Form 3160-3
(June 2015)

OCD Hobbs
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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.
NMNM015321

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 5467
103H

2. Name of Operator
KAISER FRANCIS OIL COMPANY (12361)

9. API Well No.
30-025-45385

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

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

10. Field and Pool, or Exploratory
WC-025 G-06 S253329O; UPR AS

4. Location of Well *(Report location clearly and in accordance with any State requirements.*)*
At surface NESW / 2400 FSL / 1795 FWL / LAT 32.0863916 / LONG -103.6141245
At proposed prod. zone SESW / 330 FSL / 2182 FWL / LAT 32.0662022 / LONG -103.6128008

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)
240 feet

16. No of acres in lease
838.8

17. Spacing Unit dedicated to this well
240

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

19. Proposed Depth
9750 feet / 17070 feet

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

21. Elevations (Show whether DF, KDB, RT, GL, etc.)
3418 feet

22. Approximate date work will start*
11/01/2018

23. Estimated duration
30 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)	Melanie Wilson / Ph: (575)914-1461	08/15/2018
Title: Regulatory Analyst		
Approved by *(Signature)* (Electronic Submission)	Name *(Printed/Typed)* Cody Layton / Ph: (575)234-5959	Date 10/31/2018
Title: Assistant Field Manager Lands & Minerals	Office: CARLSBAD	

Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.
Conditions of approval, if any, are attached.

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

GCP Rec 11/28/18

APPROVED WITH CONDITIONS

Approval Date: 10/31/2018

KZ 11/28/18

(Continued on page 2)

*(Instructions on page 2)

Double sided

INSTRUCTIONS

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

ITEM I: If the proposal is to redrill to the same reservoir at a different subsurface location or to a new reservoir, use this form with appropriate notations. Consult applicable Federal regulations concerning subsequent work proposals or reports on the well.

ITEM 4: Locations on Federal or Indian land should be described in accordance with Federal requirements. Consult local Federal offices for specific instructions.

ITEM 14: Needed only when location of well cannot readily be found by road from the land or lease description. A plat, or plats, separate or on the reverse side, showing the roads to, and the surveyed location of, the wen, and any other required information, should be furnished when required by Federal agency offices.

ITEMS 15 AND 18: If well is to be, or has been directionany drilled, give distances for subsurface location of hole in any present or objective productive zone.

ITEM 22: Consult applicable Federal regulations, or appropriate officials, concerning approval of the proposal before operations are started.

ITEM 24: If the proposal will involve hydraulic fracturing operations, you must comply with 43 CFR 3162.3-3, including providing information about the protection of usable water. Operators should provide the best available information about all formations containing water and their depths. This information could include data and interpretation of resistivity logs run on nearby wells. Information may also be obtained from state or tribal regulatory agencies and from local BLM offices.

NOTICES

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

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

PRINCIPAL PURPOSES: The information will be used to: (1) process and evaluate your application for a permit to drill a new oil, gas, or service wen or to reenter a plugged and abandoned well; and (2) document, for administrative use, information for the management, disposal and use of National Resource Lands and resources including (a) analyzing your proposal to discover and extract the Federal or Indian resources encountered; (b) reviewing procedures and equipment and the projected impact on the land involved; and (c) evaluating the effects of the proposed operation on the surface and subsurface water and other environmental impacts.

ROUTINE USE: Information from the record and/or the record win be transferred to appropriate Federal, State, and local or foreign agencies, when relevant to civil, criminal or regulatory investigations or prosecution, in connection with congressional inquiries and for regulatory responsibilities.

EFFECT OF NOT PROVIDING INFORMATION: Filing of this application and disclosure of the information is mandatory only if you elect to initiate a drilling or reentry operation on an oil and gas lease.

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

The BLM conects this information to anow evaluation of the technical, safety, and environmental factors involved with drilling for oil and/or gas on Federal and Indian oil and gas leases. This information will be used to analyze and approve applications. Response to this request is mandatory only if the operator elects to initiate drilling or reentry operations on an oil and gas lease. The BLM would like you to know that you do not have to respond to this or any other Federal agency-sponsored information collection unless it displays a currently valid OMB control number.

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

(Continued on page 3)

Additional Operator Remarks

Location of Well

1. SHL: NESW / 2400 FSL / 1795 FWL / TWSP: 25S / RANGE: 33E / SECTION: 31 / LAT: 32.0863916 / LONG: -103.6141245 (TVD: 0 feet, MD: 0 feet)
   PPP: NESW / 2540 FSL / 2182 FWL / TWSP: 25S / RANGE: 33E / SECTION: 31 / LAT: 32.0869308 / LONG: -103.6128769 (TVD: 9237 feet, MD: 9259 feet)
   BHL: SESW / 330 FSL / 2182 FWL / TWSP: 26S / RANGE: 33E / SECTION: 6 / LAT: 32.0662022 / LONG: -103.6128008 (TVD: 9750 feet, MD: 17070 feet)

BLM Point of Contact

Name: Tenille Ortiz

Title: Legal Instruments Examiner

Phone: 5752342224

Email: tortiz@blm.gov

Review and Appeal Rights

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

Operator Name: KAISER FRANCIS OIL COMPANY

Well Name: RED HILLS **Well Number:** 103H

Describe other minerals:

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:** 2

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:** 240 FT

Reservoir well spacing assigned acres Measurement: 240 Acres

Well plat: RED_HILLS_103H_C102_20180809063859.pdf

Red_Hills_103H_Pymt_20180815104513.pdf

Well work start Date: 11/01/2018 **Duration:** 30 DAYS

Section 3 - Well Location Table

Survey Type: RECTANGULAR

Describe Survey Type:

Datum: NAD83 **Vertical Datum:** NAVD88

Survey number: 6208

	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
SHL Leg #1	2400	FSL	1795	FWL	25S	33E	31	Aliquot NESW	32.0863916	-103.6141245	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 015321	3418	0	0
KOP Leg #1	2600	FSL	2182	FWL	25S	33E	31	Aliquot NESW	32.0869406	-103.6128772	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 015321	-5759	9199	9177
PPP Leg #1	2540	FSL	2182	FWL	25S	33E	31	Aliquot NESW	32.0869308	-103.6128769	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 015321	-5819	9259	9237

APD ID: 10400032915 **Submission Date:** 08/15/2018

Operator Name: KAISER FRANCIS OIL COMPANY

Well Name: RED HILLS **Well Number:** 103H

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

Highlighted data reflects the most recent changes

Show Final Text

Section 1 - General

APD ID: 10400032915 **Tie to previous NOS?** **Submission Date:** 08/15/2018

BLM Office: CARLSBAD **User:** Melanie Wilson **Title:** Regulatory Analyst

Federal/Indian APD: FED **Is the first lease penetrated for production Federal or Indian?** FED

Lease number: NMNM015321 **Lease Acres:** 838.8

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 **Mater 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 **Well Number:** 103H **Well API Number:**

Field/Pool or Exploratory? Field and Pool **Field Name:** JENNINGS **Pool Name:** UPPER BONE SPRING SHALE

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

Pay.gov

Receipt

Your payment is complete

Pay.gov Tracking ID: 26BKAP60
Agency Tracking ID: 75552374640
Form Name: Bureau of Land Management (BLM) Application for Permit to Drill (APD) Fee
Application Name: BLM Oil and Gas Online Payment

Payment Information

Payment Type: Debit or credit card
Payment Amount: $9,790.00
Transaction Date: 08/15/2018 12:44:04 PM EDT
Payment Date: 08/15/2018
Company: KAISER-FRANCIS OIL COMPANY
APD IDs: 10400032915
Lease Numbers: NMNM15321
Well Numbers: 103H
Note: You will need your Pay.gov Tracking ID to complete your APD transaction in AFMSS II. Please ensure you write this number down upon completion of payment.

Account Information

Cardholder Name: GEORGE B KAISER
Card Type: Visa
Card Number: **********0061

Email Confirmation Receipt

Confirmation Receipts have been emailed to:
mjp1692@gmail.com

APD ID: 10400032915 **Submission Date:** 08/15/2018

Operator Name: KAISER FRANCIS OIL COMPANY

Well Name: RED HILLS **Well Number:** 103H

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
1	---	3418	0	0		NONE	No
2	RUSTLER	2558	860	860		NONE	No
3	SALADO	2218	1200	1200		NONE	No
4	TOP SALT	1418	2000	2000		NONE	No
5	BASE OF SALT	-1032	4450	4450		NONE	No
6	LAMAR	-1332	4750	4750		NATURAL GAS,OIL	No
7	BELL CANYON	-1452	4870	4870		NATURAL GAS,OIL	No
8	CHERRY CANYON	-2442	5860	5860		NATURAL GAS,OIL	No
9	BRUSHY CANYON	-5182	8600	8600		NATURAL GAS,OIL	No
10	BONE SPRING	-5382	8800	8800		NATURAL GAS,OIL	No
11	AVALON SAND	-5592	9010	9010		NATURAL GAS,OIL	Yes
12	BONE SPRING 1ST	-6532	9950	9950		NATURAL GAS,OIL	No

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.

Operator Name: KAISER FRANCIS OIL COMPANY

Well Name: RED HILLS **Well Number:** 103H

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_103H_Choke_Manifold_10k_20180810081258.pdf

BOP Diagram Attachment:

Red_Hills_103H_BOP_stack_5k_annular_20180810081314.pdf

Red_Hills_103H_FlexHose_Specs_Cactus_171_20180810081350.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	910	0	910			910	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	4800	0	4800			4800	L-80	40	LTC	1.2	2.3	DRY	3.8	DRY	4.8
3	PRODUCTION	8.5	5.5	NEW	API	N	0	17070	0	9750			17070	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 **Well Number:** 103H

Casing Attachments

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

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Red_Hills_103H_Casing_Assumptions_20180810081521.pdf

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

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Red_Hills_103H_Casing_Assumptions_20180810081604.pdf

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

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Red_Hills_103H_Casing_Assumptions_20180810081844.pdf

Red_Hills_103H_GBCD_5.5in_Connection_Spec_Sheet_20180810081859.pdf

Section 4 - Cement

Operator Name: KAISER FRANCIS ... COMPANY

Well Name: RED HILLS **Well Number:** 103H

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
SURFACE	Lead		0	910	424	1.75	13.5	741	50	Halcem	Kol Seal
SURFACE	Tail		0	910	157	1.33	14.8	209	50	Halcem	Poly Flake
INTERMEDIATE	Lead		0	4800	748	2.09	12.5	1563	30	Econocem	Kol Seal
INTERMEDIATE	Tail		0	4800	293	1.33	14.8	390	30	Halcem	none
PRODUCTION	Lead		3800	17070	355	3.49	10.5	1238	10	NeoCem	Kol Seal
PRODUCTION	Tail		3800	17070	1724	1.22	14.5	2108	10	Versacem	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
8704	17070	OTHER : CUT BRINE	8.8	9.2							
910	4800	OTHER : BRINE	9.8	10.2							
4800	8704	OTHER : CUT BRINE	8.8	9.2							

Operator Name: KAISER FRANCIS OIL COMPANY

Well Name: RED HILLS **Well Number:** 103H

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	910	OTHER : FRESH WATER	8.4	9							

Section 6 - Test, Logging, Coring

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

None planned

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:** 2567

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_103H_H2S_Contingency_Plan_20180810082951.pdf

Operator Name: KAISER FRANCIS OIL COMPANY

Well Name: RED HILLS **Well Number:** 103H

Section 8 - Other Information

Proposed horizontal/directional/multi-lateral plan submission:

Red_Hills_103H___Directional_Plan_20180810083017.pdf

Other proposed operations facets description:

Gas Capture Plan attached

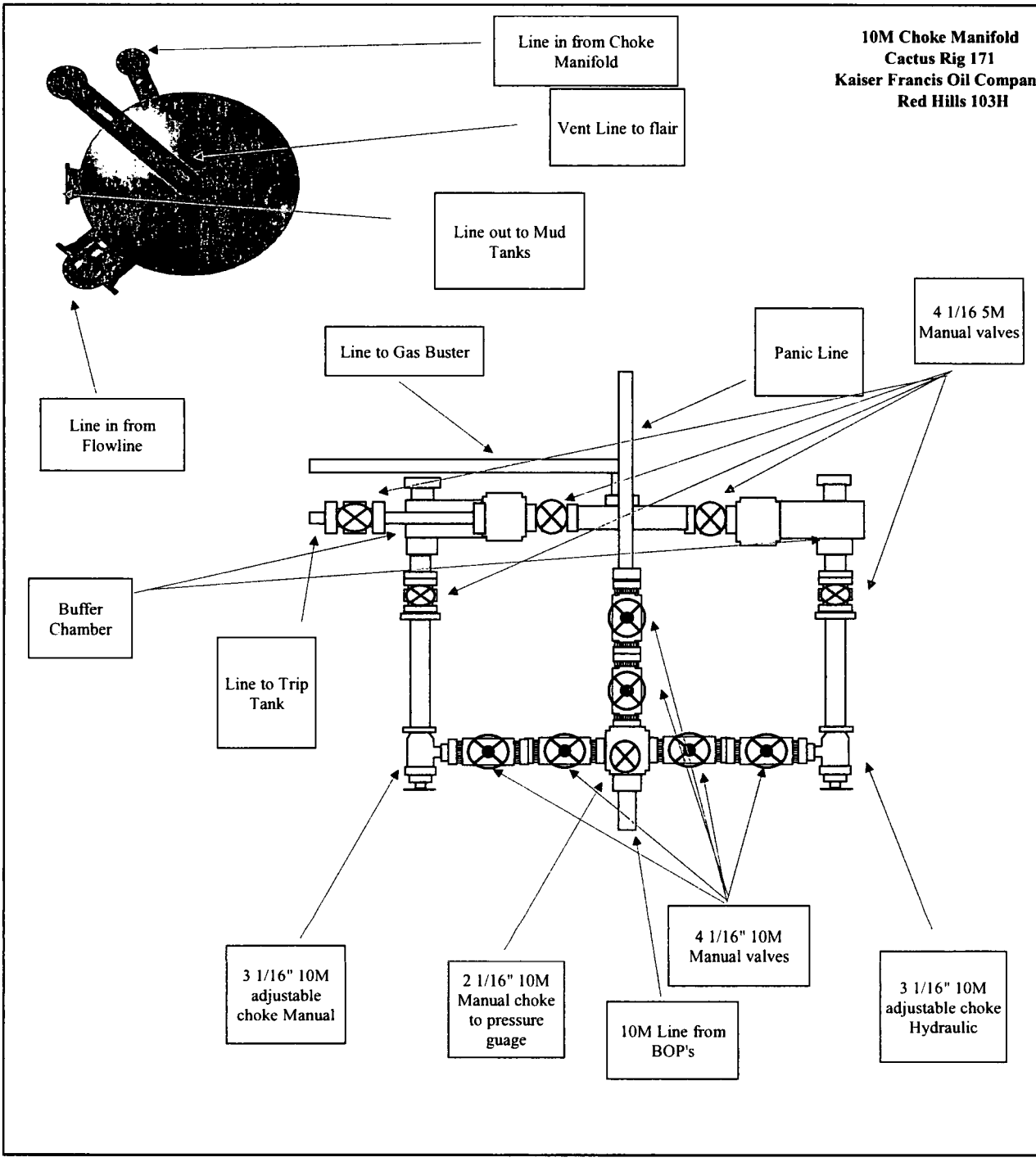
Other proposed operations facets attachment:

Red_Hills__103H_Gas_Capture_Plan_20180810083043.pdf

Other Variance attachment:

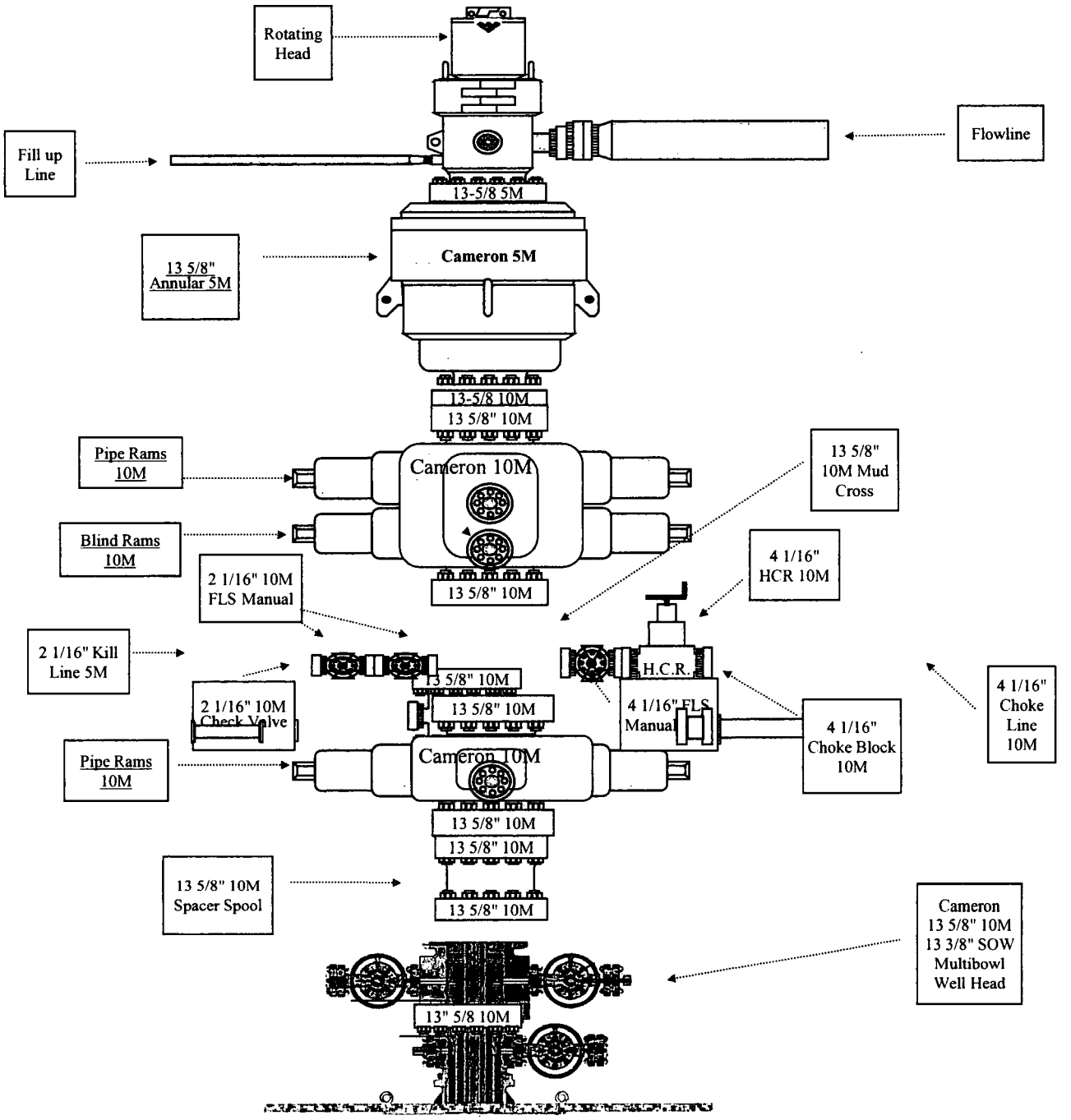
Red_Hills_103H_FlexHose_Specs_Cactus_171_20180813095451.pdf

10M Choke Manifold
Cactus Rig 171
Kaiser Francis Oil Company
Red Hills 103H



10M BOP with 5M Annular
Kaiser Francis Oil Company

Hole Sections Utilized
***12 1/4" Hole below Surface Casing**
***8 3/4"-8 1/2" Hole below Intermediate casing**



GATES E & S NORTH AMERICA, INC.
1450 Montana Rd
Iola, KS 66749

PHONE: 620-365-4147
FAX: 620-365-4119
EMAIL: ***Eileen.Johns@gates.com***
WEB: www.gates.com

ASSY # M14311

10K CEMENTING ASSEMBLY PRESSURE TEST CERTIFICATE

Customer :	A-7 AUSTIN INC DBA AUSTIN HOSE	Test Date:	9/1/2017
Customer Ref. :	4085873	Hose Serial No.:	IO-090117-2
Invoice No. :	508456	Created By:	BENJAMIN ALLEN
Comments:	N/A		
Hose Temperature:	-4°F to +180°F (-20°C to +82°C)		
Product Description:	10K3.035.0CM4116FIXXFLTFLG SS\LE		
End Fitting 1 :	4 1/16 10K FIXED FLANGE	End Fitting 2 :	4 1/16 10K FLOATING FLANGE
Gates Part No. :	4773-4290	Assembly Code :	L39629081817IO-090117-2
Working Pressure :	10,000 PSI	Test Pressure :	15,000 PSI

Gates E & S North America, Inc. certifies that the following hose assembly has been tested to the Gates Oilfield Roughneck Agreement/Specification requirements and passed the 15 minute hydrostatic test per API Spec 7K/Q1, Sixth Edition, June 2015, Test pressure 9.6.7 and per Table 9 to 15,000 psi in accordance with this product number. Hose burst pressure 9.6.7.2 exceeds the minimum of 2.5 times the working pressure per Table 9.

Quality:	QUALITY	Produciton:	PRODUCTION
Date :	9/1/2017	Date :	9/1/2017
Signature :	Benjamin Allen	Signature :	

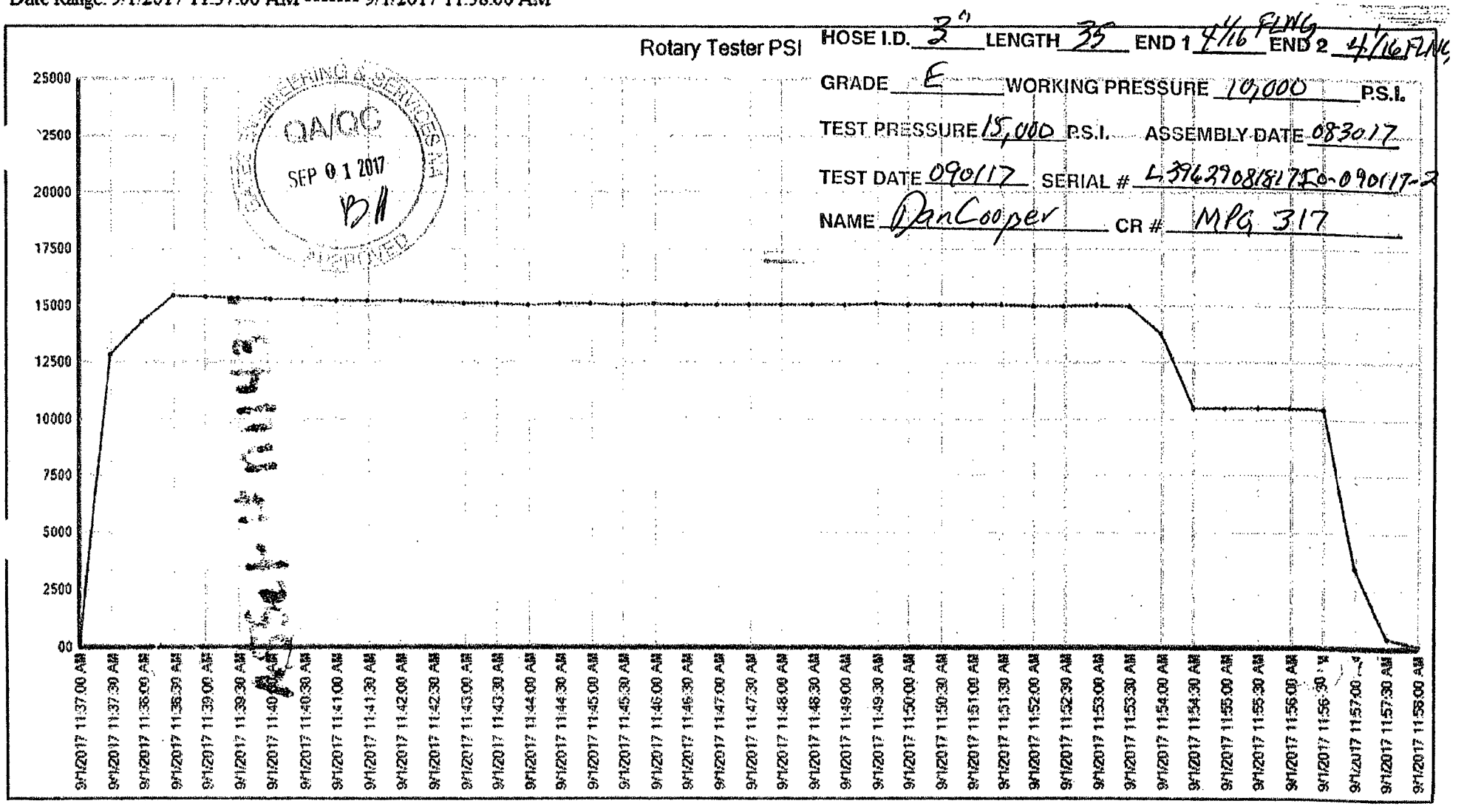
Form PTC - 01 Rev.0 2

Rotary Tester

StartDate: 9/1/2017 EndDate: 9/1/2017 ☑ Do Not Average Values

StartTime: 11:37 AM EndTime: 11:58 AM Lookup

Date Range: 9/1/2017 11:37:00 AM ------- 9/1/2017 11:58:00 AM



Friday, Sep 01, 2017 01:24 PM

KAISER-FRANCIS OIL COMPANY
RED HILLS 103H

Formation Name	Formation Top TVD
Rustler	860
Salado	1200
Top of Salt	2000
Base of Salt	4450
Lamar	4750
Bell Canyon	4870
Cherry Canyon	5860
Brushy Canyon	8600
Lower Brushy Canyon	8800
Avalon	9010
1 BSS	9950
2 BSS	10510
3 BSL	10950
3 BSS	11685
Wolfcamp	12070

Interval	Length	Casing Size	Weight (#/ft)	Grade	Thread	Condition	Hole Size	TVD (ft)
Conductor	120	20"				New		120
Surface	910	13-3/8"	54.5	J-55	BTC	New	17.5	910
Intermediate	4800	9-5/8"	40	L-80	LTC	New	12.25	4800
Production	[redacted]	5-1/2"	20	P110	GBCD	New	8.5	9750

Mud Type	Mud Weight Hole Control	Depth	Viscosity	Fluid Loss
FW	8.4 - 9.0	900	32 - 34	NC
Brine	9.8 - 10.2	4800	28	NC
Cut Brine	8.7 - 9.2	17070	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	5.8
2.4	2.7	3.3	3.4

KAISER-FRANCIS OIL COMPANY
RED HILLS 103H

Formation Name	Formation Top TVD
Rustler	850
Salado	1200
Top of Salt	2000
Base of Salt	4450
Lamar	4750
Bell Canyon	4870
Cherry Canyon	5860
Brushy Canyon	8600
Lower Brushy Canyon	8800
Avalon	9010
1 BSS	9950
2 BSS	10510
3 BSL	10950
3 BSS	11685
Wolfcamp	12070

Interval	Length	Casing Size	Weight (#/ft)	Grade	Thread	Condition	Hole Size	TVD (ft)
Conductor	120	20"				New		120
Surface	910	13-3/8"	54.5	J-55	BTC	New	17.5	910
Intermediate	4800	9-5/8"	40	L-80	LTC	New	12.25	4800
Production	[redacted]	5-1/2"	20	P110	GBCD	New	8.5	9750

Mud Type	Mud Weight Hole Control	Depth	Viscosity	Fluid Loss
FW	8.4 - 9.0	900	32 - 34	NC
Brine	9.8 - 10.2	4800	28	NC
Cut Brine	8.7 - 9.2	17070	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	641900	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
RED HILLS 103H

Formation Name	Formation Top TVD
Rustler	860
Salado	1200
Top of Salt	2000
Base of Salt	4450
Lamar	4750
Bell Canyon	4870
Cherry Canyon	5860
Brushy Canyon	8600
Lower Brushy Canyon	8800
Avalon	9010
1 BSS	9950
2 BSS	10510
3 BSL	10950
3 BSS	11685
Wolfcamp	12070

Interval	Length	Casing Size	Weight (#/ft)	Grade	Thread	Condition	Hole Size	TVD (ft)
Conductor	120	20"				New		120
Surface	910	13-3/8"	54.5	J-55	BTC	New	17.5	910
Intermediate	4800	9-5/8"	40	L-80	LTC	New	12.25	4800
Production	5170	5-1/2"	20	P-110	GBCD	New	8.5	9750

Mud Type	Mud Weight Hole Control	Depth	Viscosity	Fluid Loss
FW	8.4 - 9.0	900	32 - 34	NC
Brine	9.8 - 10.2	4800	28	NC
Cut Brine	8.7 - 9.2	17070	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	9090	5750	916000	727000
9.2	4664	11100	12640	841000	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

GB tubulars
Casings & Connections

GB Connection Performance Properties Sheet

Rev. 3 (08/25/2015)

ENGINEERING THE RIGHT CONNECTIONS™

Casing: 5.5 OD, 20 ppf
Casing Grade: P-110

Connection: GB CD Butt 6.050
Coupling Grade: API P-110

PIPE BODY GEOMETRY					
Nominal OD (in.)	5 1/2	Wall Thickness (in.)	0.361	Drift Diameter (in.)	4.653
Nominal Weight (ppf)	20.00	Nominal ID (in.)	4.778	API Alternate Drift Dia. (in.)	N/A
Plain End Weight (ppf)	19.83	Plain End Area (in.^{2})	5.828		

PIPE BODY PERFORMANCE					
Material Specification	P-110	Min. Yield Str. (psi)	110,000	Min. Ultimate Str. (psi)	125,000
Collapse		**Tension**		**Pressure**	
API (psi)	11,100	Pl. End Yield Str. (kips)	641	Min. Int. Yield Press. (psi)	12,640
High Collapse (psi)	N/A	**Torque**		**Bending**	
		Yield Torque (ft-lbs)	74,420	Build Rate to Yield (°/100 ft)	91.7

GB CD Butt 6.050 COUPLING GEOMETRY			
Coupling OD (in.)	6.050	Makeup Loss (in.)	4.2500
Coupling Length (in.)	8.500	Critical Cross-Sect. (in.^{2})	6.102

GB CD Butt 6.050 CONNECTION PERFORMANCE RATINGS/EFFICIENCIES					
Material Specification	API P-110	Min. Yield Str. (psi)	110,000	Min. Ultimate Str. (psi)	125,000
Tension		**Efficiency**		**Bending**	
Thread Str. (kips)	667	Internal Pressure (%)	98%	Build Rate to Yield (°/100 ft)	83.3
Min. Tension Yield (kips)	638	External Pressure (%)	100%	**Yield Torque**	
Min. Tension Ult. (kips)	725	Tension (%)	100%	Yield Torque (ft-lbs)	31,180
Joint Str. (kips)	667	Compression (%)	100%		
		Ratio of Areas (Cplg/Pipe)	1.05		

MAKEUP TORQUE					
Min. MU Tq. (ft-lbs)	10,000	Max. MU Tq. (ft-lbs)	20,000	Running Tq. (ft-lbs)	See GBT RP
				Max. Operating Tq. (ft-lbs)*	29,620

Units: US Customary (lbm, in., °F, lbf)
1 kip = 1,000 lbs
* See Running Procedure for description and limitations.
See attached: Notes for GB Connection Performance Properties.
GBT Running Procedure (GBT RP): www.gbtubulars.com/pdf/RP-GB-DWC-Connections.pdf
Blanking Dimensions: www.gbtubulars.com/pdf/GB-DWC-Blanking-Dimensions.pdf
Connection yield torque rating based on physical testing or extrapolation therefrom

GB tubulars
Casings & Connections

Notes for GB Connection Performance Properties

Rev. 0; (Oct., 2013)

ENGINEERING THE RIGHT CONNECTIONS™

1. All dimensions shown are nominal. Plain end weight is calculated in accordance with API TR 5C3. Performance properties are empirical, based on nominal dimensions, minimum material yield and ultimate strengths, and calculated in general accordance with industry standard formula(s) assuming uniaxial loading. All properties are calculated on the basis of materials at room temperature. NOTE: Material properties change with temperature.
2. Joint strength is the lesser of pipe thread strength and minimum coupling tension as calculated in accordance with API TR 5C3. Tensile efficiency is calculated using coupling strength based on ultimate material strength per API TR 5C3 divided by plain end yield strength of the casing. Minimum Coupling Tension based on material *yield* strength is provided *for information only*. Performance values presented for tension do not account for failure by pull-out (which can occur for casing with larger D/t ratios), effects of internal and external pressure, thermally induced axial loads, casing curvature (bending), and/or other static and dynamic loads that may occur singularly or in combination during downhole deployment and with subsequent well operations.
3. Drift diameters are based on Standard and Alternate drift sizes per API 5CT. Drift diameters are not specified for API 5L pipe. Drift diameters shown on GB Connection Performance Property Sheets represent the diameter of the drift mandrel used for end-drifting after coupling buck on. When shown, the alternate drift diameter is used for end drifting. Drift testing is performed in accordance with currently applicable API Specifications.
4. Minimum Internal Yield Pressure Performance values for Casing (API 5CT), Line Pipe (API 5L), and mill casing proprietary grades are based on API TR 5C3 formulas and assume 87.5% minimum wall thicknesses. Minimum Internal Yield Pressure efficiency for GB Connections is the lesser of the Minimum Internal Yield Pressure of the coupling and Leak Resistance divided by pipe body Minimum Internal Yield Pressure (all based on API TR 5C3 formulas). GB Connections typically demonstrate pressure resistance exceeding the mating pipe body unless otherwise noted with a pressure efficiency < 100%. Pressure efficiency can only be achieved when connections are properly assembled in strict accordance with GB Tubulars' Running Procedures (www.gbtubulars.com/pdf/RP-GB-DWC-Connections.pdf and www.gbtubulars.com/pdf/RP-20-GB-Butt-and-GB-3P.pdf.
5. Compression efficiency of the Casing/Connection combinations does not consider the axial load that causes pipe body buckling. The compressive load that causes buckling is usually less than the pipe body compressive yield strength and is dependent on a number of factors including, but not limited to, string length (or slenderness ratio; L/D), thermally induced axial loads, and annular clearance that may (or may not) lend side support to the casing string.
6. Bending values assume a constant radius of curvature where the casing is in uniformly intimate contact with the wall of the wellbore (i.e. when the upset at the coupling OD is small compared with wellbore wall irregularities). When the radius of curvature is not constant due to large wellbore wall irregularities, varying trajectory, micro doglegs, wash-outs, rock ledges, and other downhole conditions, unpredictable excessive bending stresses can occur that may be detrimental to casing and connection performance.
7. Fatigue failures are a function of material properties, stress range, and number of stress reversal cycles. API 5CT, API 5L, and mill proprietary casing/coupling materials have a finite fatigue life. Higher stress ranges yield lower fatigue life. So as a general rule of thumb, casing should never be rotated at higher RPMs than needed for task accomplishment. For the same stress range, casing rotated at 25 RPMs will generally last 4 times longer (more rotating hours) than casing rotated at 100 RPMs. However with fatigue, there are opportunities for unexpected higher stress reversal levels associated with vibration, thermally induced axial loads, and bending (see above) in addition to all other stress reversals imparted during running, rotating, reciprocating, pressure testing, pumping, etc. The extent and quality of the cement job is also a factor. Under aggressive, high-volume, multi-stage hydraulic fracturing operations, the casing string (including the connections) is severely taxed such that local stress range(s) and actual number of applied cycles cannot be precisely determined without full string instrumentation.
8. External pressure efficiency (expressed in percent) is the ratio of the lesser of Minimum Internal Yield Pressure and Leak Resistance for coupling (calculated per API TR 5C3) divided by the API collapse rating of the casing. External pressure efficiency has not been verified by testing and does not consider other applied loads. External pressure efficiency does not account for any high collapse rating that may be shown on GB Connection Performance Property Sheets.
9. Maximum Makeup Torque is provided for guidance only. This value is not the same as the Connection Yield Torque shown. Connection Yield Torque is the lesser of yield torque rating for the critical cross-section of pipe body, connector body, and pin nose and the threadform load flank bearing area. Connection Yield Torque does not consider radial buckling of the pipe or connection due to excessive jaw pressure during torque application. Torque in connections can increase or decrease over that applied at makeup (connection tightening/loosening) with rotating and stimulation operations due to slip-stick, shock loads, bending, tight spots, vibration(s), temperature, and other downhole factors that may occur individually or in combination. Due to circumstances beyond the control of GB Tubulars, User accepts all risks associated with casing and connection related issues that occur during and after rotating operations.
10. **Every** GB Connection requires the proper amount and distribution of thread compound to all pin and coupling threads and careful field make up in strict accordance with GB Tubulars' Running Procedures to provide expected levels of performance in service.
11. Reactions among water, drilling muds and other fluids, and chemicals introduced by User with downhole formation fluids may result in an environment detrimental to casing and connection performance. User should carefully consider all aspects of the string design including material compatibility with respect to possible corrosion, sour conditions, and other factors that may result in unexpected casing and/or connection failure at or below published ratings.
12. Performance Properties are subject to change without notice. User is advised to obtain the current GB Connection Performance Property Sheet for each application.

Limitations

Data presented in GB Performance Property Sheets and Running Procedures ("GB Information") is provided for informational purposes only and intended to be supplemented by the professional judgment of qualified personnel during design, field handling, deployment, and all subsequent well operations. The use of GB Information is at the User's sole risk.

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GB tubulars	Running Procedure for Casing with GB *Drilling with Casing* Connections	October 29, 2007
		Rev. 12 (11/25/2013)

OVERVIEW

This field running procedure applies to makeup of **GB *Drilling with Casing*** (GB DwC) Connections which include GB CD, GB WS, GB HB, GB CDE, GB WSE, and GB HBE Connections with GB Butt (Buttress), GB 4P, and GB 3P thread forms. All of these connections are suitable for ***Running*** (standard casing applications), ***Rotating*** (to aid string advancement), ***Drilling*** (Drilling with Casing/Drilling with Liners) and ***Driving***. This procedure also applies to the legacy GB Connections known as GB Butt and GB 3P.

Numerous factors impact the makeup torque of Buttress (GB Butt) and Modified Buttress Threads (such as GB 4P and GB 3P). Some of these factors include but are not limited to: allowable threading tolerances, joint characteristics (OD, straightness, and weight), vertical alignment (derrick, top drive, and elevator alignment relative to rotary table), thread compound (amount and distribution), snub line (location and orientation), distance between tongs and backups, temperature/weather, equipment type, efficiencies (electrical, hydraulic and mechanical), grips/dies (type, orientation, location, contact area, and distribution), measurement equipment, gauge calibration, personnel, etc. The nature of these types of connections makes it impossible to provide makeup torque values that will yield proper power tight makeup on every rig under all circumstances with the wide variety of existing connection makeup equipment. This procedure has been designed to determine the ***Running Torque*** required for proper power tight makeup of GB Connections under the circumstances and with the actual equipment, set up conditions, weather, etc. that exist at the time of running. With proper execution of this procedure, GB Connections will be properly and consistently assembled. This GB Running Procedure provides the basic recommended practices and is intended to be supplemented by the professional judgment of qualified personnel based on observation of actual makeups throughout the casing run.

DEFINITIONS

1. Minimum Makeup (MU) Torque: Connections must have at least this amount of torque applied.
2. Shoulder Torque: MU torque required to achieve shoulder engagement.
3. Running Torque: Developed at start of casing run per GB Running Procedure and once established, used for the rest of the joints in the string. The ***Running Torque*** will likely vary with each job due to the factors listed in the Overview section.
4. Delta Torque: Difference between shoulder torque and final makeup torque.
5. Maximum MU Torque: Assembly torque shall not exceed the Maximum Makeup Torque shown on size, weight, and grade-specific GB Performance Property Sheets during routine assembly.
6. Yield Torque: Torque that causes yielding in the connection (usually yielding of the pin nose). Yield torque rating does **NOT** consider the torque that may radially buckle the pipe body at the grip points.
7. Maximum Operating Torque: Yield Torque with 5% Safety Factor. The Maximum Operating Torque is **NOT** the Maximum Makeup Torque and is **NOT** a sustainable rotating torque. Operating at the Maximum Operating Torque for any length of time may damage the connection. User should carefully consider this value to determine if more than a 5% Safety Factor on yield torque is suitable for the application.

KEY INFORMATION

Thread Compound: Best-O-Life 2000, API Modified, API Modified Hi-Pressure, or any industry recognized equivalent to these products. Thread compound may also be referred to as "dope".

Torque Values: See individual GB Connection Performance Property Sheets available at the following link; http://www.gbtubulars.com/connection_selector.php.

Continuous Makeup: Makeup of GB Connections **SHALL START AND CONTINUE WITHOUT STOPPING** until full power tight makeup is achieved.

Makeup Speed: Use of high gear at no more than 20 RPMs is permissible once proper starting thread engagement has occurred. **THE FINAL TWO (2) TURNS, AT A MINIMUM, SHALL BE COMPLETED IN LOW GEAR AT LESS THAN 6 RPMS**.

Shoulder Engagement: Pin nose engagement. Shoulder engagement is indicated by a spike on an analog torque gauge or a sharp vertical spike on a torque vs. turn plot. As a secondary check, proper power tight makeup is achieved when the coupling covers approximately half of the API Triangle Stamp on the pin.

Acceptance Criteria: All GB Connections must exhibit shoulder engagement (achieve pin-to-pin or pin-to-shoulder engagement) with a minimum delta torque ≥ 10% of the shoulder torque.

It is imperative that the following procedure be executed carefully at the beginning of the run to determine the ***Running Torque*** (torque to be used for the rest of the string). The ***Running Torque*** is determined while running the first 10 joints exclusive of joints assembled with threadlocking compounds. Sometimes more than the first 10 joints will be needed to establish the ***Running Torque*** due to erratic results and/or rig-specific conditions. The ***Running Torque*** may have to be re-established during the casing run under certain conditions[1]. Use the size-specific GB Connection Performance Property Sheets (http://www.gbtubulars.com/connection_selector.php) for physical properties and torque values.

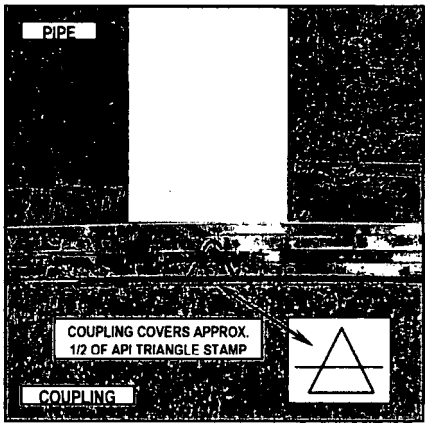
Each GB Connection Performance Property Sheet presents calculated Yield Torque values for the pipe body and connection which are based on nominal dimensions and minimum material yield strength. The Maximum Operating Torque shown on the GB Connection Performance Property Sheets includes a 5% safety factor on Yield Torque. As such, it represents the limiting torque ***spike*** that can be applied to the connection during rotating operations. The Maximum Operating Torque is **NOT** the Maximum Makeup Torque and is **NOT** a sustainable rotating torque. Operating at the Maximum Operating Torque for any length of time will likely damage the connection.

Connections shall be made up until shoulder engagement with delta torque ≥ 10% of the shoulder torque (not to exceed the maximum makeup torque, see procedure below) using the ***Running Torque*** value established in this procedure. The Maximum Makeup Torque at the beginning and throughout the run shall be limited to the value shown on the applicable GB Connection Performance Property Sheet. The maximum torque value is given as a practical limit for avoidance of thread galling, connection damage, and possible tube damage due to excessive jaw pressure that can occur with application of extreme makeup torque. Contact GB Tubulars if more than the Maximum Makeup Torque value is required for shoulder engagement and/or final make up, or if torque exceeding the Maximum Operating Torque value is required for the intended service.

[1] Examples include but are not limited to more than an occasional low delta torque, string of mixed mills, equipment change, large temperature change, and wobbling or noticeable vibration when joint is turning.

PROCEDURE FOR ESTABLISHING *RUNNING TORQUE*

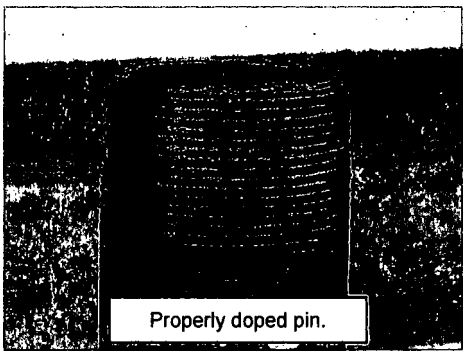
1. Remove coupling thread protectors only after casing is set in V-Door.
2. ***Always apply fresh thread compound to coupling threads and internal shoulder (where applicable).*** See Comment No. 1 (below) for discussion on proper amount of thread compound.
3. Remove pin thread protectors only after joint is raised in the derrick. Visually inspect pin threads for sufficient thread compound as described in Comment No. 1; ***add fresh compound to pin threads and pin nose.***
4. Fresh thread compound should **NEVER** be added on top of dope contaminated with dust, dirt, and/or debris. Threads observed to have contaminated thread compound shall be thoroughly cleaned and dried before applying fresh thread compound.
5. Stab the pin carefully into the coupling of the joint hanging in the rotary table. A stabbing guide is recommended to protect the pin nose and leading thread from physical damage that may contribute to thread galling. Make up each connection until shoulder engagement plus delta torque ≥ 10% of the shoulder torque without exceeding the Maximum Makeup Torque. Record the shoulder torque observed for the first 10 joints (excluding threadlocked accessory joints). The ***Running Torque*** is (a) the Minimum Makeup Torque shown on the GB Connection Performance Property Sheets ***or*** (b) the Maximum Shoulder Torque recorded from the first 10 makeups + 10%, ***whichever is higher*** (rounded to the next highest 500 ft.-lbs.) When making up the initial joints for establishing the ***Running Torque*** carefully watch the torque gauge for the shoulder torque and try to manually shut down the tongs before reaching Maximum Makeup Torque shown on the GB Connection Performance Property Sheets. Alternately, the dump valve should be set to the Maximum Makeup Torque during this initial process.



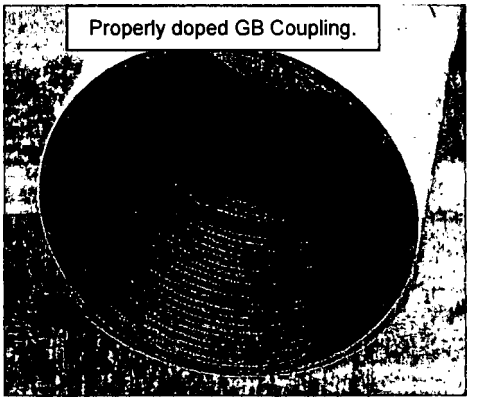
6. After the first 10 makeups (more if necessary due to conditions at the time of the run), use the ***"Running Torque"*** established in Step 5 for the remainder of the string. A dump valve is strongly recommended to stop makeup once the established ***Running Torque*** is achieved.
7. All connections made up with the established ***Running Torque*** should achieve shoulder engagement with the minimum amount of delta torque. Carefully watch for the spike on the torque gauge during each makeup to verify shoulder engagement. As a ***secondary*** verification, randomly check the makeup position relative to the API Triangle Stamp during the run. Proper power tight makeup position is achieved when the coupling covers approximately half of the API Triangle Stamp on the pin (see accompanying photo).

COMMENTS, TROUBLESHOOTING

1. GB Connections are thread compound friendly. Thread compounds shall be handled, mixed, and applied in strict accordance with the manufacturer's instructions. **THREAD COMPOUND SHALL BE APPLIED TO BOTH PIN AND COUPLING THREADS AND SHOULDER OF EVERY CONNECTION**. Sufficient thread compound has been applied when all threads (pin and coupling), pin nose, and coupling ID surfaces are completely covered **WITH NO GAPS OR BARE SPOTS**. The thread form should be discernible beneath the compound; i.e. when the thread valleys appear half full. Be generous with the thread compound; but avoid over-doping to the point where ***excessive*** amounts are squeezed out during assembly.


Properly doped pin.

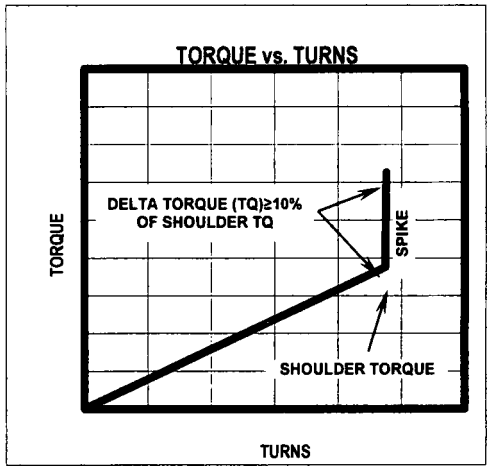
Use of a mustache brush is the preferred method for applying and distributing thread compounds to GB Connections.


Properly doped GB Coupling.

2. If threads are cleaned on racks, new dope shall be applied in a light, even coat to both pin and coupling threads. See Comment No. 1 above for description of sufficient thread compound. Clean thread protectors shall be re-applied to freshly doped pin and coupling threads unless the casing run is imminent (no more than a few hours) to avoid contaminating exposed thread compound.
3. All connections should achieve shoulder engagement before reaching the "***Running Torque***" value determined by this procedure. Any connection that does not achieve shoulder engagement at the established "***Running Torque***" value shall be visually inspected for position relative to the API Triangle Stamp.
   a) If the coupling is shy of the API Triangle Stamp Base, the connection shall be broken out, cleaned and inspected visually for thread damage, re-doped, and made-up again (or laid down if threads are damaged). Connections that have not achieved shoulder engagement **SHALL NEVER** be backed up a couple of turns and remade. They shall be completely broken out, cleaned and inspected as described above.
   b) If the coupling covers the API Triangle base but does not cover approximately half of the Triangle Stamp, add additional torque to achieve shouldering and finish the makeup. It is common to see high torque (possibly exceeding the recommended maximum torque) to initiate connection turning. This is acceptable as long as the torque drops off once movement starts and then spikes with shoulder engagement. If acceptable makeup doesn't occur with one additional torque application, the connection shall be broken out (as described in 3a above).
   c) Any connection not properly assembled (i.e. not meeting the acceptance criteria) in two (2) attempts (provided threads pass a visual inspection each time) is reject and shall be laid down.
4. At the established ***Running Torque***, the connections will generally shoulder with at least 10% delta torque. High interference connections will tend to have a higher shoulder torque and less delta torque (at least 10% of the shoulder torque is required). Low interference connections will tend to have lower shoulder torque and more delta torque. In general, the GB Connections makeup consistently but will vary due to any of the factors enumerated in the second paragraph of the Overview section of this procedure. However, wide variability on more than a few joints should be investigated for a root cause and, if necessary, a new ***Running Torque*** should be established following the same procedure used at the start of the casing run.
5. It is recommended to have a few spare, loose couplings available in the event coupling threads become damaged on the rig. This allows changing out a coupling without having to lay a joint(s) down. Pin threads shall be cleaned and inspected visually for thread damage and re-doped before installing a replacement coupling (or the joint shall be laid down if pin threads under the removed coupling are damaged and cannot be field repaired).
   - For GB CDE (and other GB Connections with internal shoulders) install the coupling hand tight (use of strap wrenches to assist is permitted) and then make up with power tongs to shoulder engagement using the above established ***Running Torque***.
   - GB CD Connections are made up to a precise position at the threading plant (mill side). Prior to removing a damaged coupling, a radial paint band should be applied to the pipe body to mark the position of the existing coupling. After removal, install the new coupling hand tight (use of strap wrenches to assist is permitted) and then make

up with power tongs to the exact same position using the previously applied paint band as the indicator.

6. ***Torque vs. Turn monitoring systems are recommended for field makeup of GB Connections.*** While Torque vs. Turn plots provide good information about makeup, they **SHALL NOT BE SUBSTITUTED FOR DIRECT VISUAL OBSERVATION OF THE CONNECTION DURING ASSEMBLY**. There is no second chance to watch field assembly of a connection. Torque vs. Turn plots can always be viewed for verification purposes once a makeup is finished. When available, torque vs. turn plots shall finish with a clearly defined spike as shown in the graphic to the right. The general character of torque vs. turn plots for good makeups will become evident after the first ten (10) makeups (again, more may be necessary due to rig- and/or equipment-specific conditions). Any makeup that results in a plot that is "out-of-character"[2] when compared with the majority of plots from previous good makeups should be checked carefully.



When using Torque vs. Turn monitoring equipment, GB recommends setting a reference torque value of 500 ft.-lbs. or 10% of the minimum makeup torque (whichever is lower) to normalize the resulting plots. Plot scales should be set so data spans at least 2/3 of the turns scale on each plot (10 turns will usually be sufficient at the start and can be reduced based on data from the first few joints). **UNDER NO CIRCUMSTANCE SHOULD MAKEUP BE STARTED UNTIL THE MONITORING SYSTEM IS READY TO RECORD DATA**.

7. Occasionally the mill side of a GB Connection may turn during field makeup. When observed, the makeup should continue without stopping per this procedure. It may be helpful to scribe a vertical line across the coupling-pipe interface to aid estimation of mill side turning if it is observed with some frequency. The amount of mill side turn should be carefully observed and estimated. If the mill side turns less than ½ turn and all other aspects of the makeup are good, the connection is acceptable. If the mill side turns more than ½ turn trouble-shooting should be initiated paying particular attention to amount and distribution of thread compound, vertical alignment, weight of joint, hooked end on pipe, and other possible factors that may contribute to possible high torque during field makeup. It should be noted that mill side turning during field makeup occurs occasionally and should not be concerning. Frequent or persistent mill side turning is a symptom that needs troubleshooting and appropriate corrective action.
8. A double wrap of the pick-up sling should be used when raising casing into the derrick when single joint, side-door, or slip elevators are not being used.
9. Higher torque may be required to achieve shoulder engagement when threadlock compounds are applied. User is advised to carefully follow the manufacturer's instructions with respect to mixing, application, temperature, and time. Torque ranges with threadlock compounds cannot be estimated due to many variables including but not limited to temperature, time, connection tolerances, and surface finish. In these cases, carefully monitor makeup to be sure shouldering occurs. The only exception to the shouldering requirement is with float equipment (float shoe and float collar) that will be assembled with a threadlocking compound. In this case, makeup to a position that covers the base of API Triangle Stamp is considered satisfactory.
10. Manual and automated dump valves can miss the established ***Running Torque*** due to a number of factors. Slightly overshooting the ***Running Torque*** is not cause for concern as long as the final "dump" torque is not excessive and the equipment used is generally consistent joint-to-joint.

[2] An "out-of-character" plot may initiate with a high torque, show significantly steeper slope from the start of makeup, wide torque undulations as makeup progresses, no clearly defined spike, insufficient/inconsistent turns, etc.

11. Attached is a "Worksheet for determining GB Connection ***Running Torque*** at the beginning of a Casing Run" for use at the start of any casing run using GB Connections. GB recommends that this worksheet be filled out and maintained with the casing run records.

PROCEDURE SUMMARY

1. Remove coupling protectors after casing is set in V-Door and apply fresh thread compound to coupling threads.
2. Raise joint in derrick, remove pin protectors, and apply fresh thread compound to pin threads and pin nose.
3. Carefully stab pin into coupling and makeup to pin nose engagement. Try to stop makeup without exceeding the Maximum Makeup Torque (shown on GB Connection Performance Property Sheets). Carefully watch for and note the Shoulder Torque.
4. Record Shoulder Torque and Final Torque values, and position relative to API Triangle Stamp for first ten (10) connections, more if necessary due to run/rig-specific conditions.
5. The ***Running Torque*** is (a) the Minimum Makeup Torque shown on the GB Connection Performance Property Sheet or (b) the Maximum Torque required for shoulder engagement + 10% delta torque determined from the first 10 makeups, ***whichever is higher***. Use the attached Worksheet to record this data and determine the ***Running Torque***.
6. Make up the rest of the string at the ***Running Torque*** determined in the previous step.

NOTES:

- *This summary is provided for quick reference and is not a substitute for the comprehensive procedure provided above.*
- *Does not apply to threadlock connections.*

DO's and DONT's

1. **DO** check vertical alignment.
2. **DO** apply thread compound to all pin and coupling threads, pin nose and coupling shoulder area.
3. **DO** establish the ***Running Torque*** in accordance with GB Procedures.
4. **DO** make adjustments to ***Running Torque*** if indicated by inconsistent makeups during the casing run.
5. **DO** check every makeup for a clear indication of shouldering with a minimum delta torque ≥ 10% of the shoulder torque.
6. **DO** reject any coupling that is not properly made up after two (2) attempts.
7. **DO** carefully stab pins into coupling (use a stabbing guide for casing smaller than 9 5/8" OD).
8. **DO** finish the makeup with at least two (2) full turns in low gear at 6 RPMs or less.
9. **DO** make up every connection continuously to pin nose engagement without stopping.
10. **DO NOT** over dope.
11. **DO NOT** exceed the Maximum Makeup Torque as shown on the GB Connection Performance Property Sheets during assembly.

12. **DO NOT** make up any misaligned connection.
13. **DO NOT** exceed 20 RPMs in high gear and 6 RPMs in low gear.
14. **DO NOT** remove pin thread protectors until pipe is hanging in the derrick.
15. **DO NOT** ever back a connection up a couple of turns and remake. Any connection requiring this type of attention **SHALL** be broken out completely, cleaned, visually inspected, and if OK, re-doped and remade.
16. **DO NOT** hesitate to contact GB Tubulars with questions before and during any casing run.

RECOMMENDED EQUIPMENT

- Stabbing Guide
- Mustache Brush
- Torque vs. Turn Monitoring Equipment or Dump Valve

Worksheet for determining GB Connection Running Torque at the beginning of a Casing Run

Ignore joints that are assembled with threadlock compounds. See "Addendum Procedure for GB Connections Assembled with Threadlocking Compounds" available at www.gbtubulars.com.

Pertinent Excerpt from GB Running Procedure

5. Stab the pin carefully into the coupling of the joint hanging in the rotary table. A stabbing guide is recommended to protect the pin nose and leading thread from physical damage that may contribute to thread galling. Make up each connection until shoulder engagement plus delta torque ≥ 10% of the shoulder torque without exceeding the Maximum Makeup Torque. Record the shoulder torque observed for the first 10 joints (excluding threadlocked accessory joints). The Running Torque is (a) the Minimum Makeup Torque shown on the GB Connection Performance Property Sheets or (b) the Maximum Shoulder Torque recorded from the first 10 makeups + 10%, whichever is higher (rounded to the next highest 500 ft.-lbs.) When making up the initial joints for establishing the Running Torque carefully watch the torque gauge for the shoulder torque and try to manually shut down the tongs before reaching Maximum Makeup Torque shown on the GB Connection Performance Property Sheets. Alternately, the dump valve should be set to the Maximum Makeup Torque during this initial process.

6. After the first 10 makeups (more if necessary due to conditions at the time of the run), use the "Running Torque" established in Step 5 for the remainder of the string. A dump valve is strongly recommended to stop makeup once the established Running Torque is achieved.

Casing Data		Comment
OD (in)		See GB Connection Data Sheet
Weight (ppf)		See GB Connection Data Sheet
Grade		See GB Connection Data Sheet
Min MU Torque (ft-lbs)		See GB Connection Data Sheet
Max MU Torque (ft-lbs)		(2 X Min MU Tq)
Max Operating Torque (ft-lbs)		The Maximum Operating Torque is **NOT** the Maximum Makeup Torque and is **NOT** a sustainable rotating torque. Operating at the Maximum Operating Torque for any length of time will likely damage the connection.

Notes	Joint No.	Shoulder Torque (ft-lbs)	Final Torque (ft-lbs)	Triangle Stamp Position Sketch (△)
Required	1			
Required	2			
Required	3			
Required	4			
Required	5			
Required	6			
Required	7			
Required	8			
Required	9			
Required	10			
Optional	11			
Optional	12			
Optional	13			
Optional	14			
Optional	15			
Max. Shoulder Torque				
A Max. Shoulder Torque + 10%				
B Min. Makeup Torque (from GB Conn. Data Sheet)				
Running Torque (ft-lbs)			**A** or **B**, whichever is greater.	

Optional joints should be added if there is wide variability in shoulder torques recorded during the initial 10 joints. Judgement should be used to determine if more than 10 joints are needed for the purpose of establishing the Running Torque and, if so, how many more should be added.

Wide variations in Shoulder Torque during the first ten (10) joints suggest other issues requiring attention such as poor alignment, improper amount and distribution of thread compound, etc. Refer to 2nd paragraph of GB Running Procedure for possible contributing factors to aid troubleshooting.

GB Tubulars
950 Threadneedle, Suite 130
Houston TX 77079
Toll Free: 1-888-245-3848
Main: 713-465-3585
Fax: 713-984-1529

For Techincal Information, contact:
Gene Mannella
genem@gbtubulars.com
Qing Lu
qingl@gbtubulars.com

Rev. 12 (11/25/2013)

GB tubulars

GATES E & S NORTH AMERICA, INC.
1450 Montana Rd
Iola, KS 66749

PHONE: 620-365-4147
FAX: 620-365-4119
EMAIL: *Eileen.Johns@gates.com*
WEB: www.gates.com

ASSY # M14311

10K CEMENTING ASSEMBLY PRESSURE TEST CERTIFICATE

Customer :	A-7 AUSTIN INC DBA AUSTIN HOSE	Test Date:	9/1/2017
Customer Ref. :	4085873	Hose Serial No.:	IO-090117-2
Invoice No. :	508456	Created By:	BENJAMIN ALLEN
Comments:	N/A		
Hose Temperature:	-4°F to +180°F (-20°C to +82°C)		
Product Description:	10K3.035.0CM4116FIXXFLTFLG SS\LE		
End Fitting 1 :	4 1/16 10K FIXED FLANGE	End Fitting 2 :	4 1/16 10K FLOATING FLANGE
Gates Part No. :	4773-4290	Assembly Code :	L396290818171O-090117-2
Working Pressure :	10,000 PSI	Test Pressure :	15,000 PSI

Gates E & S North America, Inc. certifies that the following hose assembly has been tested to the Gates Oilfield Roughneck Agreement/Specification requirements and passed the 15 minute hydrostatic test per API Spec 7K/Q1, Sixth Edition, June 2015, Test pressure 9.6.7 and per Table 9 to 15,000 psi in accordance with this product number. Hose burst pressure 9.6.7.2 exceeds the minimum of 2.5 times the working pressure per Table 9.

Quality:	QUALITY	Produciton:	PRODUCTION
Date :	9/1/2017	Date :	9/1/2017
Signature :	Benjamin Allen	Signature :	

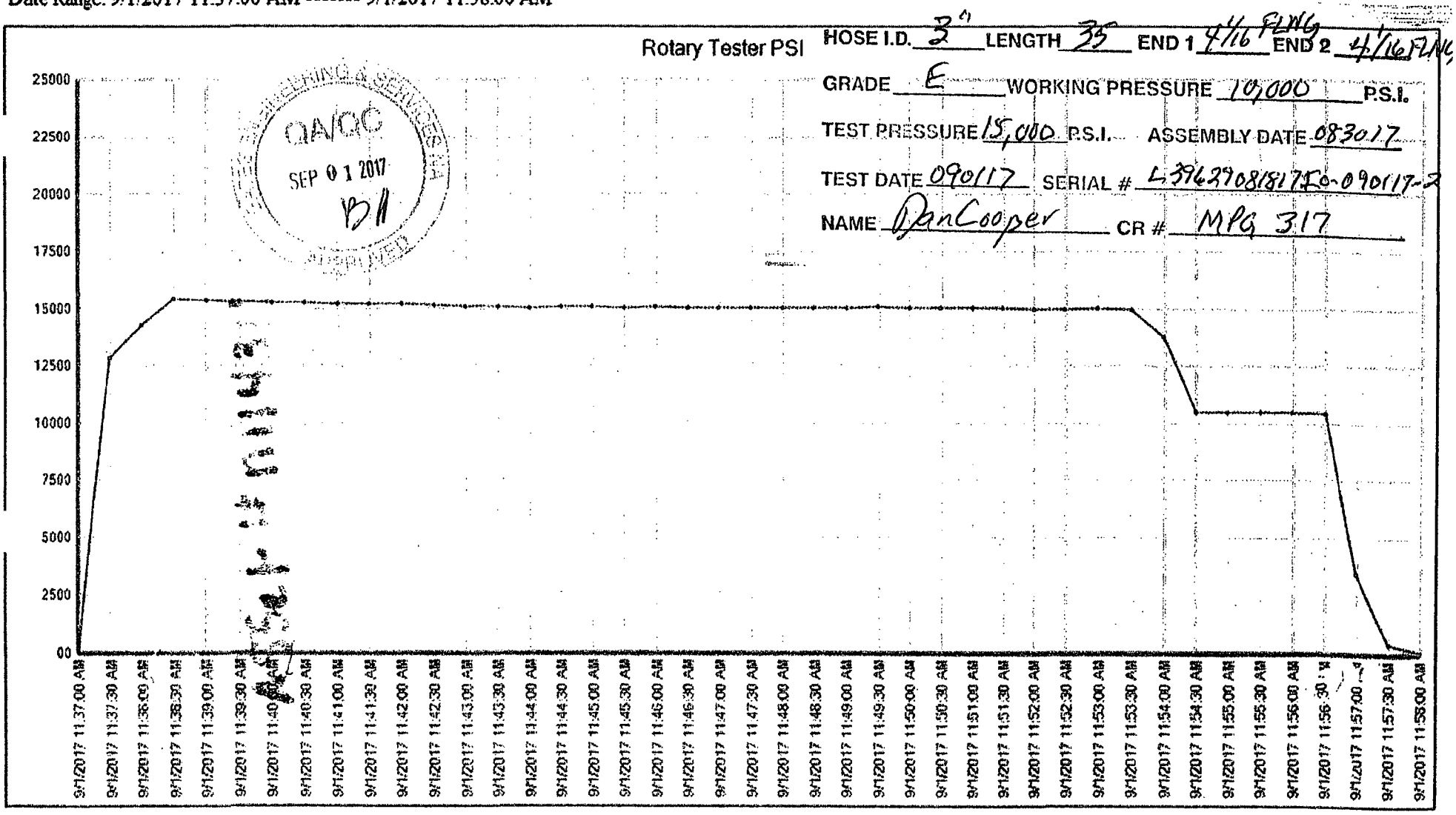
Form PTC - 01 Rev.0 2

Rotary Tester

StartDate: 9/1/2017 EndDate: 9/1/2017 ☑ Do Not Average Values

StartTime: 11:37 AM EndTime: 11:58 AM Lookup

Date Range: 9/1/2017 11:37:00 AM ------- 9/1/2017 11:58:00 AM



Friday, Sep 01, 2017 01:24 PM

APD ID: 10400032915 **Submission Date:** 08/15/2018

Operator Name: KAISER FRANCIS OIL COMPANY

Well Name: RED HILLS **Well Number:** 103H

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

Highlighted data reflects the most recent changes

Show Final Text

Section 1 - Existing Roads

Will existing roads be used? YES

Existing Road Map:

RED_HILLS_103H_Existing_Roads_20180810083110.pdf

Existing Road Purpose: ACCESS,FLUID TRANSPORT **Row(s) Exist?** NO

ROW ID(s)

ID:

Do the existing roads need to be improved? NO

Existing Road Improvement Description:

Existing Road Improvement Attachment:

Section 2 - New or Reconstructed Access Roads

Will new roads be needed? YES

New Road Map:

RED_HILLS_103H_Access_Road_20180810083223.pdf

New road type: RESOURCE

Length: 1833 Feet **Width (ft.):** 25

Max slope (%): 2 **Max grade (%):** 2

Army Corp of Engineers (ACOE) permit required? NO

ACOE Permit Number(s):

New road travel width: 15

New road access erosion control: Road construction requirements and regular maintenance would alleviate potential impacts to the access road from water erosion damage.

New road access plan or profile prepared? NO

New road access plan attachment:

Access road engineering design? NO

Access road engineering design attachment:

Operator Name: KAISER FRANCIS OIL COMPANY

Well Name: RED HILLS **Well Number:** 103H

Access surfacing type: OTHER

Access topsoil source: BOTH

Access surfacing type description: Native caliche

Access onsite topsoil source depth: 6

Offsite topsoil source description: Material will be obtained from BLM caliche pit in NWNW Section 23-T25S-R33E or BLM pit in NWNW Section 1-T25S-R33E

Onsite topsoil removal process: The top 6 inches of topsoil is pushed off and stockpiled along the side of the location. An approximate 160' X 160' area is used within the proposed well site to remove caliche. Subsoil is removed and stockpiled within the pad site to build the location and road. Then subsoil is pushed back in the hole and caliche is spread accordingly across proposed access road.

Access other construction information:

Access miscellaneous information:

Number of access turnouts: **Access turnout map:**

Drainage Control

New road drainage crossing: OTHER

Drainage Control comments: Proposed access road will be crowned and ditched and constructed of 6 inch rolled and compacted caliche. Water will be diverted where necessary to avoid ponding, maintain good drainage, and to be consistent with local drainage patterns.

Road Drainage Control Structures (DCS) description: The ditches will be 3' wide with 3:1 slopes

Road Drainage Control Structures (DCS) attachment:

Access Additional Attachments

Additional Attachment(s):

Section 3 - Location of Existing Wells

Existing Wells Map? YES

Attach Well map:

RED_HILLS_103H_1_Mile_Map_20180810083326.pdf

RED_HILLS_103H__1_MILE_WELLS_20180810083341.pdf

Existing Wells description:

Section 4 - Location of Existing and/or Proposed Production Facilities

Submit or defer a Proposed Production Facilities plan? DEFER

Estimated Production Facilities description: Production facilities are planned for the south side of pad. Plan for initial wells: 2-1000 bbl water tanks and 8-1000 bbl oil tanks, a temporary 6X20 horizontal 3-phase sep, a 48" X 10' 3-phase sep, a 8 X 20' heater treater and a 48"X 10' 2-phase sep

Section 5 - Location and Types of Water Supply

Water Source Table

Water source use type: INTERMEDIATE/PRODUCTION CASING **Water source type:** OTHER
Describe type: BRINE WATER
Source latitude: **Source longitude:**
Source datum:
Water source permit type: PRIVATE CONTRACT
Source land ownership: PRIVATE
Water source transport method: TRUCKING
Source transportation land ownership: OTHER **Describe transportation land ownership:**
Water source volume (barrels): 20000 **Source volume (acre-feet):** 2.577862
Source volume (gal): 840000

Water source use type: OTHER, STIMULATION, SURFACE CASING **Water source type:** OTHER
Describe type: FRESH WATER
Source latitude: **Source longitude:**
Source datum:
Water source permit type: PRIVATE CONTRACT
Source land ownership: PRIVATE
Water source transport method: TRUCKING
Source transportation land ownership: OTHER **Describe transportation land ownership:**
Water source volume (barrels): 250000 **Source volume (acre-feet):** 32.223274
Source volume (gal): 10500000

Water source and transportation map:
Red_Hills_103H_Water_Source_Map_20180813095336.pdf
Water source comments: Water source transportation land ownership is a mixture of Federal, State and County.
New water well? NO

New Water Well Info

Well latitude: **Well Longitude:** **Well datum:**
Well target aquifer:
Est. depth to top of aquifer(ft): **Est thickness of aquifer:**

Aquifer comments:

Aquifer documentation:

Well depth (ft): **Well casing type:**

Well casing outside diameter (in.): **Well casing inside diameter (in.):**

New water well casing? **Used casing source:**

Drilling method: **Drill material:**

Grout material: **Grout depth:**

Casing length (ft.): **Casing top depth (ft.):**

Well Production type: **Completion Method:**

Water well additional information:

State appropriation permit:

Additional information attachment:

Section 6 - Construction Materials

Construction Materials description: On site caliche will be used for construction if sufficient. In the event insufficient quantities of caliche are available onsite, caliche will be trucked in from BLM's caliche pit in NWNW Section 23-T25S-R33E or NWNW Section 1-T25S-R33E
Construction Materials source location attachment:

Section 7 - Methods for Handling Waste

Waste type: DRILLING

Waste content description: Drilling fluids and cuttings

Amount of waste: 3900 barrels

Waste disposal frequency : One Time Only

Safe containment description: All drilling fluids will be stored safely and disposed of properly

Safe containmant attachment:

Waste disposal type: HAUL TO COMMERCIAL FACILITY **Disposal location ownership:** COMMERCIAL
Disposal type description:

Disposal location description: Cuttings will be hauled to R360's facility on US 62/180 at Halfway, NM

Waste type: SEWAGE

Waste content description: Human waste and grey water

Amount of waste: 1000 gallons

Waste disposal frequency : One Time Only

Safe containment description: Waste material will be stored safely and disposed of properly

Safe containmant attachment:

Waste disposal type: HAUL TO COMMERCIAL FACILITY **Disposal location ownership:** COMMERCIAL
Disposal type description:

Disposal location description: Trucked to an approved disposal facility.

Waste type: GARBAGE

Waste content description: Miscellaneous trash

Amount of waste: 500 pounds

Waste disposal frequency : One Time Only

Safe containment description: Trash produced during drilling and completion operations will be collected in a trash container and disposed of properly
Safe containmant attachment:

Waste disposal type: HAUL TO COMMERCIAL FACILITY **Disposal location ownership:** COMMERCIAL
Disposal type description:

Disposal location description: Trucked to an approved disposal facility

Reserve Pit

Reserve Pit being used? NO

Temporary disposal of produced water into reserve pit?

Reserve pit length (ft.) **Reserve pit width (ft.)**

Reserve pit depth (ft.) **Reserve pit volume (cu. yd.)**

Is at least 50% of the reserve pit in cut?

Reserve pit liner

Reserve pit liner specifications and installation description

Cuttings Area

Cuttings Area being used? NO

Are you storing cuttings on location? YES

Description of cuttings location Cuttings will be stored in roll off bins and hauled to R360 on US 62/180 near Halfway.

Cuttings area length (ft.) **Cuttings area width (ft.)**

Cuttings area depth (ft.) **Cuttings area volume (cu. yd.)**

Is at least 50% of the cuttings area in cut?

WCuttings area liner

Cuttings area liner specifications and installation description

Section 8 - Ancillary Facilities

Are you requesting any Ancillary Facilities?: NO

Ancillary Facilities attachment:

Comments:

Section 9 - Well Site Layout

Well Site Layout Diagram:

Red_Hills_103H_Drilling_Layout_20180810083519.pdf
RED_HILLS_103H_Well_Pad_Layout_20180810083539.pdf

Comments:

Section 10 - Plans for Surface Reclamation

Type of disturbance: New Surface Disturbance

Multiple Well Pad Name: RED HILLS

Multiple Well Pad Number: 2

Recontouring attachment:

Drainage/Erosion control construction: During construction proper erosion control methods will be used to control erosion, runoff and siltation of the surrounding area.
Drainage/Erosion control reclamation: Proper erosion control methods will be used on the area to control erosion, runoff and siltation of the surrounding area

Well pad proposed disturbance (acres): 4.72
Road proposed disturbance (acres): 1.05
Powerline proposed disturbance (acres): 0
Pipeline proposed disturbance (acres): 0
Other proposed disturbance (acres): 0

Total proposed disturbance: 5.77

Well pad interim reclamation (acres): 0
Road interim reclamation (acres): 0
Powerline interim reclamation (acres): 0
Pipeline interim reclamation (acres): 0
Other interim reclamation (acres): 0

Total interim reclamation: 0

Well pad long term disturbance (acres): 4.72
Road long term disturbance (acres): 1.05
Powerline long term disturbance (acres): 0
Pipeline long term disturbance (acres): 0
Other long term disturbance (acres): 0

Total long term disturbance: 5.77

Disturbance Comments:

Reconstruction method: The areas planned for interim reclamation will then be recontoured to the original contour if feasible, or if not feasible, to an interim contour that blends with the surrounding topography as much as possible. Where applicable, the fill material of the well pad will be backfilled into the cut to bring the area back to the original contour. The interim cut and fill slopes prior to re-seeding will not be steeper than a 3:1 ratio, unless the adjacent native topography is steeper. Note: Constructed slopes may be much steeper during drilling, but will be recontoured to the above ratios during interim reclamation.

Topsoil redistribution: Topsoil will be evenly respread and aggressively revegetated over the entire disturbed area not needed for all-weather operations

Soil treatment: To seed the area, the proper BLM seed mixture, free of noxious weeds, will be used. Final seedbed preparation will consist of contour cultivating to a depth of 4 to 6 inches within 24 hours prior to seeding, dozer tracking, or other imprinting in order to break the soil crust and create seed germination micro-sites.

Existing Vegetation at the well pad: The historic climax plant community is a grassland dominated by black grama, dropseeds, and blue stems with sand sage and shinnery oak distributed evenly throughout. Current landscape displays mesquite, shinnery oak, yucca, desert sage, fourwing saltbush, snakeweed, and bunch grasses

Existing Vegetation at the well pad attachment:

Existing Vegetation Community at the road: Refer to "Existing Vegetation at the well pad'

Existing Vegetation Community at the road attachment:

Existing Vegetation Community at the pipeline: N/A

Existing Vegetation Community at the pipeline attachment:

Existing Vegetation Community at other disturbances: N/A

Existing Vegetation Community at other disturbances attachment:

Non native seed used? NO

Non native seed description:

Seedling transplant description:

Will seedlings be transplanted for this project? NO

Seedling transplant description attachment:

Will seed be harvested for use in site reclamation? NO

Seed harvest description:

Seed harvest description attachment:

Seed Management

Seed Table

Seed type: **Seed source:**

Seed name:

Source name: **Source address:**

Source phone:

Seed cultivar:

Seed use location:

PLS pounds per acre: **Proposed seeding season:**

Seed Summary	
Seed Type	**Pounds/Acre**

Total pounds/Acre:

Seed reclamation attachment:

Operator Contact/Responsible Official Contact Info

First Name: **Last Name:**

Phone: **Email:**

Seedbed prep:

Seed BMP:

Seed method:

Existing invasive species? NO

Existing invasive species treatment description:

Existing invasive species treatment attachment:

Weed treatment plan description: No invasive species present. Standard regular maintenance to maintain a clear location and road.
Weed treatment plan attachment:

Monitoring plan description: Identify areas supporting weeds prior to construction; prevent the introduction and spread of weeds from construction equipment during construction; and contain weed seeds and propagules by preventing segregated topsoil from being spread to adjacent areas. No invasive species present. Standard regular maintenance to maintain a clear location and road.
Monitoring plan attachment:

Success standards: To maintain all disturbed areas as per Gold Book standards

Pit closure description: N/A

Pit closure attachment:

Section 11 - Surface Ownership

Disturbance type: NEW ACCESS ROAD

Describe:

Surface Owner: BUREAU OF LAND MANAGEMENT

Other surface owner description:

BIA Local Office:

BOR Local Office:

COE Local Office:

Operator Name: KAISER FRANCIS OIL COMPANY

Well Name: RED HILLS **Well Number:** 103H

DOD Local Office:

NPS Local Office:

State Local Office:

Military Local Office:

USFWS Local Office:

Other Local Office:

USFS Region:

USFS Forest/Grassland: **USFS Ranger District:**

Disturbance type: WELL PAD

Describe:

Surface Owner: BUREAU OF LAND MANAGEMENT

Other surface owner description:

BIA Local Office:

BOR Local Office:

COE Local Office:

DOD Local Office:

NPS Local Office:

State Local Office:

Military Local Office:

USFWS Local Office:

Other Local Office:

USFS Region:

USFS Forest/Grassland: **USFS Ranger District:**

Section 12 - Other Information

Right of Way needed? YES **Use APD as ROW?** YES

ROW Type(s): 281001 ROW - ROADS

Operator Name: KAISER FRANCIS OIL COMPANY

Well Name: RED HILLS **Well Number:** 103H

ROW Applications

SUPO Additional Information: SUPO will be attached with APD.

Use a previously conducted onsite? YES

Previous Onsite information: Onsite conducted 04/19/18 by William DeGrush (BLM), Matt Warner (Kaiser-Francis), Frank Jaramillo (Madron Surveying) and Jeff (APAC archaeologist)

Other SUPO Attachment

Red_Hills_103H_SUP_20180815094845.pdf

Section 1 - General

Would you like to address long-term produced water disposal? NO

Section 2 - Lined Pits

Would you like to utilize Lined Pit PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner:

PWD disturbance (acres):

Lined pit PWD on or off channel:

Lined pit PWD discharge volume (bbl/day):

Lined pit specifications:

Pit liner description:

Pit liner manufacturers information:

Precipitated solids disposal:

Decribe precipitated solids disposal:

Precipitated solids disposal permit:

Lined pit precipitated solids disposal schedule:

Lined pit precipitated solids disposal schedule attachment:

Lined pit reclamation description:

Lined pit reclamation attachment:

Leak detection system description:

Leak detection system attachment:

Lined pit Monitor description:

Lined pit Monitor attachment:

Lined pit: do you have a reclamation bond for the pit?

Is the reclamation bond a rider under the BLM bond?

Lined pit bond number:

Lined pit bond amount:

Additional bond information attachment:

Section 3 - Unlined Pits

Would you like to utilize Unlined Pit PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner: **PWD disturbance (acres):**

Unlined pit PWD on or off channel:

Unlined pit PWD discharge volume (bbl/day):

Unlined pit specifications:

Precipitated solids disposal:

Decribe precipitated solids disposal:

Precipitated solids disposal permit:

Unlined pit precipitated solids disposal schedule:

Unlined pit precipitated solids disposal schedule attachment:

Unlined pit reclamation description:

Unlined pit reclamation attachment:

Unlined pit Monitor description:

Unlined pit Monitor attachment:

Do you propose to put the produced water to beneficial use?

Beneficial use user confirmation:

Estimated depth of the shallowest aquifer (feet):

Does the produced water have an annual average Total Dissolved Solids (TDS) concentration equal to or less than that of the existing water to be protected?

TDS lab results:

Geologic and hydrologic evidence:

State authorization:

Unlined Produced Water Pit Estimated percolation:

Unlined pit: do you have a reclamation bond for the pit?

Is the reclamation bond a rider under the BLM bond?

Unlined pit bond number:

Unlined pit bond amount:

Additional bond information attachment:

Section 4 - Injection

Would you like to utilize Injection PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner: **PWD disturbance (acres):**

Injection PWD discharge volume (bbl/day):

Injection well mineral owner:

Injection well type:

Injection well number: **Injection well name:**

Assigned injection well API number? **Injection well API number:**

Injection well new surface disturbance (acres):

Minerals protection information:

Mineral protection attachment:

Underground Injection Control (UIC) Permit?

UIC Permit attachment:

Section 5 - Surface Discharge

Would you like to utilize Surface Discharge PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner: **PWD disturbance (acres):**

Surface discharge PWD discharge volume (bbl/day):

Surface Discharge NPDES Permit?

Surface Discharge NPDES Permit attachment:

Surface Discharge site facilities information:

Surface discharge site facilities map:

Section 6 - Other

Would you like to utilize Other PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner: **PWD disturbance (acres):**

Other PWD discharge volume (bbl/day):

Other PWD type description:

Other PWD type attachment:

Have other regulatory requirements been met?

Other regulatory requirements attachment:

Operator Name: KAISER FRANCIS OIL COMPANY

Well Name: RED HILLS **Well Number:** 103H

	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
EXIT Leg #1	330	FSL	2182	FWL	26S	33E	6	Aliquot SESW	32.0662022	-103.6128008	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 015321	-6332	17070	9750
BHL Leg #1	330	FSL	2182	FWL	26S	33E	6	Aliquot SESW	32.0662022	-103.6128008	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 015321	-6332	17070	9750

AFMSS

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

Bond Info Data Report

10/31/2018

Bond Information

Federal/Indian APD: FED

BLM Bond number: WYB000055

BIA Bond number:

Do you have a reclamation bond? NO

Is the reclamation bond a rider under the BLM bond?

Is the reclamation bond BLM or Forest Service?

BLM reclamation bond number:

Forest Service reclamation bond number:

Forest Service reclamation bond attachment:

Reclamation bond number:

Reclamation bond amount:

Reclamation bond rider amount:

Additional reclamation bond information attachment: