Form 3160-3
(June 2015)

FORM APPROVED
OMB No. 1004-0137
Expires: January 31, 2018

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No.: NMNM122620

6. If Indian, Allotee or Tribe Name:

1a. Type of work: ☑ DRILL ☐ REENTER

1b. Type of Well: ☑ Oil Well ☐ Gas Well ☐ Other

1c. Type of Completion: ☐ Hydraulic Fracturing ☑ Single Zone ☐ Multiple Zone

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

8. Lease Name and Well No.: RED HILLS FEDERAL 106H

2. Name of Operator: KAISER FRANCIS OIL COMPANY

9. API Well No.: 30 025 47036

3a. Address: 6733 S. Yale Ave. Tulsa OK 74121

3b. Phone No. *(include area code)*: (918)491-0000

10. Field and Pool, or Exploratory: BELL LAKE / BONE SPRING, SOUTH

4. Location of Well *(Report location clearly and in accordance with any State requirements.*)*

At surface: NENE / 300 FNL / 1055 FEL / LAT 32.0943496 / LONG -103.6062614

At proposed prod. zone: SESE / 100 FSL / 400 FEL / LAT 32.0655728 / LONG -103.6041408

11. Sec., T. R. M. or Blk. and Survey or Area: SEC 31 / T25S / R33E / NMP

14. Distance in miles and direction from nearest town or post office*: 25 miles

12. County or Parish: LEA

13. State: NM

15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any): 300 feet

16. No of acres in lease: 440.2

17. Spacing Unit dedicated to this well: 320

18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.: 20 feet

19. Proposed Depth: 9872 feet / 20618 feet

20. BLM/BIA Bond No. in file: FED: WYB000055

21. Elevations (Show whether DF, KDB, RT, GL, etc.): 3401 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.
2. A Drilling Plan.
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).
4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above).
5. Operator certification.
6. Such other site specific information and/or plans as may be requested by the BLM.

25. Signature	Name *(Printed/Typed)*	Date
(Electronic Submission)	Stormi Davis / Ph: (575)308-3765	03/08/2019

Title: Regulatory Analyst

Approved by *(Signature)*	Name *(Printed/Typed)*	Date
(Electronic Submission)	Cody Layton / Ph: (575)234-5959	03/30/2020

Title	Office
Assistant Field Manager Lands & Minerals	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

(Continued on page 2)

*(Instructions on page 2)

Approval Date: 03/30/2020

Entered 04/02/2020 - KMS NMOCD

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	[3] Pool Name
30-025- 47036	97994	WC-025 G-06 S253329D; Upper Bone Spring

[4] Property Code	[5] Property Name	[6] Well Number
	RED HILLS FEDERAL	**106H**

[7] OGRID No.	[8] Operator Name	[9] Elevation
12361	**KAISER-FRANCIS OIL CO.**	**3400.9**

[10] Surface Location

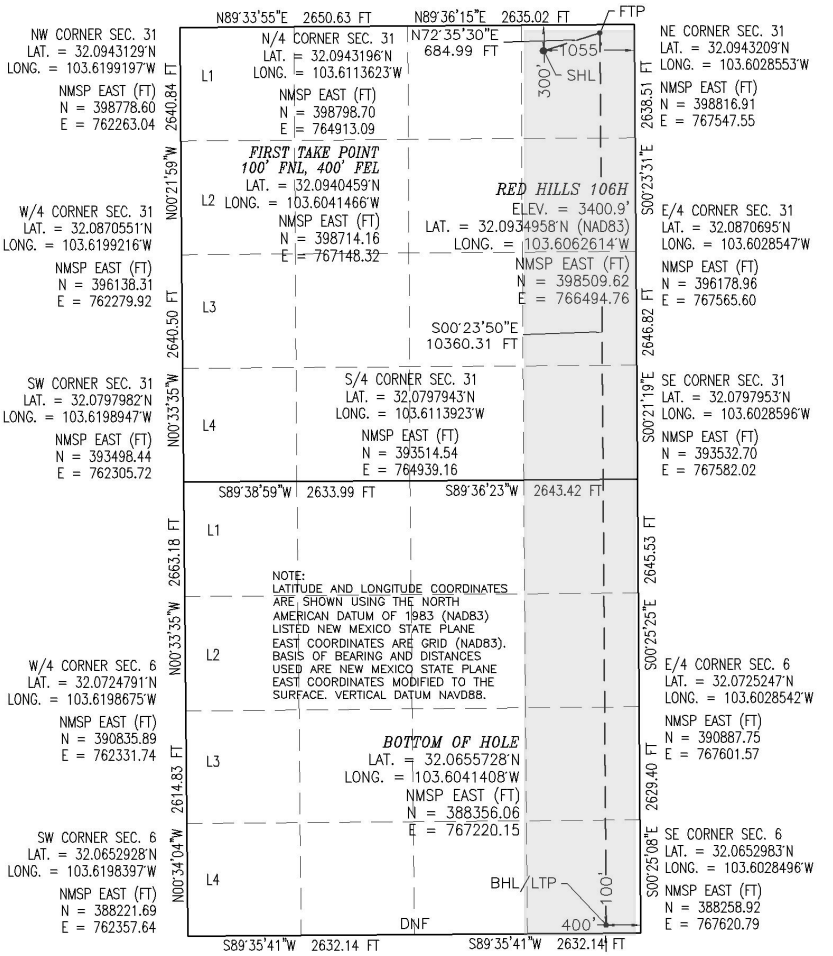
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
A	**31**	**25 S**	**33 E**		**300**	**NORTH**	**1055**	**EAST**	**LEA**

[11] Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
P	**6**	**26 S**	**33 E**		**100**	**SOUTH**	**400**	**EAST**	**LEA**

[12] Dedicated Acres	[13] Joint or Infill	[14] Consolidation Code	[15] Order No.
320			

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.



[17] OPERATOR CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

Stormi Davis 1/2/20
Signature Date

Stormi Davis
Printed Name

ssdavis104@gmail.com
E-mail Address

[18] SURVEYOR CERTIFICATION

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.

NOVEMBER 12, 2019
Date of Survey

Signature and Seal of Professional Surveyor:

Certificate Number: FILIMON F. JARAMILLO PLS 12797

SURVEY NO. 6455C

District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 S. First St., Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy, Minerals and Natural Resources Department

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Submit Original
to Appropriate
District Office

GAS CAPTURE PLAN

Date: **02/20/2019**

☒ Original

Operator & OGRID No.: Kaiser-Francis Oil Company, 12361

☐ Amended - Reason for Amendment: _____

This Gas Capture Plan outlines actions to be taken by the Operator to reduce well/production facility flaring/venting for new completion (new drill, recomplete to new zone, re-frac) activity.

Note: Form C-129 must be submitted and approved prior to exceeding 60 days allowed by Rule (Subsection A of 19.15.18.12 NMAC).

Well(s)/Production Facility – Name of facility

The well(s) that will be located at the production facility are shown in the table below.

Well Name	API	Well Location (ULSTR)	Footages	Expected MCF/D	Flared or Vented	Comments
Red Hills 004H	TBD	K-6-26S-33E		2000	0	
Red Hills 005H	TBD	K-6-26S-33E		2000	0	
Red Hills 006H	TBD	K-6-26S-33E		2000	0	
Red Hills 104H	TBD	K-6-26S-33E		2000	0	
Red Hills 105H	TBD	K-6-26S-33E		2000	0	
Red Hills 106H	TBD	K-6-26S-33E		2000	0	
Red Hills 404H	TBD	K-6-26S-33E		2000	0	
Red Hills 405H	TBD	K-6-26S-33E		2000	0	
Red Hills 406H	TBD	K-6-26S-33E		2000	0	

Gathering System and Pipeline Notification

Well(s) will be connected to a production facility after flowback operations are complete, if gas transporter system is in place. The gas produced from production facility is dedicated to Targa and will be connected to Targa low/high pressure gathering system located in _Lea_ County, New Mexico. It will require _11,000' of pipeline to connect the facility to low/high pressure gathering system. Kaiser-Francis Oil Company provides (periodically) to Targa a drilling, completion and estimated first production date for wells that are scheduled to be drilled in the foreseeable future. In addition, Kaiser-Francis Oil Company and Targa have periodic conference calls to discuss changes to drilling and completion schedules. Gas from these wells will be processed at Targa Processing Plant located in Sec._36_, Twn.__19S_, Rng._36E, __Lea__ County, New Mexico. The actual flow of the gas will be based on compression operating parameters and gathering system pressures.

Flowback Strategy

After the fracture treatment/completion operations, well(s) will be produced to temporary production tanks and gas will be flared or vented. During flowback, the fluids and sand content will be monitored. When the produced fluids contain minimal sand, the wells will be turned to production facilities. Gas sales should start as soon as the wells start flowing through the production facilities, unless there are operational issues on Targa system at that time. Based on current information, it is Kaiser-Francis Oil Company's belief the system can take this gas upon completion of the well(s).

Safety requirements during cleanout operations from the use of underbalanced air cleanout systems may necessitate that sand and non-pipeline quality gas be vented and/or flared rather than sold on a temporary basis.

Alternatives to Reduce Flaring

Below are alternatives considered from a conceptual standpoint to reduce the amount of gas flared.

- Power Generation – On lease
  - Only a portion of gas is consumed operating the generator, remainder of gas will be flared
- Compressed Natural Gas – On lease
  - Gas flared would be minimal, but might be uneconomical to operate when gas volume declines
- NGL Removal – On lease
  - Plants are expensive, residue gas is still flared, and uneconomical to operate when gas volume declines

PECOS DISTRICT
DRILLING OPERATIONS
CONDITIONS OF APPROVAL

OPERATOR'S NAME:	**Kaiser Francis Oil Company**
LEASE NO.:	**NMNM122620**
WELL NAME & NO.:	**Red Hills Federal 106H**
SURFACE HOLE FOOTAGE:	**300' FNL & 1055' FEL**
BOTTOM HOLE FOOTAGE	**100' FSL & 400' FEL**
LOCATION:	**Section 31, T 25S, R 33E, NMPM**
COUNTY:	**Lea 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 **972'** (a minimum of 25' into the Rustler Anhydrite and above the salt) and cemented to surface.
   a. **If cement does not circulate to surface,** the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of **6 hours** after pumping cement, ideally between 8-10 hours after.
   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 **9-5/8"** intermediate casing shall be set at approximately **4999'** and cemented to surface.

   a. **If cement does not circulate to surface,** see B.1.a, c & d.

3. 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.

   a. **If cement does not circulate to surface,** see B.1.a, c & d.

   b. In Medium Cave/Karst areas, if cement does not circulate to surface on the first two casing strings, the cement on the 3rd casing string must come to surface.

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.

DR 03/13/2020

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 intergrity 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 intergrity 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, it must meet or exceed the pressure rating of the BOP system. Additionally, 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.

AFMSS

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

Operator Certification Data Report

03/31/2020

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 **Signed on:** 03/08/2019

Title: Regulatory Analyst

Street Address: 106 W. Riverside Drive

City: Carlsbad **State:** NM **Zip:** 88220

Phone: (575)308-3765

Email address: nmogrservices@gmail.com

Field Representative

Representative Name:

Street Address: P.O. Box 21468

City: Oklahoma City **State:** OK **Zip:** 74121-1468

Phone: (918)527-5260

Email address: erich@kfoc.net

APD ID: 10400039639 **Submission Date:** 03/08/2019

Operator Name: KAISER FRANCIS OIL COMPANY

Well Name: RED HILLS FEDERAL **Well Number:** 106H

Well Type: OIL WELL **Well Work Type:** Drill

Highlighted data reflects the most recent changes

Show Final Text

Section 1 - General

APD ID: 10400039639 **Tie to previous NOS?** N **Submission Date:** 03/08/2019

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: NMNM122620 **Lease Acres:** 440.2

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.

Zip: 74121

Operator PO Box: PO Box 21468

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: RED HILLS FEDERAL **Well Number:** 106H **Well API Number:**

Field/Pool or Exploratory? Field and Pool **Field Name:** BELL LAKE **Pool Name:** BONE SPRING, SOUTH

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

Operator Name: KAISER FRANCIS OIL COMPANY

Well Name: RED HILLS FEDERAL **Well Number:** 106H

Is the proposed well in an area containing other mineral resources? USEABLE WATER,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:** RED HILLS **Number:** 3

Well Class: HORIZONTAL **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: 25 Miles **Distance to nearest well:** 20 FT **Distance to lease line:** 300 FT

Reservoir well spacing assigned acres Measurement: 320 Acres

Well plat: Red_Hills_106H_Pymt_Rec_20190308113712.pdf

Red_Hills_Federal_106H_C102_20200102104810.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: 6455 **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	300	FNL	1055	FEL	25S	33E	31	Aliquot NENE	32.0943496	-103.6062614	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 122620	3401	0	0	
KOP Leg #1	300	FNL	1055	FEL	25S	33E	31	Aliquot NENE	32.0934958	-103.6062614	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 122620	-5940	9400	9341	

Operator Name: KAISER FRANCIS OIL COMPANY

Well Name: RED HILLS FEDERAL **Well Number:** 106H

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	100	FNL	400	FEL	25S	33E	31	Aliquot NENE	32.0940459	-103.6041466	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 122620	-6471	10259	9872	
PPP Leg #1-2	0	FNL	400	FEL	26S	33E	6	Aliquot NENE	32.079916	-103.6041437	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 015321	-6471	15439	9872	
EXIT Leg #1	100	FSL	400	FEL	26S	33E	6	Aliquot SESE	32.0655728	-103.6041408	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 015321	-6471	20618	9872	
BHL Leg #1	100	FSL	400	FEL	26S	33E	6	Aliquot SESE	32.0655728	-103.6041408	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 015321	-6471	20618	9872	

APD ID: 10400039639 **Submission Date:** 03/08/2019

Operator Name: KAISER FRANCIS OIL COMPANY

Well Name: RED HILLS FEDERAL **Well Number:** 106H

Well Type: OIL WELL **Well Work Type:** Drill

Highlighted data reflects the most recent changes

Show Final Text

Section 1 - Geologic Formations

Formation ID	Formation Name	Elevation	True Vertical Depth	Measured Depth	Lithologies	Mineral Resources	Producing Formation
409006	---	3401	0	0	OTHER : None	NONE	N
409007	RUSTLER	2519	882	882	SANDSTONE	NONE	N
409008	SALADO	2179	1222	1222	SALT	NONE	N
409009	TOP SALT	1379	2022	2022	SALT	NONE	N
409010	BASE OF SALT	-1071	4472	4472	SALT	NONE	N
409011	LAMAR	-1371	4772	4772	SANDSTONE	NATURAL GAS, OIL	N
409012	BELL CANYON	-1491	4892	4892	SANDSTONE	NATURAL GAS, OIL	N
409013	CHERRY CANYON	-2481	5882	5882	SANDSTONE	NATURAL GAS, OIL	N
409014	BRUSHY CANYON	-5221	8622	8622	SANDSTONE	NATURAL GAS, OIL	N
409022	BONE SPRING	-5421	8822	8822	LIMESTONE	NATURAL GAS, OIL	N
409023	AVALON SAND	-5631	9032	9032	SANDSTONE	NATURAL GAS, OIL	Y

Section 2 - Blowout Prevention

Pressure Rating (PSI): 5M **Rating Depth:** 11000

Equipment: A 5M 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

Operator Name: KAISER FRANCIS OIL COMPANY

Well Name: RED HILLS FEDERAL **Well Number:** 106H

Testing Procedure: BOP/BOPE will be tested by an independent service company to 250 psi low and 5000 psi high. The System may be upgraded to a higher pressure but still tested to the working pressure stated. If the system is upgraded all the components installed will be functional and tested. Pipe rams will be operationally checked each 24 hour period. The Annular shall be functionally operated at least weekly. Blind rams will be operationally checked on each trip out of the hole. These checks will be noted on the daily tour sheets.

Choke Diagram Attachment:

Red_Hills_Pad_3_Choke_Manifold_20190222070105.pdf

BOP Diagram Attachment:

Red_Hills_Pad_3_Wellhead_Diagram_20190222070205.pdf

Red_Hills_Pad_3_BOP_20190222070135.pdf

Cactus_Flex_Hose_16C_Certification_20200102111339.pdf

Well_Control_Plan_20200102111340.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	972	0	972			972	J-55	54.5	BUTT	2.7	6.4	DRY	18.3	DRY	17.2
2	INTERMEDIATE	12.25	9.625	NEW	API	N	0	4999	0	4972			4999	L-80	40	LT&C	1.2	2.3	DRY	3.8	DRY	4.8
3	PRODUCTION	8.5	5.5	NEW	API	N	0	20618	0	9872			20618	P-110	20	OTHER - GBCD	2.4	2.7	DRY	3.4	DRY	3.3

Casing Attachments

Operator Name: KAISER FRANCIS OIL COMPANY

Well Name: RED HILLS FEDERAL **Well Number:** 106H

Casing Attachments

Casing ID: 1 **String Type:** SURFACE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Red_Hills_106H_Casing_Assumptions_20200102111715.pdf

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

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Red_Hills_106H_Casing_Assumptions_20200102111753.pdf

Casing ID: 3 **String Type:** PRODUCTION

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Red_Hills_106H_GBCD_5.5in_Connection_Spec_Sheet_20190301065600.pdf

Red_Hills_106H_Casing_Assumptions_20200102111825.pdf

Section 4 - Cement

Operator Name: KAISER FRANCIS OIL COMPANY

Well Name: RED HILLS FEDERAL **Well Number:** 106H

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
SURFACE	Lead		0	972	500	1.75	13.5	874	50	Halcem	Kol Seal
SURFACE	Tail		0	972	157	1.33	14.8	209	50	Halcem	Poly Flake
INTERMEDIATE	Lead		0	4999	748	2.09	12.5	1563	30	Econocem	Kol Seal
INTERMEDIATE	Tail		0	4999	293	1.33	14.8	390	30	Halcem	none
PRODUCTION	Lead		3800	20618	354	3.49	10.5	1234	10	Class H	Kol Seal
PRODUCTION	Tail		3800	20618	2325	1.22	14.5	2843	10	Class H	Halad R-344

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
0	972	OTHER : FRESH WATER	8.4	9							
972	4972	OTHER : BRINE	9.8	10.2							
4972	9872	OTHER : CUT BRINE	8.8	9.2							

Operator Name: KAISER FRANCIS OIL COMPANY

Well Name: RED HILLS FEDERAL **Well Number:** 106H

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: 4712 **Anticipated Surface Pressure:** 2540.16

Anticipated Bottom Hole Temperature(F): 191

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

Describe:

Contingency Plans geoharzards description:

Contingency Plans geohazards attachment:

Hydrogen Sulfide drilling operations plan required? YES

Hydrogen sulfide drilling operations plan:

Red_Hills_Pad_3_H2S_Contingency_Plan_20190222065154.pdf

Section 8 - Other Information

Proposed horizontal/directional/multi-lateral plan submission:

RED_HILLS_106H___Directional_Plan_20200102112149.pdf

Other proposed operations facets description:

Gas Capture Plan attached

Other proposed operations facets attachment:

Red_Hills_Pad_3_Gas_Capture_Plan_20190222065621.pdf

Other Variance attachment:

Cactus_Flex_Hose_16C_Certification_20200102112209.pdf

Kaiser-Francis Oil Company
Red Hills 106H

CASING ASSUMPTIONS

Interval	Length	Casing Size	Weight (#/ft)	Grade	Thread	Condition	Hole Size	TVD (ft)
Conductor	120	20"				New		120
Surface	972	13-3/8"	54.5	J-55	BTC	New	17.5	972
Intermediate	4999	9-5/8"	40	L-80	LTC	New	12.25	4972
Production	20618	5-1/2"	20	P110	GBCD	New	8.5	9872

Mud Type	Mud Weight Hole Control	Viscosity	Fluid Loss
FW	8.4 - 9.0	32 - 34	NC
Brine	9.8 - 10.2	28	NC
Cut Brine	8.8 - 9.2	28-29	NC

Anticipated Mud Weight (ppg)	Max Pore Pressure (psi)	Collapse (psi)	Burst (psi)	Body Tensile Strength	Joint Tensile Strength
9	426	1130	2730	853000	909000
10	2496	3090	5750	916000	727000
9.2	4664	11100	12640	641000	667000

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)
2.7	6.4	17.2	18.3
1.2	2.3	4.8	3.8
2.4	2.7	3.3	3.4

KAISER-FRANCIS OIL COMPANY
HYDROGEN SULFIDE (H_2S) CONTINGENCY PLAN
FOR DRILLING/COMPLETION WORKOVER/FACILITY

Red Hills Pad 3
SECTION 6 -T26S-R33E
LEA COUNTY, NM

This well/facility is not expected to have H_2S, but due to the sensitive location, the following is submitted as requested.

TABLE OF CONTENTS

EMERGENCY RESPONSE ACTIVATION AND GENERAL RESPONSIBILITIES

Activation of the Emergency Action Plan

In the event of any emergency situation, all personnel on location should first ensure that the following items are initiated. After that, they should refer to the appropriate Specific Emergency Guidance sections below for further responsibilities:

1. Notify the senior ranking contract representative on site.
2. Notify Kaiser-Francis representative in charge.
3. Notify civil authorities if the Kaiser-Francis Representative cannot be contacted and the situation dictates.
4. Perform rescue and first aid as required (without jeopardizing additional personnel).

General Responsibilities

In the event of an H_2S emergency, the following plan will be initiated.

1) All personnel will immediately evacuate to an up-wind and if possible up-hill “safe area”.

2) If for any reason a person must enter the hazardous area, they must wear a SCBA (Self contained breathing apparatus).

3) Always use the “buddy system”.

4) Isolate the well/problem if possible.

5) Account for all personnel

6) Display the proper colors, warning all unsuspecting personnel of the danger at hand

7) Contact the Company personnel as soon as possible if not at the location. (use the enclosed call list as instructed)

At this point the company representative will evaluate the situation and coordinate the necessary duties to bring the situation under control, and if necessary, the notification of emergency response agencies and residents.

INDIVIDUAL RESPONSIBILITIES DURING AN H_2S RELEASE

The following procedures and responsibilities will be implemented on activation of the H_2S siren and lights.

All Personnel:

1. On alarm, don escape unit (if available) and report to upwind briefing area.

Rig Manager/Tool Pusher:

1. Check that all personnel are accounted for and their condition.
2. Administer or arrange for first aid treatment, and/or call EMTs as needed.
3. Identify two people best suited to secure well and perform rescue, and instruct them to don SCBA.
4. Notify Contract management and Kaiser-Francis Representative.
5. Remain at the briefing area, assess and monitor personnel and overall situation for hazards or conditions that might warrant a change in the action plan.

Two People Responsible for Shut-in and Rescue:

1. Don SCBA and acquire tools to secure well and perform rescue, i.e., wrenches, retrieval ropes, etc.
2. Utilize the buddy system to secure well and perform rescue(s).
3. Return to the briefing area and stand by for further instructions.

All Other Personnel:

1. Isolate the area and prevent entry by other persons into the 100 ppm ROE. Additionally the first responder(s) must evacuate any public places encompassed by the 100 ppm ROE. First responder(s) must take care not to injure themselves during this operation. Company and/or local officials must be contacted to aid in this operation. Evacuation of the public should be beyond the 100 ppm ROE.

Kaiser-Francis Oil Company Representative:

1. Remain at the briefing area, assess and monitor personnel and overall situation for hazards or conditions that might warrant a change in the action plan.
2. Notify company management or Local Incident Commander, and Police, Fire Department, or other local emergency services as required.

PROCEDURE FOR IGNITING AN UNCONTROLLABLE CONDITION:
Should control of the well be considered lost and ignition considered, take care to protect against exposure to Sulfur Dioxide (SO_2). Intentional ignition must be coordinated with the NMOCD and local officials. Additionally the NM State Police shall be the Incident Command of any major release.

The decision to ignite a well should be a last resort and one if not both of the following pertain.

1) Human life and/or property are in danger.

2) There is no hope of bringing the situation under control with the prevailing conditions at the site.

INSTRUCTIONS FOR IGNITION:

1) Two people are required. They must be equipped with positive pressure; self contained breathing apparatus and a "D"-ring style, full body, OSHA approved safety harness. Non-flammable rope will be attached.

2) One of the people will be a qualified safety person who will test the atmosphere for H_2S, Oxygen, & LFL. The other person will be the company supervisor; he is responsible for igniting the well.

3) Ignite up-wind from a distance no closer than necessary. Make sure that where you ignite from has the maximum escape avenue available. A 25mm flare gun shall be used, with a +/-500' range to ignite the gas.

4) Prior to ignition, make a final check for combustible gases.

5) Following ignition, continue with the emergency actions & procedures as before.

CONTACTING AUTHORITIES

Kaiser-Francis personnel must liaison with local and state agencies to ensure a proper response to a major release. Additionally, the OCD must be notified of the release as soon as possible but no later than 4 hours. Agencies will ask for information such as type and volume of release, wind direction, location of release, etc. Be prepared with all information available. The following call list of essential and potential responders has been prepared for use during a release. This response plan must be in coordination with the State of New Mexico's 'Hazardous Materials Emergency Response Plan' (HMER).

EMERGENCY CALL LIST: (Start and continue until ONE of these people have been reached)

	OFFCE	MOBILE
Kaiser-Francis Oil Co.	918/494-0000	
Bill Wilkinson	580/668-2335	580/221-4637
David Zerger	918/491-4350	918/557-6708
Charles Lock	918/491-4337	918/671-6510
Stuart Blake	918/491-4347	918/510-4126
Robert Sanford	918/491-4201	918/770-2682
Eric Hansen	918/491-4339	918/527-5260

EMERGENCY RESPONSE NUMBERS: Lea County, New Mexico

State Police – Artesia	575/748-9718
State Police – Hobbs	575/392-5580
State Police – Carlsbad	575/885-3138
Lea County Sheriff - Lovington	575/396-3611
Local Emergency Planning Center – Lea County	575/396-8607
Local Emergency Planning Center – Eddy County	575/885-3581
Fire Fighting, Rescue & Ambulance – Carlsbad	911 or 575/885-3125
Fire Fighting, Rescue & Ambulance – Hobbs	911 or 575/397-9308
Fire Fighting – Jal Volunteer Fire Department	911 or 505/395-2221
New Mexico Oil & Gas Commission – Artesia	575/748-1283
New Mexico Oil & Gas Commission – Hobbs	575/393-6161
Air Medical Transport Services – Hobbs	800/550-1025
Med Flight Air Ambulance – Albuquerque	505/842-4433
Angel MedFlight	844/553-9033
DXP	432/580-3770
BJ Services	575/392-5556
Halliburton	575/392-6531 800/844-8451

PROTECTION OF THE GENERAL PUBLIC/ROE:

In the event of a release with a concentration greater than 100 ppm H_2S, the ROE (Radius of Exposure) calculations will be done to determine if the following conditions have been met:

- Does the 100 ppm ROE include any public area (any place not associated with this site)
- Does the 500 ppm ROE include any public road (any road which the general public may travel)
- Is the 100 ppm ROE equal to or greater than 3000 feet

If any one of these conditions have been met then the Contingency Plan will be implemented. The following shows how to calculate the radius of exposure and an example.

Calculation for the 100 ppm ROE:

X = [(1.589)(concentration)(Q)] (0.6258)

(H2S concentrations in decimal form)
10,000 ppm +=1.+
1,000 ppm +=.1+
100 ppm +=.01+
10 ppm +=.001+

Calculation for the 500 ppm ROE:

X+[(0.4546)(concentration)(Q)] (.06258)

EXAMPLE: If a well/facility has been determined to have 150 ppm H_2S in the gas mixture and the well/facility is producing at a gas rate of 200 MCFPD then:

ROE for 100 PPM X=[(1.589)(.0150)(200)] (0.6258)
X=2.65'

ROE for 500 PPM X=[(.4546)(.0150)(200)] (0.6258)
X=1.2'

(These calculations will be forwarded to the appropriate District NMOCD office when applicable.)

PUBLIC EVACUATION PLAN:
(When the supervisor has determined that the General Public will be involved, the following plan will be implemented)

1) Notification of the emergency response agencies of the hazardous condition and Implement evacuation procedures.

2) A trained person in H_2S safety, shall monitor with detection equipment the H_2S Concentration, wind and area of exposure (ROE). This person will determine the outer perimeter of the hazardous area. The extent of the evacuation area will be determined from the data being collected. Monitoring shall continue until the situation has been resolved. **(All monitoring equipment will be UL approved, for use in class I groups A,B,C & D, Division I, hazardous locations. All monitors will have a minimum capability of measuring H_2S, oxygen, and flammable values.)**

3) Law enforcement shall be notified to set up necessary barriers and maintain such for the duration of the situation as well as aid in the evacuation procedure.

4) The company supervising personnel shall stay in communication with all agencies through out the duration of the situation and inform such agencies when the situation has been contained and the effected area(s) is safe to enter.

CHARACTERISTICS OF H_2S AND SO_2

Common Name	Chemical Formula	Specific Gravity	Threshold Limit	Hazardous Limit	Lethal Concentration
Hydrogen Sulfide	H_2S	1.189 Air = 1	10 ppm	100 ppm	600 ppm
Sulfur Dioxide	SO_2	2.21 Air = 1	2 ppm	N/A	1000 ppm

TRAINING:

All responders must have training in the detection of H_2S measures for protection against the gas, equipment used for protection and emergency response. Weekly drills by all crews will be conducted and recorded in the IADC daily log. Additionally, responders must be equipped with H_2S monitors at all times.

PUBLIC RELATIONS

Kaiser-Francis recognizes that the news media have a legitimate interest in incidents at Kaiser-Francis facilities that could affect the public. It is to the company's benefit to cooperate with the news media when incidents occur because these media are our best liaison with the public.

Our objective is to see that all reports of any emergency are factual and represent the company's position fairly and accurately. Cooperation with news media representatives is the most reliable guarantee that this objective will be met.

All contract and Kaiser-Francis employees are instructed **NOT** to make any statement to the media concerning the emergency incident. If a media representative contacts any employee, they should refer them to the designated Emergency Command Center where they should contact the Incident Commander or his designated relief for any information concerning the incident.

KAISER-FRANCIS OIL COMPANY

Kaiser Francis

Red Hills 106H
Red Hills 106H
Red Hills 106H
Red Hills 106H

Plan: 191215 Red Hills 106H

Morcor Standard Plan

15 December, 2019

Morcor Engineering

Morcor Standard Plan

Company:	Kaiser Francis	**Local Co-ordinate Reference:**	Well Red Hills 106H
Project:	Red Hills 106H	**TVD Reference:**	WELL @ 3422.9usft (Original Well Elev)
Site:	Red Hills 106H	**MD Reference:**	WELL @ 3422.9usft (Original Well Elev)
Well:	Red Hills 106H	**North Reference:**	Grid
Wellbore:	Red Hills 106H	**Survey Calculation Method:**	Minimum Curvature
Design:	191215 Red Hills 106H	**Database:**	EDM 5000.1 Single User Db

Project Red Hills 106H

Map System:	US State Plane 1983	**System Datum:**	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site Red Hills 106H

Site Position:		**Northing:**	398,509.62 usft	**Latitude:**	32° 5' 36.585 N
From:	Map	**Easting:**	766,494.76 usft	**Longitude:**	103° 36' 22.541 W
Position Uncertainty:	1.0 usft	**Slot Radius:**	17-1/2 "	**Grid Convergence:**	0.39 °

Well Red Hills 106H

Well Position	**+N/-S**	0.0 usft	**Northing:**	398,509.62 usft	**Latitude:**	32° 5' 36.585 N
	+E/-W	0.0 usft	**Easting:**	766,494.76 usft	**Longitude:**	103° 36' 22.541 W
Position Uncertainty		0.0 usft	**Wellhead Elevation:**	usft	**Ground Level:**	3,400.9 usft

Wellbore Red Hills 106H

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	12/15/2019	6.54	59.84	47,685

Design 191215 Red Hills 106H

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	175.91

Survey Tool Program **Date** 12/15/2019

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.0	20,618.0	191215 Red Hills 106H (Red Hills 106H)	MWD	MWD - Standard

Company:	Kaiser Francis	**Local Co-ordinate Reference:**	Well Red Hills 106H
Project:	Red Hills 106H	**TVD Reference:**	WELL @ 3422.9usft (Original Well Elev)
Site:	Red Hills 106H	**MD Reference:**	WELL @ 3422.9usft (Original Well Elev)
Well:	Red Hills 106H	**North Reference:**	Grid
Wellbore:	Red Hills 106H	**Survey Calculation Method:**	Minimum Curvature
Design:	191215 Red Hills 106H	**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	-3,422.9	0.0	0.0	766,494.76	398,509.62	0.00	0.00
100.0	0.00	0.00	100.0	-3,322.9	0.0	0.0	766,494.76	398,509.62	0.00	0.00
120.0	0.00	0.00	120.0	-3,302.9	0.0	0.0	766,494.76	398,509.62	0.00	0.00
20" Conductor										
200.0	0.00	0.00	200.0	-3,222.9	0.0	0.0	766,494.76	398,509.62	0.00	0.00
300.0	0.00	0.00	300.0	-3,122.9	0.0	0.0	766,494.76	398,509.62	0.00	0.00
400.0	0.00	0.00	400.0	-3,022.9	0.0	0.0	766,494.76	398,509.62	0.00	0.00
500.0	0.00	0.00	500.0	-2,922.9	0.0	0.0	766,494.76	398,509.62	0.00	0.00
600.0	0.00	0.00	600.0	-2,822.9	0.0	0.0	766,494.76	398,509.62	0.00	0.00
700.0	0.00	0.00	700.0	-2,722.9	0.0	0.0	766,494.76	398,509.62	0.00	0.00
800.0	0.00	0.00	800.0	-2,622.9	0.0	0.0	766,494.76	398,509.62	0.00	0.00
882.0	0.00	0.00	882.0	-2,540.9	0.0	0.0	766,494.76	398,509.62	0.00	0.00
Rustler										
900.0	0.00	0.00	900.0	-2,522.9	0.0	0.0	766,494.76	398,509.62	0.00	0.00
972.0	0.00	0.00	972.0	-2,450.9	0.0	0.0	766,494.76	398,509.62	0.00	0.00
13 3/8" Surface Casing										
1,000.0	0.00	0.00	1,000.0	-2,422.9	0.0	0.0	766,494.76	398,509.62	0.00	0.00
Start Build 3.00										
1,100.0	3.00	37.89	1,100.0	-2,322.9	2.1	1.6	766,496.37	398,511.69	-1.95	3.00
1,200.0	6.00	37.89	1,199.6	-2,223.3	8.3	6.4	766,501.19	398,517.88	-7.78	3.00
1,222.5	6.68	37.89	1,222.0	-2,200.9	10.2	8.0	766,502.71	398,519.84	-9.62	3.00
Salado										
1,229.4	6.88	37.89	1,228.9	-2,194.0	10.9	8.5	766,503.21	398,520.48	-10.23	3.00
Start 8076.2 hold at 1229.4 MD										
1,300.0	6.88	37.89	1,298.9	-2,124.0	17.5	13.6	766,508.41	398,527.16	-16.52	0.00
1,400.0	6.88	37.89	1,398.2	-2,024.7	27.0	21.0	766,515.77	398,536.61	-25.43	0.00
1,500.0	6.88	37.89	1,497.5	-1,925.4	36.4	28.4	766,523.13	398,546.07	-34.34	0.00
1,600.0	6.88	37.89	1,596.8	-1,826.1	45.9	35.7	766,530.49	398,555.53	-43.24	0.00

Company:	Kaiser Francis	**Local Co-ordinate Reference:**	Well Red Hills 106H
Project:	Red Hills 106H	**TVD Reference:**	WELL @ 3422.9usft (Original Well Elev)
Site:	Red Hills 106H	**MD Reference:**	WELL @ 3422.9usft (Original Well Elev)
Well:	Red Hills 106H	**North Reference:**	Grid
Wellbore:	Red Hills 106H	**Survey Calculation Method:**	Minimum Curvature
Design:	191215 Red Hills 106H	**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)
1,700.0	6.88	37.89	1,696.1	-1,726.8	55.4	43.1	766,537.85	398,564.98	-52.15	0.00
1,800.0	6.88	37.89	1,795.3	-1,627.6	64.8	50.4	766,545.21	398,574.44	-61.06	0.00
1,900.0	6.88	37.89	1,894.6	-1,528.3	74.3	57.8	766,552.57	398,583.90	-69.97	0.00
2,000.0	6.88	37.89	1,993.9	-1,429.0	83.7	65.2	766,559.93	398,593.35	-78.88	0.00
2,028.3	6.88	37.89	2,022.0	-1,400.9	86.4	67.3	766,562.01	398,596.03	-81.40	0.00
Top of Salt										
2,100.0	6.88	37.89	2,093.2	-1,329.7	93.2	72.5	766,567.29	398,602.81	-87.79	0.00
2,200.0	6.88	37.89	2,192.5	-1,230.4	102.6	79.9	766,574.65	398,612.27	-96.69	0.00
2,300.0	6.88	37.89	2,291.7	-1,131.2	112.1	87.2	766,582.01	398,621.72	-105.60	0.00
2,400.0	6.88	37.89	2,391.0	-1,031.9	121.6	94.6	766,589.37	398,631.18	-114.51	0.00
2,500.0	6.88	37.89	2,490.3	-932.6	131.0	102.0	766,596.73	398,640.64	-123.42	0.00
2,600.0	6.88	37.89	2,589.6	-833.3	140.5	109.3	766,604.09	398,650.10	-132.33	0.00
2,700.0	6.88	37.89	2,688.9	-734.0	149.9	116.7	766,611.45	398,659.55	-141.24	0.00
2,800.0	6.88	37.89	2,788.1	-634.8	159.4	124.0	766,618.81	398,669.01	-150.14	0.00
2,900.0	6.88	37.89	2,887.4	-535.5	168.8	131.4	766,626.17	398,678.47	-159.05	0.00
3,000.0	6.88	37.89	2,986.7	-436.2	178.3	138.8	766,633.53	398,687.92	-167.96	0.00
3,100.0	6.88	37.89	3,086.0	-336.9	187.8	146.1	766,640.89	398,697.38	-176.87	0.00
3,200.0	6.88	37.89	3,185.2	-237.7	197.2	153.5	766,648.25	398,706.84	-185.78	0.00
3,300.0	6.88	37.89	3,284.5	-138.4	206.7	160.8	766,655.60	398,716.29	-194.69	0.00
3,400.0	6.88	37.89	3,383.8	-39.1	216.1	168.2	766,662.96	398,725.75	-203.59	0.00
3,500.0	6.88	37.89	3,483.1	60.2	225.6	175.6	766,670.32	398,735.21	-212.50	0.00
3,600.0	6.88	37.89	3,582.4	159.5	235.0	182.9	766,677.68	398,744.66	-221.41	0.00
3,700.0	6.88	37.89	3,681.6	258.7	244.5	190.3	766,685.04	398,754.12	-230.32	0.00
3,800.0	6.88	37.89	3,780.9	358.0	254.0	197.6	766,692.40	398,763.58	-239.23	0.00
3,900.0	6.88	37.89	3,880.2	457.3	263.4	205.0	766,699.76	398,773.03	-248.14	0.00
4,000.0	6.88	37.89	3,979.5	556.6	272.9	212.4	766,707.12	398,782.49	-257.04	0.00
4,100.0	6.88	37.89	4,078.8	655.9	282.3	219.7	766,714.48	398,791.95	-265.95	0.00

Company:	Kaiser Francis	**Local Co-ordinate Reference:**	Well Red Hills 106H
Project:	Red Hills 106H	**TVD Reference:**	WELL @ 3422.9usft (Original Well Elev)
Site:	Red Hills 106H	**MD Reference:**	WELL @ 3422.9usft (Original Well Elev)
Well:	Red Hills 106H	**North Reference:**	Grid
Wellbore:	Red Hills 106H	**Survey Calculation Method:**	Minimum Curvature
Design:	191215 Red Hills 106H	**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)
4,200.0	6.88	37.89	4,178.0	755.1	291.8	227.1	766,721.84	398,801.41	-274.86	0.00
4,300.0	6.88	37.89	4,277.3	854.4	301.2	234.4	766,729.20	398,810.86	-283.77	0.00
4,400.0	6.88	37.89	4,376.6	953.7	310.7	241.8	766,736.56	398,820.32	-292.68	0.00
4,496.1	6.88	37.89	4,472.0	1,049.1	319.8	248.9	766,743.64	398,829.41	-301.24	0.00
Base of Salt										
4,500.0	6.88	37.89	4,475.9	1,053.0	320.2	249.2	766,743.92	398,829.78	-301.59	0.00
4,600.0	6.88	37.89	4,575.2	1,152.3	329.6	256.5	766,751.28	398,839.23	-310.49	0.00
4,700.0	6.88	37.89	4,674.4	1,251.5	339.1	263.9	766,758.64	398,848.69	-319.40	0.00
4,798.3	6.88	37.89	4,772.0	1,349.1	348.4	271.1	766,765.88	398,857.98	-328.16	0.00
Lamar										
4,800.0	6.88	37.89	4,773.7	1,350.8	348.5	271.2	766,766.00	398,858.15	-328.31	0.00
4,900.0	6.88	37.89	4,873.0	1,450.1	358.0	278.6	766,773.36	398,867.60	-337.22	0.00
4,919.1	6.88	37.89	4,892.0	1,469.1	359.8	280.0	766,774.77	398,869.41	-338.92	0.00
Bell Canyon										
4,999.7	6.88	37.89	4,972.0	1,549.1	367.4	285.9	766,780.70	398,877.03	-346.10	0.00
9 5/8" Intermediate Casing										
5,000.0	6.88	37.89	4,972.3	1,549.4	367.4	286.0	766,780.72	398,877.06	-346.13	0.00
5,100.0	6.88	37.89	5,071.6	1,648.7	376.9	293.3	766,788.08	398,886.52	-355.04	0.00
5,200.0	6.88	37.89	5,170.8	1,747.9	386.4	300.7	766,795.44	398,895.97	-363.95	0.00
5,300.0	6.88	37.89	5,270.1	1,847.2	395.8	308.0	766,802.80	398,905.43	-372.85	0.00
5,400.0	6.88	37.89	5,369.4	1,946.5	405.3	315.4	766,810.16	398,914.89	-381.76	0.00
5,500.0	6.88	37.89	5,468.7	2,045.8	414.7	322.8	766,817.52	398,924.34	-390.67	0.00
5,600.0	6.88	37.89	5,568.0	2,145.1	424.2	330.1	766,824.88	398,933.80	-399.58	0.00
5,700.0	6.88	37.89	5,667.2	2,244.3	433.6	337.5	766,832.24	398,943.26	-408.49	0.00
5,800.0	6.88	37.89	5,766.5	2,343.6	443.1	344.8	766,839.60	398,952.72	-417.40	0.00
5,900.0	6.88	37.89	5,865.8	2,442.9	452.6	352.2	766,846.96	398,962.17	-426.30	0.00
5,916.3	6.88	37.89	5,882.0	2,459.1	454.1	353.4	766,848.16	398,963.72	-427.76	0.00
Cherry Canyon										

Company:	Kaiser Francis	**Local Co-ordinate Reference:**	Well Red Hills 106H
Project:	Red Hills 106H	**TVD Reference:**	WELL @ 3422.9usft (Original Well Elev)
Site:	Red Hills 106H	**MD Reference:**	WELL @ 3422.9usft (Original Well Elev)
Well:	Red Hills 106H	**North Reference:**	Grid
Wellbore:	Red Hills 106H	**Survey Calculation Method:**	Minimum Curvature
Design:	191215 Red Hills 106H	**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)
6,000.0	6.88	37.89	5,965.1	2,542.2	462.0	359.6	766,854.32	398,971.63	-435.21	0.00
6,100.0	6.88	37.89	6,064.4	2,641.5	471.5	366.9	766,861.68	398,981.09	-444.12	0.00
6,200.0	6.88	37.89	6,163.6	2,740.7	480.9	374.3	766,869.04	398,990.54	-453.03	0.00
6,300.0	6.88	37.89	6,262.9	2,840.0	490.4	381.6	766,876.40	399,000.00	-461.94	0.00
6,400.0	6.88	37.89	6,362.2	2,939.3	499.8	389.0	766,883.76	399,009.46	-470.85	0.00
6,500.0	6.88	37.89	6,461.5	3,038.6	509.3	396.4	766,891.12	399,018.91	-479.75	0.00
6,600.0	6.88	37.89	6,560.7	3,137.8	518.8	403.7	766,898.48	399,028.37	-488.66	0.00
6,700.0	6.88	37.89	6,660.0	3,237.1	528.2	411.1	766,905.84	399,037.83	-497.57	0.00
6,800.0	6.88	37.89	6,759.3	3,336.4	537.7	418.4	766,913.20	399,047.28	-506.48	0.00
6,900.0	6.88	37.89	6,858.6	3,435.7	547.1	425.8	766,920.56	399,056.74	-515.39	0.00
7,000.0	6.88	37.89	6,957.9	3,535.0	556.6	433.2	766,927.92	399,066.20	-524.30	0.00
7,100.0	6.88	37.89	7,057.1	3,634.2	566.0	440.5	766,935.28	399,075.65	-533.20	0.00
7,200.0	6.88	37.89	7,156.4	3,733.5	575.5	447.9	766,942.64	399,085.11	-542.11	0.00
7,300.0	6.88	37.89	7,255.7	3,832.8	584.9	455.2	766,950.00	399,094.57	-551.02	0.00
7,400.0	6.88	37.89	7,355.0	3,932.1	594.4	462.6	766,957.36	399,104.03	-559.93	0.00
7,500.0	6.88	37.89	7,454.3	4,031.4	603.9	470.0	766,964.72	399,113.48	-568.84	0.00
7,600.0	6.88	37.89	7,553.5	4,130.6	613.3	477.3	766,972.08	399,122.94	-577.75	0.00
7,700.0	6.88	37.89	7,652.8	4,229.9	622.8	484.7	766,979.44	399,132.40	-586.65	0.00
7,800.0	6.88	37.89	7,752.1	4,329.2	632.2	492.0	766,986.80	399,141.85	-595.56	0.00
7,900.0	6.88	37.89	7,851.4	4,428.5	641.7	499.4	766,994.16	399,151.31	-604.47	0.00
8,000.0	6.88	37.89	7,950.7	4,527.8	651.1	506.8	767,001.52	399,160.77	-613.38	0.00
8,100.0	6.88	37.89	8,049.9	4,627.0	660.6	514.1	767,008.88	399,170.22	-622.29	0.00
8,200.0	6.88	37.89	8,149.2	4,726.3	670.1	521.5	767,016.24	399,179.68	-631.20	0.00
8,300.0	6.88	37.89	8,248.5	4,825.6	679.5	528.8	767,023.60	399,189.14	-640.10	0.00
8,400.0	6.88	37.89	8,347.8	4,924.9	689.0	536.2	767,030.96	399,198.59	-649.01	0.00
8,500.0	6.88	37.89	8,447.1	5,024.2	698.4	543.6	767,038.32	399,208.05	-657.92	0.00
8,600.0	6.88	37.89	8,546.3	5,123.4	707.9	550.9	767,045.68	399,217.51	-666.83	0.00

Company:	Kaiser Francis	**Local Co-ordinate Reference:**	Well Red Hills 106H
Project:	Red Hills 106H	**TVD Reference:**	WELL @ 3422.9usft (Original Well Elev)
Site:	Red Hills 106H	**MD Reference:**	WELL @ 3422.9usft (Original Well Elev)
Well:	Red Hills 106H	**North Reference:**	Grid
Wellbore:	Red Hills 106H	**Survey Calculation Method:**	Minimum Curvature
Design:	191215 Red Hills 106H	**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)
8,676.2	6.88	37.89	8,622.0	5,199.1	715.1	556.5	767,051.29	399,224.72	-673.62	0.00
Brushy Canyon										
8,700.0	6.88	37.89	8,645.6	5,222.7	717.3	558.3	767,053.04	399,226.96	-675.74	0.00
8,800.0	6.88	37.89	8,744.9	5,322.0	726.8	565.6	767,060.40	399,236.42	-684.65	0.00
8,877.7	6.88	37.89	8,822.0	5,399.1	734.1	571.4	767,066.11	399,243.77	-691.56	0.00
Lower Brushy Canyon										
8,900.0	6.88	37.89	8,844.2	5,421.3	736.3	573.0	767,067.76	399,245.88	-693.55	0.00
9,000.0	6.88	37.89	8,943.5	5,520.6	745.7	580.4	767,075.12	399,255.34	-702.46	0.00
9,089.2	6.88	37.89	9,032.0	5,609.1	754.1	586.9	767,081.68	399,263.77	-710.41	0.00
Avalon										
9,100.0	6.88	37.89	9,042.7	5,619.8	755.2	587.7	767,082.48	399,264.79	-711.37	0.00
9,200.0	6.88	37.89	9,142.0	5,719.1	764.6	595.1	767,089.84	399,274.25	-720.28	0.00
9,300.0	6.88	37.89	9,241.3	5,818.4	774.1	602.4	767,097.20	399,283.71	-729.19	0.00
9,305.6	6.88	37.89	9,246.9	5,824.0	774.6	602.9	767,097.61	399,284.24	-729.69	0.00
Start DLS 10.00 TFO 141.51										
9,400.0	5.88	133.03	9,340.9	5,918.0	775.8	609.9	767,104.63	399,285.41	-730.35	10.00
9,500.0	14.66	162.99	9,439.2	6,016.3	760.1	617.3	767,112.10	399,269.77	-714.22	10.00
9,600.0	24.39	170.11	9,533.4	6,110.5	727.6	624.6	767,119.37	399,237.24	-681.26	10.00
9,700.0	34.27	173.30	9,620.5	6,197.6	679.2	631.5	767,126.21	399,188.81	-632.46	10.00
9,800.0	44.20	175.19	9,697.8	6,274.9	616.3	637.7	767,132.44	399,125.94	-569.32	10.00
9,900.0	54.15	176.51	9,763.1	6,340.2	540.9	643.1	767,137.84	399,050.56	-493.74	10.00
10,000.0	64.12	177.52	9,814.3	6,391.4	455.3	647.5	767,142.27	398,964.95	-408.03	10.00
10,100.0	74.08	178.38	9,850.0	6,427.1	362.1	650.8	767,145.58	398,871.70	-314.79	10.00
10,200.0	84.06	179.16	9,868.9	6,446.0	264.0	652.9	767,147.68	398,773.67	-216.85	10.00
10,259.6	90.00	179.60	9,872.0	6,449.1	204.5	653.6	767,148.32	398,714.16	-157.45	10.00
Start 10358.3 hold at 10259.6 MD										
10,300.0	90.00	179.60	9,872.0	6,449.1	164.2	653.8	767,148.60	398,673.78	-117.15	0.00
10,400.0	90.00	179.60	9,872.0	6,449.1	64.2	654.5	767,149.29	398,573.78	-17.35	0.00

Company:	Kaiser Francis	**Local Co-ordinate Reference:**	Well Red Hills 106H
Project:	Red Hills 106H	**TVD Reference:**	WELL @ 3422.9usft (Original Well Elev)
Site:	Red Hills 106H	**MD Reference:**	WELL @ 3422.9usft (Original Well Elev)
Well:	Red Hills 106H	**North Reference:**	Grid
Wellbore:	Red Hills 106H	**Survey Calculation Method:**	Minimum Curvature
Design:	191215 Red Hills 106H	**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)
10,500.0	90.00	179.60	9,872.0	6,449.1	-35.8	655.2	767,149.99	398,473.78	82.44	0.00
10,600.0	90.00	179.60	9,872.0	6,449.1	-135.8	655.9	767,150.68	398,373.78	182.23	0.00
10,700.0	90.00	179.60	9,872.0	6,449.1	-235.8	656.6	767,151.37	398,273.79	282.02	0.00
10,800.0	90.00	179.60	9,872.0	6,449.1	-335.8	657.3	767,152.07	398,173.79	381.82	0.00
10,900.0	90.00	179.60	9,872.0	6,449.1	-435.8	658.0	767,152.76	398,073.79	481.61	0.00
11,000.0	90.00	179.60	9,872.0	6,449.1	-535.8	658.7	767,153.45	397,973.79	581.40	0.00
11,100.0	90.00	179.60	9,872.0	6,449.1	-635.8	659.4	767,154.15	397,873.80	681.20	0.00
11,200.0	90.00	179.60	9,872.0	6,449.1	-735.8	660.1	767,154.84	397,773.80	780.99	0.00
11,300.0	90.00	179.60	9,872.0	6,449.1	-835.8	660.8	767,155.53	397,673.80	880.78	0.00
11,400.0	90.00	179.60	9,872.0	6,449.1	-935.8	661.5	767,156.23	397,573.80	980.57	0.00
11,500.0	90.00	179.60	9,872.0	6,449.1	-1,035.8	662.2	767,156.92	397,473.81	1,080.37	0.00
11,600.0	90.00	179.60	9,872.0	6,449.1	-1,135.8	662.9	767,157.61	397,373.81	1,180.16	0.00
11,700.0	90.00	179.60	9,872.0	6,449.1	-1,235.8	663.5	767,158.31	397,273.81	1,279.95	0.00
11,800.0	90.00	179.60	9,872.0	6,449.1	-1,335.8	664.2	767,159.00	397,173.81	1,379.74	0.00
11,900.0	90.00	179.60	9,872.0	6,449.1	-1,435.8	664.9	767,159.70	397,073.82	1,479.54	0.00
12,000.0	90.00	179.60	9,872.0	6,449.1	-1,535.8	665.6	767,160.39	396,973.82	1,579.33	0.00
12,100.0	90.00	179.60	9,872.0	6,449.1	-1,635.8	666.3	767,161.08	396,873.82	1,679.12	0.00
12,200.0	90.00	179.60	9,872.0	6,449.1	-1,735.8	667.0	767,161.78	396,773.82	1,778.92	0.00
12,300.0	90.00	179.60	9,872.0	6,449.1	-1,835.8	667.7	767,162.47	396,673.83	1,878.71	0.00
12,400.0	90.00	179.60	9,872.0	6,449.1	-1,935.8	668.4	767,163.16	396,573.83	1,978.50	0.00
12,500.0	90.00	179.60	9,872.0	6,449.1	-2,035.8	669.1	767,163.86	396,473.83	2,078.29	0.00
12,600.0	90.00	179.60	9,872.0	6,449.1	-2,135.8	669.8	767,164.55	396,373.83	2,178.09	0.00
12,700.0	90.00	179.60	9,872.0	6,449.1	-2,235.8	670.5	767,165.24	396,273.84	2,277.88	0.00
12,800.0	90.00	179.60	9,872.0	6,449.1	-2,335.8	671.2	767,165.94	396,173.84	2,377.67	0.00
12,900.0	90.00	179.60	9,872.0	6,449.1	-2,435.8	671.9	767,166.63	396,073.84	2,477.47	0.00
13,000.0	90.00	179.60	9,872.0	6,449.1	-2,535.8	672.6	767,167.32	395,973.84	2,577.26	0.00
13,100.0	90.00	179.60	9,872.0	6,449.1	-2,635.8	673.3	767,168.02	395,873.84	2,677.05	0.00

Company:	Kaiser Francis	**Local Co-ordinate Reference:**	Well Red Hills 106H
Project:	Red Hills 106H	**TVD Reference:**	WELL @ 3422.9usft (Original Well Elev)
Site:	Red Hills 106H	**MD Reference:**	WELL @ 3422.9usft (Original Well Elev)
Well:	Red Hills 106H	**North Reference:**	Grid
Wellbore:	Red Hills 106H	**Survey Calculation Method:**	Minimum Curvature
Design:	191215 Red Hills 106H	**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)
13,200.0	90.00	179.60	9,872.0	6,449.1	-2,735.8	674.0	767,168.71	395,773.85	2,776.84	0.00
13,300.0	90.00	179.60	9,872.0	6,449.1	-2,835.8	674.6	767,169.40	395,673.85	2,876.64	0.00
13,400.0	90.00	179.60	9,872.0	6,449.1	-2,935.8	675.3	767,170.10	395,573.85	2,976.43	0.00
13,500.0	90.00	179.60	9,872.0	6,449.1	-3,035.8	676.0	767,170.79	395,473.85	3,076.22	0.00
13,600.0	90.00	179.60	9,872.0	6,449.1	-3,135.8	676.7	767,171.48	395,373.86	3,176.02	0.00
13,700.0	90.00	179.60	9,872.0	6,449.1	-3,235.8	677.4	767,172.18	395,273.86	3,275.81	0.00
13,800.0	90.00	179.60	9,872.0	6,449.1	-3,335.8	678.1	767,172.87	395,173.86	3,375.60	0.00
13,900.0	90.00	179.60	9,872.0	6,449.1	-3,435.8	678.8	767,173.56	395,073.86	3,475.39	0.00
14,000.0	90.00	179.60	9,872.0	6,449.1	-3,535.8	679.5	767,174.26	394,973.87	3,575.19	0.00
14,100.0	90.00	179.60	9,872.0	6,449.1	-3,635.8	680.2	767,174.95	394,873.87	3,674.98	0.00
14,200.0	90.00	179.60	9,872.0	6,449.1	-3,735.7	680.9	767,175.64	394,773.87	3,774.77	0.00
14,300.0	90.00	179.60	9,872.0	6,449.1	-3,835.7	681.6	767,176.34	394,673.87	3,874.56	0.00
14,400.0	90.00	179.60	9,872.0	6,449.1	-3,935.7	682.3	767,177.03	394,573.88	3,974.36	0.00
14,500.0	90.00	179.60	9,872.0	6,449.1	-4,035.7	683.0	767,177.72	394,473.88	4,074.15	0.00
14,600.0	90.00	179.60	9,872.0	6,449.1	-4,135.7	683.7	767,178.42	394,373.88	4,173.94	0.00
14,700.0	90.00	179.60	9,872.0	6,449.1	-4,235.7	684.4	767,179.11	394,273.88	4,273.74	0.00
14,800.0	90.00	179.60	9,872.0	6,449.1	-4,335.7	685.0	767,179.81	394,173.89	4,373.53	0.00
14,900.0	90.00	179.60	9,872.0	6,449.1	-4,435.7	685.7	767,180.50	394,073.89	4,473.32	0.00
15,000.0	90.00	179.60	9,872.0	6,449.1	-4,535.7	686.4	767,181.19	393,973.89	4,573.11	0.00
15,100.0	90.00	179.60	9,872.0	6,449.1	-4,635.7	687.1	767,181.89	393,873.89	4,672.91	0.00
15,200.0	90.00	179.60	9,872.0	6,449.1	-4,735.7	687.8	767,182.58	393,773.90	4,772.70	0.00
15,300.0	90.00	179.60	9,872.0	6,449.1	-4,835.7	688.5	767,183.27	393,673.90	4,872.49	0.00
15,400.0	90.00	179.60	9,872.0	6,449.1	-4,935.7	689.2	767,183.97	393,573.90	4,972.29	0.00
15,500.0	90.00	179.60	9,872.0	6,449.1	-5,035.7	689.9	767,184.66	393,473.90	5,072.08	0.00
15,600.0	90.00	179.60	9,872.0	6,449.1	-5,135.7	690.6	767,185.35	393,373.90	5,171.87	0.00
15,700.0	90.00	179.60	9,872.0	6,449.1	-5,235.7	691.3	767,186.05	393,273.91	5,271.66	0.00
15,800.0	90.00	179.60	9,872.0	6,449.1	-5,335.7	692.0	767,186.74	393,173.91	5,371.46	0.00

Company:	Kaiser Francis	**Local Co-ordinate Reference:**	Well Red Hills 106H
Project:	Red Hills 106H	**TVD Reference:**	WELL @ 3422.9usft (Original Well Elev)
Site:	Red Hills 106H	**MD Reference:**	WELL @ 3422.9usft (Original Well Elev)
Well:	Red Hills 106H	**North Reference:**	Grid
Wellbore:	Red Hills 106H	**Survey Calculation Method:**	Minimum Curvature
Design:	191215 Red Hills 106H	**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)
15,900.0	90.00	179.60	9,872.0	6,449.1	-5,435.7	692.7	767,187.43	393,073.91	5,471.25	0.00
16,000.0	90.00	179.60	9,872.0	6,449.1	-5,535.7	693.4	767,188.13	392,973.91	5,571.04	0.00
16,100.0	90.00	179.60	9,872.0	6,449.1	-5,635.7	694.1	767,188.82	392,873.92	5,670.83	0.00
16,200.0	90.00	179.60	9,872.0	6,449.1	-5,735.7	694.8	767,189.51	392,773.92	5,770.63	0.00
16,300.0	90.00	179.60	9,872.0	6,449.1	-5,835.7	695.4	767,190.21	392,673.92	5,870.42	0.00
16,400.0	90.00	179.60	9,872.0	6,449.1	-5,935.7	696.1	767,190.90	392,573.92	5,970.21	0.00
16,500.0	90.00	179.60	9,872.0	6,449.1	-6,035.7	696.8	767,191.59	392,473.93	6,070.01	0.00
16,600.0	90.00	179.60	9,872.0	6,449.1	-6,135.7	697.5	767,192.29	392,373.93	6,169.80	0.00
16,700.0	90.00	179.60	9,872.0	6,449.1	-6,235.7	698.2	767,192.98	392,273.93	6,269.59	0.00
16,800.0	90.00	179.60	9,872.0	6,449.1	-6,335.7	698.9	767,193.67	392,173.93	6,369.38	0.00
16,900.0	90.00	179.60	9,872.0	6,449.1	-6,435.7	699.6	767,194.37	392,073.94	6,469.18	0.00
17,000.0	90.00	179.60	9,872.0	6,449.1	-6,535.7	700.3	767,195.06	391,973.94	6,568.97	0.00
17,100.0	90.00	179.60	9,872.0	6,449.1	-6,635.7	701.0	767,195.75	391,873.94	6,668.76	0.00
17,200.0	90.00	179.60	9,872.0	6,449.1	-6,735.7	701.7	767,196.45	391,773.94	6,768.56	0.00
17,300.0	90.00	179.60	9,872.0	6,449.1	-6,835.7	702.4	767,197.14	391,673.95	6,868.35	0.00
17,400.0	90.00	179.60	9,872.0	6,449.1	-6,935.7	703.1	767,197.84	391,573.95	6,968.14	0.00
17,500.0	90.00	179.60	9,872.0	6,449.1	-7,035.7	703.8	767,198.53	391,473.95	7,067.93	0.00
17,600.0	90.00	179.60	9,872.0	6,449.1	-7,135.7	704.5	767,199.22	391,373.95	7,167.73	0.00
17,700.0	90.00	179.60	9,872.0	6,449.1	-7,235.7	705.2	767,199.92	391,273.96	7,267.52	0.00
17,800.0	90.00	179.60	9,872.0	6,449.1	-7,335.7	705.8	767,200.61	391,173.96	7,367.31	0.00
17,900.0	90.00	179.60	9,872.0	6,449.1	-7,435.7	706.5	767,201.30	391,073.96	7,467.11	0.00
18,000.0	90.00	179.60	9,872.0	6,449.1	-7,535.7	707.2	767,202.00	390,973.96	7,566.90	0.00
18,100.0	90.00	179.60	9,872.0	6,449.1	-7,635.7	707.9	767,202.69	390,873.96	7,666.69	0.00
18,200.0	90.00	179.60	9,872.0	6,449.1	-7,735.7	708.6	767,203.38	390,773.97	7,766.48	0.00
18,300.0	90.00	179.60	9,872.0	6,449.1	-7,835.7	709.3	767,204.08	390,673.97	7,866.28	0.00
18,400.0	90.00	179.60	9,872.0	6,449.1	-7,935.6	710.0	767,204.77	390,573.97	7,966.07	0.00
18,500.0	90.00	179.60	9,872.0	6,449.1	-8,035.6	710.7	767,205.46	390,473.97	8,065.86	0.00

Company:	Kaiser Francis	**Local Co-ordinate Reference:**	Well Red Hills 106H
Project:	Red Hills 106H	**TVD Reference:**	WELL @ 3422.9usft (Original Well Elev)
Site:	Red Hills 106H	**MD Reference:**	WELL @ 3422.9usft (Original Well Elev)
Well:	Red Hills 106H	**North Reference:**	Grid
Wellbore:	Red Hills 106H	**Survey Calculation Method:**	Minimum Curvature
Design:	191215 Red Hills 106H	**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)
18,600.0	90.00	179.60	9,872.0	6,449.1	-8,135.6	711.4	767,206.16	390,373.98	8,165.65	0.00
18,700.0	90.00	179.60	9,872.0	6,449.1	-8,235.6	712.1	767,206.85	390,273.98	8,265.45	0.00
18,800.0	90.00	179.60	9,872.0	6,449.1	-8,335.6	712.8	767,207.54	390,173.98	8,365.24	0.00
18,900.0	90.00	179.60	9,872.0	6,449.1	-8,435.6	713.5	767,208.24	390,073.98	8,465.03	0.00
19,000.0	90.00	179.60	9,872.0	6,449.1	-8,535.6	714.2	767,208.93	389,973.99	8,564.83	0.00
19,100.0	90.00	179.60	9,872.0	6,449.1	-8,635.6	714.9	767,209.62	389,873.99	8,664.62	0.00
19,200.0	90.00	179.60	9,872.0	6,449.1	-8,735.6	715.6	767,210.32	389,773.99	8,764.41	0.00
19,300.0	90.00	179.60	9,872.0	6,449.1	-8,835.6	716.3	767,211.01	389,673.99	8,864.20	0.00
19,400.0	90.00	179.60	9,872.0	6,449.1	-8,935.6	716.9	767,211.70	389,574.00	8,964.00	0.00
19,500.0	90.00	179.60	9,872.0	6,449.1	-9,035.6	717.6	767,212.40	389,474.00	9,063.79	0.00
19,600.0	90.00	179.60	9,872.0	6,449.1	-9,135.6	718.3	767,213.09	389,374.00	9,163.58	0.00
19,700.0	90.00	179.60	9,872.0	6,449.1	-9,235.6	719.0	767,213.78	389,274.00	9,263.38	0.00
19,800.0	90.00	179.60	9,872.0	6,449.1	-9,335.6	719.7	767,214.48	389,174.01	9,363.17	0.00
19,900.0	90.00	179.60	9,872.0	6,449.1	-9,435.6	720.4	767,215.17	389,074.01	9,462.96	0.00
20,000.0	90.00	179.60	9,872.0	6,449.1	-9,535.6	721.1	767,215.86	388,974.01	9,562.75	0.00
20,100.0	90.00	179.60	9,872.0	6,449.1	-9,635.6	721.8	767,216.56	388,874.01	9,662.55	0.00
20,200.0	90.00	179.60	9,872.0	6,449.1	-9,735.6	722.5	767,217.25	388,774.02	9,762.34	0.00
20,300.0	90.00	179.60	9,872.0	6,449.1	-9,835.6	723.2	767,217.95	388,674.02	9,862.13	0.00
20,400.0	90.00	179.60	9,872.0	6,449.1	-9,935.6	723.9	767,218.64	388,574.02	9,961.92	0.00
20,500.0	90.00	179.60	9,872.0	6,449.1	-10,035.6	724.6	767,219.33	388,474.02	10,061.72	0.00
20,600.0	90.00	179.60	9,872.0	6,449.1	-10,135.6	725.3	767,220.03	388,374.02	10,161.51	0.00
20,618.0	90.00	179.60	9,872.0	6,449.1	-10,153.6	725.4	767,220.15	388,356.06	10,179.44	0.00

TD at 20618.0

Company:	Kaiser Francis	**Local Co-ordinate Reference:**	Well Red Hills 106H
Project:	Red Hills 106H	**TVD Reference:**	WELL @ 3422.9usft (Original Well Elev)
Site:	Red Hills 106H	**MD Reference:**	WELL @ 3422.9usft (Original Well Elev)
Well:	Red Hills 106H	**North Reference:**	Grid
Wellbore:	Red Hills 106H	**Survey Calculation Method:**	Minimum Curvature
Design:	191215 Red Hills 106H	**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
972.0	972.0	13 3/8" Surface Casing	13-3/8	17-1/2
4,999.7	4,972.0	9 5/8" Intermediate Casing	9-5/8	12-1/4
20,618.0	9,872.0	5 1/2" Production Casing	5-1/2	8-3/4

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
5,916.3	5,882.0	Cherry Canyon		0.00	
9,089.2	9,032.0	Avalon		0.00	
4,919.1	4,892.0	Bell Canyon		0.00	
8,676.2	8,622.0	Brushy Canyon		0.00	
2,028.3	2,022.0	Top of Salt		0.00	
4,496.1	4,472.0	Base of Salt		0.00	
1,222.5	1,222.0	Salado		0.00	
8,877.7	8,822.0	Lower Brushy Canyon		0.00	
882.0	882.0	Rustler		0.00	
4,798.3	4,772.0	Lamar		0.00	

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
1,000.0	1,000.0	0.0	0.0	Start Build 3.00
1,229.4	1,228.9	10.9	8.5	Start 8076.2 hold at 1229.4 MD
9,305.6	9,246.9	774.6	602.9	Start DLS 10.00 TFO 141.51
10,259.6	9,872.0	204.5	653.6	Start 10358.3 hold at 10259.6 MD
20,618.0	9,872.0	-10,153.6	725.4	TD at 20618.0

Company:	Kaiser Francis	**Local Co-ordinate Reference:**	Well Red Hills 106H
Project:	Red Hills 106H	**TVD Reference:**	WELL @ 3422.9usft (Original Well Elev)
Site:	Red Hills 106H	**MD Reference:**	WELL @ 3422.9usft (Original Well Elev)
Well:	Red Hills 106H	**North Reference:**	Grid
Wellbore:	Red Hills 106H	**Survey Calculation Method:**	Minimum Curvature
Design:	191215 Red Hills 106H	**Database:**	EDM 5000.1 Single User Db

Checked By: _____ Approved By: _____ Date: _____