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Form 3160-3
(June 2015)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

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

5. Lease Serial No.
NMNM123925

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.
HAMBONE FEDERAL COM
705H 323072

2. Name of Operator
COG OPERATING LLC

9. API Well No.
30-015-46670

3a. Address	3b. Phone No. *(include area code)*	10. Field and Pool, or Exploratory
600 West Illinois Ave, Midland, TX 79701	(432) 683-7443	RED HILLS/WC-025 G-09 S253309P UPF

4. Location of Well *(Report location clearly and in accordance with any State requirements.*)*
At surface NESW / 1353 FSL / 1725 FWL / LAT 32.053443 / LONG -104.009429
At proposed prod. zone NWNW / 200 FNL / 1254 FWL / LAT 32.078394 / LONG -104.010991

11. Sec., T. R. M. or Blk. and Survey or Area
SEC 8/T26S/R29E/NMP

14. Distance in miles and direction from nearest town or post office*	12. County or Parish	13. State
17 miles	EDDY	NM

15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any)	16. No of acres in lease	17. Spacing Unit dedicated to this well
100 feet	240	640.0

18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.	19. Proposed Depth	20. BLM/BIA Bond No. in file
924 feet	9920 feet / 19040 feet	FED: NMB000215

21. Elevations (Show whether DF, KDB, RT, GL, etc.)	22. Approximate date work will start*	23. Estimated duration
2895 feet	01/01/2020	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)	Stan Wagner / Ph: (432) 683-7443	10/01/2019
Title: Regulatory Advisor		
Approved by *(Signature)* (Electronic Submission)	Name *(Printed/Typed)* Cody Layton / Ph: (575) 234-5959	Date 01/29/2020
Title: Assistant Field Manager Lands & Minerals	Office: Carlsbad Field Office	

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

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

APPROVED WITH CONDITIONS

Approval Date: 01/29/2020

(Continued on page 2)

*(Instructions on page 2)

KMP 2-3-2020

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 1: 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.

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Additional Operator Remarks

Location of Well

0. SHL: NESW / 1353 FSL / 1725 FWL / TWSP: 26S / RANGE: 29E / SECTION: 8 / LAT: 32.053443 / LONG: -104.009429 (TVD: 0 feet, MD: 0 feet)

PPP: SWNW / 2641 FNL / 1254 FWL / TWSP: 26S / RANGE: 29E / SECTION: 5 / LAT: 32.071669 / LONG: -104.010981 (TVD: 9908 feet, MD: 13264 feet)

PPP: NWSW / 1420 FSL / 1254 FWL / TWSP: 26S / RANGE: 29E / SECTION: 8 / LAT: 32.053663 / LONG: -104.010955 (TVD: 9885 feet, MD: 10065 feet)

BHL: NWNW / 200 FNL / 1254 FWL / TWSP: 26S / RANGE: 29E / SECTION: 5 / LAT: 32.078394 / LONG: -104.010991 (TVD: 9920 feet, MD: 19040 feet)

BLM Point of Contact

Name: Jenna L Weber
Title: LIE
Phone: (575) 234-5972
Email: jlweber@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.

APD ID: 10400047590
Operator Name: COG OPERATING LLC
Well Name: HAMBONE FEDERAL COM
Well Type: OIL WELL

Submission Date: 10/01/2019
Federal/Indian APD: FED
Well Number: 705H
Well Work Type: Drill

Highlighted data reflects the most recent changes
Show Final Text

Application

Section 1 - General

APD ID: 10400047590
Tie to previous NOS? N
Submission Date: 10/01/2019
BLM Office: CARLSBAD
User: Stan Wagner
Title: Regulatory Advisor
Federal/Indian APD: FED
Is the first lease penetrated for production Federal or Indian? FED
Lease number: NMNM123925
Lease Acres: 240
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: COG OPERATING LLC
Operator letter of designation:

Operator Info

Operator Organization Name: COG OPERATING LLC
Operator Address: 600 West Illinois Ave
Zip: 79701
Operator PO Box:
Operator City: Midland
State: TX
Operator Phone: (432)683-7443
Operator Internet Address: RODOM@CONCHO.COM

Section 2 - Well Information

Well in Master Development Plan? NO
Master Development Plan name:
Well in Master SUPO? NO
Master SUPO name:

Operator Name: COG OPERATING LLC

Well Name: HAMBONE FEDERAL COM **Well Number:** 705H

Well in Master Drilling Plan? NO **Master Drilling Plan name:**

Well Name: HAMBONE FEDERAL COM **Well Number:** 705H **Well API Number:**

Field/Pool or Exploratory? Field and Pool **Field Name:** RED HILLS **Pool Name:** WC-025 G-09 S253309P UPPER WOLFCAMP

Is the proposed well in an area containing other mineral resources? USEABLE WATER

Is the proposed well in a Helium production area? N **Use Existing Well Pad?** N **New surface disturbance?**

Type of Well Pad: MULTIPLE WELL **Multiple Well Pad Name:** HAMBONE FEDERAL COM **Number:** 704H/705H/706H

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: 17 Miles **Distance to nearest well:** 924 FT **Distance to lease line:** 100 FT

Reservoir well spacing assigned acres Measurement: 640 Acres

Well plat: Hambone_Fed_Com_705H_C_102_20190927082550.pdf

Well work start Date: 01/01/2020 **Duration:** 30 DAYS

Section 3 - Well Location Table

Survey Type: RECTANGULAR

Describe Survey Type:

Datum: NAD83 **Vertical Datum:** NAVD88

Survey number: **Reference Datum:** GROUND LEVEL

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	1353	FSL	1725	FWL	26S	29E	8	Aliquot NESW	32.053443	-104.009429	EDDY	NEW MEXICO	NEW MEXICO	F	NMNM 123925	2895	0	0	N
KOP Leg #1	1353	FSL	1725	FWL	26S	29E	8	Aliquot NESW	32.053443	-104.009429	EDDY	NEW MEXICO	NEW MEXICO	F	NMNM 123925	2895	0	0	N

Operator Name: COG OPERATING LLC

Well Name: HAMBONE FEDERAL COM **Well Number:** 705H

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	1420	FSL	1254	FWL	26S	29E	8	Aliquot NWSW	32.053663	-104.010955	EDDY	NEW MEXICO	NEW MEXICO	S	STATE	-6990	10065	9885	Y
PPP Leg #1-2	2641	FNL	1254	FWL	26S	29E	5	Aliquot SWNW	32.071669	-104.010981	EDDY	NEW MEXICO	NEW MEXICO	F	FEE	-7013	13264	9908	Y
EXIT Leg #1	330	FNL	1254	FWL	26S	29E	5	Aliquot NWNW	32.078037	-104.01099	EDDY	NEW MEXICO	NEW MEXICO	F	NMNM 118113	-7024	18910	9919	Y
BHL Leg #1	200	FNL	1254	FWL	26S	29E	5	Aliquot NWNW	32.078394	-104.010991	EDDY	NEW MEXICO	NEW MEXICO	F	NMNM 118113	-7025	19040	9920	Y

Drilling Plan

Section 1 - Geologic Formations

Formation ID	Formation Name	Elevation	True Vertical Depth	Measured Depth	Lithologies	Mineral Resources	Producing Formation
540327	QUATERNARY	2895	0	0	ALLUVIUM	NONE	N
540330	RUSTLER	2885	10	10	CONGLOMERATE	NONE	N
540331	TOP SALT	2595	300	300	SALT	NONE	N
540332	BASE OF SALT	323	2572	2572	SALT	NONE	N
540325	LAMAR	95	2800	2800	LIMESTONE	NONE	N
540326	BELL CANYON	9	2886	2886	SANDSTONE	NONE	N
540333	CHERRY CANYON	-746	3641	3641	SANDSTONE	NATURAL GAS, OIL	N
540334	BRUSHY CANYON	-2054	4949	4949	SANDSTONE	NATURAL GAS, OIL	N
540335	BONE SPRING LIME	-3605	6500	6500	LIMESTONE	NATURAL GAS, OIL	N
540336	BONE SPRING 1ST	-4521	7416	7416	SANDSTONE	NATURAL GAS, OIL	N

Operator Name: COG OPERATING LLC

Well Name: HAMBONE FEDERAL COM **Well Number:** 705H

Formation ID	Formation Name	Elevation	True Vertical Depth	Measured Depth	Lithologies	Mineral Resources	Producing Formation
540337	BONE SPRING 2ND	-5371	8266	8266	SANDSTONE	NATURAL GAS, OIL	Y
540329	BONE SPRING 3RD	-6397	9292	9292	SANDSTONE	NATURAL GAS, OIL	N
540324	WOLFCAMP	-6765	9660	9660	SHALE	NATURAL GAS, OIL	Y

Section 2 - Blowout Prevention

Pressure Rating (PSI): 3M **Rating Depth:** 9920

Equipment: BOP and BOPE will be installed per Onshore Order #2 requirements prior to drilling below the surface casing and will be rated to the above pressure rating or greater, see attached diagrams. 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.
Requesting Variance? YES

Variance request: A variance is requested for the use of a flexible choke line from the BOP to choke manifold. See attached for specs and hydrostatic test chart. A variance is requested for use of a multibowl wellhead
Testing Procedure: The BOP and BOPE will be fully tested per Onshore Order #2 when initially installed, whenever any seal subject to test pressure is broken, and/or following related repairs.
Choke Diagram Attachment:

COG_3M_Choke_20190926121347.pdf

BOP Diagram Attachment:

COG_3M_BOP_20190926121400.pdf

Flex_Hose_Variance___Pioneer_84_20190926121403.pdf

Pressure Rating (PSI): 5M **Rating Depth:** 9920

Equipment: BOP and BOPE will be installed per Onshore Order #2 requirements prior to drilling below the surface casing and will be rated to the above pressure rating or greater, see attached diagrams. 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.
Requesting Variance? YES

Variance request: A variance is requested for the use of a flexible choke line from the BOP to choke manifold. See attached for specs and hydrostatic test chart.A variance is re A variance is requested for use of a multibowl wellhead
Testing Procedure: The BOP and BOPE will be fully tested per Onshore Order #2 when initially installed, whenever any seal subject to test pressure is broken, and/or following related repairs.
Choke Diagram Attachment:

COG__5M_Choke_20190926121623.pdf

BOP Diagram Attachment:

COG__5M_BOPE_20190926121636.pdf

Flex_Hose_Variance___Pioneer_84_20190926121639.pdf

COG__5M_Choke_20190926121623.pdf

COG__5M_BOPE_20190926121636.pdf

Flex_Hose_Variance___Pioneer_84_20190926121639.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	
1	SURFACE	14.75	10.75	NEW	API	N	0	360	0	360	2895	2535	360	J-55	45.5	BUTT	12.69	1.04	DRY	43.65	DRY	43
2	INTERMEDIATE	9.875	7.625	NEW	API	N	0	9320	0	9320	3585	-6425	9320	HCL-80	26.4	BUTT	1.44	1.16	DRY	2.45	DRY	2.
3	PRODUCTION	6.75	5.5	NEW	API	N	0	19040	0	9920	3585	-7025	19040	P-110	20	OTHER - SF	1.97	2.43	DRY	3.23	DRY	3.

Casing Attachments

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

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

COG_Hambone_Fed_Com__20190926121821

Casing Attachments

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

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

COG__See_previously_attached_drilling_plan_20190926121927.docx

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

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

COG__See_previously_attached_drilling_plan_20190926142214.docx

Section 4 - Cement

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
SURFACE	Lead		0	360	90	1.75	13.5	157	115	Class C	4% Gel + 1% CaCl2
SURFACE	Tail		360	360	100	1.34	14.8	134	50	Class C	2% CaCl2
INTERMEDIATE	Lead		0	9320	760	3.6	10.3	2736	50	Tuned Light Blend	N/A
INTERMEDIATE	Tail		9320	9320	250	1.08	16.4	270	50	Class H	N/A

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
PRODUCTION	Lead		8820	19040	130	2.5	11.9	325	35	Class H	50:50:10 H Blend
PRODUCTION	Tail		19040	19040	1180	1.24	14.4	1463	35	Class H	50:50:2 H Blend

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
360	9320	SALT SATURATED	8.4	9							Diesel Brine Emulsion
9320	19040	OIL-BASED MUD	9.6	12							OBM
0	360	WATER-BASED MUD	8.6	8.8							Fresh water gel

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:

CEMENT BOND LOG,COMPENSATED NEUTRON LOG,GAMMA RAY LOG,

Coring operation description for the well:

None planned

Section 7 - Pressure

Anticipated Bottom Hole Pressure: 6195 **Anticipated Surface Pressure:** 4012

Anticipated Bottom Hole Temperature(F): 155

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:

COG_H2S_SUP_20190926123014.pdf
COG_H2S_Schem_V_door_west_20190926123014.pdf

Section 8 - Other Information

Proposed horizontal/directional/multi-lateral plan submission:

HAMBONE_FEDERAL_COM_705H_PWP1_WPlot_20190927082814.pdf
HAMBONE_FEDERAL_COM_705H_PWP1_SVY_RPT_20190927082814.pdf
HAMBONE_FEDERAL_COM_705H_PWP1_AC_RPT_20190927082814.pdf

Other proposed operations facets description:

COG requests the option to preset casing.

Other proposed operations facets attachment:

COG_Hambone_Fed_Com_GCP_20190927082831.docx
COG_Closed_Loop_V_door_west_20190927082831.pdf
COG_Hambone_Fed_Com_705H___APD_Drill_Plan_20190927082832.pdf

Other Variance attachment:

Section 1 - Existing Roads

Will existing roads be used? YES

Existing Road Map:

COG_Hambone_Federal_Com_705H_existing_roads_20190918093728.pdf

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

ROW ID(s)

ID:

Do the existing roads need to be improved? YES

Existing Road Improvement Description: Existing roads will be maintained in the same condition or better.

Existing Road Improvement Attachment:

Section 2 - New or Reconstructed Access Roads

Will new roads be needed? YES

New Road Map:

COG_Hambone_Federal_Com_705H_roads_20190918093823.pdf

New road type: RESOURCE

Length: 3517 Feet **Width (ft.):** 30

Max slope (%): 33 **Max grade (%):** 1

Army Corp of Engineers (ACOE) permit required? N

ACOE Permit Number(s):

New road travel width: 14

New road access erosion control: Water will be diverted where necessary to avoid ponding, prevent erosion, maintain good drainage, and to be consistent with local drainage patterns.
New road access plan or profile prepared? N

New road access plan attachment:

Access road engineering design? N

Access road engineering design attachment:

Turnout? N

Access surfacing type: OTHER

Access topsoil source: ONSITE

Access surfacing type description: Caliche

Access onsite topsoil source depth: 6

Offsite topsoil source description:

Onsite topsoil removal process: Blading

Access other construction information: No turnouts are planned.

Access miscellaneous information:

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

Drainage Control

New road drainage crossing: OTHER

Drainage Control comments: None necessary

Road Drainage Control Structures (DCS) description: None needed.

Road Drainage Control Structures (DCS) attachment:

Access Additional Attachments

Section 3 - Location of Existing Wells

Existing Wells Map? YES

Attach Well map:

COG_Hambone_Federal_Com_705H_1mile_radius_20190918093944.pdf

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

Submit or defer a Proposed Production Facilities plan? SUBMIT

Production Facilities description: Hambone Federal Com central tank battery "K" located 2658' FNL & 2195' FWL Sec 8-26S-29E

Production Facilities map:

COG_Hambone_Federal_Com_705H_pipelines_20190918094116.pdf
COG_Hambone_Federal_Com_705H_powerline_20190918094118.pdf
COG_Hambone_Federal_Com_705H_roads_20190918094119.pdf
COG_Hambone_Federal_Com_705H_CTB_layout_20190918094120.pdf
COG_Hambone_Fed_Com_Facility_Plan_20190918094122.pdf

Section 5 - Location and Types of Water Supply

Water Source Table

Water source type: OTHER

Describe type: Brine Water

Water source use type: INTERMEDIATE/PRODUCTION CASING

Source latitude: **Source longitude:**

Source datum:

Water source permit type: PRIVATE CONTRACT

Water source transport method: TRUCKING

Source land ownership: COMMERCIAL

Source transportation land ownership: COMMERCIAL

Water source volume (barrels): 30000 **Source volume (acre-feet):** 3.866793

Source volume (gal): 1260000

Water source type: OTHER

Describe type: Fresh Water

Water source use type: ICE PAD CONSTRUCTION & MAINTENANCE
SURFACE CASING
STIMULATION

Source latitude: **Source longitude:**

Source datum:

Water source permit type: PRIVATE CONTRACT

Water source transport method: PIPELINE

Source land ownership: PRIVATE

Source transportation land ownership: PRIVATE

Water source volume (barrels): 450000 **Source volume (acre-feet):** 58.001892

Source volume (gal): 18900000

Water source and transportation map:

Hambone_Fed_Com_fresh_water_map_20190918094207.pdf
Hambone_Fed_Com_Wells_brine_water_20190918094207.pdf

Water source comments: See attached maps

New water well? N

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

Using any construction materials: YES

Construction Materials description: Caliche will be obtained from the actual well site. If caliche does not exist or is not plentiful from the well site, the caliche source will be from a Federal Caliche Pit located in Sec 24-T26S-R29E.
Construction Materials source location attachment:

Section 7 - Methods for Handling Waste

Waste type: DRILLING

Waste content description: Drilling fluids and produced oil land water while drilling and completion operations

Amount of waste: 6000 barrels

Waste disposal frequency : One Time Only

Safe containment description: All drilling waste 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: Garbage and trash produced during drilling and completion operations.

Amount of waste: 500 pounds

Waste disposal frequency : One Time Only

Safe containment description: Garbage and trash produced during drilling and completion operations will be collected in a trash container and disposed of properly at a state approved disposal facility
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: SEWAGE

Waste content description: Human waste and gray water

Amount of waste: 1000 gallons

Waste disposal frequency : One Time Only

Safe containment description: Waste will be properly contained and disposed of properly at a state approved disposal facility.
Safe containmant attachment:

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

Disposal location description: Trucked to an approved disposal facility

Reserve Pit

Reserve Pit being used? N

Temporary disposal of produced water into reserve pit? NO

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? Y

Description of cuttings location Roll off cutting containers on tracks

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?: N

Ancillary Facilities attachment:

Comments: Gas Capture Plan attached

Section 9 - Well Site Layout

Well Site Layout Diagram:

COG_Hambone_Federal_Com_705H_wellsite_20190918095013.pdf

Comments: A Central Tank Battery "K" will be constructed 2658' FNL & 2195' FWL of Sec 8-26S-29E. The battery and facilities will be installed according to API specifications.

Section 10 - Plans for Surface Reclamation

Type of disturbance: New Surface Disturbance

Multiple Well Pad Name: HAMBONE FEDERAL COM

Multiple Well Pad Number: 704H/705H/706H

Recontouring attachment:

COG_Hambone_Federal_Com_705H_reclamation_20190918095030.pdf

Drainage/Erosion control construction: Proper erosion control methods will be used at the well site to control erosion, runoff, and siltation of the surrounding area. Straw waddles will be used as necessary at the well site to reduce sediment impacts to fragile/sensitive soils.

Drainage/Erosion control reclamation: The interim reclamation will be monitored periodically to ensure that vegetation has re-established and that erosion is controlled.

Well pad proposed disturbance (acres): 0 **Well pad interim reclamation (acres):** 0 **Well pad long term disturbance (acres):** 0

Road proposed disturbance (acres): 0 **Road interim reclamation (acres):** 0 **Road long term disturbance (acres):** 0

Powerline proposed disturbance (acres): 0 **Powerline interim reclamation (acres):** 0 **Powerline long term disturbance (acres):** 0

Pipeline proposed disturbance (acres): 0 **Pipeline interim reclamation (acres):** 0 **Pipeline long term disturbance (acres):** 0

Other proposed disturbance (acres): 0 **Other interim reclamation (acres):** 0 **Other long term disturbance (acres):** 0

Total proposed disturbance: 0 **Total interim reclamation:** 0 **Total long term disturbance:** 0

Disturbance Comments:

Reconstruction method: If needed, portions of the pad not needed for production operations will be re-contoured to its original state as much as possible. The caliche that is removed will be reused. The stockpiled topsoil will be spread out over reclaimed area and reseeded with BLM approved seed mixture.
Topsoil redistribution: South

Soil treatment: None

Existing Vegetation at the well pad: Shinnery Oak/Mesquite grassland

Existing Vegetation at the well pad attachment:

Existing Vegetation Community at the road: Shinnery Oak/Mesquite grassland

Existing Vegetation Community at the road attachment:

Existing Vegetation Community at the pipeline: Shinnery Oak/Mesquite grassland

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? N

Non native seed description:

Seedling transplant description:

Will seedlings be transplanted for this project? N

Seedling transplant description attachment:

Will seed be harvested for use in site reclamation? N

Seed harvest description:

Seed harvest description attachment:

Seed Management

Seed Table

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? N

Existing invasive species treatment description:

Existing invasive species treatment attachment:

Weed treatment plan description: N/A

Weed treatment plan attachment:

Monitoring plan description: N/A

Monitoring plan attachment:

Success standards: N/A

Pit closure description: N/A

Pit closure attachment:

Section 11 - Surface Ownership

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? N **Use APD as ROW?**

ROW Type(s):

ROW Applications

SUPO Additional Information: Surface Use & Operating Plan.

Use a previously conducted onsite? Y

Previous Onsite information: Onsite completed on 07/01/2019 by Gerald Herrera (COG) and Matias Telles (BLM).

Other SUPO Attachment

Hambone_Fed_Com_Wells_brine_water_20190918095641.pdf
Hambone_Fed_Com_fresh_water_map_20190918095642.pdf
COG_Hambone_Federal_Com_705H_SUPO_20190918095642.pdf
COG_Hambone_Fed_Com_Facility_Plan_20190918095650.pdf
COG_Hambone_Federal_Com_705H_all_plats_20190918095710.pdf

PWD

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? N

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? N

Produced Water Disposal (PWD) Location:

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

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? N

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? N

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? N

Produced Water Disposal (PWD) Location:

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

Other PWD discharge volume (bbl/day):

Other PWD type description:

Operator Name: COG OPERATING LLC

Well Name: HAMBONE FEDERAL COM **Well Number:** 705H

Other PWD type attachment:

Have other regulatory requirements been met?

Other regulatory requirements attachment:

Bond Info

Bond Information

Federal/Indian APD: FED

BLM Bond number: NMB000215

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:

Operator Certification

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: Stan Wagner **Signed on:** 10/01/2019

Title: Regulatory Advisor

Street Address: 600 West Illinois Ave

City: Midland **State:** TX **Zip:** 79701

Phone: (432)253-9685

Email address: swagner@concho.com

Operator Name: COG OPERATING LLC

Well Name: HAMBONE FEDERAL COM **Well Number:** 705H

Field Representative

Representative Name:

Street Address:

City: **State:** **Zip:**

Phone: (432)253-9685

Email address: swagner@concho.com

Payment Info

Payment

APD Fee Payment Method: BLM DIRECT

CBS Receipt number: 26KIL2K8

Intent [X] As Drilled [ ]

API #
30-015-

Operator Name:	Property Name:	Well Number
COG Operating LLC	Hambone Federal Com	705H

Kick Off Point (KOP)

UL	Section	Township	Range	Lot	Feet	From N/S	Feet	From E/W	County
K	8	26S	29E						Eddy

Latitude	Longitude	NAD
		NAD 83

First Take Point (FTP)

UL	Section	Township	Range	Lot	Feet	From N/S	Feet	From E/W	County
K	8	26S	29E		1420	South	1254	West	Eddy

Latitude	Longitude	NAD
32.053663	-104.010955	NAD 83

Last Take Point (LTP)

UL	Section	Township	Range	Lot	Feet	From N/S	Feet	From E/W	County
D	5	26S	29E		330	North	1254	West	Eddy

Latitude	Longitude	NAD
32.078037	-104.010990	NAD 83

Is this well the defining well for the Horizontal Spacing Unit? Yes

Is this well an infill well? No

If infill is yes please provide API if available, Operator Name and well number for Defining well for Horizontal Spacing Unit.

API #

Operator Name:	Property Name:	Well Number

KZ 06/29/2018

COG Operating, LLC - Hambone Federal Com #705H

1. Geologic Formations

TVD of target	9,920' EOL	Pilot hole depth	NA
MD at TD:	19,040'	Deepest expected fresh water:	50'

Formation	Depth (TVD) from KB	Water/Mineral Bearing/ Target Zone?	Hazards*
Quaternary Fill	Surface	Water	
Rustler	10	Water	
Top of Salt	400	Salt	
Base of Salt	2572	Salt	
Lamar	2800	Salt Water	
Bell Canyon	2886	Salt Water	
Cherry Canyon	3641	Oil/Gas	
Brushy Canyon	4949	Oil/Gas	
Bone Spring Lime	6500	Oil/Gas	
U. Avalon Shale	6834	Oil/Gas	
L. Avalon Shale	7108	Oil/Gas	
1st Bone Spring Sand	7416	Oil/Gas	
2nd Bone Spring Sand	8266	Oil/Gas	
3rd Bone Spring Sand	9292	Oil/Gas	
Wolfcamp	9660	Target Oil/Gas	
Strawn	12368	Not Penetrated	

2. Casing Program

Hole Size	Casing Interval		Csg. Size	Weight	Grade	Conn.	SF	SF Burst	SF
	From	To		(lbs)			Collapse		Body
14.75	0	360	10.75"	45.5	J55	BTC	12.69	1.04	43.65
9.875"	0	9,320	7.625"	26.4	HCL80	BTC	1.44	1.16	2.45
6.75"	0	19,040	5.5"	20	P110	SF	1.97	2.43	3.23
				BLM Minimum Safety Factor			1.125	1	1.6 Dry 1.8 Wet

Intermediate casing will be kept at least 1/3 full while running casing.to mitigate collapse. Surface burst based on 0.7 frac gradient at the shoe with Gas Gradient 0.1 psi/ft to surface and
All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.h

The 5" casing will be run back 500' into the intermediate casing to ensure the coupling OD clearance is greater than .422" for the cement bond tie in.

COG Operating, LLC - Hambone Federal Com #705H

	Y or N
Is casing new? If used, attach certification as required in Onshore Order #1	Y
Does casing meet API specifications? If no, attach casing specification sheet.	Y
Is premium or uncommon casing planned? If yes attach casing specification sheet.	N
Does the above casing design meet or exceed BLM's minimum standards? If not provide justification (loading assumptions, casing design criteria).	Y
Will the intermediate pipe be kept at a minimum 1/3 fluid filled to avoid approaching the collapse pressure rating of the casing?	Y
Is well located within Capitan Reef?	N
If yes, does production casing cement tie back a minimum of 50' above the Reef?	
Is well within the designated 4 string boundary?	
Is well located in SOPA but not in R-111-P?	N
If yes, are the first 2 strings cemented to surface and 3rd string cement tied back 500' into previous casing?	
Is well located in R-111-P and SOPA?	N
If yes, are the first three strings cemented to surface?	
Is 2nd string set 100' to 600' below the base of salt?	
Is well located in high Cave/Karst?	N
If yes, are there two strings cemented to surface?	
(For 2 string wells) If yes, is there a contingency casing if lost circulation occurs?	
Is well located in critical Cave/Karst?	N
If yes, are there three strings cemented to surface?	

3. Cementing Program

Casing	# Sks	Wt. lb/ gal	Yld ft3/ sack	H_20 gal/sk	500# Comp. Strength (hours)	Slurry Description
Surf.	90	13.5	1.75	9	12	Lead: Class C + 4% Gel + 1% CaCl2
	100	14.8	1.34	6.34	8	Tail: Class C + 2% CaCl2
Inter.	760	10.3	3.6	21.48	16	Tuned Light Blend
	250	16.4	1.08	4.32	8	Tail: Class H
Prod	130	11.9	2.5	19	72	Lead: 50:50:10 H Blend
	1180	14.4	1.24	5.7	19	Tail: 50:50:2 Class H Blend

Volumes Subject to Observed Hole Conditions and/or Fluid Caliper Results
Lab reports with the 500 psi compressive strength time for the cement will be onsite for review.

Casing String	TOC	% Excess
Surface	0'	115%
1st Intermediate	0'	50%
Production	8,820'	35% OH in Lateral (KOP to EOL)

4. Pressure Control Equipment

N	A variance is requested for the use of a diverter on the surface casing. See attached for schematic.

BOP installed and tested before drilling which hole?	Size?	Min. Required WP	Type	x	Tested to:
9-7/8"	13-5/8"	3M	Annular	x	2500 psi
			Blind Ram		3M
			Pipe Ram	x	
			Double Ram	x	
			Other*		
6-3/4"	13-5/8"	5M	Annular	x	2500 psi
			Blind Ram		5M
			Pipe Ram	x	
			Double Ram	x	
			Other*		

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

Pipe rams will be operationally checked each 24 hour period. Blind rams will be operationally checked on each trip out of the hole. These checks will be noted on the daily tour sheets. Other accessories to the BOP equipment will include a Kelly cock and floor safety valve (inside BOP) and choke lines and choke manifold. See attached schematics.

X	Formation integrity test will be performed per Onshore Order #2. On Exploratory wells or on that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.i.
Y	A variance is requested for the use of a flexible choke line from the BOP to Choke Manifold. See attached for specs and hydrostatic test chart.
	N Are anchors required by manufacturer?
Y	A multibowl wellhead is being used. The BOP will be tested per Onshore Order #2 after installation on the surface casing which will cover testing requirements for a maximum of 30 days. If any seal subject to test pressure is broken the system must be tested.

5. Mud Program

Depth		Type	Weight (ppg)	Viscosity	Water Loss
From	To				
0	Surf. Shoe	FW Gel	8.6 - 8.8	28-34	N/C
Surf csg	7-5/8" Int shoe	Brine Diesel Emulsion	8.4 - 9	28-34	N/C
7-5/8" Int shoe	Lateral TD	OBM	9.6 - 12	35-45	<20

Sufficient mud materials to maintain mud properties and meet minimum lost circulation and weight increase requirements will be kept on location at all times.

What will be used to monitor the loss or gain of fluid?	PVT/Pason/Visual Monitoring

6. Logging and Testing Procedures

Logging, Coring and Testing.	
Y	Will run GR/CNL from TD to surface (horizontal well – vertical portion of hole). Stated logs run will be in the Completion Report and submitted to the BLM.
Y	No Logs are planned based on well control or offset log information.
N	Drill stem test? If yes, explain.
N	Coring? If yes, explain.

Additional logs planned		Interval
N	Resistivity	Pilot Hole TD to ICP
N	Density	Pilot Hole TD to ICP
Y	CBL	Production casing (If cement not circulated to surface)
Y	Mud log	Intermediate shoe to TD
N	PEX	

7. Drilling Conditions

Condition	Specify what type and where?
BH Pressure at deepest TVD	6195 psi at 9920' TVD
Abnormal Temperature	NO 155 Deg. F.

No abnormal pressure or temperature conditions are anticipated. Sufficient mud materials to maintain mud properties and weight increase requirements will be kept on location at all times.

Sufficient supplies of Paper/LCM for periodic sweeps to control seepage and losses will be maintained on location.

Hydrogen Sulfide (H2S) monitors will be installed prior to drilling out the surface shoe. If H2S is detected in concentrations greater than 100 ppm, the operator will comply with the provisions of Onshore Oil and Gas Order #6. If Hydrogen Sulfide is encountered, measured values and formations will be provided to the BLM.	
N	H2S is present
Y	H2S Plan attached

8. Other Facets of Operation

Y	Is it a walking operation?
Y	Is casing pre-set?

x	H2S Plan.
x	BOP & Choke Schematics.
x	Directional Plan

NORTHERN DELAWARE BASIN

EDDY COUNTY, NM
ATLAS
HAMBONE FEDERAL COM #705H

OWB

Plan: PWP1

Standard Survey Report

23 September, 2019

Survey Report

Company:	NORTHERN DELAWARE BASIN	**Local Co-ordinate Reference:**	Well HAMBONE FEDERAL COM #705H
Project:	EDDY COUNTY, NM	**TVD Reference:**	KB=25' @ 2920.8usft (Pioneer 84)
Site:	ATLAS	**MD Reference:**	KB=25' @ 2920.8usft (Pioneer 84)
Well:	HAMBONE FEDERAL COM #705H	**North Reference:**	Grid
Wellbore:	OWB	**Survey Calculation Method:**	Minimum Curvature
Design:	PWP1	**Database:**	EDM_Users

Project EDDY COUNTY, NM

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

Site ATLAS

Site Position:		**Northing:**	371,480.80 usft	**Latitude:**	32° 1' 15.933 N
From:	Map	**Easting:**	573,599.60 usft	**Longitude:**	104° 5' 45.086 W
Position Uncertainty:	0.0 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	0.13 °

Well HAMBONE FEDERAL COM #705H

Well Position	**+N/-S**	0.0 usft	**Northing:**	383,273.30 usft	**Latitude:**	32° 3' 11.946 N
	+E/-W	0.0 usft	**Easting:**	600,500.50 usft	**Longitude:**	104° 0' 32.204 W
Position Uncertainty		3.0 usft	**Wellhead Elevation:**	usft	**Ground Level:**	2,895.8 usft

Wellbore OWB

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	6/17/2019	6.93	59.81	47,589.30594974

Design PWP1

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	356.78

Survey Tool Program **Date** 9/23/2019

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.0	9,403.0	PWP1 (OWB)	Standard Keeper 104	Standard Wireline Keeper ver 1.0.4
9,403.0	19,040.4	PWP1 (OWB)	MWD+IFR1+FDIR	OWSG MWD + IFR1 + FDIR Correction

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	0.00

Survey Report

Company:	NORTHERN DELAWARE BASIN	**Local Co-ordinate Reference:**	Well HAMBONE FEDERAL COM #705H
Project:	EDDY COUNTY, NM	**TVD Reference:**	KB=25' @ 2920.8usft (Pioneer 84)
Site:	ATLAS	**MD Reference:**	KB=25' @ 2920.8usft (Pioneer 84)
Well:	HAMBONE FEDERAL COM #705H	**North Reference:**	Grid
Wellbore:	OWB	**Survey Calculation Method:**	Minimum Curvature
Design:	PWP1	**Database:**	EDM_Users

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	0.00
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	0.00
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	0.00	0.00
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	0.00
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	0.00
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.0	0.00	0.00	0.00
1,700.0	0.00	0.00	1,700.0	0.0	0.0	0.0	0.00	0.00	0.00
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.0	0.00	0.00	0.00
1,900.0	0.00	0.00	1,900.0	0.0	0.0	0.0	0.00	0.00	0.00
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.0	0.00	0.00	0.00
2,100.0	0.00	0.00	2,100.0	0.0	0.0	0.0	0.00	0.00	0.00
2,200.0	0.00	0.00	2,200.0	0.0	0.0	0.0	0.00	0.00	0.00
2,300.0	0.00	0.00	2,300.0	0.0	0.0	0.0	0.00	0.00	0.00
2,400.0	0.00	0.00	2,400.0	0.0	0.0	0.0	0.00	0.00	0.00
2,500.0	0.00	0.00	2,500.0	0.0	0.0	0.0	0.00	0.00	0.00
2,600.0	0.00	0.00	2,600.0	0.0	0.0	0.0	0.00	0.00	0.00
2,700.0	0.00	0.00	2,700.0	0.0	0.0	0.0	0.00	0.00	0.00
2,800.0	0.00	0.00	2,800.0	0.0	0.0	0.0	0.00	0.00	0.00
2,900.0	0.00	0.00	2,900.0	0.0	0.0	0.0	0.00	0.00	0.00
3,000.0	0.00	0.00	3,000.0	0.0	0.0	0.0	0.00	0.00	0.00
3,100.0	0.00	0.00	3,100.0	0.0	0.0	0.0	0.00	0.00	0.00
3,200.0	0.00	0.00	3,200.0	0.0	0.0	0.0	0.00	0.00	0.00
3,300.0	0.00	0.00	3,300.0	0.0	0.0	0.0	0.00	0.00	0.00
3,400.0	0.00	0.00	3,400.0	0.0	0.0	0.0	0.00	0.00	0.00
3,500.0	0.00	0.00	3,500.0	0.0	0.0	0.0	0.00	0.00	0.00
3,600.0	0.00	0.00	3,600.0	0.0	0.0	0.0	0.00	0.00	0.00
3,700.0	0.00	0.00	3,700.0	0.0	0.0	0.0	0.00	0.00	0.00
3,800.0	0.00	0.00	3,800.0	0.0	0.0	0.0	0.00	0.00	0.00
3,900.0	0.00	0.00	3,900.0	0.0	0.0	0.0	0.00	0.00	0.00
4,000.0	0.00	0.00	4,000.0	0.0	0.0	0.0	0.00	0.00	0.00
4,100.0	0.00	0.00	4,100.0	0.0	0.0	0.0	0.00	0.00	0.00
4,200.0	0.00	0.00	4,200.0	0.0	0.0	0.0	0.00	0.00	0.00
4,300.0	0.00	0.00	4,300.0	0.0	0.0	0.0	0.00	0.00	0.00
4,400.0	0.00	0.00	4,400.0	0.0	0.0	0.0	0.00	0.00	0.00
4,500.0	0.00	0.00	4,500.0	0.0	0.0	0.0	0.00	0.00	0.00
4,600.0	0.00	0.00	4,600.0	0.0	0.0	0.0	0.00	0.00	0.00
4,700.0	0.00	0.00	4,700.0	0.0	0.0	0.0	0.00	0.00	0.00
4,800.0	0.00	0.00	4,800.0	0.0	0.0	0.0	0.00	0.00	0.00
4,900.0	0.00	0.00	4,900.0	0.0	0.0	0.0	0.00	0.00	0.00
5,000.0	0.00	0.00	5,000.0	0.0	0.0	0.0	0.00	0.00	0.00
5,100.0	0.00	0.00	5,100.0	0.0	0.0	0.0	0.00	0.00	0.00
5,200.0	0.00	0.00	5,200.0	0.0	0.0	0.0	0.00	0.00	0.00

Survey Report

Company:	NORTHERN DELAWARE BASIN	**Local Co-ordinate Reference:**	Well HAMBONE FEDERAL COM #705H
Project:	EDDY COUNTY, NM	**TVD Reference:**	KB=25' @ 2920.8usft (Pioneer 84)
Site:	ATLAS	**MD Reference:**	KB=25' @ 2920.8usft (Pioneer 84)
Well:	HAMBONE FEDERAL COM #705H	**North Reference:**	Grid
Wellbore:	OWB	**Survey Calculation Method:**	Minimum Curvature
Design:	PWP1	**Database:**	EDM_Users

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
5,300.0	0.00	0.00	5,300.0	0.0	0.0	0.0	0.00	0.00	0.00
5,400.0	0.00	0.00	5,400.0	0.0	0.0	0.0	0.00	0.00	0.00
5,500.0	0.00	0.00	5,500.0	0.0	0.0	0.0	0.00	0.00	0.00
Start Build 2.00									
5,600.0	2.00	229.00	5,600.0	-1.1	-1.3	-1.1	2.00	2.00	0.00
5,700.0	4.00	229.00	5,699.8	-4.6	-5.3	-4.3	2.00	2.00	0.00
5,750.0	5.00	229.00	5,749.7	-7.2	-8.2	-6.7	2.00	2.00	0.00
Start 3672.9 hold at 5750.0 MD									
5,800.0	5.00	229.00	5,799.5	-10.0	-11.5	-9.3	0.00	0.00	0.00
5,900.0	5.00	229.00	5,899.1	-15.7	-18.1	-14.7	0.00	0.00	0.00
6,000.0	5.00	229.00	5,998.7	-21.4	-24.7	-20.0	0.00	0.00	0.00
6,100.0	5.00	229.00	6,098.4	-27.2	-31.2	-25.4	0.00	0.00	0.00
6,200.0	5.00	229.00	6,198.0	-32.9	-37.8	-30.7	0.00	0.00	0.00
6,300.0	5.00	229.00	6,297.6	-38.6	-44.4	-36.0	0.00	0.00	0.00
6,400.0	5.00	229.00	6,397.2	-44.3	-51.0	-41.4	0.00	0.00	0.00
6,500.0	5.00	229.00	6,496.8	-50.0	-57.6	-46.7	0.00	0.00	0.00
6,600.0	5.00	229.00	6,596.4	-55.8	-64.1	-52.1	0.00	0.00	0.00
6,700.0	5.00	229.00	6,696.1	-61.5	-70.7	-57.4	0.00	0.00	0.00
6,800.0	5.00	229.00	6,795.7	-67.2	-77.3	-62.7	0.00	0.00	0.00
6,900.0	5.00	229.00	6,895.3	-72.9	-83.9	-68.1	0.00	0.00	0.00
7,000.0	5.00	229.00	6,994.9	-78.6	-90.4	-73.4	0.00	0.00	0.00
7,100.0	5.00	229.00	7,094.5	-84.3	-97.0	-78.8	0.00	0.00	0.00
7,200.0	5.00	229.00	7,194.2	-90.1	-103.6	-84.1	0.00	0.00	0.00
7,300.0	5.00	229.00	7,293.8	-95.8	-110.2	-89.4	0.00	0.00	0.00
7,400.0	5.00	229.00	7,393.4	-101.5	-116.8	-94.8	0.00	0.00	0.00
7,500.0	5.00	229.00	7,493.0	-107.2	-123.3	-100.1	0.00	0.00	0.00
7,600.0	5.00	229.00	7,592.6	-112.9	-129.9	-105.5	0.00	0.00	0.00
7,700.0	5.00	229.00	7,692.3	-118.7	-136.5	-110.8	0.00	0.00	0.00
7,800.0	5.00	229.00	7,791.9	-124.4	-143.1	-116.1	0.00	0.00	0.00
7,900.0	5.00	229.00	7,891.5	-130.1	-149.6	-121.5	0.00	0.00	0.00
8,000.0	5.00	229.00	7,991.1	-135.8	-156.2	-126.8	0.00	0.00	0.00
8,100.0	5.00	229.00	8,090.7	-141.5	-162.8	-132.2	0.00	0.00	0.00
8,200.0	5.00	229.00	8,190.4	-147.2	-169.4	-137.5	0.00	0.00	0.00
8,300.0	5.00	229.00	8,290.0	-153.0	-176.0	-142.8	0.00	0.00	0.00
8,400.0	5.00	229.00	8,389.6	-158.7	-182.5	-148.2	0.00	0.00	0.00
8,500.0	5.00	229.00	8,489.2	-164.4	-189.1	-153.5	0.00	0.00	0.00
8,600.0	5.00	229.00	8,588.8	-170.1	-195.7	-158.9	0.00	0.00	0.00
8,700.0	5.00	229.00	8,688.5	-175.8	-202.3	-164.2	0.00	0.00	0.00
8,800.0	5.00	229.00	8,788.1	-181.5	-208.8	-169.5	0.00	0.00	0.00
8,900.0	5.00	229.00	8,887.7	-187.3	-215.4	-174.9	0.00	0.00	0.00
9,000.0	5.00	229.00	8,987.3	-193.0	-222.0	-180.2	0.00	0.00	0.00
9,100.0	5.00	229.00	9,086.9	-198.7	-228.6	-185.5	0.00	0.00	0.00
9,200.0	5.00	229.00	9,186.6	-204.4	-235.2	-190.9	0.00	0.00	0.00
9,300.0	5.00	229.00	9,286.2	-210.1	-241.7	-196.2	0.00	0.00	0.00

Survey Report

Company:	NORTHERN DELAWARE BASIN	**Local Co-ordinate Reference:**	Well HAMBONE FEDERAL COM #705H
Project:	EDDY COUNTY, NM	**TVD Reference:**	KB=25' @ 2920.8usft (Pioneer 84)
Site:	ATLAS	**MD Reference:**	KB=25' @ 2920.8usft (Pioneer 84)
Well:	HAMBONE FEDERAL COM #705H	**North Reference:**	Grid
Wellbore:	OWB	**Survey Calculation Method:**	Minimum Curvature
Design:	PWP1	**Database:**	EDM_Users

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
9,400.0	5.00	229.00	9,385.8	-215.9	-248.3	-201.6	0.00	0.00	0.00
9,422.9	5.00	229.00	9,408.6	-217.2	-249.8	-202.8	0.00	0.00	0.00
Start DLS 12.00 TFO 114.82									
9,500.0	8.46	311.66	9,485.3	-215.6	-256.6	-200.8	12.00	4.49	107.21
9,600.0	19.66	331.07	9,582.2	-195.9	-270.3	-180.4	12.00	11.20	19.40
9,700.0	31.45	336.44	9,672.3	-157.1	-288.9	-140.7	12.00	11.79	5.38
9,800.0	43.34	339.08	9,751.6	-101.0	-311.7	-83.3	12.00	11.90	2.63
9,900.0	55.27	340.75	9,816.7	-29.9	-337.6	-10.8	12.00	11.93	1.67
10,000.0	67.23	341.99	9,864.7	53.1	-365.5	73.5	12.00	11.95	1.24
10,100.0	79.18	343.03	9,893.5	144.2	-394.2	166.2	12.00	11.96	1.04
10,190.4	90.00	343.90	9,902.0	230.4	-419.8	253.6	12.00	11.96	0.96
Start DLS 4.00 TFO 90.44									
10,200.0	90.00	344.28	9,902.0	239.6	-422.4	263.0	4.00	-0.03	4.00
10,300.0	89.97	348.28	9,902.1	336.7	-446.1	361.3	4.00	-0.03	4.00
10,400.0	89.94	352.28	9,902.2	435.3	-463.0	460.6	4.00	-0.03	4.00
10,500.0	89.91	356.28	9,902.3	534.8	-472.9	560.5	4.00	-0.03	4.00
10,587.1	89.88	359.77	9,902.4	621.8	-475.9	647.5	4.00	-0.03	4.00
Start 8453.3 hold at 10587.1 MD									
10,600.0	89.88	359.77	9,902.5	634.7	-476.0	660.4	0.00	0.00	0.00
10,700.0	89.88	359.77	9,902.7	734.7	-476.4	760.3	0.00	0.00	0.00
10,800.0	89.88	359.77	9,902.9	834.7	-476.8	860.2	0.00	0.00	0.00
10,900.0	89.88	359.77	9,903.1	934.7	-477.2	960.0	0.00	0.00	0.00
11,000.0	89.88	359.77	9,903.3	1,034.7	-477.6	1,059.9	0.00	0.00	0.00
11,100.0	89.88	359.77	9,903.5	1,134.7	-478.0	1,159.8	0.00	0.00	0.00
11,200.0	89.88	359.77	9,903.7	1,234.7	-478.4	1,259.6	0.00	0.00	0.00
11,300.0	89.88	359.77	9,903.9	1,334.7	-478.9	1,359.5	0.00	0.00	0.00
11,400.0	89.88	359.77	9,904.1	1,434.7	-479.3	1,459.4	0.00	0.00	0.00
11,500.0	89.88	359.77	9,904.3	1,534.7	-479.7	1,559.2	0.00	0.00	0.00
11,600.0	89.88	359.77	9,904.6	1,634.7	-480.1	1,659.1	0.00	0.00	0.00
11,700.0	89.88	359.77	9,904.8	1,734.7	-480.5	1,759.0	0.00	0.00	0.00
11,800.0	89.88	359.77	9,905.0	1,834.7	-480.9	1,858.8	0.00	0.00	0.00
11,900.0	89.88	359.77	9,905.2	1,934.7	-481.3	1,958.7	0.00	0.00	0.00
12,000.0	89.88	359.77	9,905.4	2,034.7	-481.7	2,058.5	0.00	0.00	0.00
12,100.0	89.88	359.77	9,905.6	2,134.7	-482.1	2,158.4	0.00	0.00	0.00
12,200.0	89.88	359.77	9,905.8	2,234.7	-482.5	2,258.3	0.00	0.00	0.00
12,300.0	89.88	359.77	9,906.0	2,334.7	-483.0	2,358.1	0.00	0.00	0.00
12,400.0	89.88	359.77	9,906.2	2,434.7	-483.4	2,458.0	0.00	0.00	0.00
12,500.0	89.88	359.77	9,906.4	2,534.7	-483.8	2,557.9	0.00	0.00	0.00
12,600.0	89.88	359.77	9,906.6	2,634.7	-484.2	2,657.7	0.00	0.00	0.00
12,700.0	89.88	359.77	9,906.8	2,734.7	-484.6	2,757.6	0.00	0.00	0.00
12,800.0	89.88	359.77	9,907.0	2,834.7	-485.0	2,857.5	0.00	0.00	0.00
12,900.0	89.88	359.77	9,907.3	2,934.7	-485.4	2,957.3	0.00	0.00	0.00
13,000.0	89.88	359.77	9,907.5	3,034.7	-485.8	3,057.2	0.00	0.00	0.00

Survey Report

Company:	NORTHERN DELAWARE BASIN	**Local Co-ordinate Reference:**	Well HAMBONE FEDERAL COM #705H
Project:	EDDY COUNTY, NM	**TVD Reference:**	KB=25' @ 2920.8usft (Pioneer 84)
Site:	ATLAS	**MD Reference:**	KB=25' @ 2920.8usft (Pioneer 84)
Well:	HAMBONE FEDERAL COM #705H	**North Reference:**	Grid
Wellbore:	OWB	**Survey Calculation Method:**	Minimum Curvature
Design:	PWP1	**Database:**	EDM_Users

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
13,100.0	89.88	359.77	9,907.7	3,134.7	-486.2	3,157.0	0.00	0.00	0.00
13,200.0	89.88	359.77	9,907.9	3,234.7	-486.6	3,256.9	0.00	0.00	0.00
13,300.0	89.88	359.77	9,908.1	3,334.7	-487.1	3,356.8	0.00	0.00	0.00
13,400.0	89.88	359.77	9,908.3	3,434.7	-487.5	3,456.6	0.00	0.00	0.00
13,500.0	89.88	359.77	9,908.5	3,534.7	-487.9	3,556.5	0.00	0.00	0.00
13,600.0	89.88	359.77	9,908.7	3,634.7	-488.3	3,656.4	0.00	0.00	0.00
13,700.0	89.88	359.77	9,908.9	3,734.7	-488.7	3,756.2	0.00	0.00	0.00
13,800.0	89.88	359.77	9,909.1	3,834.7	-489.1	3,856.1	0.00	0.00	0.00
13,900.0	89.88	359.77	9,909.3	3,934.7	-489.5	3,956.0	0.00	0.00	0.00
14,000.0	89.88	359.77	9,909.5	4,034.7	-489.9	4,055.8	0.00	0.00	0.00
14,100.0	89.88	359.77	9,909.7	4,134.7	-490.3	4,155.7	0.00	0.00	0.00
14,200.0	89.88	359.77	9,910.0	4,234.7	-490.7	4,255.6	0.00	0.00	0.00
14,300.0	89.88	359.77	9,910.2	4,334.7	-491.2	4,355.4	0.00	0.00	0.00
14,400.0	89.88	359.77	9,910.4	4,434.7	-491.6	4,455.3	0.00	0.00	0.00
14,500.0	89.88	359.77	9,910.6	4,534.7	-492.0	4,555.1	0.00	0.00	0.00
14,600.0	89.88	359.77	9,910.8	4,634.7	-492.4	4,655.0	0.00	0.00	0.00
14,700.0	89.88	359.77	9,911.0	4,734.7	-492.8	4,754.9	0.00	0.00	0.00
14,800.0	89.88	359.77	9,911.2	4,834.7	-493.2	4,854.7	0.00	0.00	0.00
14,900.0	89.88	359.77	9,911.4	4,934.7	-493.6	4,954.6	0.00	0.00	0.00
15,000.0	89.88	359.77	9,911.6	5,034.7	-494.0	5,054.5	0.00	0.00	0.00
15,100.0	89.88	359.77	9,911.8	5,134.7	-494.4	5,154.3	0.00	0.00	0.00
15,200.0	89.88	359.77	9,912.0	5,234.7	-494.9	5,254.2	0.00	0.00	0.00
15,300.0	89.88	359.77	9,912.2	5,334.7	-495.3	5,354.1	0.00	0.00	0.00
15,400.0	89.88	359.77	9,912.4	5,434.7	-495.7	5,453.9	0.00	0.00	0.00
15,500.0	89.88	359.77	9,912.6	5,534.7	-496.1	5,553.8	0.00	0.00	0.00
15,600.0	89.88	359.77	9,912.9	5,634.7	-496.5	5,653.7	0.00	0.00	0.00
15,700.0	89.88	359.77	9,913.1	5,734.7	-496.9	5,753.5	0.00	0.00	0.00
15,800.0	89.88	359.77	9,913.3	5,834.7	-497.3	5,853.4	0.00	0.00	0.00
15,900.0	89.88	359.77	9,913.5	5,934.7	-497.7	5,953.2	0.00	0.00	0.00
16,000.0	89.88	359.77	9,913.7	6,034.7	-498.1	6,053.1	0.00	0.00	0.00
16,100.0	89.88	359.77	9,913.9	6,134.7	-498.5	6,153.0	0.00	0.00	0.00
16,200.0	89.88	359.77	9,914.1	6,234.7	-499.0	6,252.8	0.00	0.00	0.00
16,300.0	89.88	359.77	9,914.3	6,334.6	-499.4	6,352.7	0.00	0.00	0.00
16,400.0	89.88	359.77	9,914.5	6,434.6	-499.8	6,452.6	0.00	0.00	0.00
16,500.0	89.88	359.77	9,914.7	6,534.6	-500.2	6,552.4	0.00	0.00	0.00
16,600.0	89.88	359.77	9,914.9	6,634.6	-500.6	6,652.3	0.00	0.00	0.00
16,700.0	89.88	359.77	9,915.1	6,734.6	-501.0	6,752.2	0.00	0.00	0.00
16,800.0	89.88	359.77	9,915.3	6,834.6	-501.4	6,852.0	0.00	0.00	0.00
16,900.0	89.88	359.77	9,915.6	6,934.6	-501.8	6,951.9	0.00	0.00	0.00
17,000.0	89.88	359.77	9,915.8	7,034.6	-502.2	7,051.7	0.00	0.00	0.00
17,100.0	89.88	359.77	9,916.0	7,134.6	-502.6	7,151.6	0.00	0.00	0.00
17,200.0	89.88	359.77	9,916.2	7,234.6	-503.1	7,251.5	0.00	0.00	0.00
17,300.0	89.88	359.77	9,916.4	7,334.6	-503.5	7,351.3	0.00	0.00	0.00
17,400.0	89.88	359.77	9,916.6	7,434.6	-503.9	7,451.2	0.00	0.00	0.00

Survey Report

Company:	NORTHERN DELAWARE BASIN	**Local Co-ordinate Reference:**	Well HAMBONE FEDERAL COM #705H
Project:	EDDY COUNTY, NM	**TVD Reference:**	KB=25' @ 2920.8usft (Pioneer 84)
Site:	ATLAS	**MD Reference:**	KB=25' @ 2920.8usft (Pioneer 84)
Well:	HAMBONE FEDERAL COM #705H	**North Reference:**	Grid
Wellbore:	OWB	**Survey Calculation Method:**	Minimum Curvature
Design:	PWP1	**Database:**	EDM_Users

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
17,500.0	89.88	359.77	9,916.8	7,534.6	-504.3	7,551.1	0.00	0.00	0.00
17,600.0	89.88	359.77	9,917.0	7,634.6	-504.7	7,650.9	0.00	0.00	0.00
17,700.0	89.88	359.77	9,917.2	7,734.6	-505.1	7,750.8	0.00	0.00	0.00
17,800.0	89.88	359.77	9,917.4	7,834.6	-505.5	7,850.7	0.00	0.00	0.00
17,900.0	89.88	359.77	9,917.6	7,934.6	-505.9	7,950.5	0.00	0.00	0.00
18,000.0	89.88	359.77	9,917.8	8,034.6	-506.3	8,050.4	0.00	0.00	0.00
18,100.0	89.88	359.77	9,918.0	8,134.6	-506.7	8,150.3	0.00	0.00	0.00
18,200.0	89.88	359.77	9,918.3	8,234.6	-507.2	8,250.1	0.00	0.00	0.00
18,300.0	89.88	359.77	9,918.5	8,334.6	-507.6	8,350.0	0.00	0.00	0.00
18,400.0	89.88	359.77	9,918.7	8,434.6	-508.0	8,449.8	0.00	0.00	0.00
18,500.0	89.88	359.77	9,918.9	8,534.6	-508.4	8,549.7	0.00	0.00	0.00
18,600.0	89.88	359.77	9,919.1	8,634.6	-508.8	8,649.6	0.00	0.00	0.00
18,700.0	89.88	359.77	9,919.3	8,734.6	-509.2	8,749.4	0.00	0.00	0.00
18,800.0	89.88	359.77	9,919.5	8,834.6	-509.6	8,849.3	0.00	0.00	0.00
18,900.0	89.88	359.77	9,919.7	8,934.6	-510.0	8,949.2	0.00	0.00	0.00
19,000.0	89.88	359.77	9,919.9	9,034.6	-510.4	9,049.0	0.00	0.00	0.00
19,040.4	89.88	359.77	9,920.0	9,075.0	-510.6	9,089.4	0.00	0.00	0.00
TD at 19040.4									

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
FTP-HAMBONE FED - plan misses target center by 96.0usft at 10065.0usft MD (9885.7 TVD, 111.7 N, -384.1 E) - Point	0.00	0.00	9,902.0	78.6	-472.8	383,351.90	600,027.70	32° 3' 12.738 N	104° 0' 37.695 W
LTP-HAMBONE FEDI - plan hits target center - Point	0.00	0.00	9,919.7	8,945.0	-510.1	392,218.30	599,990.40	32° 4' 40.485 N	104° 0' 37.820 W
PBHL-HAMBONE FE - plan hits target center - Rectangle (sides W100.0 H9,292.0 D20.0)	-0.12	179.76	9,920.0	9,075.0	-510.6	392,348.30	599,989.90	32° 4' 41.772 N	104° 0' 37.821 W

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
5500	5500	0	0	Start Build 2.00
5750	5750	-7	-8	Start 3672.9 hold at 5750.0 MD
9423	9409	-217	-250	Start DLS 12.00 TFO 114.82
10,190	9902	230	-420	Start DLS 4.00 TFO 90.44
10,587	9902	622	-476	Start 8453.3 hold at 10587.1 MD
19,040	9920	9075	-511	TD at 19040.4

Company:	NORTHERN DELAWARE BASIN	**Local Co-ordinate Reference:**	Well HAMBONE FEDERAL COM #705H
Project:	EDDY COUNTY, NM	**TVD Reference:**	KB=25' @ 2920.8usft (Pioneer 84)
Site:	ATLAS	**MD Reference:**	KB=25' @ 2920.8usft (Pioneer 84)
Well:	HAMBONE FEDERAL COM #705H	**North Reference:**	Grid
Wellbore:	OWB	**Survey Calculation Method:**	Minimum Curvature
Design:	PWP1	**Database:**	EDM_Users

Checked By: _____ Approved By: _____ Date: _____

Azimuths to Grid North
True North: -0.17°
Magnetic North: 6.76°

Magnetic Field
Strength: 47539.3nT
Dip Angle: 59.81°
Date: 6/17/2019
Model: IGRF2015

Project: EDDY COUNTY, NM
Site: ATLAS
Well: HAMBONE FEDERAL COM #705H
Wellbore: OWB
Design: PWP1
GL: 2895.8
KB=25' @ 2920.8usft (Pioneer 84)

CONCHO

WELL DETAILS: HAMBONE FEDERAL COM #705H

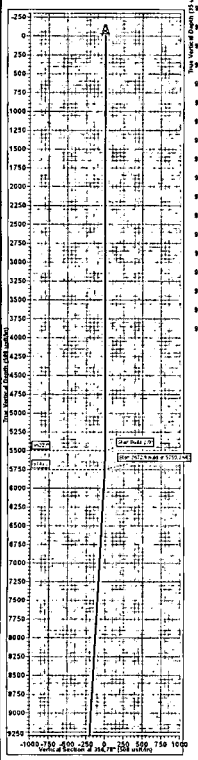
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.0	0.0	383273.30	600500.50	32° 3' 11.846 N	104° 0' 32.054 W

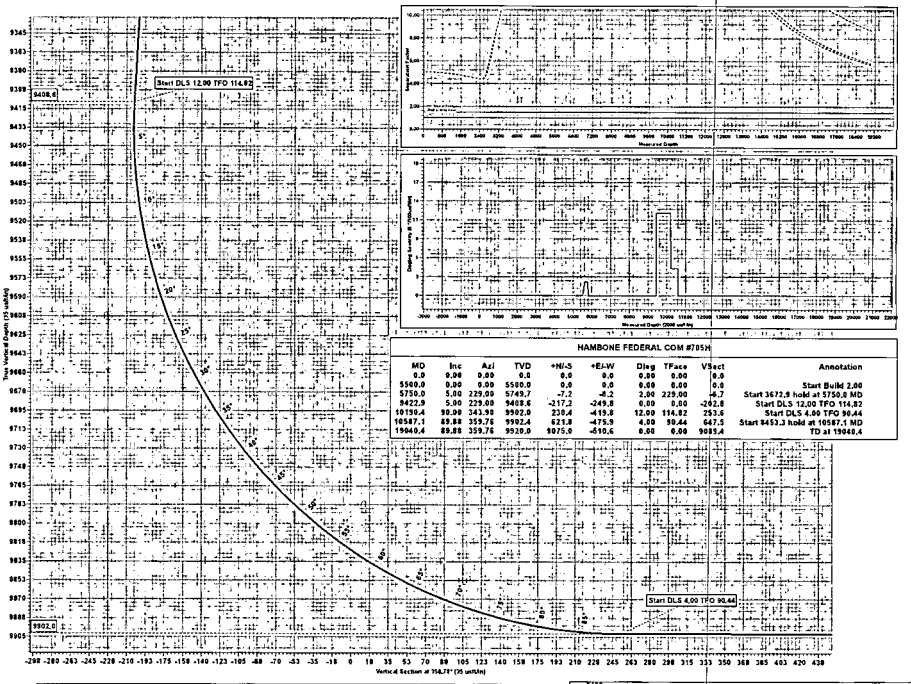
DESIGN TARGET DETAILS

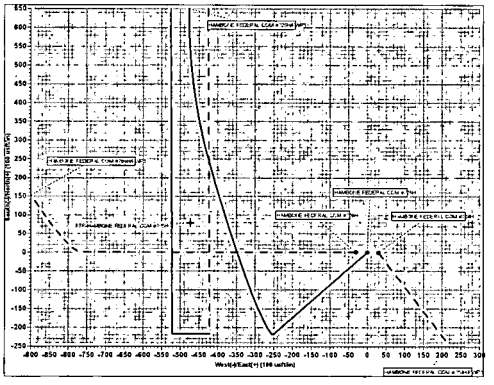
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
FTP-HAMBONE FEDERAL COM #705H	9902.0	78.6	-472.8	383351.90	600027.70	32° 3' 12.738 N	104° 0' 37.695 W
LTP-HAMBONE FEDERAL COM #705H	9919.7	8965.0	-510.1	392218.30	599990.40	32° 4' 40.485 N	104° 0' 37.820 W
PBHL-HAMBONE FEDERAL COM #705H	9920.0	9075.0	-510.6	392348.30	599989.90	32° 4' 41.772 N	104° 0' 37.821 W

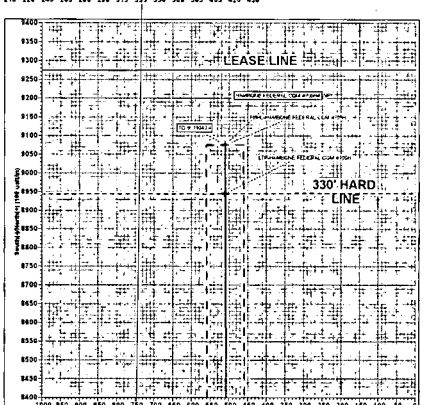
HAMBONE FEDERAL COM #705H

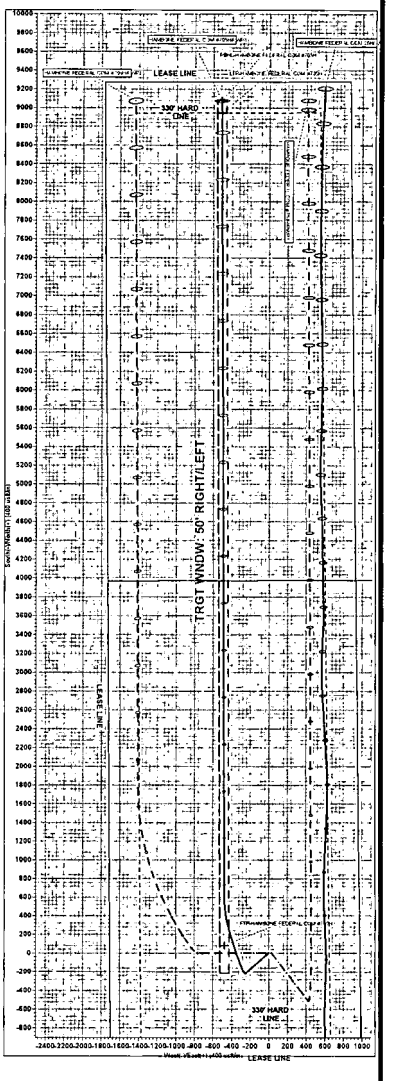
MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Annotation
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
5500.0	0.00	0.00	5500.0	0.0	0.0	0.00	0.00	0.0	Start Build 2.00
5750.0	5.00	229.00	5749.7	-7.2	-4.2	2.00	229.00	-6.7	Start 3672.9 hold at 5750.0 MD
9422.9	5.00	229.00	9408.6	-217.2	-249.8	0.00	0.00	-282.8	Start DLS 12.00 TFO 114.82
10150.4	90.00	343.90	9902.0	230.4	-419.8	12.00	114.82	253.6	Start DLS 4.00 TFO 90.44
10587.1	89.88	359.76	9902.4	621.8	-475.9	4.00	90.44	647.5	Start 8453.3 hold at 10587.1 MD
19040.4	89.88	359.76	9920.0	9075.0	-510.6	0.00	0.00	9085.4	TD at 19040.4

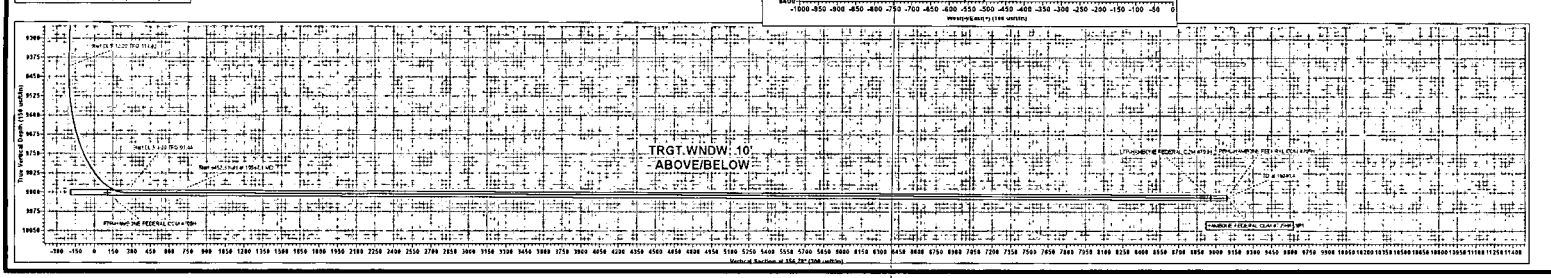






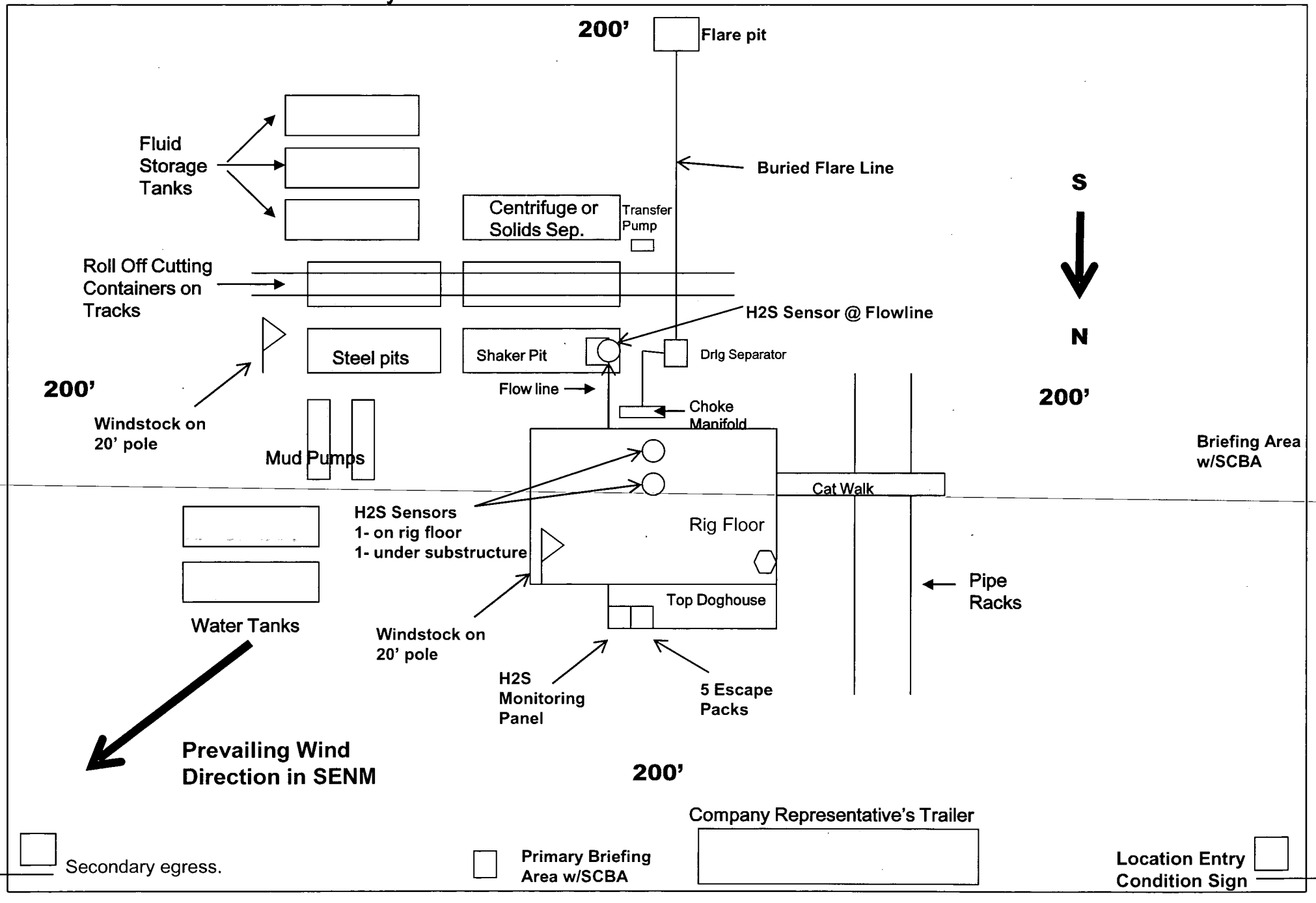






COG Operating LLC
H_2S Equipment Schematic
Terrain: Shinnery sand hills.

Well pad will be 400' x 400'
with cellar in center of pad



COG Operating LLC

Rig Plat & Closed Loop Equipment Diagram

Well pad will be 400' X 400' with cellar in center of pad

Flare Lines will be from both Choke Manifold & Separator to edge of location.

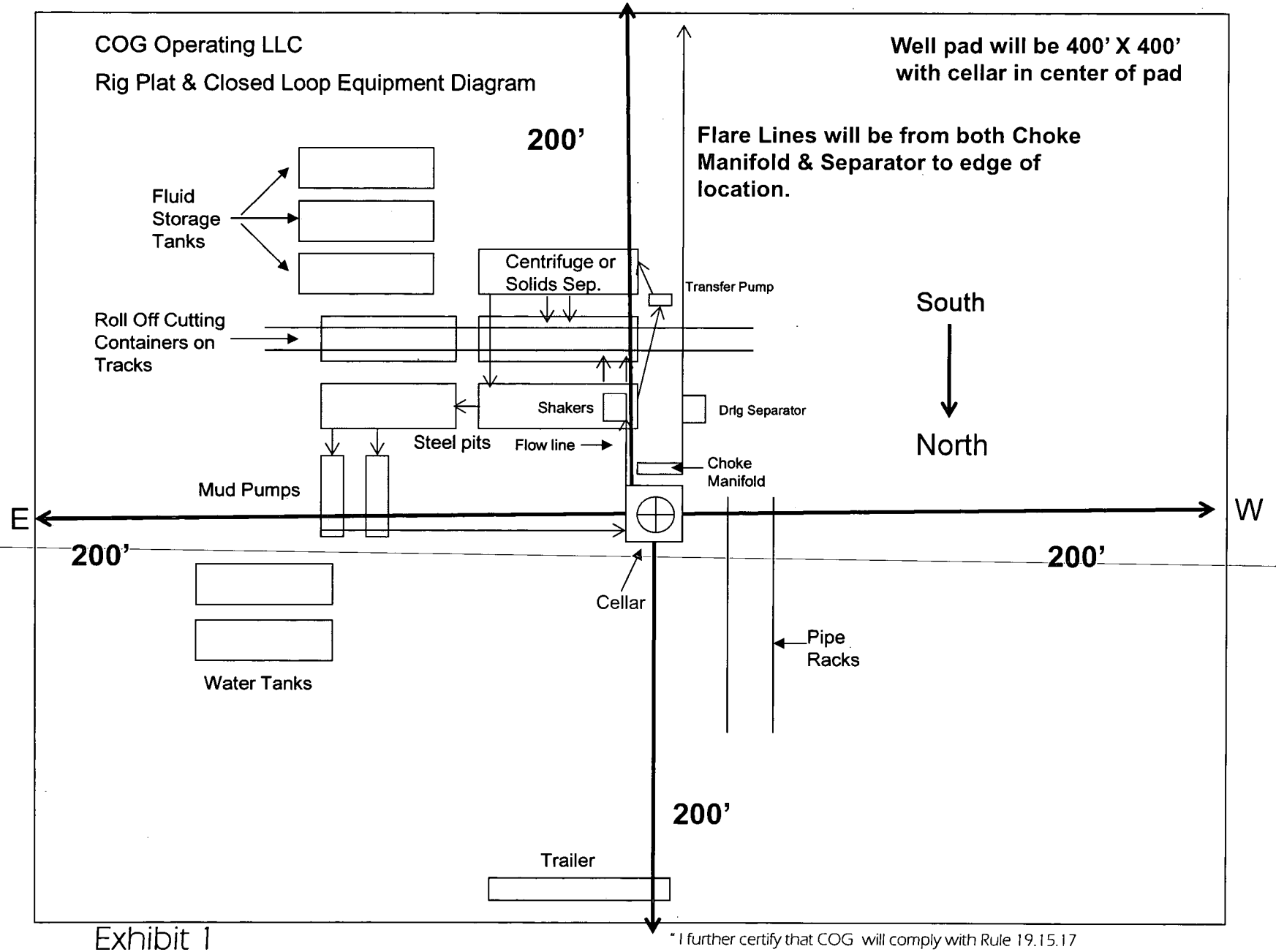


Exhibit 1

"I further certify that COG will comply with Rule 19.15.17 NMAC by using a Closed Loop System."

COG OPERATING LLC
HYDROGEN SULFIDE DRILLING OPERATIONS PLAN

1. HYDROGEN SULFIDE TRAINING

All personnel, whether regularly assigned, contracted, or employed on an unscheduled basis, will receive training from a qualified instructor in the following areas prior to commencing drilling operations on this well:

a. The hazards and characteristics of hydrogen sulfide (H_2S).
b. The proper use and maintenance of personal protective equipment and life support systems.
c. The proper use of H_2S detectors, alarms, warning systems, briefing areas, evacuation procedures, and prevailing winds.
d. The proper techniques for first aid and rescue procedures.

In addition, supervisory personnel will be trained in the following areas:

a. The effects of H2S on metal components. If high tensile tubulars are to be used, personnel will be trained in their special maintenance requirements.
b. Corrective action and shut-in procedures when drilling or reworking a well and blowout prevention and well control procedures.
c. The contents and requirements of the H_2S Drilling Operations Plan and the Public Protection Plan.

There will be an initial training session just prior to encountering a known or probable H2S zone (within 3 days or 500 feet) and weekly H2S and well control drills for all personnel in each crew. The initial training session shall include a review of the site specific H2S Drilling Operations Plan and the Public Protection Plan. This plan shall be available at the well site. All personnel will be required to carry documentation that they have received the proper training.

2. H_2S SAFETY EQUIPMENT AND SYSTEMS

Note: All H_2S safety equipment and systems will be installed, tested, and operational when drilling reaches a depth of 500 feet above, or three days prior to penetrating the first zone containing or reasonably expected to contain H2S. If H2S greater than 100 ppm is encountered in the gas stream we will shut in and install H2S equipment.

a. Well Control Equipment:
   Flare line.
   Choke manifold with remotely operated choke.
   Blind rams and pipe rams to accommodate all pipe sizes with properly sized closing unit.
   Auxiliary equipment to include: annular preventer, mud-gas separator, rotating head.

b. Protective equipment for essential personnel:
Mark II Surviveair 30-minute units located in the dog house and at briefing areas.

c. H2S detection and monitoring equipment:
2 - portable H2S monitor positioned on location for best coverage and response. These units have warning lights and audible sirens when H2S levels of 20 ppm are reached.

d. Visual warning systems:
Caution/Danger signs shall be posted on roads providing direct access to location. Signs will be painted a high visibility yellow with black lettering of sufficient size to be readable at a reasonable distance from the immediate location. Bilingual signs will be used, when appropriate. See example attached.

e. Mud Program:
The mud program has been designed to minimize the volume of H2S circulated to the surface.

f. Metallurgy:
All drill strings, casings, tubing, wellhead, blowout preventers, drilling spool, kill lines, choke manifold and lines, and valves shall be suitable for H2S service.

g. Communication:
Company vehicles equipped with cellular telephone.

COG OPERATING LLC has conducted a review to determine if an H2S contingency plan is required for the above referenced well. We were able to conclude that any potential hazardous volume would be minimal. H2S concentrations of wells in this area from surface to TD are low enough; therefore, we do not believe that an H2S contingency plan is necessary.

WARNING

YOU ARE ENTERING AN H_2S AREA
AUTHORIZED PERSONNEL ONLY

1. ***BEARDS OR CONTACT LENSES NOT ALLOWED***
2. ***HARD HATS REQUIRED***
3. ***SMOKING IN DESIGNATED AREAS ONLY***
4. ***BE WIND CONSCIOUS AT ALL TIMES***
5. ***CK WITH COG OPERATING LLC FOREMAN AT MAIN OFFICE***

COG OPERATING LLC

1-575-748-6940

EMERGENCY CALL LIST

	OFFICE	MOBILE
COG OPERATING LLC OFFICE	575-748-6940	
SETH WILD	432-683-7443	432-528-3633
JOHN COFFMAN	432-685-4310	432-631-9762

EMERGENCY RESPONSE NUMBERS

	OFFICE
STATE POLICE	575-748-9718
EDDY COUNTY SHERIFF	575-746-2701
EMERGENCY MEDICAL SERVICES (AMBULANCE)	911 or 575-746-2701
EDDY COUNTY EMERGENCY MANAGEMENT (HARRY BURGESS)	575-887-9511
STATE EMERGENCY RESPONSE CENTER (SERC)	575-476-9620
CARLSBAD POLICE DEPARTMENT	575-885-2111
CARLSBAD FIRE DEPARTMENT	575-885-3125
NEW MEXICO OIL CONSERVATION DIVISION	575-748-1283
INDIAN FIRE & SAFETY	800-530-8693
HALLIBURTON SERVICES	800-844-8451

Surface Use & Operating Plan

Hambone Federal Com #705H

- Surface Owner: Bureau of Land Management
- New Road: 3277.6' west main road to tie-in of existing road, services 704H, 705H, 706H well pad.
  120' from tie-in of west main road to southwest corner of "K" CTB.
  120' from tie-in of west main road to southeast corner of "K" CTB.
- Flow Line: Buried onsite
- Tank Battery Facilities: 2658' FNL & 2195' FWL, Sec. 8-T26S-R29E
- Well Pad: Multiple. Hambone Federal Com 704H, 705H, and 706H share a well pad.

Well Site Information

- V Door: West
- Topsoil: West
- Interim Reclamation: West

Attachments

- C102
- Closed Loop System
- Layout
- Brine H20
- Fresh H2O
- Existing Roads

- 1Mile Map and Data
- Maps and Plats
- Well Site Layout
- Reclamation

Notes

Onsite: On-site was done by Gerald Herrera (COG) and Matias Telles (BLM) on July 1, 2019.

SURFACE USE AND OPERATING PLAN

1. Existing & Proposed Access Roads

A. The well site survey and elevation plat for the proposed well is attached with this application. It was staked by Harcrow Surveying, Artesia, NM.

B. All roads to the location are shown on the maps and road plats. The existing lease roads are illustrated and are adequate for travel during drilling and production operations. Upgrading existing roads prior to drilling the well will be done where necessary. The road route to the well site is depicted in well layout map. The road shown in the well layout will be used to access the well.

C. Directions to location: See 600 x 600 plat.

FROM THE INTERSECTION OF HIGHWAY 285 AND LONGHORN RD. (CR-725), GO NORTHEASTERLY ON CR-725 FOR APPROX. 3.8 MILES; THEN TURN RIGHT (SOUTHEAST) AND GO APPROX. 0.8 MILES; THEN TURN RIGHT (SOUTHWEST) AND GO APPROX. 0.6 MILES, TO THE PROPOSED ROAD. PROPOSED WELLS LIE APPROXIMATELY 0.5 MILES SOUTHWESTERLY.

D. Based on current road maintenance performed on other roads serving existing wells, we anticipate maintaining the lease roads leading to the proposed well pad at least once a year on dry conditions and twice a year in wetter conditions.

2. Proposed Access Road:

The Location Verification Map shows that 3277.6 ft. of new west main road servicing the well pad and "K" CTB will be required for this location. Additionally, 120 ft. of new road ties west main road to the southwest access of "K" CTB. 120' of new road ties west main road to the southeast access of "K" CTB. The required roads will be constructed as follows:

The maximum width of the running surface will be 14'. The road will be crowned, ditched and constructed of 6" rolled and compacted caliche. Ditches will be at 3:1 slope and 4 feet wide. Water will be diverted where necessary to avoid ponding, prevent erosion, maintain good drainage, and to be consistent with local drainage patterns.

A. The average grade will be less than 1%.

B. No turnouts are planned.

C. No cattleguard, culvert, gates, or fence cuts are necessary.

D. Surfacing material will consist of native caliche. Caliche will be obtained from the actual well site if available. If not available onsite, caliche will be obtained from a Federal Caliche Pit located in Section 24, T26S, R29E.

3. Location of Existing Well:

The One-Mile Radius Map shows existing wells within a one-mile radius of the proposed wellbore.

4. Location of Existing and/or Proposed Facilities:

A. A Central Tank Battery will be constructed 2658' FNL & 2195' FWL of Section 8, T26S, R29E. Topsoil will be on the westside of the "K" CTB pad.

i. Production from 6 producing Hambone Federal Com wells will be routed to the "K" CTB.

ii. Planned Pipeline Installation across adjoining pads:

1. 1 buried 4-inch FP 601HT production flowline **766.5'** from the wellhead to "K" CTB
2. 1 buried 4-inch FP line for gas-lift supply **766.3'** from "K" CTB to well site servicing all wells.
3. 1 buried 6-inch Poly water transfer line **3579.3'** from 'K" CTB to a tie-in of the "P" CTB transfer line connecting to the existing Hambone Fed Com 25H battery as shown on layout plat.

iii. Above pipeline routes shown on attached facility layout plat.

B. The tank battery and facilities including all flow lines and piping will be installed according to API specifications.

C. Any additional caliche will be obtained from the actual well site. If caliche does not exist or is not plentiful from the well site, caliche

D. will be obtained from the Federal Caliche Pit located in Section 24, T26S, R29E. Any additional construction materials will be purchased from contractors.

E. It will be necessary to run electric power if this well is productive. 3196.9 ft of west main power line will be constructed from the well pad to an existing tie-in point as shown on the powerline plat. Additionally, 337.1 ft of power line will be constructed from the "K" CTB tying into the west main power line. Power will connect to an Xcel Energy existing line.

F. If the well is productive, rehabilitation plans will include the following:

G. The original topsoil from the well site will be returned to the location, and the site will be re-contoured as close as possible to the original site.

5. Location and Type of Water Supply:

The well will be drilled with combination brine and fresh water mud system as outlined in the drilling program. Fresh water will be obtained from the Big Papi Frac Pond located in Section 10, T26S, R29E. Brine water will be obtained from the Malaga I Brine Station in Sec 2, T21S, R25E, or if necessary other commercial water stations in the area and hauled to location by transport truck over the existing and proposed access roads shown in road maps. If a commercial fresh water source is nearby, fast line may be laid along existing road ROW's and fresh water pumped to the well. No water well will be drilled on the location.

6. Source of Construction Materials and Location "Turn-Over" Procedure:

Obtaining caliche: One primary way of obtaining caliche to build locations and roads will be by "turning over" the location. This means, caliche will be obtained from the actual well site. Amount will vary for each pad. The procedure below has been approved by BLM personnel:

A. The top 6 inches of topsoil is pushed off and stockpiled along the side of the location.

B. An approximate 160' X 160' area is used within the proposed well site to remove caliche.

C. Subsoil is removed and stockpiled within the surveyed well pad.

D. When caliche is found, material will be stock piled within the pad site to build the location and road.

E. Then subsoil is pushed back in the hole and caliche is spread accordingly across entire location and road.

F. Once well is drilled, the stock piled top soil will be used for interim reclamation and spread along areas where caliche is picked up and the location size is reduced.

G. Neither caliche, nor subsoil will be stock piled outside of the well pad. Topsoil will be stockpiled along the edge of the pad as depicted in the Well Site Layout or survey plat.

7. Methods for Handling Waste:

A. The well will be drilled utilizing a closed loop mud system. Drill cuttings will be held in roll-off style mud boxes and taken to R360's disposal site.

B. Drilling fluids will be contained in steel mud pits.

C. Water produced from the well during completion will be held temporarily in steel tanks and then taken to an NMOCD approved commercial disposal facility.

D. Garbage and trash produced during drilling or completion operations will be collected in a trash bin and hauled to an approved landfill. No toxic waste or hazardous chemicals will be produced by this operation.

E. Human waste and grey water will need to be properly contained and disposed of. Proper disposal and elimination of waste and grey water may include but are not limited to portable septic systems and/or portable waste gathering systems (i.e. portable toilets).

F. After the rig is moved out and the well is either completed or abandoned, all waste materials will be cleaned up within 30 days. In the event of a dry hole only a dry hole marker will remain.

8. Ancillary Facilities:

No airstrip, campsite or other facilities will be built, as a result of operations on this well.

9. Well Site Layout:

A. The drill pad layout, with elevations staked by Harcrow Surveying, is shown in the Elevation Plat. Dimensions of the pad and pits are shown on the Rig Layout. V door

direction is west. Topsoil, if available, will be stockpiled per BLM specifications. Because the pad is almost level no major cuts will be required.

B. The Rig Layout Closed-Loop exhibit shows the proposed orientation of closed loop system and access road. No permanent living facilities are planned, but a temporary foreman/toolpusher's trailer will be on location during the drilling operations.

10. Plans for Restoration of the Surface:

A. Interim Reclamation will take place after the well has been completed. The pad will be downsized by reclaiming the areas not needed for production operations. The portions of the pad that are not needed for production operations will be re-contoured to its original state as much as possible. The caliche that is removed will be reused to either build another pad site or for road repairs within the lease. The stockpiled topsoil will then be spread out reclaimed area and reseeded with a BLM approved seed mixture. In the event the well must be worked over or maintained, it may be necessary to drive, park, and/or operate machinery on reclaimed land. This area will be repaired or reclaimed after work is complete.

Sedimentation and Erosion Control

Straw Waddles will be used as necessary at the well site to reduce sediment impacts to fragile/sensitive soils.

B. Final Reclamation: Upon plugging and abandoning the well all caliche for well pad and lease road will be removed and surface will be recountoured to reflect its surroundings as much as possible. Caliche will be recycled for road repair or reused for another well pad within the lease. If any topsoil remains, it will be spread out and the area will be re-seeded with a BLM approved mixture and re-vegetated as per BLM orders. When required by BLM, the well pad site will be restored to match pre-construction grades.

11. Surface Ownership:

A. The surface is owned by The United States Government, Bureau of Land Management. The surface is multiple uses with the primary uses of the region for grazing of livestock and the production of oil and gas. The surface owner was notified before staking this well.

B. The proposed road routes and surface location will be restored as directed by the BLM.

+

12. Other Information:

A. The area around the well site is grassland and the topsoil is sandy. The vegetation is moderately sparse with native prairie grasses, some mesquite and shinnery oak. No wildlife was observed but it is likely that mule deer, rabbits, coyotes and rodents traverse the area.

B. There is no permanent or live water in the immediate area.

C. There are no dwellings within 2 miles of this location.

D. If needed, a Cultural Resources Examination is being prepared by Boone Arch Services of NM, LLC., 2030 North Canal, Carlsbad, New Mexico, 88220, phone number 575-885-1352 and the results will be forwarded to your office in the near future. Otherwise, **COG will be participating in the Permian Basin MOA Program.**

13. Bond Coverage:

Bond Coverage is Statewide Bond NMB000215

14. Lessee's and Operator's Representative:

The COG Operating LLC representative responsible for assuring compliance with the surface use plan is as follows:

Seth Wild
Drilling Superintendent
COG Operating LLC
One Concho Center
600 W Illinois Ave
Midland, TX 79701
(432) 221-0414 (office)
(432) 525-3633(cell)

Ray Peterson
Drilling Manager
COG Operating LLC
One Concho Center
600 W Illinois Ave
Midland, TX 79701
(432) 685-4304 (office)
(432) 818-2254 (business)

CONCHO

Facility Plan
Hambone Federal 8 K CTB &
Hambone Federal 8 P CTB
Sec 8, T26S, R29E

REV	DATE	BY
A	06/11/19	JS

PECOS DISTRICT
SURFACE USE
CONDITIONS OF APPROVAL
COG Operating LLC
Lease Number NMNM123925

Well Pad 1
Hambone Federal Com 704H
Surface Hole Location: 1353' FSL & 1755' FWL, Section 8, T. 26 S., R. 29 E.
Bottom Hole Location: 200' FNL & 2178' FWL, Section 5, T. 26 S, R 29 E.

Hambone Federal Com 705H
Surface Hole Location: 1353' FSL & 1725' FWL, Section 8, T. 26 S., R. 29 E.
Bottom Hole Location: 200' FNL & 1254' FWL, Section 5, T. 26 S, R 29 E.

Hambone Federal Com 706H
Surface Hole Location: 1353' FSL & 1695' FWL, Section 8, T. 26 S., R. 29 E.
Bottom Hole Location: 200' FNL & 330' FWL, Section 5, T. 26 S, R 29 E.

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Standard Conditions of Approval (COA) apply to this APD. If any deviations to these standards exist or special COAs are required, the section with the deviation or requirement will be checked below.

I. GENERAL PROVISIONS

The approval of the Application For Permit To Drill (APD) is in compliance with all applicable laws and regulations: 43 Code of Federal Regulations 3160, the lease terms, Onshore Oil and Gas Orders, Notices.To Lessees, New Mexico Oil Conservation Division (NMOCD) Rules, National Historical Preservation Act As Amended, and instructions and orders of the Authorized Officer. Any request for a variance shall be submitted to the Authorized Officer on Form 3160-5, Sundry Notices and Report on Wells.

II. PERMIT EXPIRATION

If the permit terminates prior to drilling and drilling cannot be commenced within 60 days after expiration, an operator is required to submit Form 3160-5, Sundry Notices and Reports on Wells, requesting surface reclamation requirements for any surface disturbance. However, if the operator will be able to initiate drilling within 60 days after the expiration of the permit, the operator must have set the conductor pipe in order to allow for an extension of 60 days beyond the expiration date of the APD. (Filing of a Sundry Notice is required for this 60 day extension.)

III. ARCHAEOLOGICAL, PALEONTOLOGY & HISTORICAL SITES

Any cultural and/or paleontological resource discovered by the operator or by any person working on the operator's behalf shall immediately report such findings to the Authorized Officer. The operator is fully accountable for the actions of their contractors and subcontractors. The operator shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery shall be made by the Authorized Officer to determine the appropriate actions that shall be required to prevent the loss of significant cultural or scientific values of the discovery. The operator shall be held responsible for the cost of the proper mitigation measures that the Authorized Officer assesses after consultation with the operator on the evaluation and decisions of the discovery. Any unauthorized collection or disturbance of cultural or paleontological resources may result in a shutdown order by the Authorized Officer.

IV. NOXIOUS WEEDS

The operator shall be held responsible if noxious weeds become established within the areas of operations. Weed control shall be required on the disturbed land where noxious weeds exist, which includes the roads, pads, associated pipeline corridor, and adjacent land affected by the establishment of weeds due to this action. The operator shall consult with the Authorized Officer for acceptable weed control methods, which include following EPA and BLM requirements and policies.

V. SPECIAL REQUIREMENT(S)

Texas Hornshell

The company shall comply with Spill Prevention, Control and Countermeasure (SPCC) requirements in accordance with 40 CFR Part 112.

Hydrology:

The entire well pad(s) will be bermed to prevent oil, salt, and other chemical contaminants from leaving the well pad. The compacted berm shall be constructed at a minimum of 12 inches with impermeable mineral material (e.g. caliche). Topsoil shall not be used to construct the berm. No water flow from the uphill side(s) of the pad shall be allowed to enter the well pad. The integrity of the berm shall be maintained around the surfaced pad throughout the life of the well and around the downsized pad after interim reclamation has been completed. Any water erosion that may occur due to the construction of the well pad during the life of the well will be quickly corrected and proper measures will be taken to prevent future erosion. Stockpiling of topsoil is required. The top soil shall be stockpiled in an appropriate location to prevent loss of soil due to water or wind erosion and not used for berming or erosion control. If fluid collects within the bermed area, the fluid must be vacuumed into a safe container and disposed of properly at a state approved facility.

Tank battery locations will be lined and bermed. A 20 mil permanent liner will be installed with a 4 oz. felt backing to prevent tears or punctures. Tank battery berms must be large enough to contain 1 ½ times the content of the largest tank or 24 hour production, whichever is greater. Automatic shut off, check valves, or similar systems will be installed for tanks to minimize the effects of catastrophic line failures used in production or drilling.

When crossing ephemeral drainages the pipeline(s) will be buried to a minimum depth of 48 inches from the top of pipe to ground level. Erosion control methods such as gabions and/or rock aprons should be placed on both up and downstream sides of the pipeline crossing. In addition, curled (weed free) wood/straw fiber wattles/logs and/or silt fences should be placed on the downstream side for sediment control during construction and maintained until soils and vegetation have stabilized. Water bars should be placed within the ROW to divert and dissipate surface runoff. A pipeline access road is not permitted to cross these ephemeral drainages. Traffic should be diverted to a preexisting route. Additional seeding may be required in floodplains and drainages to restore energy dissipating vegetation.

Prior to pipeline installation/construction a leak detection plan will be developed. The method(s) could incorporate gauges to detect pressure drops, situating valves and lines so they can be visually inspected periodically or installing electronic sensors to alarm when a leak is present. The leak detection plan will incorporate an automatic shut off system that will be installed for proposed pipelines to minimize the effects of an undesirable event.

Cave/Karst Surface Mitigation

The following stipulations will be applied to minimize impacts during construction, drilling and production:

Construction:

General Construction:

- No blasting
- The BLM, Carlsbad Field Office, will be informed immediately if any subsurface drainage channels, cave passages, or voids are penetrated during construction, and no additional construction shall occur until clearance has been issued by the Authorized Officer.
- All linear surface disturbance activities will avoid sinkholes and other karst features to lessen the possibility of encountering near surface voids during construction, minimize changes to runoff, and prevent untimely leaks and spills from entering the karst drainage system.
- All spills or leaks will be reported to the BLM immediately for their immediate and proper treatment.

Pad Construction:

- The pad will be constructed and leveled by adding the necessary fill and caliche – no blasting.
- The entire perimeter of the well pad will be bermed to prevent oil, salt, and other chemical contaminants from leaving the well pad.
- The compacted berm shall be constructed at a minimum of 12 inches high with impermeable mineral material (e.g., caliche).
- No water flow from the uphill side(s) of the pad shall be allowed to enter the well pad.
- The topsoil stockpile shall be located outside the bermed well pad.
- Topsoil, either from the well pad or surrounding area, shall not be used to construct the berm.
- No storm drains, tubing or openings shall be placed in the berm.
- If fluid collects within the bermed area, the fluid must be vacuumed into a safe container and disposed of properly at a state approved facility.
- The integrity of the berm shall be maintained around the surfaced pad throughout the life of the well and around the downsized pad after interim reclamation has been completed.
- Any access road entering the well pad shall be constructed so that the integrity of the berm height surrounding the well pad is not compromised (i.e. an access road crossing the berm cannot be lower than the berm height).
- Following a rain event, all fluids will vacuumed off of the pad and hauled off-site and disposed at a proper disposal facility.

Tank Battery Construction:

- The pad will be constructed and leveled by adding the necessary fill and caliche – no blasting.
- All tank battery locations and facilities will be lined and bermed.
- The liner should be at least 20 mil in thickness and installed with a 4 oz. felt backing, or equivalent, to prevent tears or punctures.
- Tank battery berms must be large enough to contain 1 ½ times the content of the largest tank.

Road Construction:

- Turnout ditches and drainage leadoffs will not be constructed in such a manner as to alter the natural flow of water into or out of cave or karst features.
- Special restoration stipulations or realignment may be required if subsurface features are discovered during construction.

Buried Pipeline/Cable Construction:

- Rerouting of the buried line(s) may be required if a subsurface void is encountered during construction to minimize the potential subsidence/collapse of the feature(s) as well as the possibility of leaks/spills entering the karst drainage system.

Powerline Construction:

- Smaller powerlines will be routed around sinkholes and other karst features to avoid or lessen the possibility of encountering near surface voids and to minimize changes to runoff or possible leaks and spills from entering karst systems.
- Larger powerlines will adjust their pole spacing to avoid cave and karst features.
- Special restoration stipulations or realignment may be required if subsurface voids are encountered.

Surface Flowlines Installation:

- Flowlines will be routed around sinkholes and other karst features to minimize the possibility of leaks/spills from entering the karst drainage system.

Leak Detection System:

- A method of detecting leaks is required. The method could incorporate gauges to measure loss, situating values and lines so they can be visually inspected, or installing electronic sensors to alarm when a leak is present.
- A leak detection plan will be submitted to BLM that incorporates an automatic shut off system (see below) to minimize the effects of an undesirable event that could negatively sensitive cave/karst resources.
- Well heads, pipelines (surface and buried), storage tanks, and all supporting equipment should be monitored regularly after installation to promptly identify and fix leaks.

Automatic Shut-off Systems:

- Automatic shut off, check values, or similar systems will be installed for pipelines and tanks to minimize the effects of catastrophic line failures used in production or drilling.

Cave/Karst Subsurface Mitigation

The following stipulations will be applied to protect cave/karst and groundwater concerns:

Closed Loop System:

- A closed loop system using steel tanks will be utilized during drilling – no pits
- All fluids and cuttings will be hauled off-site and disposed of properly at an authorized site

Rotary Drilling with Fresh Water:

- Fresh water will be used as a circulating medium in zones where caves or karst features are expected. SEE ALSO: Drilling COAs for this well.

Directional Drilling:

- The kick off point for directional drilling will occur at least 100 feet below the bottom of the cave occurrence zone. SEE ALSO: Drilling COAs for this well.

Lost Circulation:

- ALL lost circulation zones between surface and the base of the cave occurrence zone will be logged and reported in the drilling report.
- If a void of four feet or more and circulation losses greater than 70 percent occur simultaneously while drilling in any cave-bearing zone, regardless of the type of drilling machinery used, the BLM will be notified immediately by the operator. The BLM will assess the situation and work with the operator on corrective actions to resolve the problem.

Abandonment Cementing:

- Additional plugging conditions of approval may be required upon well abandonment in high and medium karst potential occurrence zones.
- The BLM will assess the situation and work with the operator to ensure proper plugging of the wellbore.

Pressure Testing:

- The operator will perform annual pressure monitoring on all casing annuli and reported in a sundry notice.
- If the test results indicated a casing failure has occurred, remedial action will be undertaken to correct the problem to the BLM's approval.

VI. CONSTRUCTION

A. NOTIFICATION

The BLM shall administer compliance and monitor construction of the access road and well pad. Notify the Carlsbad Field Office at (575) 234-5909 at least 3 working days prior to commencing construction of the access road and/or well pad.

When construction operations are being conducted on this well, the operator shall have the approved APD and Conditions of Approval (COA) on the well site and they shall be made available upon request by the Authorized Officer.

B. TOPSOIL

The operator shall strip the top portion of the soil (root zone) from the entire well pad area and stockpile the topsoil along the edge of the well pad as depicted in the APD. The root zone is typically six (6) inches in depth. All the stockpiled topsoil will be redistributed over the interim reclamation areas. Topsoil shall not be used for berming the pad or facilities. For final reclamation, the topsoil shall be spread over the entire pad area for seeding preparation.

Other subsoil (below six inches) stockpiles must be completely segregated from the topsoil stockpile. Large rocks or subsoil clods (not evident in the surrounding terrain) must be buried within the approved area for interim and final reclamation.

C. CLOSED LOOP SYSTEM

Tanks are required for drilling operations: No Pits.

The operator shall properly dispose of drilling contents at an authorized disposal site.

D. FEDERAL MINERAL MATERIALS PIT

Payment shall be made to the BLM prior to removal of any federal mineral materials. Call the Carlsbad Field Office at (575) 234-5972.

E. WELL PAD SURFACING

Surfacing of the well pad is not required.

If the operator elects to surface the well pad, the surfacing material may be required to be removed at the time of reclamation. The well pad shall be constructed in a manner which creates the smallest possible surface disturbance, consistent with safety and operational needs.

F. EXCLOSURE FENCING (CELLARS & PITS)

Exclosure Fencing
The operator will install and maintain exclosure fencing for all open well cellars to prevent access to public, livestock, and large forms of wildlife before and after drilling operations until the pit is free of fluids and the operator initiates backfilling. (For examples of exclosure fencing design, refer to BLM's Oil and Gas Gold Book, Exclosure Fence Illustrations, Figure 1, Page 18.)

G. ON LEASE ACCESS ROADS

Road Width
The access road shall have a driving surface that creates the smallest possible surface disturbance and does not exceed fourteen (14) feet in width. The maximum width of surface disturbance, when constructing the access road, shall not exceed twenty-five (25) feet.

Surfacing
Surfacing material is not required on the new access road driving surface. If the operator elects to surface the new access road or pad, the surfacing material may be required to be removed at the time of reclamation.

Where possible, no improvements should be made on the unsurfaced access road other than to remove vegetation as necessary, road irregularities, safety issues, or to fill low areas that may sustain standing water.

The Authorized Officer reserves the right to require surfacing of any portion of the access road at any time deemed necessary. Surfacing may be required in the event the road deteriorates, erodes, road traffic increases, or it is determined to be beneficial for future field development. The surfacing depth and type of material will be determined at the time of notification.

Crowning
Crowning shall be done on the access road driving surface. The road crown shall have a grade of approximately 2% (i.e., a 1" crown on a 14' wide road). The road shall conform to Figure 1; cross section and plans for typical road construction.

Ditching
Ditching shall be required on both sides of the road.

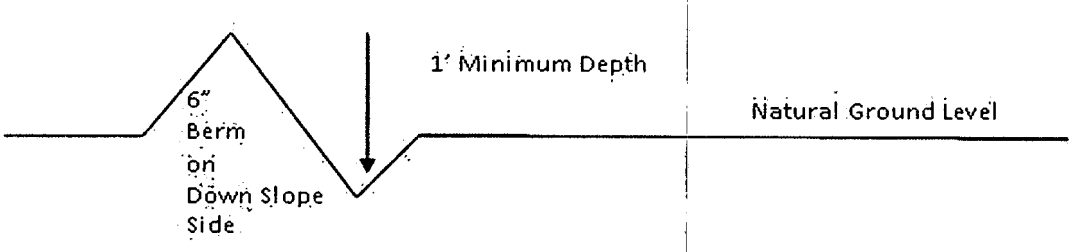
Turnouts
Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall conform to Figure 1; cross section and plans for typical road construction.

Drainage

Drainage control systems shall be constructed on the entire length of road (e.g. ditches, sidehill outsloping and insloping, lead-off ditches, culvert installation, and low water crossings).

A typical lead-off ditch has a minimum depth of 1 foot below and a berm of 6 inches above natural ground level. The berm shall be on the down-slope side of the lead-off ditch.

Cross Section of a Typical Lead-off Ditch



All lead-off ditches shall be graded to drain water with a 1 percent minimum to 3 percent maximum ditch slope. The spacing interval are variable for lead-off ditches and shall be determined according to the formula for spacing intervals of lead-off ditches, but may be amended depending upon existing soil types and centerline road slope (in %);

Formula for Spacing Interval of Lead-off Ditches

Example - On a 4% road slope that is 400 feet long, the water flow shall drain water into a lead-off ditch. Spacing interval shall be determined by the following formula:

$$\text{400 foot road with 4\% road slope: } \frac{400'}{4\%} + 100' = 200' \text{ lead-off ditch interval}$$

Cattle guards

An appropriately sized cattle guard sufficient to carry out the project shall be installed and maintained at fence/road crossings. Any existing cattle guards on the access road route shall be repaired or replaced if they are damaged or have deteriorated beyond practical use. The operator shall be responsible for the condition of the existing cattle guards that are in place and are utilized during lease operations.

Fence Requirement

Where entry is granted across a fence line, the fence shall be braced and tied off on both sides of the passageway prior to cutting. The operator shall notify the private surface landowner or the grazing allotment holder prior to crossing any fences.

Public Access
Public access on this road shall not be restricted by the operator without specific written approval granted by the Authorized Officer.

Construction Steps

1. Salvage topsoil
2. Construct road
3. Redistribute topsoil
4. Revegetate slopes

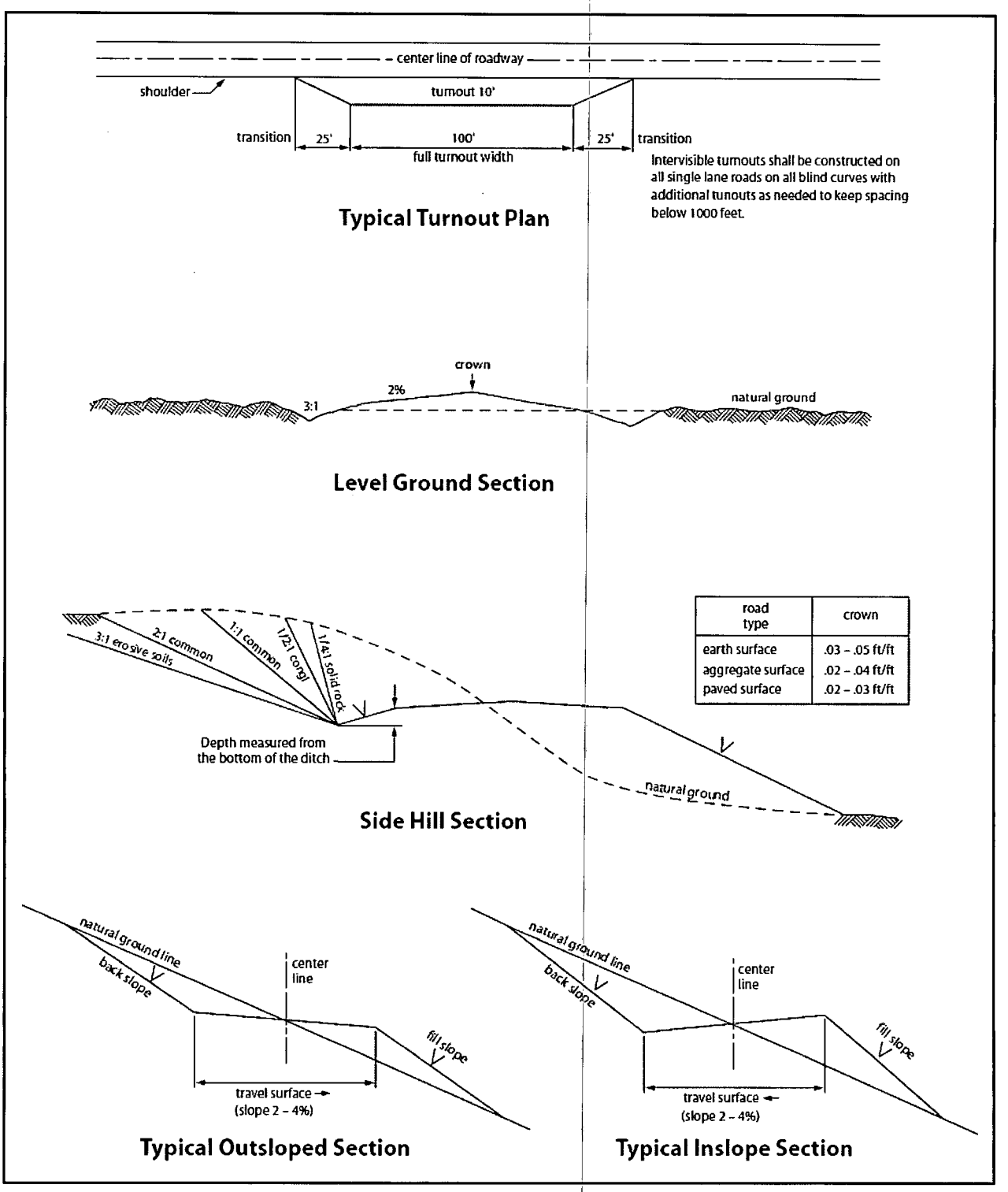


Figure 1. Cross-sections and plans for typical road sections representative of BLM resource or FS local and higher-class roads.

VII. PRODUCTION (POST DRILLING)

A. WELL STRUCTURES & FACILITIES

Placement of Production Facilities
Production facilities should be placed on the well pad to allow for maximum interim recontouring and revegetation of the well location.

Exclosure Netting (Open-top Tanks)
Immediately following active drilling or completion operations, the operator will take actions necessary to prevent wildlife and livestock access, including avian wildlife, to all open-topped tanks that contain or have the potential to contain salinity sufficient to cause harm to wildlife or livestock, hydrocarbons, or Resource Conservation and Recovery Act of 1976-exempt hazardous substances. At a minimum, the operator will net, screen, or cover open-topped tanks to exclude wildlife and livestock and prevent mortality. If the operator uses netting, the operator will cover and secure the open portion of the tank to prevent wildlife entry. The operator will net, screen, or cover the tanks until the operator removes the tanks from the location or the tanks no longer contain substances that could be harmful to wildlife or livestock. Use a maximum netting mesh size of 1 ½ inches. The netting must not be in contact with fluids and must not have holes or gaps.

Chemical and Fuel Secondary Containment and Exclosure Screening
The operator will prevent all hazardous, poisonous, flammable, and toxic substances from coming into contact with soil and water. At a minimum, the operator will install and maintain an impervious secondary containment system for any tank or barrel containing hazardous, poisonous, flammable, or toxic substances sufficient to contain the contents of the tank or barrel and any drips, leaks, and anticipated precipitation. The operator will dispose of fluids within the containment system that do not meet applicable state or U. S. Environmental Protection Agency livestock water standards in accordance with state law; the operator must not drain the fluids to the soil or ground. The operator will design, construct, and maintain all secondary containment systems to prevent wildlife and livestock exposure to harmful substances. At a minimum, the operator will install effective wildlife and livestock exclosure systems such as fencing, netting, expanded metal mesh, lids, and grate covers. Use a maximum netting mesh size of 1 ½ inches.

Open-Vent Exhaust Stack Exclosures
The operator will construct, modify, equip, and maintain all open-vent exhaust stacks on production equipment to prevent birds and bats from entering, and to discourage perching, roosting, and nesting. (*Recommended exclosure structures on open-vent exhaust stacks are in the shape of a cone.*) Production equipment includes, but may not be limited to, tanks, heater-treaters, separators, dehydrators, flare stacks, in-line units, and compressor mufflers.

Containment Structures
Proposed production facilities such as storage tanks and other vessels will have a secondary containment structure that is constructed to hold the capacity of 1.5 times the largest tank, plus freeboard to account for precipitation, unless more stringent protective requirements are deemed necessary.

Painting Requirement
All above-ground structures including meter housing that are not subject to safety requirements shall be painted a flat non-reflective paint color, **Shale Green** from the BLM Standard Environmental Color Chart (CC-001: June 2008).

B. PIPELINES

BURIED PIPELINE STIPULATIONS

A copy of the application (Grant, APD, or Sundry Notice) and attachments, including conditions of approval, survey plat and/or map, will be on location during construction. BLM personnel may request to you a copy of your permit during construction to ensure compliance with all stipulations.

Holder agrees to comply with the following stipulations to the satisfaction of the Authorized Officer:

1. The Holder shall indemnify the United States against any liability for damage to life or property arising from the occupancy or use of public lands under this grant.

2. The Holder shall comply with all applicable Federal laws and regulations existing or hereafter enacted or promulgated. In any event, the holder shall comply with the Toxic Substances Control Act of 1976 as amended, 15 USC 2601 et seq. (1982) with regards to any toxic substances that are used, generated by or stored on the right-of-way or on facilities authorized under this right-of-way grant. (See 40 CFR Part 702-799 and especially, provisions on polychlorinated biphenyls, 40 CFR 761.1-761.193.) Additionally, any release of toxic substances (leaks, spills, etc.) in excess of the reportable quantity established by 40 CFR Part 117 shall be reported as required by the Comprehensive Environmental Response, Compensation, and Liability Act, section 102b. A copy of any report required or requested by any Federal agency or State government as a result of a reportable release or spill of any toxic substances shall be furnished to the authorized officer concurrent with the filing of the reports to the involved Federal agency or State government.

3. The holder agrees to indemnify the United States against any liability arising from the release of any hazardous substance or hazardous waste (as these terms are defined in the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. 9601, et seq. or the Resource Conservation and Recovery Act, 42 U.S.C.6901, et seq.) on the Right-of-Way (unless the release or threatened release is wholly unrelated to the Right-of-Way holder's activity on the Right-of-Way), or resulting from the activity of the Right-of-Way holder on the Right-of-Way. This agreement applies without regard to whether a release is caused by the holder, its agent, or unrelated third parties.

4. If, during any phase of the construction, operation, maintenance, or termination of the pipeline, any oil or other pollutant should be discharged from the pipeline system, impacting Federal lands, the control and total removal, disposal, and cleaning up of such oil or other pollutant, wherever found, shall be the responsibility of holder, regardless of fault. Upon failure of holder to control, dispose of, or clean up such discharge on or affecting Federal lands, or to repair all damages resulting therefrom, on the Federal lands, the Authorized Officer may take such measures as he deems necessary to control and clean up the discharge and restore the area, including where appropriate, the aquatic environment and fish and wildlife habitats, at the full expense of the holder. Such action by the Authorized Officer shall not relieve holder of any responsibility as provided herein.

5. All construction and maintenance activity will be confined to the authorized right-of-way.

6. The pipeline will be buried with a minimum cover of **36** inches between the top of the pipe and ground level.

7. The maximum allowable disturbance for construction in this right-of-way will be **30** feet:

- Blading of vegetation within the right-of-way will be allowed: maximum width of blading operations will not exceed **20** feet. The trench is included in this area. (*Blading is defined as the complete removal of brush and ground vegetation.*)

- Clearing of brush species within the right-of-way will be allowed: maximum width of clearing operations will not exceed **30** feet. The trench and bladed area are included in this area. (*Clearing is defined as the removal of brush while leaving ground vegetation (grasses, weeds, etc.) intact. Clearing is best accomplished by holding the blade 4 to 6 inches above the ground surface.*)

- The remaining area of the right-of-way (if any) shall only be disturbed by compressing the vegetation. (*Compressing can be caused by vehicle tires, placement of equipment, etc.*)

8. The holder shall stockpile an adequate amount of topsoil where blading is allowed. The topsoil to be stripped is approximately ___6___ inches in depth. The topsoil will be segregated from other spoil piles from trench construction. The topsoil will be evenly distributed over the bladed area for the preparation of seeding.

9. The holder shall minimize disturbance to existing fences and other improvements on public lands. The holder is required to promptly repair improvements to at least their former state. Functional use of these improvements will be maintained at all times. The holder will contact the owner of any improvements prior to disturbing them. When necessary to pass through a fence line, the fence shall be braced on both sides of the passageway prior to cutting of the fence. No permanent gates will be allowed unless approved by the Authorized Officer.

10. Vegetation, soil, and rocks left as a result of construction or maintenance activity will be randomly scattered on this right-of-way and will not be left in rows, piles, or berms, unless otherwise approved by the Authorized Officer. The entire right-of-way shall be recontoured to match the surrounding landscape. The backfilled soil shall be compacted and a 6 inch berm will be left over the ditch line to allow for settling back to grade.

11. In those areas where erosion control structures are required to stabilize soil conditions, the holder will install such structures as are suitable for the specific soil conditions being encountered and which are in accordance with sound resource management practices.

12. The holder will reseed all disturbed areas. Seeding will be done according to the attached seeding requirements, using the following seed mix.

( ) seed mixture 1 ( ) seed mixture 3

(X) seed mixture 2 ( ) seed mixture 4

( ) seed mixture 2/LPC ( ) Aplomado Falcon Mixture

13. All above-ground structures not subject to safety requirements shall be painted by the holder to blend with the natural color of the landscape. The paint used shall be color which simulates "Standard Environmental Colors" – **Shale Green**, Munsell Soil Color No. 5Y 4/2.

14. The pipeline will be identified by signs at the point of origin and completion of the right-of-way and at all road crossings. At a minimum, signs will state the holder's name, BLM serial number, and the product being transported. All signs and information thereon will be posted in a permanent, conspicuous manner, and will be maintained in a legible condition for the life of the pipeline.

15. The holder shall not use the pipeline route as a road for purposes other than routine maintenance as determined necessary by the Authorized Officer in consultation with the holder before maintenance begins. The holder will take whatever steps are necessary to ensure that the pipeline route is not used as a roadway. As determined necessary during the life of the pipeline, the Authorized Officer may ask the holder to construct temporary deterrence structures.

16. Any cultural resource (historic or prehistoric site or object) discovered by the holder, or any person working on the holder's behalf, on public or Federal land shall be immediately reported to the Authorized Officer. The holder shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery will be made by the Authorized Officer to determine appropriate actions to prevent the loss of significant cultural or scientific values. The holder will be responsible for the cost of evaluation and any decision as to the proper mitigation measures will be made by the Authorized Officer after consulting with the holder.

OR

If the entire project is covered under the Permian Basin Programmatic Agreement (cultural resources only):

The proponent has contributed funds commensurate to the undertaking into an account for offsite mitigation. Participation in the PA serves as mitigation for the effects of this project on cultural resources. If any human skeletal remains, funerary objects, sacred objects, or objects of cultural patrimony are discovered at any time during construction, all construction activities shall halt and the BLM will be notified as soon as possible within 24 hours. Work shall not resume until a Notice to Proceed is issued by the BLM. See Stipulation 17 for more information.

If the proposed project is split between a Class III inventory and a Permian Basin Programmatic Agreement contribution, the portion of the project covered under Class III inventory should default to the first paragraph stipulations.

17. The holder is hereby obligated to comply with procedures established in the Native American Graves Protection and Repatriation Act (NAGPRA) to protect such cultural items as human

remains, associated funerary objects, sacred objects, and objects of cultural patrimony discovered inadvertently during the course of project implementation. In the event that any of the cultural items listed above are discovered during the course of project work, the proponent shall immediately halt the disturbance and contact the BLM within 24 hours for instructions. The proponent or initiator of any project shall be held responsible for protecting, evaluating, reporting, excavating, treating, and disposing of these cultural items according to the procedures established by the BLM in consultation with Indian Tribes."

18. Any paleontological resource (historic or prehistoric site or object) discovered by the holder, or any person working on the holder's behalf, on public or Federal land shall be immediately reported to the Authorized Officer. The holder shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery will be made by the Authorized Officer to determine appropriate actions to prevent the loss of significant cultural or scientific values. The holder will be responsible for the cost of evaluation and any decision as to the proper mitigation measures will be made by the Authorized Officer after consulting with the holder.

19. The operator shall be held responsible if noxious weeds become established within the areas of operations. Weed control shall be required on the disturbed land where noxious weeds exist, which includes associated roads, pipeline corridor and adjacent land affected by the establishment of weeds due to this action. The operator shall consult with the Authorized Officer for acceptable weed control methods, which include following EPA and BLM requirements and policies.

20. Escape Ramps - The operator will construct and maintain pipeline/utility trenches [that are not otherwise fenced, screened, or netted] to prevent livestock, wildlife, and humans from becoming entrapped. At a minimum, the operator will construct and maintain escape ramps, ladders, or other methods of avian and terrestrial wildlife escape in the trenches according to the following criteria:

a. Any trench left open for eight (8) hours or less is not required to have escape ramps; however, before the trench is backfilled, the contractor/operator shall inspect the trench for wildlife, remove all trapped wildlife, and release them at least 100 yards from the trench.
b. For trenches left open for eight (8) hours or more, earthen escape ramps (built at no more than a 30 degree slope and spaced no more than 500 feet apart) shall be placed in the trench.

21. Special Stipulations:

Karst:

- The BLM, Carlsbad Field Office, will be informed immediately if any subsurface drainage channels, passages, or voids are intersected by trenching, and no pipe will be laid in the trench at that point until clearance has been issued by the Authorized Officer.
- If a void is encountered alignments may be rerouted to avoid the karst feature and lessen; the potential of subsidence or collapse of karst features, buildup of toxic or combustible gas, or other possible impacts to cave and karst resources from the buried pipeline.

- Special restoration stipulations or realignment may be required at such intersections, if any.
- A leak detection plan **will be submitted to the BLM Carlsbad Field Office for approval** prior to pipeline installation. The method could incorporate gauges to detect pressure drops, situating values and lines so they can be visually inspected periodically or installing electronic sensors to alarm when a leak is present. The leak detection plan will incorporate an automatic shut off system that will be installed for proposed pipelines to minimize the effects of an undesirable event.
- Regular monitoring is required to quickly identify leaks for their immediate and proper treatment.
- All spills or leaks will be reported to the BLM immediately for their immediate and proper treatment.

VIII. INTERIM RECLAMATION

During the life of the development, all disturbed areas not needed for active support of production operations should undergo interim reclamation in order to minimize the environmental impacts of development on other resources and uses.

Within six (6) months of well completion, operators should work with BLM surface management specialists (Jim Amos: 575-234-5909) to devise the best strategies to reduce the size of the location. Interim reclamation should allow for remedial well operations, as well as safe and efficient removal of oil and gas.

During reclamation, the removal of caliche is important to increasing the success of revegetating the site. Removed caliche that is free of contaminants may be used for road repairs, fire walls or for building other roads and locations. In order to operate the well or complete workover operations, it may be necessary to drive, park and operate on restored interim vegetation within the previously disturbed area. Disturbing revegetated areas for production or workover operations will be allowed. If there is significant disturbance and loss of vegetation, the area will need to be revegetated. Communicate with the appropriate BLM office for any exceptions/exemptions if needed.

All disturbed areas after they have been satisfactorily prepared need to be reseeded with the seed mixture provided below.

Upon completion of interim reclamation, the operator shall submit a Sundry Notices and Reports on Wells, Subsequent Report of Reclamation (Form 3160-5).

IX. FINAL ABANDONMENT & RECLAMATION

At final abandonment, well locations, production facilities, and access roads must undergo "final" reclamation so that the character and productivity of the land are restored.

Earthwork for final reclamation must be completed within six (6) months of well plugging. All pads, pits, facility locations and roads must be reclaimed to a satisfactory revegetated, safe, and stable condition, unless an agreement is made with the landowner or BLM to keep the road and/or pad intact.

After all disturbed areas have been satisfactorily prepared, these areas need to be revegetated with the seed mixture provided below. Seeding should be accomplished by drilling on the contour whenever practical or by other approved methods. Seeding may need to be repeated until revegetation is successful, as determined by the BLM.

Operators shall contact a BLM surface protection specialist prior to surface abandonment operations for site specific objectives (Jim Amos: 575-234-5909).

Ground-level Abandoned Well Marker to avoid raptor perching: Upon the plugging and subsequent abandonment of the well, the well marker will be installed at ground level on a plate containing the pertinent information for the plugged well.

Seed Mixture 2, for Sandy Sites

The holder shall seed all disturbed areas with the seed mixture listed below. The seed mixture shall be planted in the amounts specified in pounds of pure live seed (PLS)* per acre. There shall be no primary or secondary noxious weeds in the seed mixture. Seed will be tested and the viability testing of seed will be done in accordance with State law (s) and within nine (9) months prior to purchase. Commercial seed will be either certified or registered seed. The seed container will be tagged in accordance with State law(s) and available for inspection by the authorized officer.

Seed will be planted using a drill equipped with a depth regulator to ensure proper depth of planting where drilling is possible. The seed mixture will be evenly and uniformly planted over the disturbed area (smaller/heavier seeds have a tendency to drop the bottom of the drill and are planted first). The holder shall take appropriate measures to ensure this does not occur. Where drilling is not possible, seed will be broadcast and the area shall be raked or chained to cover the seed. When broadcasting the seed, the pounds per acre are to be doubled. The seeding will be repeated until a satisfactory stand is established as determined by the authorized officer. Evaluation of growth will not be made before completion of at least one full growing season after seeding.

Species to be planted in pounds of pure live seed* per acre:

Species	lb/acre
Sand dropseed (Sporobolus cryptandrus)	1.0
Sand love grass (Eragrostis trichodes)	1.0
Plains bristlegrass (Setaria macrostachya)	2.0

*Pounds of pure live seed:

Pounds of seed **x** percent purity **x** percent germination = pounds pure live seed

PECOS DISTRICT
DRILLING OPERATIONS
CONDITIONS OF APPROVAL

OPERATOR'S NAME:	**COG Operating LLC**
LEASE NO.:	**NMNM123925**
WELL NAME & NO.:	**Hambone Federal Com 705H**
SURFACE HOLE FOOTAGE:	**1353' FSL & 1725' FWL**
BOTTOM HOLE FOOTAGE	**200' FNL & 1254' FWL**
LOCATION:	**Section 8, T 26S, R 29E, NMPM**
COUNTY:	**Eddy County, New Mexico**

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

A. HYDROGEN SULFIDE

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

B. CASING

1. The **10-3/4"** surface casing shall be set at approximately **360'** (a minimum of 75' into the Rustler Anhydrite and above the salt) and cemented to surface.
   a. **If cement does not circulate to surface,** the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of **6 hours** after pumping cement, ideally between 8-10 hours after.
   b. WOC time for a primary cement job will be a minimum of **8 hours** or **500 psi** compressive strength, whichever is greater. This is to include the lead cement.
   c. If cement falls back, remedial cementing will be done prior to drilling out the shoe.
   d. WOC time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 psi compressive strength, whichever is greater.

2. The **7-5/8"** intermediate casing shall be set in the 3rd BS Lime and cemented to surface.
   a. **If cement does not circulate to surface,** see B.1.a, c & d.
   b. This casing must be kept at least 1/3 full at all times in order to meet BLM collapse requirements.
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. 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 **3000 (3M)** psi.
2. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the intermediate casing shoe shall be **5000 (5M)** psi.

D. SPECIAL REQUIREMENTS

1. Submit a Communitization Agreement to the Carlsbad Field Office, 620 E Greene St. Carlsbad, New Mexico 88220, at least 90 days before the anticipated date of first production from a well subject to a spacing order issued by the New Mexico Oil Conservation Division. The Communitization Agreement will include the signatures of all working interest owners in all Federal and Indian leases subject to the Communitization Agreement (i.e., operating rights owners and lessees of record), or certification that the operator has obtained the written signatures of all such owners and will make those signatures available to the BLM immediately upon request.
   a. The well sign on location shall include the surface and bottom hole lease numbers. When the Communitization Agreement number is known, it shall also be on the sign.

DR 1/23/2020

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. 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.

Generated: 10/26/2017

U. S. Steel Tubular Products

5 1/2 20.00 lb (0.361) P110 HP — USS-EAGLE SFH™

	PIPE	CONNECTION	
MECHANICAL PROPERTIES			
Minimum Yield Strength	**125,000**		*psi*
Maximum Yield Strength	**140,000**		*psi*
Minimum Tensile Strength	**130,000**		*psi*
DIMENSIONS			
Outside Diameter	**5.500**	**5.830**	*in.*
Wall Thickness	0.361		*in.*
Inside Diameter	4.778	4.693	*in.*
Drift - API	4.653	4.653	*in.*
Nominal Linear Weight, T&C	**20.00**		*lbs/ft*
Plain End Weight	19.83		*lbs/ft*
SECTION AREA			
Cross Sectional Area | Critical Area	5.828	5.027	*sq. in.*
Joint Efficiency		86.25	%
PERFORMANCE			
Minimum Collapse Pressure	13,150	13,150	*psi*
External Pressure Leak Resistance		10,000	*psi*
Minimum Internal Yield Pressure	14,360	14,360	*psi*
Minimum Pipe Body Yield Strength	729,000		*lbs*
Joint Strength		629,000	*lbs*
Compression Rating		629,000	*lbs*
Reference Length		21,146	*ft*
Maximum Uniaxial Bend Rating		89.9	*deg/100 ft*
MAKE-UP DATA			
Minimum Make-Up Torque		14,200	*ft-lbs*
Maximum Make-Up Torque		16,800	*ft-lbs*
Maximum Operating Torque		25,700	*ft-lbs*
Make-Up Loss		5.92	*in.*

Notes:

1) Other than proprietary collapse and connection values, performance properties have been calculated using standard equations defined by API 5C3 and do not incorporate any additional design or safety factors. Calculations assume nominal pipe OD, nominal wall thickness, and Specified Minimum Yield Strength (SMYS).
2) Compressive & Tensile Connection Efficiencies are calculated by dividing the connection critical area by the pipe body area.
3) Uniaxial bending rating shown is structural only, and equal to compression efficiency.
4) Torques have been calculated assuming a thread compound friction factor of 1.0 and are recommended only. Field make-up torques may require adjustment based on actual field conditions (e.g. make-up speed, temperature, thread compound, etc.).
5) Reference length is calculated by joint strength divided by plain end weight with 1.5 safety factor.
6) Connection external pressure resistance has been verified to 10,000 psi (Fit-For-Service testing protocol).

Manuel USS Product Data Sheet 2017 rev26 (Sept)

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