke_Manifold_20190313143543.pdf

BOP Diagram Attachment:

Mosaic_Fed_2419_3BS_1H_Flex_Hose_Data_20190313143700.pdf

Mosaic_Fed_2419_3BS_1H_BOP_20190313143836.pdf

Mosaic_Fed_2419_3BS_1H_Wellhead_Diagram_20191024130847.pdf

Section 3 - Casing

Casing ID	String Type	Hole Size	Csg Size	Condition	Standard	Tapered String	Top Set MD	Bottom Set MD	Top Set TVD	Bottom Set TVD	Top Set MSL	Bottom Set MSL	Calculated casing length MD	Grade	Weight	Joint Type	Collapse SF	Burst SF	Joint SF Type	Joint SF	Body SF Type	Body SF
1	SURFACE	17.5	13.375	NEW	API	N	0	500	0	500			500	H-40	48	ST&C	3.3	7.4	DRY	13.4	DRY	22.5
2	INTERMEDIATE	12.25	10.75	NEW	API	N	0	2850	0	2850			2850	J-55	40.5	BUTT	1.1	2.1	DRY	3.6	DRY	5.4
3	INTERMEDIATE	9.875	7.625	NEW	API	N	0	8800	0	8800			8800	P-110	29.7	BUTT	1.6	2.3	DRY	2.9	DRY	3.6
4	PRODUCTION	6.75	5.5	NEW	API	N	0	19754	0	9592			19754	P-110	20	OTHER - USS Eagle	22	2.4	DRY	3.3	DRY	3.8

Casing Attachments

Casing ID: 1 String Type: SURFACE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Mosaic_Fed_2419_3BS_1H_Casing_Assumptions_20191015142137.pdf

Operator Name: KAISER FRANCIS OIL COMPANY

Well Name: MOSAIC FED 2419 3BS

Well Number: 1H

Casing Attachments

Casing ID: 2 **String Type:** INTERMEDIATE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Mosaic_Fed_2419_3BS_1H_Casing_Assumptions_20191015142157.pdf

Casing ID: 3 **String Type:** INTERMEDIATE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Mosaic_Fed_2419_3BS_1H_Casing_Assumptions_20191015142213.pdf

Casing ID: 4 **String Type:** PRODUCTION

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

5.5_x_20_P110_HP_USS_EAGLE_SFH_Performance_Sheet_20190208114733.pdf

Mosaic_Fed_2419_3BS_1H_Casing_Assumptions_20191015142232.pdf

Section 4 - Cement

Operator Name: KAISER FRANCIS OIL COMPANY

Well Name: MOSAIC FED 2419 3BS

Well Number: 1H

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
SURFACE	Lead		0	500	396	1.75	13.5	693	100	ExtendaCem	KOL-Seal

INTERMEDIATE	Lead		0	2850	340	2.46	11.9	836.4	75	EconoCem C	None
INTERMEDIATE	Tail		0	2850	212	1.33	14.8	282	50	Halcem	none
INTERMEDIATE	Lead		0	8800	1291	2.77	11	3576	50	NeoCem	LCM
INTERMEDIATE	Tail		0	8800	568	1.2	15.6	680	50	Halcem	Halad
PRODUCTION	Lead		9000	1975 4	520	1.44	13	749	15	NeoCem	None
PRODUCTION	Tail		9000	1975 4	554	1.22	14.5	678	15	Versacem	Halad

Section 5 - Circulating Medium

Mud System Type: Closed

Will an air or gas system be Used? NO

Description of the equipment for the circulating system in accordance with Onshore Order #2:

Diagram of the equipment for the circulating system in accordance with Onshore Order #2:

Describe what will be on location to control well or mitigate other conditions: Sufficient mud materials to maintain mud properties and meet minimum lost circulation and weight increase requirements will be kept on location at all times

Describe the mud monitoring system utilized: PVT/Pason/Visual Monitoring

Circulating Medium Table

Top Depth	Bottom Depth	Mud Type	Min Weight (lbs/gal)	Max Weight (lbs/gal)	Density (lbs/cu ft)	Gel Strength (lbs/100 sqft)	PH	Viscosity (CP)	Salinity (ppm)	Filtration (cc)	Additional Characteristics
8800	9592	OIL-BASED MUD	12.5	13							

Operator Name: KAISER FRANCIS OIL COMPANY

Well Name: MOSAIC FED 2419 3BS

Well Number: 1H

Top Depth	Bottom Depth	Mud Type	Min Weight (lbs/gal)	Max Weight (lbs/gal)	Density (lbs/cu ft)	Gel Strength (lbs/100 sqft)	PH	Viscosity (CP)	Salinity (ppm)	Filtration (cc)	Additional Characteristics
500	2850	OTHER : Brine	10	10							
0	500	OTHER : Fresh Water	8.4	9							
2850	8800	OTHER : Diesel Brine Emulsion	9	9.3							

Section 6 - Test, Logging, Coring

List of production tests including testing procedures, equipment and safety measures:

Top of cement on production casing will be determined by calculation.

List of open and cased hole logs run in the well:

DS,GR,MUDLOG

Coring operation description for the well:

None planned

Section 7 - Pressure

Anticipated Bottom Hole Pressure: 6470

Anticipated Surface Pressure: 4359.54

Anticipated Bottom Hole Temperature(F): 195

Anticipated abnormal pressures, temperatures, or potential geologic hazards? NO

Describe:

Contingency Plans geohazards description:

Contingency Plans geohazards attachment:

Hydrogen Sulfide drilling operations plan required? YES

Hydrogen sulfide drilling operations plan:

Mosaic_Fed_2419_Pad_1_H2S_Plan_20190205114237.pdf

Operator Name: KAISER FRANCIS OIL COMPANY

Well Name: MOSAIC FED 2419 3BS

Well Number: 1H

Section 8 - Other Information

Proposed horizontal/directional/multi-lateral plan submission:

Mosaic_Fed_2419_3BS_1H__Directional_Plan_20190313144057.pdf

Other proposed operations facets description:

Gas Capture Plan attached

Other proposed operations facets attachment:

Mosaic_Fed_2419_Pad_1_GCP_20190205114357.pdf

Other Variance attachment:

Mosaic_Fed_2419_3BS_1H_Flex_Hose_Data_20190313143455.pdf

Casing Assumptions

Interval	Length	Casing Size	Weight (#/ft)	Grade	Thread	Condition	Hole Size	TVD (ft)	Mud Type	Mud Weight Hole Control	Viscosity	Fluid Loss	Anticipated Mud Weight (ppg)	Max Pore Pressure (psi)	Collapse (psi)	Burst (psi)	Body Tensile Strength	Joint Tensile Strength	Collapse Safety Factor (Min 1:1)	Burst Safety Factor (Min 1:0)	Body Tensile Safety Factor (Min 1:8)	Joint Tensile Safety Factor (Min 1:8)
Conductor	120	20"				New		120														
Surface	500	13-3/8"	48	H-40	STC	New	17-1/2"	500	FW	8.4 - 9.0	32 - 34	NC	9	234	770	1730	541000	322000	3.3	7.4	22.5	13.4
Intermediate	2850	10-3/4"	40.5	J55	BTC API Special Clearance	New	12-1/4"	2850	Brine	10.0	28-32	LCM	10.0	1482	1580	3130	629000	420000	1.1	2.1	5.4	3.6
Intermediate	8800	7-5/8"	29.7	P110	BTC	New	9-7/8"	8800	DBE	9-9.3	28-29	NC	9	4118	6700	9460	940000	769000	1.6	2.3	3.6	2.9
Production	19754	5-1/2"	20	P110 HC	USS Eagle SFH	New	6-3/4"	9592	OBM	12.5-13	55-70	LCM	12	5972	13150	14360	729000	629000	2.2	2.4	3.8	3.3

Kaiser Francis

Mosaic Fed 2419 3BS 1H

Mosaic Fed 2419 3BS 1H

Mosaic Fed 2419 3BS 1H

Mosaic Fed 2419 3BS 1H

Plan: 190228 Mosaic Fed 2419 3BS 1H

Morcor Standard Plan

06 March, 2019

Morcor Engineering

Morcor Standard Plan

Company:	Kaiser Francis	Local Co-ordinate Reference:	Well Mosaic Fed 2419 3BS 1H
Project:	Mosaic Fed 2419 3BS 1H	TVD Reference:	WELL @ 3008.6usft (Original Well Elev)
Site:	Mosaic Fed 2419 3BS 1H	MD Reference:	WELL @ 3008.6usft (Original Well Elev)
Well:	Mosaic Fed 2419 3BS 1H	North Reference:	Grid
Wellbore:	Mosaic Fed 2419 3BS 1H	Survey Calculation Method:	Minimum Curvature
Design:	190228 Mosaic Fed 2419 3BS 1H	Database:	EDM 5000.1 Single User Db

Project		Mosaic Fed 2419 3BS 1H	
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site		Mosaic Fed 2419 3BS 1H				
Site Position:		Northing:	471,254.53	usft	Latitude:	32° 17' 42.836 N
From:	Lat/Long	Easting:	629,177.44	usft	Longitude:	104° 2' 56.593 W
Position Uncertainty:	1.0 usft	Slot Radius:	17-1/2	"	Grid Convergence:	0.15 °

Well		Mosaic Fed 2419 3BS 1H				
Well Position	+N/-S	0.0 usft	Northing:	471,254.53 usft	Latitude:	32° 17' 42.836 N
	+E/-W	0.0 usft	Easting:	629,177.44 usft	Longitude:	104° 2' 56.593 W
Position Uncertainty	1.0 usft		Wellhead Elevation:	usft	Ground Level:	2,986.6 usft

Wellbore		Mosaic Fed 2419 3BS 1H			
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	2/28/2019	6.86	59.98	47,843

Design	190228 Mosaic Fed 2419 3BS 1H			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	88.27

Survey Tool Program		Date	3/1/2019		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
0.0	19,754.0	190228 Mosaic Fed 2419 3BS 1H (Mosaic)	MWD	MWD - Standard	

Morcor Engineering

Morcor Standard Plan

Company:	Kaiser Francis	Local Co-ordinate Reference:	Well Mosaic Fed 2419 3BS 1H
Project:	Mosaic Fed 2419 3BS 1H	TVD Reference:	WELL @ 3008.6usft (Original Well Elev)
Site:	Mosaic Fed 2419 3BS 1H	MD Reference:	WELL @ 3008.6usft (Original Well Elev)
Well:	Mosaic Fed 2419 3BS 1H	North Reference:	Grid
Wellbore:	Mosaic Fed 2419 3BS 1H	Survey Calculation Method:	Minimum Curvature
Design:	190228 Mosaic Fed 2419 3BS 1H	Database:	EDM 5000.1 Single User Db

Planned Survey											
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	Easting (usft)	Northing (usft)	V. Sec (usft)	DLeg (°/100usft)	
0.0	0.00	0.00	0.0	-3,008.6	0.0	0.0	629,177.44	471,254.53	0.00	0.00	
50.0	0.00	0.00	50.0	-2,958.6	0.0	0.0	629,177.44	471,254.53	0.00	0.00	
100.0	0.00	280.00	100.0	-2,908.6	0.0	0.0	629,177.44	471,254.53	0.00	0.00	
120.0	0.00	280.00	120.0	-2,888.6	0.0	0.0	629,177.44	471,254.53	0.00	0.00	
20" Conductor											
150.0	0.00	280.00	150.0	-2,858.6	0.0	0.0	629,177.44	471,254.53	0.00	0.00	
200.0	0.00	280.00	200.0	-2,808.6	0.0	0.0	629,177.44	471,254.53	0.00	0.00	
250.0	0.00	280.00	250.0	-2,758.6	0.0	0.0	629,177.44	471,254.53	0.00	0.00	
300.0	0.00	280.00	300.0	-2,708.6	0.0	0.0	629,177.44	471,254.53	0.00	0.00	
350.0	0.00	280.00	350.0	-2,658.6	0.0	0.0	629,177.44	471,254.53	0.00	0.00	
13 3/8" Surface Casing											
400.0	0.00	280.00	400.0	-2,608.6	0.0	0.0	629,177.44	471,254.53	0.00	0.00	
450.0	0.00	280.00	450.0	-2,558.6	0.0	0.0	629,177.44	471,254.53	0.00	0.00	
500.0	0.00	280.00	500.0	-2,508.6	0.0	0.0	629,177.44	471,254.53	0.00	0.00	
550.0	0.00	280.00	550.0	-2,458.6	0.0	0.0	629,177.44	471,254.53	0.00	0.00	
600.0	0.00	280.00	600.0	-2,408.6	0.0	0.0	629,177.44	471,254.53	0.00	0.00	
650.0	0.00	280.00	650.0	-2,358.6	0.0	0.0	629,177.44	471,254.53	0.00	0.00	
700.0	0.00	280.00	700.0	-2,308.6	0.0	0.0	629,177.44	471,254.53	0.00	0.00	
750.0	0.00	280.00	750.0	-2,258.6	0.0	0.0	629,177.44	471,254.53	0.00	0.00	
800.0	0.00	280.00	800.0	-2,208.6	0.0	0.0	629,177.44	471,254.53	0.00	0.00	
850.0	0.00	280.00	850.0	-2,158.6	0.0	0.0	629,177.44	471,254.53	0.00	0.00	
900.0	0.00	280.00	900.0	-2,108.6	0.0	0.0	629,177.44	471,254.53	0.00	0.00	
950.0	0.00	280.00	950.0	-2,058.6	0.0	0.0	629,177.44	471,254.53	0.00	0.00	
1,000.0	0.00	280.00	1,000.0	-2,008.6	0.0	0.0	629,177.44	471,254.53	0.00	0.00	
1,050.0	0.00	280.00	1,050.0	-1,958.6	0.0	0.0	629,177.44	471,254.53	0.00	0.00	
1,100.0	0.00	280.00	1,100.0	-1,908.6	0.0	0.0	629,177.44	471,254.53	0.00	0.00	
1,150.0	0.00	280.00	1,150.0	-1,858.6	0.0	0.0	629,177.44	471,254.53	0.00	0.00	

Morcor Engineering

Morcor Standard Plan

Company:	Kaiser Francis	Local Co-ordinate Reference:	Well Mosaic Fed 2419 3BS 1H
Project:	Mosaic Fed 2419 3BS 1H	TVD Reference:	WELL @ 3008.6usft (Original Well Elev)
Site:	Mosaic Fed 2419 3BS 1H	MD Reference:	WELL @ 3008.6usft (Original Well Elev)
Well:	Mosaic Fed 2419 3BS 1H	North Reference:	Grid
Wellbore:	Mosaic Fed 2419 3BS 1H	Survey Calculation Method:	Minimum Curvature
Design:	190228 Mosaic Fed 2419 3BS 1H	Database:	EDM 5000.1 Single User Db

Planned Survey											
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	Easting (usft)	Northing (usft)	V. Sec (usft)	DLeg (°/100usft)	
1,200.0	0.00	280.00	1,200.0	-1,808.6	0.0	0.0	629,177.44	471,254.53	0.00	0.00	
1,250.0	0.00	280.00	1,250.0	-1,758.6	0.0	0.0	629,177.44	471,254.53	0.00	0.00	
1,300.0	0.00	280.00	1,300.0	-1,708.6	0.0	0.0	629,177.44	471,254.53	0.00	0.00	
1,350.0	0.00	280.00	1,350.0	-1,658.6	0.0	0.0	629,177.44	471,254.53	0.00	0.00	
1,400.0	0.00	280.00	1,400.0	-1,608.6	0.0	0.0	629,177.44	471,254.53	0.00	0.00	
1,450.0	0.00	280.00	1,450.0	-1,558.6	0.0	0.0	629,177.44	471,254.53	0.00	0.00	
1,500.0	0.00	280.00	1,500.0	-1,508.6	0.0	0.0	629,177.44	471,254.53	0.00	0.00	
1,550.0	0.00	280.00	1,550.0	-1,458.6	0.0	0.0	629,177.44	471,254.53	0.00	0.00	
1,600.0	0.00	280.00	1,600.0	-1,408.6	0.0	0.0	629,177.44	471,254.53	0.00	0.00	
1,650.0	0.00	280.00	1,650.0	-1,358.6	0.0	0.0	629,177.44	471,254.53	0.00	0.00	
1,700.0	0.00	280.00	1,700.0	-1,308.6	0.0	0.0	629,177.44	471,254.53	0.00	0.00	
1,750.0	0.00	280.00	1,750.0	-1,258.6	0.0	0.0	629,177.44	471,254.53	0.00	0.00	
1,800.0	0.00	280.00	1,800.0	-1,208.6	0.0	0.0	629,177.44	471,254.53	0.00	0.00	
1,850.0	0.00	280.00	1,850.0	-1,158.6	0.0	0.0	629,177.44	471,254.53	0.00	0.00	
1,900.0	0.00	280.00	1,900.0	-1,108.6	0.0	0.0	629,177.44	471,254.53	0.00	0.00	
1,950.0	0.00	280.00	1,950.0	-1,058.6	0.0	0.0	629,177.44	471,254.53	0.00	0.00	
2,000.0	0.00	280.00	2,000.0	-1,008.6	0.0	0.0	629,177.44	471,254.53	0.00	0.00	
2,050.0	0.00	280.00	2,050.0	-958.6	0.0	0.0	629,177.44	471,254.53	0.00	0.00	
2,100.0	0.00	280.00	2,100.0	-908.6	0.0	0.0	629,177.44	471,254.53	0.00	0.00	
2,150.0	0.00	280.00	2,150.0	-858.6	0.0	0.0	629,177.44	471,254.53	0.00	0.00	
2,200.0	0.00	280.00	2,200.0	-808.6	0.0	0.0	629,177.44	471,254.53	0.00	0.00	
2,250.0	0.00	280.00	2,250.0	-758.6	0.0	0.0	629,177.44	471,254.53	0.00	0.00	
2,300.0	0.00	280.00	2,300.0	-708.6	0.0	0.0	629,177.44	471,254.53	0.00	0.00	
2,350.0	0.00	280.00	2,350.0	-658.6	0.0	0.0	629,177.44	471,254.53	0.00	0.00	
2,400.0	0.00	280.00	2,400.0	-608.6	0.0	0.0	629,177.44	471,254.53	0.00	0.00	
2,450.0	0.00	280.00	2,450.0	-558.6	0.0	0.0	629,177.44	471,254.53	0.00	0.00	
2,500.0	0.00	280.00	2,500.0	-508.6	0.0	0.0	629,177.44	471,254.53	0.00	0.00	

Morcor Engineering

Morcor Standard Plan

Company:	Kaiser Francis	Local Co-ordinate Reference:	Well Mosaic Fed 2419 3BS 1H
Project:	Mosaic Fed 2419 3BS 1H	TVD Reference:	WELL @ 3008.6usft (Original Well Elev)
Site:	Mosaic Fed 2419 3BS 1H	MD Reference:	WELL @ 3008.6usft (Original Well Elev)
Well:	Mosaic Fed 2419 3BS 1H	North Reference:	Grid
Wellbore:	Mosaic Fed 2419 3BS 1H	Survey Calculation Method:	Minimum Curvature
Design:	190228 Mosaic Fed 2419 3BS 1H	Database:	EDM 5000.1 Single User Db

Planned Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	Easting (usft)	Northing (usft)	V. Sec (usft)	DLeg (°/100usft)
2,550.0	0.00	280.00	2,550.0	-458.6	0.0	0.0	629,177.44	471,254.53	0.00	0.00
2,600.0	0.00	280.00	2,600.0	-408.6	0.0	0.0	629,177.44	471,254.53	0.00	0.00
2,613.0	0.00	280.00	2,613.0	-395.6	0.0	0.0	629,177.44	471,254.53	0.00	0.00
10 3/4" Intermediate Casing										
2,638.6	0.00	280.00	2,638.6	-370.0	0.0	0.0	629,177.44	471,254.53	0.00	0.00
Delaware										
2,650.0	0.00	280.00	2,650.0	-358.6	0.0	0.0	629,177.44	471,254.53	0.00	0.00
2,700.0	0.00	280.00	2,700.0	-308.6	0.0	0.0	629,177.44	471,254.53	0.00	0.00
2,750.0	0.00	280.00	2,750.0	-258.6	0.0	0.0	629,177.44	471,254.53	0.00	0.00
2,800.0	0.00	280.00	2,800.0	-208.6	0.0	0.0	629,177.44	471,254.53	0.00	0.00
2,850.0	0.00	280.00	2,850.0	-158.6	0.0	0.0	629,177.44	471,254.53	0.00	0.00
2,900.0	0.00	280.00	2,900.0	-108.6	0.0	0.0	629,177.44	471,254.53	0.00	0.00
2,950.0	0.00	280.00	2,950.0	-58.6	0.0	0.0	629,177.44	471,254.53	0.00	0.00
3,000.0	0.00	280.00	3,000.0	-8.6	0.0	0.0	629,177.44	471,254.53	0.00	0.00
3,050.0	0.00	280.00	3,050.0	41.4	0.0	0.0	629,177.44	471,254.53	0.00	0.00
3,100.0	0.00	280.00	3,100.0	91.4	0.0	0.0	629,177.44	471,254.53	0.00	0.00
3,150.0	0.00	280.00	3,150.0	141.4	0.0	0.0	629,177.44	471,254.53	0.00	0.00
3,200.0	0.00	280.00	3,200.0	191.4	0.0	0.0	629,177.44	471,254.53	0.00	0.00
3,250.0	0.00	280.00	3,250.0	241.4	0.0	0.0	629,177.44	471,254.53	0.00	0.00
3,300.0	0.00	280.00	3,300.0	291.4	0.0	0.0	629,177.44	471,254.53	0.00	0.00
3,350.0	0.00	280.00	3,350.0	341.4	0.0	0.0	629,177.44	471,254.53	0.00	0.00
3,368.6	0.00	280.00	3,368.6	360.0	0.0	0.0	629,177.44	471,254.53	0.00	0.00
Cherry Canyon										
3,400.0	0.00	280.00	3,400.0	391.4	0.0	0.0	629,177.44	471,254.53	0.00	0.00
3,450.0	0.00	280.00	3,450.0	441.4	0.0	0.0	629,177.44	471,254.53	0.00	0.00
3,500.0	0.00	280.00	3,500.0	491.4	0.0	0.0	629,177.44	471,254.53	0.00	0.00

Morcor Engineering
Morcor Standard Plan

Company:	Kaiser Francis	Local Co-ordinate Reference:	Well Mosaic Fed 2419 3BS 1H
Project:	Mosaic Fed 2419 3BS 1H	TVD Reference:	WELL @ 3008.6usft (Original Well Elev)
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Wellbore:	Mosaic Fed 2419 3BS 1H	Survey Calculation Method:	Minimum Curvature
Design:	190228 Mosaic Fed 2419 3BS 1H	Database:	EDM 5000.1 Single User Db

Planned Survey											
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	Easting (usft)	Northing (usft)	V. Sec (usft)	DLeg (°/100usft)	
3,550.0	0.00	280.00	3,550.0	541.4	0.0	0.0	629,177.44	471,254.53	0.00	0.00	
Start Build 3.00											
3,600.0	1.50	280.00	3,600.0	591.4	0.1	-0.6	629,176.80	471,254.65	-0.64	3.00	
3,650.0	3.00	280.00	3,650.0	641.4	0.5	-2.6	629,174.86	471,254.99	-2.56	3.00	
3,700.0	4.50	280.00	3,699.8	691.2	1.0	-5.8	629,171.64	471,255.56	-5.76	3.00	
3,750.0	6.00	280.00	3,749.6	741.0	1.8	-10.3	629,167.14	471,256.35	-10.24	3.00	
Start 850.0 hold at 3750.0 MD											
3,800.0	6.00	280.00	3,799.4	790.8	2.7	-15.5	629,161.99	471,257.26	-15.36	0.00	
3,850.0	6.00	280.00	3,849.1	840.5	3.6	-20.6	629,156.84	471,258.17	-20.48	0.00	
3,900.0	6.00	280.00	3,898.8	890.2	4.5	-25.7	629,151.70	471,259.07	-25.60	0.00	
3,950.0	6.00	280.00	3,948.5	939.9	5.4	-30.9	629,146.55	471,259.98	-30.71	0.00	
4,000.0	6.00	280.00	3,998.3	989.7	6.4	-36.0	629,141.40	471,260.89	-35.83	0.00	
4,050.0	6.00	280.00	4,048.0	1,039.4	7.3	-41.2	629,136.26	471,261.80	-40.95	0.00	
4,100.0	6.00	280.00	4,097.7	1,089.1	8.2	-46.3	629,131.11	471,262.70	-46.07	0.00	
4,150.0	6.00	280.00	4,147.4	1,138.8	9.1	-51.5	629,125.96	471,263.61	-51.18	0.00	
4,200.0	6.00	280.00	4,197.2	1,188.6	10.0	-56.6	629,120.81	471,264.52	-56.30	0.00	
4,250.0	6.00	280.00	4,246.9	1,238.3	10.9	-61.8	629,115.67	471,265.43	-61.42	0.00	
4,300.0	6.00	280.00	4,296.6	1,288.0	11.8	-66.9	629,110.52	471,266.33	-66.53	0.00	
4,350.0	6.00	280.00	4,346.3	1,337.7	12.7	-72.1	629,105.37	471,267.24	-71.65	0.00	
4,400.0	6.00	280.00	4,396.1	1,387.5	13.6	-77.2	629,100.23	471,268.15	-76.77	0.00	
4,450.0	6.00	280.00	4,445.8	1,437.2	14.5	-82.4	629,095.08	471,269.06	-81.89	0.00	
4,500.0	6.00	280.00	4,495.5	1,486.9	15.4	-87.5	629,089.93	471,269.96	-87.00	0.00	
4,550.0	6.00	280.00	4,545.3	1,536.7	16.3	-92.7	629,084.79	471,270.87	-92.12	0.00	
4,600.0	6.00	280.00	4,595.0	1,586.4	17.2	-97.8	629,079.64	471,271.78	-97.24	0.00	
Start Turn 29.00											
4,650.0	5.81	294.50	4,644.7	1,636.1	18.7	-102.7	629,074.76	471,273.28	-102.07	3.00	
4,700.0	6.00	309.00	4,694.5	1,685.9	21.4	-107.0	629,070.43	471,275.98	-106.32	3.00	
Start Turn 29.00											

Morcor Engineering
Morcor Standard Plan

Company:	Kaiser Francis	Local Co-ordinate Reference:	Well Mosaic Fed 2419 3BS 1H
Project:	Mosaic Fed 2419 3BS 1H	TVD Reference:	WELL @ 3008.6usft (Original Well Elev)
Site:	Mosaic Fed 2419 3BS 1H	MD Reference:	WELL @ 3008.6usft (Original Well Elev)
Well:	Mosaic Fed 2419 3BS 1H	North Reference:	Grid
Wellbore:	Mosaic Fed 2419 3BS 1H	Survey Calculation Method:	Minimum Curvature
Design:	190228 Mosaic Fed 2419 3BS 1H	Database:	EDM 5000.1 Single User Db

Planned Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	Easting (usft)	Northing (usft)	V. Sec (usft)	DLeg (°/100usft)
4,750.0	5.81	323.50	4,744.2	1,735.6	25.1	-110.6	629,066.89	471,279.66	-109.74	3.00
4,759.5	5.82	326.30	4,753.6	1,745.0	25.9	-111.1	629,066.34	471,280.44	-110.27	3.00
Brushy Canyon										
4,800.0	6.00	338.00	4,793.9	1,785.3	29.6	-113.0	629,064.41	471,284.11	-112.09	3.00
Start DLS 2.18 TFO 100.44										
4,850.0	5.90	348.50	4,843.7	1,835.1	34.5	-114.5	629,062.92	471,289.06	-113.43	2.18
4,900.0	6.00	359.00	4,893.4	1,884.8	39.7	-115.1	629,062.36	471,294.19	-113.84	2.18
Start 3850.0 hold at 4900.0 MD										
4,950.0	6.00	359.00	4,943.1	1,934.5	44.9	-115.2	629,062.27	471,299.41	-113.77	0.00
5,000.0	6.00	359.00	4,992.8	1,984.2	50.1	-115.3	629,062.18	471,304.64	-113.70	0.00
5,050.0	6.00	359.00	5,042.6	2,034.0	55.3	-115.4	629,062.08	471,309.86	-113.64	0.00
5,100.0	6.00	359.00	5,092.3	2,083.7	60.6	-115.4	629,061.99	471,315.09	-113.57	0.00
5,150.0	6.00	359.00	5,142.0	2,133.4	65.8	-115.5	629,061.90	471,320.32	-113.50	0.00
5,200.0	6.00	359.00	5,191.7	2,183.1	71.0	-115.6	629,061.81	471,325.54	-113.44	0.00
5,250.0	6.00	359.00	5,241.5	2,232.9	76.2	-115.7	629,061.72	471,330.77	-113.37	0.00
5,300.0	6.00	359.00	5,291.2	2,282.6	81.5	-115.8	629,061.63	471,335.99	-113.30	0.00
5,350.0	6.00	359.00	5,340.9	2,332.3	86.7	-115.9	629,061.54	471,341.22	-113.24	0.00
5,400.0	6.00	359.00	5,390.7	2,382.1	91.9	-116.0	629,061.45	471,346.44	-113.17	0.00
5,450.0	6.00	359.00	5,440.4	2,431.8	97.1	-116.1	629,061.35	471,351.67	-113.11	0.00
5,500.0	6.00	359.00	5,490.1	2,481.5	102.4	-116.2	629,061.26	471,356.89	-113.04	0.00
5,550.0	6.00	359.00	5,539.8	2,531.2	107.6	-116.3	629,061.17	471,362.12	-112.97	0.00
5,600.0	6.00	359.00	5,589.6	2,581.0	112.8	-116.4	629,061.08	471,367.35	-112.91	0.00
5,650.0	6.00	359.00	5,639.3	2,630.7	118.0	-116.5	629,060.99	471,372.57	-112.84	0.00
5,700.0	6.00	359.00	5,689.0	2,680.4	123.3	-116.5	629,060.90	471,377.80	-112.77	0.00
5,750.0	6.00	359.00	5,738.7	2,730.1	128.5	-116.6	629,060.81	471,383.02	-112.71	0.00
5,800.0	6.00	359.00	5,788.5	2,779.9	133.7	-116.7	629,060.72	471,388.25	-112.64	0.00
5,850.0	6.00	359.00	5,838.2	2,829.6	138.9	-116.8	629,060.62	471,393.47	-112.57	0.00

Morcor Engineering

Morcor Standard Plan

Company:	Kaiser Francis	Local Co-ordinate Reference:	Well Mosaic Fed 2419 3BS 1H
Project:	Mosaic Fed 2419 3BS 1H	TVD Reference:	WELL @ 3008.6usft (Original Well Elev)
Site:	Mosaic Fed 2419 3BS 1H	MD Reference:	WELL @ 3008.6usft (Original Well Elev)
Well:	Mosaic Fed 2419 3BS 1H	North Reference:	Grid
Wellbore:	Mosaic Fed 2419 3BS 1H	Survey Calculation Method:	Minimum Curvature
Design:	190228 Mosaic Fed 2419 3BS 1H	Database:	EDM 5000.1 Single User Db

Planned Survey											
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	Easting (usft)	Northing (usft)	V. Sec (usft)	DLeg (°/100usft)	
5,900.0	6.00	359.00	5,887.9	2,879.3	144.2	-116.9	629,060.53	471,398.70	-112.51	0.00	
5,950.0	6.00	359.00	5,937.6	2,929.0	149.4	-117.0	629,060.44	471,403.93	-112.44	0.00	
6,000.0	6.00	359.00	5,987.4	2,978.8	154.6	-117.1	629,060.35	471,409.15	-112.38	0.00	
6,050.0	6.00	359.00	6,037.1	3,028.5	159.8	-117.2	629,060.26	471,414.38	-112.31	0.00	
6,100.0	6.00	359.00	6,086.8	3,078.2	165.1	-117.3	629,060.17	471,419.60	-112.24	0.00	
6,150.0	6.00	359.00	6,136.5	3,127.9	170.3	-117.4	629,060.08	471,424.83	-112.18	0.00	
6,200.0	6.00	359.00	6,186.3	3,177.7	175.5	-117.5	629,059.99	471,430.05	-112.11	0.00	
6,250.0	6.00	359.00	6,236.0	3,227.4	180.7	-117.5	629,059.89	471,435.28	-112.04	0.00	
6,267.7	6.00	359.00	6,253.6	3,245.0	182.6	-117.6	629,059.86	471,437.13	-112.02	0.00	
Bone Spring											
6,300.0	6.00	359.00	6,285.7	3,277.1	186.0	-117.6	629,059.80	471,440.50	-111.98	0.00	
6,350.0	6.00	359.00	6,335.4	3,326.8	191.2	-117.7	629,059.71	471,445.73	-111.91	0.00	
6,400.0	6.00	359.00	6,385.2	3,376.6	196.4	-117.8	629,059.62	471,450.96	-111.84	0.00	
6,450.0	6.00	359.00	6,434.9	3,426.3	201.6	-117.9	629,059.53	471,456.18	-111.78	0.00	
6,500.0	6.00	359.00	6,484.6	3,476.0	206.9	-118.0	629,059.44	471,461.41	-111.71	0.00	
6,550.0	6.00	359.00	6,534.4	3,525.8	212.1	-118.1	629,059.35	471,466.63	-111.64	0.00	
6,600.0	6.00	359.00	6,584.1	3,575.5	217.3	-118.2	629,059.26	471,471.86	-111.58	0.00	
6,650.0	6.00	359.00	6,633.8	3,625.2	222.5	-118.3	629,059.17	471,477.08	-111.51	0.00	
6,700.0	6.00	359.00	6,683.5	3,674.9	227.8	-118.4	629,059.07	471,482.31	-111.45	0.00	
6,750.0	6.00	359.00	6,733.3	3,724.7	233.0	-118.5	629,058.98	471,487.54	-111.38	0.00	
6,800.0	6.00	359.00	6,783.0	3,774.4	238.2	-118.6	629,058.89	471,492.76	-111.31	0.00	
6,850.0	6.00	359.00	6,832.7	3,824.1	243.5	-118.6	629,058.80	471,497.99	-111.25	0.00	
6,900.0	6.00	359.00	6,882.4	3,873.8	248.7	-118.7	629,058.71	471,503.21	-111.18	0.00	
6,950.0	6.00	359.00	6,932.2	3,923.6	253.9	-118.8	629,058.62	471,508.44	-111.11	0.00	
7,000.0	6.00	359.00	6,981.9	3,973.3	259.1	-118.9	629,058.53	471,513.66	-111.05	0.00	
7,050.0	6.00	359.00	7,031.6	4,023.0	264.4	-119.0	629,058.44	471,518.89	-110.98	0.00	
7,100.0	6.00	359.00	7,081.3	4,072.7	269.6	-119.1	629,058.34	471,524.11	-110.91	0.00	

Morcor Engineering
Morcor Standard Plan

Company:	Kaiser Francis	Local Co-ordinate Reference:	Well Mosaic Fed 2419 3BS 1H
Project:	Mosaic Fed 2419 3BS 1H	TVD Reference:	WELL @ 3008.6usft (Original Well Elev)
Site:	Mosaic Fed 2419 3BS 1H	MD Reference:	WELL @ 3008.6usft (Original Well Elev)
Well:	Mosaic Fed 2419 3BS 1H	North Reference:	Grid
Wellbore:	Mosaic Fed 2419 3BS 1H	Survey Calculation Method:	Minimum Curvature
Design:	190228 Mosaic Fed 2419 3BS 1H	Database:	EDM 5000.1 Single User Db

Planned Survey											
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	Easting (usft)	Northing (usft)	V. Sec (usft)	DLeg (°/100usft)	
7,150.0	6.00	359.00	7,131.1	4,122.5	274.8	-119.2	629,058.25	471,529.34	-110.85	0.00	
7,200.0	6.00	359.00	7,180.8	4,172.2	280.0	-119.3	629,058.16	471,534.57	-110.78	0.00	
7,250.0	6.00	359.00	7,230.5	4,221.9	285.3	-119.4	629,058.07	471,539.79	-110.72	0.00	
7,300.0	6.00	359.00	7,280.2	4,271.6	290.5	-119.5	629,057.98	471,545.02	-110.65	0.00	
7,323.5	6.00	359.00	7,303.6	4,295.0	292.9	-119.5	629,057.94	471,547.47	-110.62	0.00	
1st Bone Spring											
7,350.0	6.00	359.00	7,330.0	4,321.4	295.7	-119.6	629,057.89	471,550.24	-110.58	0.00	
7,400.0	6.00	359.00	7,379.7	4,371.1	300.9	-119.6	629,057.80	471,555.47	-110.52	0.00	
7,450.0	6.00	359.00	7,429.4	4,420.8	306.2	-119.7	629,057.71	471,560.69	-110.45	0.00	
7,500.0	6.00	359.00	7,479.1	4,470.5	311.4	-119.8	629,057.61	471,565.92	-110.38	0.00	
7,550.0	6.00	359.00	7,528.9	4,520.3	316.6	-119.9	629,057.52	471,571.15	-110.32	0.00	
7,600.0	6.00	359.00	7,578.6	4,570.0	321.8	-120.0	629,057.43	471,576.37	-110.25	0.00	
7,650.0	6.00	359.00	7,628.3	4,619.7	327.1	-120.1	629,057.34	471,581.60	-110.18	0.00	
7,700.0	6.00	359.00	7,678.1	4,669.5	332.3	-120.2	629,057.25	471,586.82	-110.12	0.00	
7,750.0	6.00	359.00	7,727.8	4,719.2	337.5	-120.3	629,057.16	471,592.05	-110.05	0.00	
7,800.0	6.00	359.00	7,777.5	4,768.9	342.7	-120.4	629,057.07	471,597.27	-109.98	0.00	
7,850.0	6.00	359.00	7,827.2	4,818.6	348.0	-120.5	629,056.98	471,602.50	-109.92	0.00	
7,900.0	6.00	359.00	7,877.0	4,868.4	353.2	-120.6	629,056.88	471,607.72	-109.85	0.00	
7,950.0	6.00	359.00	7,926.7	4,918.1	358.4	-120.6	629,056.79	471,612.95	-109.79	0.00	
8,000.0	6.00	359.00	7,976.4	4,967.8	363.6	-120.7	629,056.70	471,618.18	-109.72	0.00	
8,050.0	6.00	359.00	8,026.1	5,017.5	368.9	-120.8	629,056.61	471,623.40	-109.65	0.00	
8,097.7	6.00	359.00	8,073.6	5,065.0	373.9	-120.9	629,056.52	471,628.39	-109.59	0.00	
2nd Bone Spring											
8,100.0	6.00	359.00	8,075.9	5,067.3	374.1	-120.9	629,056.52	471,628.63	-109.59	0.00	
8,150.0	6.00	359.00	8,125.6	5,117.0	379.3	-121.0	629,056.43	471,633.85	-109.52	0.00	
8,200.0	6.00	359.00	8,175.3	5,166.7	384.5	-121.1	629,056.34	471,639.08	-109.45	0.00	
8,250.0	6.00	359.00	8,225.0	5,216.4	389.8	-121.2	629,056.25	471,644.30	-109.39	0.00	

Morcor Engineering

Morcor Standard Plan

Company:	Kaiser Francis	Local Co-ordinate Reference:	Well Mosaic Fed 2419 3BS 1H
Project:	Mosaic Fed 2419 3BS 1H	TVD Reference:	WELL @ 3008.6usft (Original Well Elev)
Site:	Mosaic Fed 2419 3BS 1H	MD Reference:	WELL @ 3008.6usft (Original Well Elev)
Well:	Mosaic Fed 2419 3BS 1H	North Reference:	Grid
Wellbore:	Mosaic Fed 2419 3BS 1H	Survey Calculation Method:	Minimum Curvature
Design:	190228 Mosaic Fed 2419 3BS 1H	Database:	EDM 5000.1 Single User Db

Planned Survey											
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	Easting (usft)	Northing (usft)	V. Sec (usft)	DLeg. (°/100usft)	
8,300.0	6.00	359.00	8,274.8	5,266.2	395.0	-121.3	629,056.16	471,649.53	-109.32	0.00	
8,350.0	6.00	359.00	8,324.5	5,315.9	400.2	-121.4	629,056.06	471,654.76	-109.25	0.00	
8,400.0	6.00	359.00	8,374.2	5,365.6	405.4	-121.5	629,055.97	471,659.98	-109.19	0.00	
8,450.0	6.00	359.00	8,423.9	5,415.3	410.7	-121.6	629,055.88	471,665.21	-109.12	0.00	
8,500.0	6.00	359.00	8,473.7	5,465.1	415.9	-121.7	629,055.79	471,670.43	-109.06	0.00	
8,550.0	6.00	359.00	8,523.4	5,514.8	421.1	-121.7	629,055.70	471,675.66	-108.99	0.00	
8,600.0	6.00	359.00	8,573.1	5,564.5	426.3	-121.8	629,055.61	471,680.88	-108.92	0.00	
8,650.0	6.00	359.00	8,622.8	5,614.2	431.6	-121.9	629,055.52	471,686.11	-108.86	0.00	
8,700.0	6.00	359.00	8,672.6	5,664.0	436.8	-122.0	629,055.43	471,691.33	-108.79	0.00	
8,750.0	6.00	359.00	8,722.3	5,713.7	442.0	-122.1	629,055.33	471,696.56	-108.72	0.00	
Start Drop -3.00											
8,800.0	4.50	359.00	8,772.1	5,763.5	446.6	-122.2	629,055.25	471,701.13	-108.67	3.00	
8,850.0	3.00	359.00	8,822.0	5,813.4	449.9	-122.2	629,055.20	471,704.40	-108.62	3.00	
8,900.0	1.50	359.00	8,871.9	5,863.3	451.8	-122.3	629,055.16	471,706.37	-108.60	3.00	
8,950.0	0.00	0.00	8,921.9	5,913.3	452.5	-122.3	629,055.15	471,707.02	-108.59	3.00	
Start 98.0 hold at 8950.0 MD											
9,000.0	0.00	0.00	8,971.9	5,963.3	452.5	-122.3	629,055.15	471,707.02	-108.59	0.00	
9,048.0	0.00	90.79	9,019.9	6,011.3	452.5	-122.3	629,055.15	471,707.02	-108.59	0.00	
Start Build 10.00											
9,050.0	0.20	90.79	9,021.9	6,013.3	452.5	-122.3	629,055.16	471,707.02	-108.59	10.00	
9,100.0	5.20	90.79	9,071.9	6,063.3	452.5	-119.9	629,057.51	471,706.99	-106.23	10.00	
9,150.0	10.20	90.79	9,121.4	6,112.8	452.4	-113.2	629,064.21	471,706.90	-99.54	10.00	
9,200.0	15.20	90.79	9,170.2	6,161.6	452.2	-102.2	629,075.19	471,706.74	-88.57	10.00	
9,250.0	20.20	90.79	9,217.8	6,209.2	452.0	-87.1	629,090.39	471,706.54	-73.38	10.00	
9,300.0	25.20	90.79	9,263.9	6,255.3	451.7	-67.8	629,109.68	471,706.27	-54.11	10.00	
9,350.0	30.20	90.79	9,308.1	6,299.5	451.4	-44.5	629,132.91	471,705.95	-30.90	10.00	

Morcor Engineering

Morcor Standard Plan

Company:	Kaiser Francis	Local Co-ordinate Reference:	Well Mosaic Fed 2419 3BS 1H
Project:	Mosaic Fed 2419 3BS 1H	TVD Reference:	WELL @ 3008.6usft (Original Well Elev)
Site:	Mosaic Fed 2419 3BS 1H	MD Reference:	WELL @ 3008.6usft (Original Well Elev)
Well:	Mosaic Fed 2419 3BS 1H	North Reference:	Grid
Wellbore:	Mosaic Fed 2419 3BS 1H	Survey Calculation Method:	Minimum Curvature
Design:	190228 Mosaic Fed 2419 3BS 1H	Database:	EDM 5000.1 Single User Db

Planned Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	Easting (usft)	Northing (usft)	V. Sec (usft)	DLeg (°/100usft)
9,374.0	32.60	90.79	9,328.6	6,320.0	451.2	-32.0	629,145.39	471,705.78	-18.43	10.00
3rd Bone Spring										
9,400.0	35.20	90.79	9,350.2	6,341.6	451.0	-17.5	629,159.91	471,705.58	-3.92	10.00
9,450.0	40.20	90.79	9,389.8	6,381.2	450.6	13.0	629,190.47	471,705.16	26.61	10.00
9,500.0	45.20	90.79	9,426.5	6,417.9	450.2	46.9	629,224.37	471,704.69	60.48	10.00
9,550.0	50.20	90.79	9,460.1	6,451.5	449.6	83.9	629,261.33	471,704.18	97.41	10.00
9,600.0	55.20	90.79	9,490.4	6,481.8	449.1	123.6	629,301.09	471,703.63	137.14	10.00
9,650.0	60.20	90.79	9,517.1	6,508.5	448.5	165.9	629,343.34	471,703.05	179.34	10.00
9,700.0	65.20	90.79	9,540.1	6,531.5	447.9	210.3	629,387.75	471,702.43	223.72	10.00
9,750.0	70.20	90.79	9,559.0	6,550.4	447.3	256.5	629,433.99	471,701.80	269.92	10.00
9,800.0	75.20	90.79	9,573.9	6,565.3	446.6	304.3	629,481.71	471,701.14	317.60	10.00
9,850.0	80.20	90.79	9,584.5	6,575.9	445.9	353.1	629,530.54	471,700.47	366.39	10.00
9,900.0	85.20	90.79	9,590.9	6,582.3	445.2	402.7	629,580.12	471,699.78	415.92	10.00
9,948.0	90.00	90.79	9,592.9	6,584.3	444.6	450.6	629,628.05	471,699.12	463.81	10.00
Start 9806.0 hold at 9948.0 MD										
9,950.0	90.00	90.79	9,592.9	6,584.3	444.6	452.6	629,630.05	471,699.09	465.81	0.00
10,000.0	90.00	90.79	9,592.9	6,584.3	443.9	502.6	629,680.05	471,698.40	515.76	0.00
10,050.0	90.00	90.79	9,592.9	6,584.3	443.2	552.6	629,730.05	471,697.71	565.72	0.00
10,100.0	90.00	90.79	9,592.9	6,584.3	442.5	602.6	629,780.04	471,697.03	615.67	0.00
10,150.0	90.00	90.79	9,592.9	6,584.3	441.8	652.6	629,830.04	471,696.34	665.62	0.00
10,200.0	90.00	90.79	9,592.9	6,584.3	441.1	702.6	629,880.03	471,695.65	715.57	0.00
10,250.0	90.00	90.79	9,592.9	6,584.3	440.4	752.6	629,930.03	471,694.96	765.52	0.00
10,300.0	90.00	90.79	9,592.9	6,584.3	439.7	802.6	629,980.02	471,694.27	815.47	0.00
10,350.0	90.00	90.79	9,592.9	6,584.3	439.0	852.6	630,030.02	471,693.58	865.43	0.00
10,400.0	90.00	90.79	9,592.9	6,584.3	438.4	902.6	630,080.01	471,692.89	915.38	0.00
10,450.0	90.00	90.79	9,592.9	6,584.3	437.7	952.6	630,130.01	471,692.20	965.33	0.00
10,500.0	90.00	90.79	9,592.9	6,584.3	437.0	1,002.6	630,180.00	471,691.51	1,015.28	0.00

Morcor Engineering
Morcor Standard Plan

Company:	Kaiser Francis	Local Co-ordinate Reference:	Well Mosaic Fed 2419 3BS 1H
Project:	Mosaic Fed 2419 3BS 1H	TVD Reference:	WELL @ 3008.6usft (Original Well Elev)
Site:	Mosaic Fed 2419 3BS 1H	MD Reference:	WELL @ 3008.6usft (Original Well Elev)
Well:	Mosaic Fed 2419 3BS 1H	North Reference:	Grid
Wellbore:	Mosaic Fed 2419 3BS 1H	Survey Calculation Method:	Minimum Curvature
Design:	190228 Mosaic Fed 2419 3BS 1H	Database:	EDM 5000.1 Single User Db

Planned Survey											
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	Easting (usft)	Northing (usft)	V. Sec (usft)	DLeg (°/100usft)	
10,550.0	90.00	90.79	9,592.9	6,584.3	436.3	1,052.6	630,230.00	471,690.82	1,065.23	0.00	
10,600.0	90.00	90.79	9,592.9	6,584.3	435.6	1,102.6	630,279.99	471,690.13	1,115.18	0.00	
10,650.0	90.00	90.79	9,592.9	6,584.3	434.9	1,152.5	630,329.99	471,689.44	1,165.14	0.00	
10,700.0	90.00	90.79	9,592.9	6,584.3	434.2	1,202.5	630,379.98	471,688.75	1,215.09	0.00	
10,750.0	90.00	90.79	9,592.9	6,584.3	433.5	1,252.5	630,429.98	471,688.06	1,265.04	0.00	
10,800.0	90.00	90.79	9,592.9	6,584.3	432.8	1,302.5	630,479.97	471,687.37	1,314.99	0.00	
10,850.0	90.00	90.79	9,592.9	6,584.3	432.2	1,352.5	630,529.97	471,686.68	1,364.94	0.00	
10,900.0	90.00	90.79	9,592.9	6,584.3	431.5	1,402.5	630,579.96	471,686.00	1,414.90	0.00	
10,950.0	90.00	90.79	9,592.9	6,584.3	430.8	1,452.5	630,629.96	471,685.31	1,464.85	0.00	
11,000.0	90.00	90.79	9,592.9	6,584.3	430.1	1,502.5	630,679.95	471,684.62	1,514.80	0.00	
11,050.0	90.00	90.79	9,592.9	6,584.3	429.4	1,552.5	630,729.95	471,683.93	1,564.75	0.00	
11,100.0	90.00	90.79	9,592.9	6,584.3	428.7	1,602.5	630,779.95	471,683.24	1,614.70	0.00	
11,150.0	90.00	90.79	9,592.9	6,584.3	428.0	1,652.5	630,829.94	471,682.55	1,664.65	0.00	
11,200.0	90.00	90.79	9,592.9	6,584.3	427.3	1,702.5	630,879.94	471,681.86	1,714.61	0.00	
11,250.0	90.00	90.79	9,592.9	6,584.3	426.6	1,752.5	630,929.93	471,681.17	1,764.56	0.00	
11,300.0	90.00	90.79	9,592.9	6,584.3	425.9	1,802.5	630,979.93	471,680.48	1,814.51	0.00	
11,350.0	90.00	90.79	9,592.9	6,584.3	425.3	1,852.5	631,029.92	471,679.79	1,864.46	0.00	
11,400.0	90.00	90.79	9,592.9	6,584.3	424.6	1,902.5	631,079.92	471,679.10	1,914.41	0.00	
11,450.0	90.00	90.79	9,592.9	6,584.3	423.9	1,952.5	631,129.91	471,678.41	1,964.36	0.00	
11,500.0	90.00	90.79	9,592.9	6,584.3	423.2	2,002.5	631,179.91	471,677.72	2,014.32	0.00	
11,550.0	90.00	90.79	9,592.9	6,584.3	422.5	2,052.5	631,229.90	471,677.03	2,064.27	0.00	
11,600.0	90.00	90.79	9,592.9	6,584.3	421.8	2,102.5	631,279.90	471,676.34	2,114.22	0.00	
11,650.0	90.00	90.79	9,592.9	6,584.3	421.1	2,152.5	631,329.89	471,675.65	2,164.17	0.00	
11,700.0	90.00	90.79	9,592.9	6,584.3	420.4	2,202.4	631,379.89	471,674.97	2,214.12	0.00	
11,750.0	90.00	90.79	9,592.9	6,584.3	419.7	2,252.4	631,429.88	471,674.28	2,264.07	0.00	
11,800.0	90.00	90.79	9,592.9	6,584.3	419.1	2,302.4	631,479.88	471,673.59	2,314.03	0.00	
11,850.0	90.00	90.79	9,592.9	6,584.3	418.4	2,352.4	631,529.87	471,672.90	2,363.98	0.00	

Morcor Engineering

Morcor Standard Plan

Company:	Kaiser Francis	Local Co-ordinate Reference:	Well Mosaic Fed 2419 3BS 1H
Project:	Mosaic Fed 2419 3BS 1H	TVD Reference:	WELL @ 3008.6usft (Original Well Elev)
Site:	Mosaic Fed 2419 3BS 1H	MD Reference:	WELL @ 3008.6usft (Original Well Elev)
Well:	Mosaic Fed 2419 3BS 1H	North Reference:	Grid
Wellbore:	Mosaic Fed 2419 3BS 1H	Survey Calculation Method:	Minimum Curvature
Design:	190228 Mosaic Fed 2419 3BS 1H	Database:	EDM 5000.1 Single User.Db

Planned Survey											
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	Easting (usft)	Northing (usft)	V. Sec (usft)	DLeg (°/100usft)	
11,900.0	90.00	90.79	9,592.9	6,584.3	417.7	2,402.4	631,579.87	471,672.21	2,413.93	0.00	
11,950.0	90.00	90.79	9,592.9	6,584.3	417.0	2,452.4	631,629.86	471,671.52	2,463.88	0.00	
12,000.0	90.00	90.79	9,592.9	6,584.3	416.3	2,502.4	631,679.86	471,670.83	2,513.83	0.00	
12,050.0	90.00	90.79	9,592.9	6,584.3	415.6	2,552.4	631,729.86	471,670.14	2,563.78	0.00	
12,100.0	90.00	90.79	9,592.9	6,584.3	414.9	2,602.4	631,779.85	471,669.45	2,613.74	0.00	
12,150.0	90.00	90.79	9,592.9	6,584.3	414.2	2,652.4	631,829.85	471,668.76	2,663.69	0.00	
12,200.0	90.00	90.79	9,592.9	6,584.3	413.5	2,702.4	631,879.84	471,668.07	2,713.64	0.00	
12,250.0	90.00	90.79	9,592.9	6,584.3	412.8	2,752.4	631,929.84	471,667.38	2,763.59	0.00	
12,300.0	90.00	90.79	9,592.9	6,584.3	412.2	2,802.4	631,979.83	471,666.69	2,813.54	0.00	
12,350.0	90.00	90.79	9,592.9	6,584.3	411.5	2,852.4	632,029.83	471,666.00	2,863.50	0.00	
12,400.0	90.00	90.79	9,592.9	6,584.3	410.8	2,902.4	632,079.82	471,665.31	2,913.45	0.00	
12,450.0	90.00	90.79	9,592.9	6,584.3	410.1	2,952.4	632,129.82	471,664.62	2,963.40	0.00	
12,500.0	90.00	90.79	9,592.9	6,584.3	409.4	3,002.4	632,179.81	471,663.94	3,013.35	0.00	
12,550.0	90.00	90.79	9,592.9	6,584.3	408.7	3,052.4	632,229.81	471,663.25	3,063.30	0.00	
12,600.0	90.00	90.79	9,592.9	6,584.3	408.0	3,102.4	632,279.80	471,662.56	3,113.25	0.00	
12,650.0	90.00	90.79	9,592.9	6,584.3	407.3	3,152.4	632,329.80	471,661.87	3,163.21	0.00	
12,700.0	90.00	90.79	9,592.9	6,584.3	406.6	3,202.4	632,379.79	471,661.18	3,213.16	0.00	
12,750.0	90.00	90.79	9,592.9	6,584.3	406.0	3,252.3	632,429.79	471,660.49	3,263.11	0.00	
12,800.0	90.00	90.79	9,592.9	6,584.3	405.3	3,302.3	632,479.78	471,659.80	3,313.06	0.00	
12,850.0	90.00	90.79	9,592.9	6,584.3	404.6	3,352.3	632,529.78	471,659.11	3,363.01	0.00	
12,900.0	90.00	90.79	9,592.9	6,584.3	403.9	3,402.3	632,579.77	471,658.42	3,412.96	0.00	
12,950.0	90.00	90.79	9,592.9	6,584.3	403.2	3,452.3	632,629.77	471,657.73	3,462.92	0.00	
13,000.0	90.00	90.79	9,592.9	6,584.3	402.5	3,502.3	632,679.76	471,657.04	3,512.87	0.00	
13,050.0	90.00	90.79	9,592.9	6,584.3	401.8	3,552.3	632,729.76	471,656.35	3,562.82	0.00	
13,100.0	90.00	90.79	9,592.9	6,584.3	401.1	3,602.3	632,779.76	471,655.66	3,612.77	0.00	
13,150.0	90.00	90.79	9,592.9	6,584.3	400.4	3,652.3	632,829.75	471,654.97	3,662.72	0.00	
13,200.0	90.00	90.79	9,592.9	6,584.3	399.7	3,702.3	632,879.75	471,654.28	3,712.67	0.00	

Morcor Engineering

Morcor Standard Plan

Company:	Kaiser Francis	Local Co-ordinate Reference:	Well Mosaic Fed 2419 3BS 1H
Project:	Mosaic Fed 2419 3BS 1H	TVD Reference:	WELL @ 3008.6usft (Original Well Elev)
Site:	Mosaic Fed 2419 3BS 1H	MD Reference:	WELL @ 3008.6usft (Original Well Elev)
Well:	Mosaic Fed 2419 3BS 1H	North Reference:	Grid
Wellbore:	Mosaic Fed 2419 3BS 1H	Survey Calculation Method:	Minimum Curvature
Design:	190228 Mosaic Fed 2419 3BS 1H	Database:	EDM 5000.1 Single User Db

Planned Survey											
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	Easting (usft)	Northing (usft)	V-Sec (usft)	DLeg (°/100usft)	
13,250.0	90.00	90.79	9,592.9	6,584.3	399.1	3,752.3	632,929.74	471,653.59	3,762.63	0.00	
13,300.0	90.00	90.79	9,592.9	6,584.3	398.4	3,802.3	632,979.74	471,652.91	3,812.58	0.00	
13,350.0	90.00	90.79	9,592.9	6,584.3	397.7	3,852.3	633,029.73	471,652.22	3,862.53	0.00	
13,400.0	90.00	90.79	9,592.9	6,584.3	397.0	3,902.3	633,079.73	471,651.53	3,912.48	0.00	
13,450.0	90.00	90.79	9,592.9	6,584.3	396.3	3,952.3	633,129.72	471,650.84	3,962.43	0.00	
13,500.0	90.00	90.79	9,592.9	6,584.3	395.6	4,002.3	633,179.72	471,650.15	4,012.38	0.00	
13,550.0	90.00	90.79	9,592.9	6,584.3	394.9	4,052.3	633,229.71	471,649.46	4,062.34	0.00	
13,600.0	90.00	90.79	9,592.9	6,584.3	394.2	4,102.3	633,279.71	471,648.77	4,112.29	0.00	
13,650.0	90.00	90.79	9,592.9	6,584.3	393.5	4,152.3	633,329.70	471,648.08	4,162.24	0.00	
13,700.0	90.00	90.79	9,592.9	6,584.3	392.9	4,202.3	633,379.70	471,647.39	4,212.19	0.00	
13,750.0	90.00	90.79	9,592.9	6,584.3	392.2	4,252.3	633,429.69	471,646.70	4,262.14	0.00	
13,800.0	90.00	90.79	9,592.9	6,584.3	391.5	4,302.2	633,479.69	471,646.01	4,312.10	0.00	
13,850.0	90.00	90.79	9,592.9	6,584.3	390.8	4,352.2	633,529.68	471,645.32	4,362.05	0.00	
13,900.0	90.00	90.79	9,592.9	6,584.3	390.1	4,402.2	633,579.68	471,644.63	4,412.00	0.00	
13,950.0	90.00	90.79	9,592.9	6,584.3	389.4	4,452.2	633,629.67	471,643.94	4,461.95	0.00	
14,000.0	90.00	90.79	9,592.9	6,584.3	388.7	4,502.2	633,679.67	471,643.25	4,511.90	0.00	
14,050.0	90.00	90.79	9,592.9	6,584.3	388.0	4,552.2	633,729.67	471,642.56	4,561.85	0.00	
14,100.0	90.00	90.79	9,592.9	6,584.3	387.3	4,602.2	633,779.66	471,641.87	4,611.81	0.00	
14,150.0	90.00	90.79	9,592.9	6,584.3	386.7	4,652.2	633,829.66	471,641.19	4,661.76	0.00	
14,200.0	90.00	90.79	9,592.9	6,584.3	386.0	4,702.2	633,879.65	471,640.50	4,711.71	0.00	
14,250.0	90.00	90.79	9,592.9	6,584.3	385.3	4,752.2	633,929.65	471,639.81	4,761.66	0.00	
14,300.0	90.00	90.79	9,592.9	6,584.3	384.6	4,802.2	633,979.64	471,639.12	4,811.61	0.00	
14,350.0	90.00	90.79	9,592.9	6,584.3	383.9	4,852.2	634,029.64	471,638.43	4,861.56	0.00	
14,400.0	90.00	90.79	9,592.9	6,584.3	383.2	4,902.2	634,079.63	471,637.74	4,911.52	0.00	
14,450.0	90.00	90.79	9,592.9	6,584.3	382.5	4,952.2	634,129.63	471,637.05	4,961.47	0.00	
14,500.0	90.00	90.79	9,592.9	6,584.3	381.8	5,002.2	634,179.62	471,636.36	5,011.42	0.00	
14,550.0	90.00	90.79	9,592.9	6,584.3	381.1	5,052.2	634,229.62	471,635.67	5,061.37	0.00	

Morcor Engineering
Morcor Standard Plan

Company:	Kaiser Francis	Local Co-ordinate Reference:	Well Mosaic Fed 2419 3BS 1H
Project:	Mosaic Fed 2419 3BS 1H	TVD Reference:	WELL @ 3008.6usft (Original Well Elev)
Site:	Mosaic Fed 2419 3BS 1H	MD Reference:	WELL @ 3008.6usft (Original Well Elev)
Well:	Mosaic Fed 2419 3BS 1H	North Reference:	Grid
Wellbore:	Mosaic Fed 2419 3BS 1H	Survey Calculation Method:	Minimum Curvature
Design:	190228 Mosaic Fed 2419 3BS 1H	Database:	EDM 5000.1 Single User Db

Planned Survey											
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	Easting (usft)	Northing (usft)	V. Sec (usft)	DLeg (%/100usft)	
14,600.0	90.00	90.79	9,592.9	6,584.3	380.4	5,102.2	634,279.61	471,634.98	5,111.32	0.00	
14,650.0	90.00	90.79	9,592.9	6,584.3	379.8	5,152.2	634,329.61	471,634.29	5,161.27	0.00	
14,700.0	90.00	90.79	9,592.9	6,584.3	379.1	5,202.2	634,379.60	471,633.60	5,211.23	0.00	
14,750.0	90.00	90.79	9,592.9	6,584.3	378.4	5,252.2	634,429.60	471,632.91	5,261.18	0.00	
14,800.0	90.00	90.79	9,592.9	6,584.3	377.7	5,302.2	634,479.59	471,632.22	5,311.13	0.00	
14,850.0	90.00	90.79	9,592.9	6,584.3	377.0	5,352.1	634,529.59	471,631.53	5,361.08	0.00	
14,900.0	90.00	90.79	9,592.9	6,584.3	376.3	5,402.1	634,579.58	471,630.84	5,411.03	0.00	
14,950.0	90.00	90.79	9,592.9	6,584.3	375.6	5,452.1	634,629.58	471,630.16	5,460.99	0.00	
15,000.0	90.00	90.79	9,592.9	6,584.3	374.9	5,502.1	634,679.57	471,629.47	5,510.94	0.00	
15,050.0	90.00	90.79	9,592.9	6,584.3	374.2	5,552.1	634,729.57	471,628.78	5,560.89	0.00	
15,100.0	90.00	90.79	9,592.9	6,584.3	373.6	5,602.1	634,779.57	471,628.09	5,610.84	0.00	
15,150.0	90.00	90.79	9,592.9	6,584.3	372.9	5,652.1	634,829.56	471,627.40	5,660.79	0.00	
15,200.0	90.00	90.79	9,592.9	6,584.3	372.2	5,702.1	634,879.56	471,626.71	5,710.74	0.00	
15,250.0	90.00	90.79	9,592.9	6,584.3	371.5	5,752.1	634,929.55	471,626.02	5,760.70	0.00	
15,300.0	90.00	90.79	9,592.9	6,584.3	370.8	5,802.1	634,979.55	471,625.33	5,810.65	0.00	
15,350.0	90.00	90.79	9,592.9	6,584.3	370.1	5,852.1	635,029.54	471,624.64	5,860.60	0.00	
15,400.0	90.00	90.79	9,592.9	6,584.3	369.4	5,902.1	635,079.54	471,623.95	5,910.55	0.00	
15,450.0	90.00	90.79	9,592.9	6,584.3	368.7	5,952.1	635,129.53	471,623.26	5,960.50	0.00	
15,500.0	90.00	90.79	9,592.9	6,584.3	368.0	6,002.1	635,179.53	471,622.57	6,010.45	0.00	
15,550.0	90.00	90.79	9,592.9	6,584.3	367.3	6,052.1	635,229.52	471,621.88	6,060.41	0.00	
15,600.0	90.00	90.79	9,592.9	6,584.3	366.7	6,102.1	635,279.52	471,621.19	6,110.36	0.00	
15,650.0	90.00	90.79	9,592.9	6,584.3	366.0	6,152.1	635,329.51	471,620.50	6,160.31	0.00	
15,700.0	90.00	90.79	9,592.9	6,584.3	365.3	6,202.1	635,379.51	471,619.81	6,210.26	0.00	
15,750.0	90.00	90.79	9,592.9	6,584.3	364.6	6,252.1	635,429.50	471,619.13	6,260.21	0.00	
15,800.0	90.00	90.79	9,592.9	6,584.3	363.9	6,302.1	635,479.50	471,618.44	6,310.16	0.00	
15,850.0	90.00	90.79	9,592.9	6,584.3	363.2	6,352.1	635,529.49	471,617.75	6,360.12	0.00	
15,900.0	90.00	90.79	9,592.9	6,584.3	362.5	6,402.0	635,579.49	471,617.06	6,410.07	0.00	

Morcor Engineering

Morcor Standard Plan

Company:	Kaiser Francis	Local Co-ordinate Reference:	Well Mosaic Fed 2419 3BS 1H
Project:	Mosaic Fed 2419 3BS 1H	TVD Reference:	WELL @ 3008.6usft (Original Well Elev)
Site:	Mosaic Fed 2419 3BS 1H	MD Reference:	WELL @ 3008.6usft (Original Well Elev)
Well:	Mosaic Fed 2419 3BS 1H	North Reference:	Grid
Wellbore:	Mosaic Fed 2419 3BS 1H	Survey Calculation Method:	Minimum Curvature
Design:	190228 Mosaic Fed 2419 3BS 1H	Database:	EDM 5000.1 Single User Db

Planned Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	Easting (usft)	Northing (usft)	V. Sec (usft)	DLeg (°/100usft)
15,950.0	90.00	90.79	9,592.9	6,584.3	361.8	6,452.0	635,629.48	471,616.37	6,460.02	0.00
16,000.0	90.00	90.79	9,592.9	6,584.3	361.1	6,502.0	635,679.48	471,615.68	6,509.97	0.00
16,050.0	90.00	90.79	9,592.9	6,584.3	360.5	6,552.0	635,729.47	471,614.99	6,559.92	0.00
16,100.0	90.00	90.79	9,592.9	6,584.3	359.8	6,602.0	635,779.47	471,614.30	6,609.87	0.00
16,150.0	90.00	90.79	9,592.9	6,584.3	359.1	6,652.0	635,829.47	471,613.61	6,659.83	0.00
16,200.0	90.00	90.79	9,592.9	6,584.3	358.4	6,702.0	635,879.46	471,612.92	6,709.78	0.00
16,250.0	90.00	90.79	9,592.9	6,584.3	357.7	6,752.0	635,929.46	471,612.23	6,759.73	0.00
16,300.0	90.00	90.79	9,592.9	6,584.3	357.0	6,802.0	635,979.45	471,611.54	6,809.68	0.00
16,350.0	90.00	90.79	9,592.9	6,584.3	356.3	6,852.0	636,029.45	471,610.85	6,859.63	0.00
16,400.0	90.00	90.79	9,592.9	6,584.3	355.6	6,902.0	636,079.44	471,610.16	6,909.59	0.00
16,450.0	90.00	90.79	9,592.9	6,584.3	354.9	6,952.0	636,129.44	471,609.47	6,959.54	0.00
16,500.0	90.00	90.79	9,592.9	6,584.3	354.2	7,002.0	636,179.43	471,608.78	7,009.49	0.00
16,550.0	90.00	90.79	9,592.9	6,584.3	353.6	7,052.0	636,229.43	471,608.10	7,059.44	0.00
16,600.0	90.00	90.79	9,592.9	6,584.3	352.9	7,102.0	636,279.42	471,607.41	7,109.39	0.00
16,650.0	90.00	90.79	9,592.9	6,584.3	352.2	7,152.0	636,329.42	471,606.72	7,159.34	0.00
16,700.0	90.00	90.79	9,592.9	6,584.3	351.5	7,202.0	636,379.41	471,606.03	7,209.30	0.00
16,750.0	90.00	90.79	9,592.9	6,584.3	350.8	7,252.0	636,429.41	471,605.34	7,259.25	0.00
16,800.0	90.00	90.79	9,592.9	6,584.3	350.1	7,302.0	636,479.40	471,604.65	7,309.20	0.00
16,850.0	90.00	90.79	9,592.9	6,584.3	349.4	7,352.0	636,529.40	471,603.96	7,359.15	0.00
16,900.0	90.00	90.79	9,592.9	6,584.3	348.7	7,402.0	636,579.39	471,603.27	7,409.10	0.00
16,950.0	90.00	90.79	9,592.9	6,584.3	348.0	7,451.9	636,629.39	471,602.58	7,459.05	0.00
17,000.0	90.00	90.79	9,592.9	6,584.3	347.4	7,501.9	636,679.38	471,601.89	7,509.01	0.00
17,050.0	90.00	90.79	9,592.9	6,584.3	346.7	7,551.9	636,729.38	471,601.20	7,558.96	0.00
17,100.0	90.00	90.79	9,592.9	6,584.3	346.0	7,601.9	636,779.38	471,600.51	7,608.91	0.00
17,150.0	90.00	90.79	9,592.9	6,584.3	345.3	7,651.9	636,829.37	471,599.82	7,658.86	0.00
17,200.0	90.00	90.79	9,592.9	6,584.3	344.6	7,701.9	636,879.37	471,599.13	7,708.81	0.00
17,250.0	90.00	90.79	9,592.9	6,584.3	343.9	7,751.9	636,929.36	471,598.44	7,758.76	0.00

Morcor Engineering
Morcor Standard Plan

Company:	Kaiser Francis	Local Co-ordinate Reference:	Well Mosaic Fed 2419 3BS 1H
Project:	Mosaic Fed 2419 3BS 1H	TVD Reference:	WELL @ 3008.6usft (Original Well Elev)
Site:	Mosaic Fed 2419 3BS 1H	MD Reference:	WELL @ 3008.6usft (Original Well Elev)
Well:	Mosaic Fed 2419 3BS 1H	North Reference:	Grid
Wellbore:	Mosaic Fed 2419 3BS 1H	Survey Calculation Method:	Minimum Curvature
Design:	190228 Mosaic Fed 2419 3BS 1H	Database:	EDM 5000.1 Single User Db

Planned Survey											
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	Easting (usft)	Northing (usft)	V. Sec (usft)	DLeg (°/100usft)	
17,300.0	90.00	90.79	9,592.9	6,584.3	343.2	7,801.9	636,979.36	471,597.75	7,808.72	0.00	
17,350.0	90.00	90.79	9,592.9	6,584.3	342.5	7,851.9	637,029.35	471,597.07	7,858.67	0.00	
17,400.0	90.00	90.79	9,592.9	6,584.3	341.8	7,901.9	637,079.35	471,596.38	7,908.62	0.00	
17,450.0	90.00	90.79	9,592.9	6,584.3	341.2	7,951.9	637,129.34	471,595.69	7,958.57	0.00	
17,500.0	90.00	90.79	9,592.9	6,584.3	340.5	8,001.9	637,179.34	471,595.00	8,008.52	0.00	
17,550.0	90.00	90.79	9,592.9	6,584.3	339.8	8,051.9	637,229.33	471,594.31	8,058.47	0.00	
17,600.0	90.00	90.79	9,592.9	6,584.3	339.1	8,101.9	637,279.33	471,593.62	8,108.43	0.00	
17,650.0	90.00	90.79	9,592.9	6,584.3	338.4	8,151.9	637,329.32	471,592.93	8,158.38	0.00	
17,700.0	90.00	90.79	9,592.9	6,584.3	337.7	8,201.9	637,379.32	471,592.24	8,208.33	0.00	
17,750.0	90.00	90.79	9,592.9	6,584.3	337.0	8,251.9	637,429.31	471,591.55	8,258.28	0.00	
17,800.0	90.00	90.79	9,592.9	6,584.3	336.3	8,301.9	637,479.31	471,590.86	8,308.23	0.00	
17,850.0	90.00	90.79	9,592.9	6,584.3	335.6	8,351.9	637,529.30	471,590.17	8,358.19	0.00	
17,900.0	90.00	90.79	9,592.9	6,584.3	334.9	8,401.9	637,579.30	471,589.48	8,408.14	0.00	
17,950.0	90.00	90.79	9,592.9	6,584.3	334.3	8,451.9	637,629.29	471,588.79	8,458.09	0.00	
18,000.0	90.00	90.79	9,592.9	6,584.3	333.6	8,501.8	637,679.29	471,588.10	8,508.04	0.00	
18,050.0	90.00	90.79	9,592.9	6,584.3	332.9	8,551.8	637,729.28	471,587.41	8,557.99	0.00	
18,100.0	90.00	90.79	9,592.9	6,584.3	332.2	8,601.8	637,779.28	471,586.72	8,607.94	0.00	
18,150.0	90.00	90.79	9,592.9	6,584.3	331.5	8,651.8	637,829.28	471,586.03	8,657.90	0.00	
18,200.0	90.00	90.79	9,592.9	6,584.3	330.8	8,701.8	637,879.27	471,585.35	8,707.85	0.00	
18,250.0	90.00	90.79	9,592.9	6,584.3	330.1	8,751.8	637,929.27	471,584.66	8,757.80	0.00	
18,300.0	90.00	90.79	9,592.9	6,584.3	329.4	8,801.8	637,979.26	471,583.97	8,807.75	0.00	
18,350.0	90.00	90.79	9,592.9	6,584.3	328.7	8,851.8	638,029.26	471,583.28	8,857.70	0.00	
18,400.0	90.00	90.79	9,592.9	6,584.3	328.1	8,901.8	638,079.25	471,582.59	8,907.65	0.00	
18,450.0	90.00	90.79	9,592.9	6,584.3	327.4	8,951.8	638,129.25	471,581.90	8,957.61	0.00	
18,500.0	90.00	90.79	9,592.9	6,584.3	326.7	9,001.8	638,179.24	471,581.21	9,007.56	0.00	
18,550.0	90.00	90.79	9,592.9	6,584.3	326.0	9,051.8	638,229.24	471,580.52	9,057.51	0.00	
18,600.0	90.00	90.79	9,592.9	6,584.3	325.3	9,101.8	638,279.23	471,579.83	9,107.46	0.00	

Morcor Engineering
Morcor Standard Plan

Company:	Kaiser Francis	Local Co-ordinate Reference:	Well Mosaic Fed 2419 3BS 1H
Project:	Mosaic Fed 2419 3BS 1H	TVD Reference:	WELL @ 3008.6usft (Original Well Elev)
Site:	Mosaic Fed 2419 3BS 1H	MD Reference:	WELL @ 3008.6usft (Original Well Elev)
Well:	Mosaic Fed 2419 3BS 1H	North Reference:	Grid
Wellbore:	Mosaic Fed 2419 3BS 1H	Survey Calculation Method:	Minimum Curvature
Design:	190228 Mosaic Fed 2419 3BS 1H	Database:	EDM 5000.1 Single User Db

Planned Survey											
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	Easting (usft)	Northing (usft)	V. Sec (usft)	DLeg (°/100usft)	
18,650.0	90.00	90.79	9,592.9	6,584.3	324.6	9,151.8	638,329.23	471,579.14	9,157.41	0.00	
18,700.0	90.00	90.79	9,592.9	6,584.3	323.9	9,201.8	638,379.22	471,578.45	9,207.36	0.00	
18,750.0	90.00	90.79	9,592.9	6,584.3	323.2	9,251.8	638,429.22	471,577.76	9,257.32	0.00	
18,800.0	90.00	90.79	9,592.9	6,584.3	322.5	9,301.8	638,479.21	471,577.07	9,307.27	0.00	
18,850.0	90.00	90.79	9,592.9	6,584.3	321.8	9,351.8	638,529.21	471,576.38	9,357.22	0.00	
18,900.0	90.00	90.79	9,592.9	6,584.3	321.2	9,401.8	638,579.20	471,575.69	9,407.17	0.00	
18,950.0	90.00	90.79	9,592.9	6,584.3	320.5	9,451.8	638,629.20	471,575.00	9,457.12	0.00	
19,000.0	90.00	90.79	9,592.9	6,584.3	319.8	9,501.8	638,679.19	471,574.32	9,507.07	0.00	
19,050.0	90.00	90.79	9,592.9	6,584.3	319.1	9,551.7	638,729.19	471,573.63	9,557.03	0.00	
19,100.0	90.00	90.79	9,592.9	6,584.3	318.4	9,601.7	638,779.19	471,572.94	9,606.98	0.00	
19,150.0	90.00	90.79	9,592.9	6,584.3	317.7	9,651.7	638,829.18	471,572.25	9,656.93	0.00	
19,200.0	90.00	90.79	9,592.9	6,584.3	317.0	9,701.7	638,879.18	471,571.56	9,706.88	0.00	
19,250.0	90.00	90.79	9,592.9	6,584.3	316.3	9,751.7	638,929.17	471,570.87	9,756.83	0.00	
19,300.0	90.00	90.79	9,592.9	6,584.3	315.6	9,801.7	638,979.17	471,570.18	9,806.79	0.00	
19,350.0	90.00	90.79	9,592.9	6,584.3	315.0	9,851.7	639,029.16	471,569.49	9,856.74	0.00	
19,400.0	90.00	90.79	9,592.9	6,584.3	314.3	9,901.7	639,079.16	471,568.80	9,906.69	0.00	
19,450.0	90.00	90.79	9,592.9	6,584.3	313.6	9,951.7	639,129.15	471,568.11	9,956.64	0.00	
19,500.0	90.00	90.79	9,592.9	6,584.3	312.9	10,001.7	639,179.15	471,567.42	10,006.59	0.00	
19,550.0	90.00	90.79	9,592.9	6,584.3	312.2	10,051.7	639,229.14	471,566.73	10,056.54	0.00	
19,600.0	90.00	90.79	9,592.9	6,584.3	311.5	10,101.7	639,279.14	471,566.04	10,106.50	0.00	
19,650.0	90.00	90.79	9,592.9	6,584.3	310.8	10,151.7	639,329.13	471,565.35	10,156.45	0.00	
19,700.0	90.00	90.79	9,592.9	6,584.3	310.1	10,201.7	639,379.13	471,564.66	10,206.40	0.00	
19,750.0	90.00	90.79	9,592.9	6,584.3	309.4	10,251.7	639,429.12	471,563.97	10,256.35	0.00	
19,754.0	90.00	90.79	9,592.9	6,584.3	309.4	10,255.7	639,433.12	471,563.92	10,260.35	0.00	
TD at 19754.0 - 5 1/2" Production Casing											

Morcor Engineering

Morcor Standard Plan

Company:	Kaiser Francis	Local Co-ordinate Reference:	Well Mosaic Fed 2419 3BS 1H
Project:	Mosaic Fed 2419 3BS 1H	TVD Reference:	WELL @ 3008.6usft (Original Well Elev)
Site:	Mosaic Fed 2419 3BS 1H	MD Reference:	WELL @ 3008.6usft (Original Well Elev)
Well:	Mosaic Fed 2419 3BS 1H	North Reference:	Grid
Wellbore:	Mosaic Fed 2419 3BS 1H	Survey Calculation Method:	Minimum Curvature
Design:	190228 Mosaic Fed 2419 3BS 1H	Database:	EDM 5000.1 Single User Db

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
120.0	120.0	20" Conductor	20	26	
350.0	350.0	13 3/8" Surface Casing	13-3/8	17-1/2	
2,613.0	2,613.0	10 3/4" Intermediate Casing	10-3/4	12-1/4	
19,754.0	9,592.9	5 1/2" Production Casing	5-1/2	8-3/4	

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
2,638.6	2,638.6	Delaware		0.00		
3,368.6	3,368.6	Cherry Canyon		0.00		
9,374.0	9,328.6	3rd Bone Spring		0.00		
7,323.5	7,303.6	1st Bone Spring		0.00		
4,759.5	4,753.6	Brushy Canyon		0.00		
8,097.7	8,073.6	2nd Bone Spring		0.00		
6,267.7	6,253.6	Bone Spring		0.00		

Morcor Engineering
Morcor Standard Plan

Company:	Kaiser Francis	Local Co-ordinate Reference:	Well Mosaic Fed 2419 3BS 1H
Project:	Mosaic Fed 2419 3BS 1H	TVD Reference:	WELL @ 3008.6usft (Original Well Elev)
Site:	Mosaic Fed 2419 3BS 1H	MD Reference:	WELL @ 3008.6usft (Original Well Elev)
Well:	Mosaic Fed 2419 3BS 1H	North Reference:	Grid
Wellbore:	Mosaic Fed 2419 3BS 1H	Survey Calculation Method:	Minimum Curvature
Design:	190228 Mosaic Fed 2419 3BS 1H	Database:	EDM.5000.1 Single User Db

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
3,550.0	3,550.0	0.0	0.0	Start Build 3.00
3,750.0	3,749.6	1.8	-10.3	Start 850.0 hold at 3750.0 MD
4,600.0	4,595.0	17.2	-97.8	Start Turn 29.00
4,700.0	4,694.5	21.4	-107.0	Start Turn 29.00
4,800.0	4,793.9	29.6	-113.0	Start DLS 2.18 TFO 100.44
4,900.0	4,893.4	39.7	-115.1	Start 3850.0 hold at 4900.0 MD
8,750.0	8,722.3	442.0	-122.1	Start Drop -3.00
8,950.0	8,921.9	452.5	-122.3	Start 98.0 hold at 8950.0 MD
9,048.0	9,019.9	452.5	-122.3	Start Build 10.00
9,948.0	9,592.9	444.6	450.6	Start 9806.0 hold at 9948.0 MD
19,754.0	9,592.9	309.4	10,255.7	TD at 19754.0

Checked By: _____	Approved By: _____	Date: _____
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