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 005H [5467]

OCD – HOBBS
03/18/2020
RECEIVED

2. Name of Operator: KAISER FRANCIS OIL COMPANY [12361]

9. API Well No.: 30-025-46992

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

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

10. Field and Pool, or Exploratory: [97994] REDHILLS BONE SPRING, SOUTH

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

At surface: NWNE / 200 FNL / 2410 FEL / LAT 32.0937733 / LONG -103.6106365

At proposed prod. zone: SWSE / 100 FSL / 2240 FEL / LAT 32.0655711 / LONG -103.6100793

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): 200 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: 9272 feet / 19992 feet

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

21. Elevations (Show whether DF, KDB, RT, GL, etc.): 3410 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	02/26/2019

Title: Regulatory Analyst

Approved by *(Signature)*	Name *(Printed/Typed)*	Date
(Electronic Submission)	Christopher Walls / Ph: (575)234-2234	03/16/2020

Title	Office
Petroleum Engineer	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.

GCP REC 03/18/2020

APPROVED WITH CONDITIONS

KZ
03/19/2020

SL

(Continued on page 2)

*(Instructions on page 2)

Approval Date: 03/16/2020

PECOS DISTRICT
DRILLING OPERATIONS
CONDITIONS OF APPROVAL

OPERATOR'S NAME:	**Kaiser Francis Oil Company**
LEASE NO.:	**NMNM122620**
WELL NAME & NO.:	**Red Hills Federal 005H**
SURFACE HOLE FOOTAGE:	**200' FNL & 2410' FEL**
BOTTOM HOLE FOOTAGE	**100' FSL & 2240' 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 **4987'** 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

03/16/2020

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:** 02/25/2019

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

AFMSS

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

Application Data Report

03/16/2020

APD ID: 10400039492

Submission Date: 02/26/2019

Operator Name: KAISER FRANCIS OIL COMPANY

Well Name: RED HILLS FEDERAL

Well Number: 005H

Well Type: OIL WELL

Well Work Type: Drill

Highlighted data reflects the most recent changes

Show Final Text

Section 1 - General

APD ID: 10400039492

Tie to previous NOS? N

Submission Date: 02/26/2019

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: 005H

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:** 005H

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:** 200 FT

Reservoir well spacing assigned acres Measurement: 320 Acres

Well plat: Red_Hills_005H_Pymt_Rec_20190226150546.pdf

RED_HILLS_005H_C102_20191224104115.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: 6452A **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	200	FNL	2410	FEL	25S	33E	31	Aliquot NWNE	32.0937733	-103.6106365	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 122620	3410	0	0	
KOP Leg #1	200	FNL	2410	FEL	25S	33E	31	Aliquot NWNE	32.0937733	-103.6106365	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 122620	-5233	8677	8643	

Operator Name: KAISER FRANCIS OIL COMPANY

Well Name: RED HILLS FEDERAL **Well Number:** 005H

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	0	FNL	2240	FEL	26S	33E	6	Aliquot NWNE	32.0797332	-103.6100825	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 015321	-5862	14814	9272	
PPP Leg #1-2	100	FNL	2240	FEL	25S	33E	31	Aliquot NWNE	32.094045	-103.6100869	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 122620	-5862	9634	9272	
EXIT Leg #1	100	FSL	2240	FEL	26S	33E	6	Aliquot SWSE	32.0655711	-103.6100793	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 015321	-5862	19992	9272	
BHL Leg #1	100	FSL	2240	FEL	26S	33E	6	Aliquot SWSE	32.0655711	-103.6100793	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 015321	-5862	19992	9272	

APD ID: 10400039492 **Submission Date:** 02/26/2019

Operator Name: KAISER FRANCIS OIL COMPANY

Well Name: RED HILLS FEDERAL **Well Number:** 005H

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
404266	---	3410	0	0	OTHER	NONE	N
404267	RUSTLER	2528	882	882	SANDSTONE	NONE	N
404268	SALADO	2188	1222	1222	SALT	NONE	N
404269	TOP SALT	1388	2022	2022	SALT	NONE	N
404270	BASE OF SALT	-1062	4472	4472	SALT	NONE	N
404271	LAMAR	-1362	4772	4786	SANDSTONE	NATURAL GAS, OIL	N
404272	BELL CANYON	-1482	4892	4907	SANDSTONE	NATURAL GAS, OIL	N
404273	CHERRY CANYON	-2472	5882	5902	SANDSTONE	NATURAL GAS, OIL	N
404274	BRUSHY CANYON	-5212	8622	8656	SANDSTONE	NATURAL GAS, OIL	N
404920	AVALON SAND	-5622	9032	9089	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

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_20200102074207.pdf

Well_Control_Plan_20200102074248.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	4987	0	4972			4987	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	19992	0	9272			19992	P-110	20	OTHER - GBCD	2.5	2.9	DRY	3.6	DRY	3.5

Casing Attachments

Operator Name: KAISER FRANCIS OIL COMPANY

Well Name: RED HILLS FEDERAL **Well Number:** 005H

Casing Attachments

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

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Red_Hills_005H_Casing_Assumptions_20200102074812.pdf

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

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Red_Hills_005H_Casing_Assumptions_20200102074853.pdf

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

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Red_Hills_005H_GBCD_5.5in_Connection_Spec_Sheet_20190225142217.pdf

Red_Hills_005H_Casing_Assumptions_20200102074941.pdf

Section 4 - Cement

Operator Name: KAISER FRANCIS OIL COMPANY

Well Name: RED HILLS FEDERAL **Well Number:** 005H

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	4987	748	2.09	12.5	1563	30	Econocem	Kol Seal
INTERMEDIATE	Tail		0	4987	293	1.33	14.8	390	30	Halcem	none
PRODUCTION	Lead		3800	19992	354	3.49	10.5	1234	10	Class H	Kol Seal
PRODUCTION	Tail		3800	19992	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
972	4972	OTHER : BRINE	9.8	10.2							
4972	9272	OTHER : CUT BRINE	8.8	9.2							
0	972	OTHER : FRESH WATER	8.4	9							

Operator Name: KAISER FRANCIS OIL COMPANY

Well Name: RED HILLS FEDERAL **Well Number:** 005H

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: 4425 **Anticipated Surface Pressure:** 2385.16

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_005H___Directional_Plan_20200102075418.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_20200102075359.pdf

Kaiser-Francis Oil Company
Red Hills 005H

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	4987	9-5/8"	40	L-80	LTC	New	12.25	4972
Production	19992	5-1/2"	20	P110	GBCD	New	8.5	9272

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	4425	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
2.5	2.9	3.5	3.6

KAISER-FRANCIS OIL COMPANY

Kaiser Francis

Red Hills 005H
Red Hills 005H
Red Hills 005H
Red Hills 005H

Plan: 191215 Red Hills 005H

Morcor Standard Plan

15 December, 2019

Company:	Kaiser Francis	**Local Co-ordinate Reference:**	Well Red Hills 005H
Project:	Red Hills 005H	**TVD Reference:**	WELL @ 3432.8usft (Original Well Elev)
Site:	Red Hills 005H	**MD Reference:**	WELL @ 3432.8usft (Original Well Elev)
Well:	Red Hills 005H	**North Reference:**	Grid
Wellbore:	Red Hills 005H	**Survey Calculation Method:**	Minimum Curvature
Design:	191215 Red Hills 005H	**Database:**	EDM 5000.1 Single User Db

Project Red Hills 005H

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 005H

Site Position:		**Northing:**	398,601.46 usft	**Latitude:**	32° 5' 37.584 N
From:	Map	**Easting:**	765,139.18 usft	**Longitude:**	103° 36' 38.292 W
Position Uncertainty:	1.0 usft	**Slot Radius:**	17-1/2 "	**Grid Convergence:**	0.38 °

Well Red Hills 005H

Well Position	**+N/-S**	0.0 usft	**Northing:**	398,601.46 usft	**Latitude:**	32° 5' 37.584 N
	+E/-W	0.0 usft	**Easting:**	765,139.18 usft	**Longitude:**	103° 36' 38.292 W
Position Uncertainty		1.0 usft	**Wellhead Elevation:**	usft	**Ground Level:**	3,410.8 usft

Wellbore Red Hills 005H

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 005H

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	178.65

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

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.0	19,992.7	191215 Red Hills 005H (Red Hills 005H)	MWD	MWD - Standard

Company:	Kaiser Francis	**Local Co-ordinate Reference:**	Well Red Hills 005H
Project:	Red Hills 005H	**TVD Reference:**	WELL @ 3432.8usft (Original Well Elev)
Site:	Red Hills 005H	**MD Reference:**	WELL @ 3432.8usft (Original Well Elev)
Well:	Red Hills 005H	**North Reference:**	Grid
Wellbore:	Red Hills 005H	**Survey Calculation Method:**	Minimum Curvature
Design:	191215 Red Hills 005H	**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	-3,432.8	0.0	0.0	765,139.18	398,601.46	0.00	0.00
100.0	0.00	0.00	100.0	-3,332.8	0.0	0.0	765,139.18	398,601.46	0.00	0.00
120.0	0.00	0.00	120.0	-3,312.8	0.0	0.0	765,139.18	398,601.46	0.00	0.00
20" Conductor										
200.0	0.00	0.00	200.0	-3,232.8	0.0	0.0	765,139.18	398,601.46	0.00	0.00
300.0	0.00	0.00	300.0	-3,132.8	0.0	0.0	765,139.18	398,601.46	0.00	0.00
400.0	0.00	0.00	400.0	-3,032.8	0.0	0.0	765,139.18	398,601.46	0.00	0.00
500.0	0.00	0.00	500.0	-2,932.8	0.0	0.0	765,139.18	398,601.46	0.00	0.00
600.0	0.00	0.00	600.0	-2,832.8	0.0	0.0	765,139.18	398,601.46	0.00	0.00
700.0	0.00	0.00	700.0	-2,732.8	0.0	0.0	765,139.18	398,601.46	0.00	0.00
800.0	0.00	0.00	800.0	-2,632.8	0.0	0.0	765,139.18	398,601.46	0.00	0.00
882.0	0.00	0.00	882.0	-2,550.8	0.0	0.0	765,139.18	398,601.46	0.00	0.00
Rustler										
900.0	0.00	0.00	900.0	-2,532.8	0.0	0.0	765,139.18	398,601.46	0.00	0.00
972.0	0.00	0.00	972.0	-2,460.8	0.0	0.0	765,139.18	398,601.46	0.00	0.00
13 3/8" Surface Casing										
1,000.0	0.00	0.00	1,000.0	-2,432.8	0.0	0.0	765,139.18	398,601.46	0.00	0.00
1,100.0	0.00	0.00	1,100.0	-2,332.8	0.0	0.0	765,139.18	398,601.46	0.00	0.00
1,200.0	0.00	0.00	1,200.0	-2,232.8	0.0	0.0	765,139.18	398,601.46	0.00	0.00
1,222.0	0.00	0.00	1,222.0	-2,210.8	0.0	0.0	765,139.18	398,601.46	0.00	0.00
Salado										
1,300.0	0.00	0.00	1,300.0	-2,132.8	0.0	0.0	765,139.18	398,601.46	0.00	0.00
1,400.0	0.00	0.00	1,400.0	-2,032.8	0.0	0.0	765,139.18	398,601.46	0.00	0.00
1,500.0	0.00	0.00	1,500.0	-1,932.8	0.0	0.0	765,139.18	398,601.46	0.00	0.00
1,600.0	0.00	0.00	1,600.0	-1,832.8	0.0	0.0	765,139.18	398,601.46	0.00	0.00
1,700.0	0.00	0.00	1,700.0	-1,732.8	0.0	0.0	765,139.18	398,601.46	0.00	0.00
1,800.0	0.00	0.00	1,800.0	-1,632.8	0.0	0.0	765,139.18	398,601.46	0.00	0.00
Start Build 3.00										

Company:	Kaiser Francis	**Local Co-ordinate Reference:**	Well Red Hills 005H
Project:	Red Hills 005H	**TVD Reference:**	WELL @ 3432.8usft (Original Well Elev)
Site:	Red Hills 005H	**MD Reference:**	WELL @ 3432.8usft (Original Well Elev)
Well:	Red Hills 005H	**North Reference:**	Grid
Wellbore:	Red Hills 005H	**Survey Calculation Method:**	Minimum Curvature
Design:	191215 Red Hills 005H	**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)
1,900.0	3.00	12.71	1,900.0	-1,532.8	2.6	0.6	765,139.76	398,604.01	-2.54	3.00
1,993.8	5.81	12.71	1,993.5	-1,439.3	9.6	2.2	765,141.34	398,611.04	-9.53	3.00
Start 6683.6 hold at 1993.8 MD										
2,000.0	5.81	12.71	1,999.6	-1,433.2	10.2	2.3	765,141.48	398,611.66	-10.14	0.00
2,022.5	5.81	12.71	2,022.0	-1,410.8	12.4	2.8	765,141.98	398,613.88	-12.35	0.00
Top of Salt										
2,100.0	5.81	12.71	2,099.1	-1,333.7	20.1	4.5	765,143.71	398,621.54	-19.97	0.00
2,200.0	5.81	12.71	2,198.6	-1,234.2	30.0	6.8	765,145.93	398,631.42	-29.79	0.00
2,300.0	5.81	12.71	2,298.1	-1,134.7	39.8	9.0	765,148.16	398,641.30	-39.62	0.00
2,400.0	5.81	12.71	2,397.6	-1,035.2	49.7	11.2	765,150.39	398,651.18	-49.45	0.00
2,500.0	5.81	12.71	2,497.1	-935.7	59.6	13.4	765,152.62	398,661.06	-59.27	0.00
2,600.0	5.81	12.71	2,596.5	-836.3	69.5	15.7	765,154.85	398,670.95	-69.10	0.00
2,700.0	5.81	12.71	2,696.0	-736.8	79.4	17.9	765,157.07	398,680.83	-78.92	0.00
2,800.0	5.81	12.71	2,795.5	-637.3	89.2	20.1	765,159.30	398,690.71	-88.75	0.00
2,900.0	5.81	12.71	2,895.0	-537.8	99.1	22.4	765,161.53	398,700.59	-98.58	0.00
3,000.0	5.81	12.71	2,994.5	-438.3	109.0	24.6	765,163.76	398,710.47	-108.40	0.00
3,100.0	5.81	12.71	3,094.0	-338.8	118.9	26.8	765,165.99	398,720.35	-118.23	0.00
3,200.0	5.81	12.71	3,193.5	-239.3	128.8	29.0	765,168.21	398,730.24	-128.06	0.00
3,300.0	5.81	12.71	3,292.9	-139.9	138.7	31.3	765,170.44	398,740.12	-137.88	0.00
3,400.0	5.81	12.71	3,392.4	-40.4	148.5	33.5	765,172.67	398,750.00	-147.71	0.00
3,500.0	5.81	12.71	3,491.9	59.1	158.4	35.7	765,174.90	398,759.88	-157.54	0.00
3,600.0	5.81	12.71	3,591.4	158.6	168.3	37.9	765,177.13	398,769.76	-167.36	0.00
3,700.0	5.81	12.71	3,690.9	258.1	178.2	40.2	765,179.35	398,779.64	-177.19	0.00
3,800.0	5.81	12.71	3,790.4	357.6	188.1	42.4	765,181.58	398,789.52	-187.02	0.00
3,900.0	5.81	12.71	3,889.9	457.1	197.9	44.6	765,183.81	398,799.41	-196.84	0.00
4,000.0	5.81	12.71	3,989.3	556.5	207.8	46.9	765,186.04	398,809.29	-206.67	0.00
4,100.0	5.81	12.71	4,088.8	656.0	217.7	49.1	765,188.27	398,819.17	-216.49	0.00

Company:	Kaiser Francis	**Local Co-ordinate Reference:**	Well Red Hills 005H
Project:	Red Hills 005H	**TVD Reference:**	WELL @ 3432.8usft (Original Well Elev)
Site:	Red Hills 005H	**MD Reference:**	WELL @ 3432.8usft (Original Well Elev)
Well:	Red Hills 005H	**North Reference:**	Grid
Wellbore:	Red Hills 005H	**Survey Calculation Method:**	Minimum Curvature
Design:	191215 Red Hills 005H	**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	5.81	12.71	4,188.3	755.5	227.6	51.3	765,190.49	398,829.05	-226.32	0.00
4,300.0	5.81	12.71	4,287.8	855.0	237.5	53.5	765,192.72	398,838.93	-236.15	0.00
4,400.0	5.81	12.71	4,387.3	954.5	247.4	55.8	765,194.95	398,848.81	-245.97	0.00
4,485.1	5.81	12.71	4,472.0	1,039.2	255.8	57.7	765,196.85	398,857.23	-254.34	0.00
Base of Salt										
4,500.0	5.81	12.71	4,486.8	1,054.0	257.2	58.0	765,197.18	398,858.70	-255.80	0.00
4,600.0	5.81	12.71	4,586.3	1,153.5	267.1	60.2	765,199.41	398,868.58	-265.63	0.00
4,700.0	5.81	12.71	4,685.7	1,252.9	277.0	62.5	765,201.63	398,878.46	-275.45	0.00
4,786.7	5.81	12.71	4,772.0	1,339.2	285.6	64.4	765,203.57	398,887.03	-283.97	0.00
Lamar										
4,800.0	5.81	12.71	4,785.2	1,352.4	286.9	64.7	765,203.86	398,888.34	-285.28	0.00
4,900.0	5.81	12.71	4,884.7	1,451.9	296.8	66.9	765,206.09	398,898.22	-295.11	0.00
4,907.3	5.81	12.71	4,892.0	1,459.2	297.5	67.1	765,206.25	398,898.95	-295.83	0.00
Bell Canyon										
4,987.7	5.81	12.71	4,972.0	1,539.2	305.4	68.9	765,208.05	398,906.89	-303.73	0.00
9 5/8" Intermediate Casing										
5,000.0	5.81	12.71	4,984.2	1,551.4	306.6	69.1	765,208.32	398,908.10	-304.93	0.00
5,100.0	5.81	12.71	5,083.7	1,650.9	316.5	71.4	765,210.55	398,917.99	-314.76	0.00
5,200.0	5.81	12.71	5,183.2	1,750.4	326.4	73.6	765,212.77	398,927.87	-324.59	0.00
5,300.0	5.81	12.71	5,282.7	1,849.9	336.3	75.8	765,215.00	398,937.75	-334.41	0.00
5,400.0	5.81	12.71	5,382.1	1,949.3	346.2	78.1	765,217.23	398,947.63	-344.24	0.00
5,500.0	5.81	12.71	5,481.6	2,048.8	356.1	80.3	765,219.46	398,957.51	-354.06	0.00
5,600.0	5.81	12.71	5,581.1	2,148.3	365.9	82.5	765,221.69	398,967.39	-363.89	0.00
5,700.0	5.81	12.71	5,680.6	2,247.8	375.8	84.7	765,223.91	398,977.27	-373.72	0.00
5,800.0	5.81	12.71	5,780.1	2,347.3	385.7	87.0	765,226.14	398,987.16	-383.54	0.00
5,900.0	5.81	12.71	5,879.6	2,446.8	395.6	89.2	765,228.37	398,997.04	-393.37	0.00
5,902.4	5.81	12.71	5,882.0	2,449.2	395.8	89.2	765,228.43	398,997.28	-393.61	0.00
Cherry Canyon										

Company:	Kaiser Francis	**Local Co-ordinate Reference:**	Well Red Hills 005H
Project:	Red Hills 005H	**TVD Reference:**	WELL @ 3432.8usft (Original Well Elev)
Site:	Red Hills 005H	**MD Reference:**	WELL @ 3432.8usft (Original Well Elev)
Well:	Red Hills 005H	**North Reference:**	Grid
Wellbore:	Red Hills 005H	**Survey Calculation Method:**	Minimum Curvature
Design:	191215 Red Hills 005H	**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	5.81	12.71	5,979.1	2,546.3	405.5	91.4	765,230.60	399,006.92	-403.20	0.00
6,100.0	5.81	12.71	6,078.5	2,645.7	415.3	93.6	765,232.83	399,016.80	-413.02	0.00
6,200.0	5.81	12.71	6,178.0	2,745.2	425.2	95.9	765,235.05	399,026.68	-422.85	0.00
6,300.0	5.81	12.71	6,277.5	2,844.7	435.1	98.1	765,237.28	399,036.56	-432.68	0.00
6,400.0	5.81	12.71	6,377.0	2,944.2	445.0	100.3	765,239.51	399,046.45	-442.50	0.00
6,500.0	5.81	12.71	6,476.5	3,043.7	454.9	102.6	765,241.74	399,056.33	-452.33	0.00
6,600.0	5.81	12.71	6,576.0	3,143.2	464.7	104.8	765,243.97	399,066.21	-462.16	0.00
6,700.0	5.81	12.71	6,675.5	3,242.7	474.6	107.0	765,246.19	399,076.09	-471.98	0.00
6,800.0	5.81	12.71	6,774.9	3,342.1	484.5	109.2	765,248.42	399,085.97	-481.81	0.00
6,900.0	5.81	12.71	6,874.4	3,441.6	494.4	111.5	765,250.65	399,095.85	-491.63	0.00
7,000.0	5.81	12.71	6,973.9	3,541.1	504.3	113.7	765,252.88	399,105.74	-501.46	0.00
7,100.0	5.81	12.71	7,073.4	3,640.6	514.2	115.9	765,255.11	399,115.62	-511.29	0.00
7,200.0	5.81	12.71	7,172.9	3,740.1	524.0	118.2	765,257.33	399,125.50	-521.11	0.00
7,300.0	5.81	12.71	7,272.4	3,839.6	533.9	120.4	765,259.56	399,135.38	-530.94	0.00
7,400.0	5.81	12.71	7,371.9	3,939.1	543.8	122.6	765,261.79	399,145.26	-540.77	0.00
7,500.0	5.81	12.71	7,471.3	4,038.5	553.7	124.8	765,264.02	399,155.14	-550.59	0.00
7,600.0	5.81	12.71	7,570.8	4,138.0	563.6	127.1	765,266.25	399,165.02	-560.42	0.00
7,700.0	5.81	12.71	7,670.3	4,237.5	573.4	129.3	765,268.47	399,174.91	-570.25	0.00
7,800.0	5.81	12.71	7,769.8	4,337.0	583.3	131.5	765,270.70	399,184.79	-580.07	0.00
7,900.0	5.81	12.71	7,869.3	4,436.5	593.2	133.8	765,272.93	399,194.67	-589.90	0.00
8,000.0	5.81	12.71	7,968.8	4,536.0	603.1	136.0	765,275.16	399,204.55	-599.73	0.00
8,100.0	5.81	12.71	8,068.3	4,635.5	613.0	138.2	765,277.39	399,214.43	-609.55	0.00
8,200.0	5.81	12.71	8,167.7	4,734.9	622.9	140.4	765,279.61	399,224.31	-619.38	0.00
8,300.0	5.81	12.71	8,267.2	4,834.4	632.7	142.7	765,281.84	399,234.20	-629.20	0.00
8,400.0	5.81	12.71	8,366.7	4,933.9	642.6	144.9	765,284.07	399,244.08	-639.03	0.00
8,500.0	5.81	12.71	8,466.2	5,033.4	652.5	147.1	765,286.30	399,253.96	-648.86	0.00
8,600.0	5.81	12.71	8,565.7	5,132.9	662.4	149.3	765,288.53	399,263.84	-658.68	0.00

Company:	Kaiser Francis	**Local Co-ordinate Reference:**	Well Red Hills 005H
Project:	Red Hills 005H	**TVD Reference:**	WELL @ 3432.8usft (Original Well Elev)
Site:	Red Hills 005H	**MD Reference:**	WELL @ 3432.8usft (Original Well Elev)
Well:	Red Hills 005H	**North Reference:**	Grid
Wellbore:	Red Hills 005H	**Survey Calculation Method:**	Minimum Curvature
Design:	191215 Red Hills 005H	**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)
8,656.6	5.81	12.71	8,622.0	5,189.2	668.0	150.6	765,289.79	399,269.43	-664.25	0.00
Brushy Canyon										
8,677.4	5.81	12.71	8,642.7	5,209.9	670.0	151.1	765,290.25	399,271.49	-666.29	0.00
Start DLS 10.00 TFO 166.83										
8,700.0	3.65	20.82	8,665.2	5,232.4	671.8	151.6	765,290.76	399,273.28	-668.07	10.00
8,800.0	6.73	168.32	8,765.0	5,332.2	669.0	153.9	765,293.08	399,270.51	-665.24	10.00
8,857.8	12.45	173.60	8,822.0	5,389.2	659.5	155.3	765,294.46	399,260.99	-655.69	10.00
Lower Brushy Canyon										
8,900.0	16.65	175.18	8,862.8	5,430.0	649.0	156.3	765,295.48	399,250.44	-645.13	10.00
9,000.0	26.63	176.96	8,955.7	5,522.9	612.2	158.7	765,297.88	399,213.70	-608.33	10.00
9,089.2	35.54	177.75	9,032.0	5,599.2	566.3	160.8	765,299.96	399,167.72	-562.32	10.00
Avalon										
9,100.0	36.62	177.82	9,040.7	5,607.9	559.9	161.0	765,300.20	399,161.38	-555.98	10.00
9,200.0	46.61	178.35	9,115.4	5,682.6	493.6	163.2	765,302.39	399,095.09	-489.65	10.00
9,300.0	56.61	178.73	9,177.4	5,744.6	415.4	165.2	765,304.36	399,016.83	-411.37	10.00
9,400.0	66.61	179.03	9,224.9	5,792.1	327.5	166.9	765,306.06	398,928.99	-323.51	10.00
9,500.0	76.60	179.29	9,256.4	5,823.6	232.8	168.3	765,307.45	398,834.23	-228.75	10.00
9,600.0	86.60	179.52	9,271.0	5,838.2	134.0	169.3	765,308.47	398,735.43	-129.95	10.00
9,634.0	90.00	179.60	9,272.0	5,839.2	100.0	169.5	765,308.73	398,701.44	-95.96	10.00
Start 10358.6 hold at 9634.0 MD										
9,700.0	90.00	179.60	9,272.0	5,839.2	34.0	170.0	765,309.19	398,635.45	-29.99	0.00
9,800.0	90.00	179.60	9,272.0	5,839.2	-66.0	170.7	765,309.88	398,535.46	70.00	0.00
9,900.0	90.00	179.60	9,272.0	5,839.2	-166.0	171.4	765,310.57	398,435.46	169.99	0.00
10,000.0	90.00	179.60	9,272.0	5,839.2	-266.0	172.1	765,311.27	398,335.46	269.97	0.00
10,100.0	90.00	179.60	9,272.0	5,839.2	-366.0	172.8	765,311.96	398,235.46	369.96	0.00
10,200.0	90.00	179.60	9,272.0	5,839.2	-466.0	173.5	765,312.65	398,135.47	469.94	0.00
10,300.0	90.00	179.60	9,272.0	5,839.2	-566.0	174.2	765,313.35	398,035.47	569.93	0.00
10,400.0	90.00	179.60	9,272.0	5,839.2	-666.0	174.9	765,314.04	397,935.47	669.92	0.00

Company:	Kaiser Francis	**Local Co-ordinate Reference:**	Well Red Hills 005H
Project:	Red Hills 005H	**TVD Reference:**	WELL @ 3432.8usft (Original Well Elev)
Site:	Red Hills 005H	**MD Reference:**	WELL @ 3432.8usft (Original Well Elev)
Well:	Red Hills 005H	**North Reference:**	Grid
Wellbore:	Red Hills 005H	**Survey Calculation Method:**	Minimum Curvature
Design:	191215 Red Hills 005H	**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	9,272.0	5,839.2	-766.0	175.6	765,314.73	397,835.47	769.90	0.00
10,600.0	90.00	179.60	9,272.0	5,839.2	-866.0	176.2	765,315.43	397,735.48	869.89	0.00
10,700.0	90.00	179.60	9,272.0	5,839.2	-966.0	176.9	765,316.12	397,635.48	969.88	0.00
10,800.0	90.00	179.60	9,272.0	5,839.2	-1,066.0	177.6	765,316.81	397,535.48	1,069.86	0.00
10,900.0	90.00	179.60	9,272.0	5,839.2	-1,166.0	178.3	765,317.51	397,435.48	1,169.85	0.00
11,000.0	90.00	179.60	9,272.0	5,839.2	-1,266.0	179.0	765,318.20	397,335.49	1,269.83	0.00
11,100.0	90.00	179.60	9,272.0	5,839.2	-1,366.0	179.7	765,318.89	397,235.49	1,369.82	0.00
11,200.0	90.00	179.60	9,272.0	5,839.2	-1,466.0	180.4	765,319.59	397,135.49	1,469.81	0.00
11,300.0	90.00	179.60	9,272.0	5,839.2	-1,566.0	181.1	765,320.28	397,035.49	1,569.79	0.00
11,400.0	90.00	179.60	9,272.0	5,839.2	-1,666.0	181.8	765,320.97	396,935.50	1,669.78	0.00
11,500.0	90.00	179.60	9,272.0	5,839.2	-1,766.0	182.5	765,321.67	396,835.50	1,769.77	0.00
11,600.0	90.00	179.60	9,272.0	5,839.2	-1,866.0	183.2	765,322.36	396,735.50	1,869.75	0.00
11,700.0	90.00	179.60	9,272.0	5,839.2	-1,966.0	183.9	765,323.05	396,635.50	1,969.74	0.00
11,800.0	90.00	179.60	9,272.0	5,839.2	-2,066.0	184.6	765,323.75	396,535.50	2,069.72	0.00
11,900.0	90.00	179.60	9,272.0	5,839.2	-2,166.0	185.3	765,324.44	396,435.51	2,169.71	0.00
12,000.0	90.00	179.60	9,272.0	5,839.2	-2,266.0	186.0	765,325.13	396,335.51	2,269.70	0.00
12,100.0	90.00	179.60	9,272.0	5,839.2	-2,365.9	186.6	765,325.83	396,235.51	2,369.68	0.00
12,200.0	90.00	179.60	9,272.0	5,839.2	-2,465.9	187.3	765,326.52	396,135.51	2,469.67	0.00
12,300.0	90.00	179.60	9,272.0	5,839.2	-2,565.9	188.0	765,327.21	396,035.52	2,569.66	0.00
12,400.0	90.00	179.60	9,272.0	5,839.2	-2,665.9	188.7	765,327.90	395,935.52	2,669.64	0.00
12,500.0	90.00	179.60	9,272.0	5,839.2	-2,765.9	189.4	765,328.60	395,835.52	2,769.63	0.00
12,600.0	90.00	179.60	9,272.0	5,839.2	-2,865.9	190.1	765,329.29	395,735.52	2,869.61	0.00
12,700.0	90.00	179.60	9,272.0	5,839.2	-2,965.9	190.8	765,329.98	395,635.53	2,969.60	0.00
12,800.0	90.00	179.60	9,272.0	5,839.2	-3,065.9	191.5	765,330.68	395,535.53	3,069.59	0.00
12,900.0	90.00	179.60	9,272.0	5,839.2	-3,165.9	192.2	765,331.37	395,435.53	3,169.57	0.00
13,000.0	90.00	179.60	9,272.0	5,839.2	-3,265.9	192.9	765,332.06	395,335.53	3,269.56	0.00
13,100.0	90.00	179.60	9,272.0	5,839.2	-3,365.9	193.6	765,332.76	395,235.54	3,369.55	0.00

Company:	Kaiser Francis	**Local Co-ordinate Reference:**	Well Red Hills 005H
Project:	Red Hills 005H	**TVD Reference:**	WELL @ 3432.8usft (Original Well Elev)
Site:	Red Hills 005H	**MD Reference:**	WELL @ 3432.8usft (Original Well Elev)
Well:	Red Hills 005H	**North Reference:**	Grid
Wellbore:	Red Hills 005H	**Survey Calculation Method:**	Minimum Curvature
Design:	191215 Red Hills 005H	**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	9,272.0	5,839.2	-3,465.9	194.3	765,333.45	395,135.54	3,469.53	0.00
13,300.0	90.00	179.60	9,272.0	5,839.2	-3,565.9	195.0	765,334.14	395,035.54	3,569.52	0.00
13,400.0	90.00	179.60	9,272.0	5,839.2	-3,665.9	195.7	765,334.84	394,935.54	3,669.50	0.00
13,500.0	90.00	179.60	9,272.0	5,839.2	-3,765.9	196.4	765,335.53	394,835.55	3,769.49	0.00
13,600.0	90.00	179.60	9,272.0	5,839.2	-3,865.9	197.0	765,336.22	394,735.55	3,869.48	0.00
13,700.0	90.00	179.60	9,272.0	5,839.2	-3,965.9	197.7	765,336.92	394,635.55	3,969.46	0.00
13,800.0	90.00	179.60	9,272.0	5,839.2	-4,065.9	198.4	765,337.61	394,535.55	4,069.45	0.00
13,900.0	90.00	179.60	9,272.0	5,839.2	-4,165.9	199.1	765,338.30	394,435.56	4,169.44	0.00
14,000.0	90.00	179.60	9,272.0	5,839.2	-4,265.9	199.8	765,339.00	394,335.56	4,269.42	0.00
14,100.0	90.00	179.60	9,272.0	5,839.2	-4,365.9	200.5	765,339.69	394,235.56	4,369.41	0.00
14,200.0	90.00	179.60	9,272.0	5,839.2	-4,465.9	201.2	765,340.38	394,135.56	4,469.39	0.00
14,300.0	90.00	179.60	9,272.0	5,839.2	-4,565.9	201.9	765,341.08	394,035.56	4,569.38	0.00
14,400.0	90.00	179.60	9,272.0	5,839.2	-4,665.9	202.6	765,341.77	393,935.57	4,669.37	0.00
14,500.0	90.00	179.60	9,272.0	5,839.2	-4,765.9	203.3	765,342.46	393,835.57	4,769.35	0.00
14,600.0	90.00	179.60	9,272.0	5,839.2	-4,865.9	204.0	765,343.16	393,735.57	4,869.34	0.00
14,700.0	90.00	179.60	9,272.0	5,839.2	-4,965.9	204.7	765,343.85	393,635.57	4,969.33	0.00
14,800.0	90.00	179.60	9,272.0	5,839.2	-5,065.9	205.4	765,344.54	393,535.58	5,069.31	0.00
14,900.0	90.00	179.60	9,272.0	5,839.2	-5,165.9	206.1	765,345.24	393,435.58	5,169.30	0.00
15,000.0	90.00	179.60	9,272.0	5,839.2	-5,265.9	206.7	765,345.93	393,335.58	5,269.28	0.00
15,100.0	90.00	179.60	9,272.0	5,839.2	-5,365.9	207.4	765,346.62	393,235.58	5,369.27	0.00
15,200.0	90.00	179.60	9,272.0	5,839.2	-5,465.9	208.1	765,347.32	393,135.59	5,469.26	0.00
15,300.0	90.00	179.60	9,272.0	5,839.2	-5,565.9	208.8	765,348.01	393,035.59	5,569.24	0.00
15,400.0	90.00	179.60	9,272.0	5,839.2	-5,665.9	209.5	765,348.70	392,935.59	5,669.23	0.00
15,500.0	90.00	179.60	9,272.0	5,839.2	-5,765.9	210.2	765,349.40	392,835.59	5,769.22	0.00
15,600.0	90.00	179.60	9,272.0	5,839.2	-5,865.9	210.9	765,350.09	392,735.60	5,869.20	0.00
15,700.0	90.00	179.60	9,272.0	5,839.2	-5,965.9	211.6	765,350.78	392,635.60	5,969.19	0.00
15,800.0	90.00	179.60	9,272.0	5,839.2	-6,065.9	212.3	765,351.47	392,535.60	6,069.17	0.00

Company:	Kaiser Francis	**Local Co-ordinate Reference:**	Well Red Hills 005H
Project:	Red Hills 005H	**TVD Reference:**	WELL @ 3432.8usft (Original Well Elev)
Site:	Red Hills 005H	**MD Reference:**	WELL @ 3432.8usft (Original Well Elev)
Well:	Red Hills 005H	**North Reference:**	Grid
Wellbore:	Red Hills 005H	**Survey Calculation Method:**	Minimum Curvature
Design:	191215 Red Hills 005H	**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	9,272.0	5,839.2	-6,165.9	213.0	765,352.17	392,435.60	6,169.16	0.00
16,000.0	90.00	179.60	9,272.0	5,839.2	-6,265.9	213.7	765,352.86	392,335.61	6,269.15	0.00
16,100.0	90.00	179.60	9,272.0	5,839.2	-6,365.9	214.4	765,353.55	392,235.61	6,369.13	0.00
16,200.0	90.00	179.60	9,272.0	5,839.2	-6,465.8	215.1	765,354.25	392,135.61	6,469.12	0.00
16,300.0	90.00	179.60	9,272.0	5,839.2	-6,565.8	215.8	765,354.94	392,035.61	6,569.11	0.00
16,400.0	90.00	179.60	9,272.0	5,839.2	-6,665.8	216.5	765,355.63	391,935.62	6,669.09	0.00
16,500.0	90.00	179.60	9,272.0	5,839.2	-6,765.8	217.1	765,356.33	391,835.62	6,769.08	0.00
16,600.0	90.00	179.60	9,272.0	5,839.2	-6,865.8	217.8	765,357.02	391,735.62	6,869.06	0.00
16,700.0	90.00	179.60	9,272.0	5,839.2	-6,965.8	218.5	765,357.71	391,635.62	6,969.05	0.00
16,800.0	90.00	179.60	9,272.0	5,839.2	-7,065.8	219.2	765,358.41	391,535.63	7,069.04	0.00
16,900.0	90.00	179.60	9,272.0	5,839.2	-7,165.8	219.9	765,359.10	391,435.63	7,169.02	0.00
17,000.0	90.00	179.60	9,272.0	5,839.2	-7,265.8	220.6	765,359.79	391,335.63	7,269.01	0.00
17,100.0	90.00	179.60	9,272.0	5,839.2	-7,365.8	221.3	765,360.49	391,235.63	7,369.00	0.00
17,200.0	90.00	179.60	9,272.0	5,839.2	-7,465.8	222.0	765,361.18	391,135.63	7,468.98	0.00
17,300.0	90.00	179.60	9,272.0	5,839.2	-7,565.8	222.7	765,361.87	391,035.64	7,568.97	0.00
17,400.0	90.00	179.60	9,272.0	5,839.2	-7,665.8	223.4	765,362.57	390,935.64	7,668.95	0.00
17,500.0	90.00	179.60	9,272.0	5,839.2	-7,765.8	224.1	765,363.26	390,835.64	7,768.94	0.00
17,600.0	90.00	179.60	9,272.0	5,839.2	-7,865.8	224.8	765,363.95	390,735.64	7,868.93	0.00
17,700.0	90.00	179.60	9,272.0	5,839.2	-7,965.8	225.5	765,364.65	390,635.65	7,968.91	0.00
17,800.0	90.00	179.60	9,272.0	5,839.2	-8,065.8	226.2	765,365.34	390,535.65	8,068.90	0.00
17,900.0	90.00	179.60	9,272.0	5,839.2	-8,165.8	226.9	765,366.03	390,435.65	8,168.89	0.00
18,000.0	90.00	179.60	9,272.0	5,839.2	-8,265.8	227.5	765,366.73	390,335.65	8,268.87	0.00
18,100.0	90.00	179.60	9,272.0	5,839.2	-8,365.8	228.2	765,367.42	390,235.66	8,368.86	0.00
18,200.0	90.00	179.60	9,272.0	5,839.2	-8,465.8	228.9	765,368.11	390,135.66	8,468.84	0.00
18,300.0	90.00	179.60	9,272.0	5,839.2	-8,565.8	229.6	765,368.81	390,035.66	8,568.83	0.00
18,400.0	90.00	179.60	9,272.0	5,839.2	-8,665.8	230.3	765,369.50	389,935.66	8,668.82	0.00
18,500.0	90.00	179.60	9,272.0	5,839.2	-8,765.8	231.0	765,370.19	389,835.67	8,768.80	0.00

Company:	Kaiser Francis	**Local Co-ordinate Reference:**	Well Red Hills 005H
Project:	Red Hills 005H	**TVD Reference:**	WELL @ 3432.8usft (Original Well Elev)
Site:	Red Hills 005H	**MD Reference:**	WELL @ 3432.8usft (Original Well Elev)
Well:	Red Hills 005H	**North Reference:**	Grid
Wellbore:	Red Hills 005H	**Survey Calculation Method:**	Minimum Curvature
Design:	191215 Red Hills 005H	**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	9,272.0	5,839.2	-8,865.8	231.7	765,370.89	389,735.67	8,868.79	0.00
18,700.0	90.00	179.60	9,272.0	5,839.2	-8,965.8	232.4	765,371.58	389,635.67	8,968.78	0.00
18,800.0	90.00	179.60	9,272.0	5,839.2	-9,065.8	233.1	765,372.27	389,535.67	9,068.76	0.00
18,900.0	90.00	179.60	9,272.0	5,839.2	-9,165.8	233.8	765,372.97	389,435.68	9,168.75	0.00
19,000.0	90.00	179.60	9,272.0	5,839.2	-9,265.8	234.5	765,373.66	389,335.68	9,268.73	0.00
19,100.0	90.00	179.60	9,272.0	5,839.2	-9,365.8	235.2	765,374.35	389,235.68	9,368.72	0.00
19,200.0	90.00	179.60	9,272.0	5,839.2	-9,465.8	235.9	765,375.05	389,135.68	9,468.71	0.00
19,300.0	90.00	179.60	9,272.0	5,839.2	-9,565.8	236.6	765,375.74	389,035.69	9,568.69	0.00
19,400.0	90.00	179.60	9,272.0	5,839.2	-9,665.8	237.3	765,376.43	388,935.69	9,668.68	0.00
19,500.0	90.00	179.60	9,272.0	5,839.2	-9,765.8	237.9	765,377.12	388,835.69	9,768.67	0.00
19,600.0	90.00	179.60	9,272.0	5,839.2	-9,865.8	238.6	765,377.82	388,735.69	9,868.65	0.00
19,700.0	90.00	179.60	9,272.0	5,839.2	-9,965.8	239.3	765,378.51	388,635.69	9,968.64	0.00
19,800.0	90.00	179.60	9,272.0	5,839.2	-10,065.8	240.0	765,379.20	388,535.70	10,068.62	0.00
19,900.0	90.00	179.60	9,272.0	5,839.2	-10,165.8	240.7	765,379.90	388,435.70	10,168.61	0.00
19,992.7	90.00	179.60	9,272.0	5,839.2	-10,258.4	241.4	765,380.54	388,343.05	10,261.25	0.00
TD at 19992.7										

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
4,987.7	4,972.0	9 5/8" Intermediate Casing	9-5/8	12-1/4
19,992.7	9,272.0	5 1/2" Production Casing	5-1/2	8-3/4

Company:	Kaiser Francis	**Local Co-ordinate Reference:**	Well Red Hills 005H
Project:	Red Hills 005H	**TVD Reference:**	WELL @ 3432.8usft (Original Well Elev)
Site:	Red Hills 005H	**MD Reference:**	WELL @ 3432.8usft (Original Well Elev)
Well:	Red Hills 005H	**North Reference:**	Grid
Wellbore:	Red Hills 005H	**Survey Calculation Method:**	Minimum Curvature
Design:	191215 Red Hills 005H	**Database:**	EDM 5000.1 Single User Db

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
4,786.7	4,772.0	Lamar		0.00	
2,022.5	2,022.0	Top of Salt		0.00	
8,656.6	8,622.0	Brushy Canyon		0.00	
5,902.4	5,882.0	Cherry Canyon		0.00	
1,222.0	1,222.0	Salado		0.00	
882.0	882.0	Rustler		0.00	
4,485.1	4,472.0	Base of Salt		0.00	
4,907.3	4,892.0	Bell Canyon		0.00	
9,089.2	9,032.0	Avalon		0.00	
8,857.8	8,822.0	Lower Brushy Canyon		0.00	

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
1,800.0	1,800.0	0.0	0.0	Start Build 3.00
1,993.8	1,993.5	9.6	2.2	Start 6683.6 hold at 1993.8 MD
8,677.4	8,642.7	670.0	151.1	Start DLS 10.00 TFO 166.83
9,634.0	9,272.0	100.0	169.5	Start 10358.6 hold at 9634.0 MD
19,992.7	9,272.0	-10,258.4	241.4	TD at 19992.7

Checked By: _____ Approved By: _____ Date: _____