Form 3160-3
(June 2015)

F/P

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

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No.
NMNM123530

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.
BASEBALL CAP FEDERAL COM
603H 318803

2. Name of Operator
COG OPERATING LLC 229137

9. API Well No.
30-025-45784

3a. Address
600 West Illinois Ave Midland TX 79701

3b. Phone No. *(include area code)*
(432)683-7443

10. Field and Pool, or Exploratory
WILDCAT / BONE SPRING 96434

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

At surface SWSE / 390 FSL / 2305 FEL / LAT 32.182179 / LONG -103.422637

At proposed prod. zone NWNE / 200 FNL / 1880 FEL / LAT 32.209721 / LONG -103.421241

11. Sec., T. R. M. or Blk. and Survey or Area
SEC 25 / T24S / R34E / NMP

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

12. County or Parish
LEA

13. State
NM

15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any)	16. No of acres in lease	17. Spacing Unit dedicated to this well
200 feet	240	320
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**
100 feet	12630 feet / 22491 feet	FED: NMB000215
21. Elevations (Show whether DF, KDB, RT, GL, etc.)	**22. Approximate date work will start***	**23. Estimated duration**
3388 feet	05/01/2019	30 days

HOBBS OCD
APR 01 2019
RECEIVED

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)	Mayte Reyes / Ph: (575)748-6945	10/29/2018
Title		
Regulatory Analyst		
Approved by *(Signature)*	**Name *(Printed/Typed)***	**Date**
(Electronic Submission)	Cody Layton / Ph: (575)234-5959	03/21/2019
Title	**Office**	
Assistant Field Manager Lands & Minerals	CARLSBAD	

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

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

OCD Rec 04/01/19

1 p.r.

APPROVED WITH CONDITIONS

Approval Date: 03/21/2019

KZ 04/01/19

(Continued on page 2)

*(Instructions on page 2)

INSTRUCTIONS

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

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

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

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

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

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

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

NOTICES

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

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

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

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

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

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

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

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

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AFMSS

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

APD Print Report

03/26/2019

APD ID: 10400035673
Submission Date: 10/29/2018
Operator Name: COG OPERATING LLC
Federal/Indian APD: FED
Well Name: BASEBALL CAP FEDERAL COM
Well Number: 603H
Well Type: OIL WELL
Well Work Type: Drill

Highlight data to show the most recent changes

Show Final Text

Application

Section 1 - General

APD ID: 10400035673
Tie to previous NOS?
Submission Date: 10/29/2018
BLM Office: CARLSBAD
User: Mayte Reyes
Title: Regulatory Analyst
Federal/Indian APD: FED
Is the first lease penetrated for production Federal or Indian? FED
Lease number: NMNM123530
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
Mater Development Plan name:
Well in Master SUPO? NO
Master SUPO name:
Well in Master Drilling Plan? NO
Master Drilling Plan name:

Operator Name: COG OPERATING LLC

Well Name: BASEBALL CAP FEDERAL COM **Well Number:** 603H

Well Name: BASEBALL CAP FEDERAL COM **Well Number:** 603H **Well API Number:**

Field/Pool or Exploratory? Field and Pool **Field Name:** WILDCAT **Pool Name:** BONE SPRING

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

Describe other minerals:

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

Type of Well Pad: MULTIPLE WELL **Multiple Well Pad Name:** BASEBALL CAP FEDERAL COM **Number:** 603H, 605H AND 705H

Well Class: HORIZONTAL **Number of Legs:**

Well Work Type: Drill

Well Type: OIL WELL

Describe Well Type:

Well sub-Type: EXPLORATORY (WILDCAT)

Describe sub-type:

Distance to town: 12 Miles **Distance to nearest well:** 100 FT **Distance to lease line:** 200 FT

Reservoir well spacing assigned acres Measurement: 320 Acres

Well plat: COG_Baseball_603H_C102_20181029131137.pdf

Well work start Date: 05/01/2019 **Duration:** 30 DAYS

Section 3 - Well Location Table

Survey Type: RECTANGULAR

Describe Survey Type:

Datum: NAD83 **Vertical Datum:** NAVD88

Survey number:

	NS-Foot	NS Indicator	EW-Foot	EW Indicator	Twsp	Range	Section	Aliquot/Lot/Tract	Latitude	Longitude	County	State	Meridian	Lease Type	Lease Number	Elevation	MD	TVD
SHL Leg #1	390	FSL	2305	FEL	24S	34E	25	Aliquot SWSE	32.182179	-103.422637	LEA	NEW MEXICO	NEW MEXICO	F	FEE	3388	0	0
KOP Leg #1	390	FSL	2305	FEL	24S	34E	25	Aliquot SWSE	32.182179	-103.422637	LEA	NEW MEXICO	NEW MEXICO	F	FEE	3388	0	0
PPP Leg #1	330	FSL	1880	FEL	24S	34E	25	Aliquot SWSE	32.181994	-103.421265	LEA	NEW MEXICO	NEW MEXICO	F	FEE	-9214	12800	12602

Operator Name: COG OPERATING L

Well Name: BASEBALL CAP FEDERAL COM **Well Number:** 603H

	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
PPP Leg #1	0	FSL	1880	FEL	24S	34E	24	Aliquot SWSE	32.19575	-103.421253	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 123530	-9150	17400	12538
EXIT Leg #1	330	FNL	1880	FEL	24S	34E	24	Aliquot NWNE	32.209364	-103.42124	LEA	NEW MEXICO	NEW MEXICO	F	FEE	-9047	22400	12435
BHL Leg #1	200	FNL	1880	FEL	24S	34E	24	Aliquot NWNE	32.209721	-103.421241	LEA	NEW MEXICO	NEW MEXICO	F	FEE	-9242	22491	12630

Drilling Plan

Section 1 - Geologic Formations

Formation ID	Formation Name	Elevation	True Vertical Depth	Measured Depth	Lithologies	Mineral Resources	Producing Formation
1	UNKNOWN	3388	0	0		NONE	No
2	RUSTLER	2474	914	914		NONE	No
3	TOP SALT	1977	1411	1411		NONE	No
4	BASE OF SALT	-1821	5209	5209		NONE	No
5	LAMAR	-2118	5506	5506		NONE	No
6	BELL CANYON	-2154	5542	5542		NONE	No
7	CHERRY CANYON	-3151	6539	6539		NATURAL GAS,OIL	No
8	BRUSHY CANYON	-4737	8125	8125		NATURAL GAS,OIL	No
9	BONE SPRING LIME	-6039	9427	9427		NATURAL GAS,OIL	No
10	UPPER AVALON SHALE	-6247	9635	9635		NATURAL GAS,OIL	No
11	---	-6565	9953	9953		NATURAL GAS,OIL	No
12	BONE SPRING 1ST	-7218	10606	10606		NATURAL GAS,OIL	No

Operator Name: COG OPERATING L_

Well Name: BASEBALL CAP FEDERAL COM **Well Number:** 603H

Formation ID	Formation Name	Elevation	True Vertical Depth	Measured Depth	Lithologies	Mineral Resources	Producing Formation
13	BONE SPRING 2ND	-7930	11318	11318		NATURAL GAS,OIL	No
14	BONE SPRING 3RD	-8860	12248	12248		NATURAL GAS,OIL	Yes
15	WOLFCAMP	-9292	12680	12680		NATURAL GAS,OIL	No

Section 2 - Blowout Prevention

Pressure Rating (PSI): 10M **Rating Depth:** 12630

Equipment: Annular. The BOP equipment will include a Kelly cock and floor safety valve (inside BOP) and choke lines and choke manifold.
Requesting Variance? NO

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

Choke Diagram Attachment:

COG_Baseball_603H_10M_Choke_20181029133129.pdf

BOP Diagram Attachment:

COG_Baseball_603H_10M_BOP_20181029133145.pdf

COG_Baseball_603H_Flex_Hose_20181029133200.pdf

Pressure Rating (PSI): 5M **Rating Depth:** 11800

Equipment: Annular. The BOP equipment will include a Kelly cock and floor safety valve (inside BOP) and choke lines and choke manifold.
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.
Testing Procedure: BOP/BOPE will be tested by an independent service company to 250 psi low and the high pressure indicated above per Onshore Order 2 requirements. The System may be upgraded to a higher pressure but still tested to the working pressure listed in the table above. If the system is upgraded all of the components installed will be functional and tested.

Choke Diagram Attachment:

COG_Baseball_603H_5M_Choke_20181029133220.pdf

BOP Diagram Attachment:

COG_Baseball_603H_5M_BOP_20181029133228.pdf

Operator Name: COG OPERATING L

Well Name: BASEBALL CAP FEDERAL COM **Well Number:** 603H

COG_Baseball_603H_5M_Choke_20181029133220.pdf

COG_Baseball_603H_Flex_Hose_20181029133310.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	17.5	13.375	NEW	API	N	0	1300	0	1300	-9530	-10415	1300	J-55	54.5	STC	1.94	5.42	DRY	7.25	DRY	7.
2	INTERMEDIATE	12.25	9.625	NEW	API	N	0	11800	0	11800	-9530	-21730	11800	HCL-80	47	OTHER - BTC	1.49	1.06	DRY	2.02	DRY	2.
3	PRODUCTION	8.5	5.5	NEW	API	N	0	22491	0	22491	-9530	-32300	22491	P-110	23	OTHER - BTC	1.77	2.09	DRY	2.49	DRY	2.

Casing Attachments

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

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

COG_Baseball_603H_Casing_Plan_20181029133354.pdf

Operator Name: COG OPERATING L...

Well Name: BASEBALL CAP FEDERAL COM **Well Number:** 603H

Casing Attachments

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

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

COG_Baseball_603H_Casing_Plan_20181029133402.pdf

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

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

COG_Baseball_603H_Casing_Plan_20181029133410.pdf

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	1300	590	1.75	13.5	1032	50	Class C	4% Gel
SURFACE	Tail		0	1300	250	1.34	14.8	335	50	Class C	2% CaCl2
INTERMEDIATE	Lead		0	11800	940	2.8	11	2632	50	NeoCem	No Additives
INTERMEDIATE	Tail		0	11800	300	1.1	16.4	330	50	Class H	No Additives

Operator Name: COG OPERATING L[illegible]

Well Name: BASEBALL CAP FEDERAL COM **Well Number:** 603H

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
PRODUCTION	Lead		0	22491	400	2	12.7	800	35	Lead: 35:65:6 H Blend	No additives
PRODUCTION	Tail		0	22491	2950	1.24	14.4	3658	35	Tail: 50:50:2 Class H Blend	No additives

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
1300	11800	OTHER : Diesel Brine Emulsion	8.6	9.4							Diesel Brine Emulsion
11800	22491	OIL-BASED MUD	10.5	12.5							OBM
0	1300	OTHER : Fresh water gel	8.4	8.6							Fresh water gel

Operator Name: COG OPERATING L[illegible]

Well Name: BASEBALL CAP FEDERAL COM **Well Number:** 603H

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:

CNL,GR

Coring operation description for the well:

None planned

Section 7 - Pressure

Anticipated Bottom Hole Pressure: 8210 **Anticipated Surface Pressure:** 5431.4

Anticipated Bottom Hole Temperature(F): 180

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_Baseball_603H_H2S_Schem_20181029134043.pdf
COG_Baseball_603H_H2S_SUP_20181029134050.pdf

Section 8 - Other Information

Proposed horizontal/directional/multi-lateral plan submission:

COG_Baseball_603H_AC_Rpt_20181029134105.pdf
COG_Baseball_603H_Direct_Plan_20181029134115.pdf

Other proposed operations facets description:

None

Other proposed operations facets attachment:

COG_Baseball_603H_Drill_Plan_20181029134124.pdf

Other Variance attachment:

COG_5M_Variance_Well_Plan_20180817102532.pdf

SUPO

Operator Name: COG OPERATING L.

Well Name: BASEBALL CAP FEDERAL COM **Well Number:** 603H

Section 1 - Existing Roads

Will existing roads be used? YES

Existing Road Map:

COG_Baseball_603H_Ext._Rd_20181029134143.pdf

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

ROW ID(s)

ID:

Do the existing roads need to be improved? NO

Existing Road Improvement Description:

Existing Road Improvement Attachment:

Section 2 - New or Reconstructed Access Roads

Will new roads be needed? YES

New Road Map:

COG_Baseball_603H_Maps_Plats_20181029134200.pdf

New road type: RESOURCE

Length: 0 Feet **Width (ft.):** 30

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

Army Corp of Engineers (ACOE) permit required? NO

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? NO

New road access plan attachment:

Access road engineering design? NO

Access road engineering design attachment:

Access surfacing type: OTHER

Access topsoil source: ONSITE

Operator Name: COG OPERATING L.

Well Name: BASEBALL CAP FEDERAL COM **Well Number:** 603H

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. Re-routing access road around proposed well location.

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

Additional Attachment(s):

Section 3 - Location of Existing Wells

Existing Wells Map? YES

Attach Well map:

COG_Baseball_603H_1Mile_Data_20181029134224.pdf

Existing Wells description:

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

Submit or defer a Proposed Production Facilities plan? DEFER

Estimated Production Facilities description: A Central Tank Battery and facilities will be permitted and constructed at a later date, once the well is completed. The battery and facilities will be installed according to API specifications.

Section 5 - Location and Types of Water Supply

Water Source Table

Operator Name: COG OPERATING L

Well Name: BASEBALL CAP FEDERAL COM **Well Number:** 603H

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

Describe type: Fresh water will be furnished by Dinwiddle Cattle Co., CP-1285 water well located in Section 5, T26S, R36E.

Source latitude: **Source longitude:**

Source datum:

Water source permit type: PRIVATE CONTRACT

Source land ownership: PRIVATE

Water source transport method: PIPELINE

Source transportation land ownership: PRIVATE

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

Source volume (gal): 18900000

Water source use type: INTERMEDIATE/PRODUCTION CASING **Water source type:** OTHER

Describe type: Brine water will be provided by Malaga Brine Station II, located in section 12. T23S. R28E.

Source latitude: **Source longitude:**

Source datum:

Water source permit type: PRIVATE CONTRACT

Source land ownership: COMMERCIAL

Water source transport method: TRUCKING

Source transportation land ownership: COMMERCIAL

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

Source volume (gal): 1260000

Water source and transportation map:

COG_Baseball_603H_Brine_H20_20181029134245.pdf

COG_Baseball_603H_Fesh_H20_20181029134257.pdf

Water source comments: Fresh water will be furnished by Dinwiddle Cattle Co., CP-1285 water well located in Section 5, T26S, R36E. Brine water will be provided by Malaga Brine Station II, located in section 12. T23S. R28E.

New water well? NO

New Water Well Info

Well latitude: **Well Longitude:** **Well datum:**

Well target aquifer:

Est. depth to top of aquifer(ft): **Est thickness of aquifer:**

Aquifer comments:

Aquifer documentation:

Operator Name: COG OPERATING L.

Well Name: BASEBALL CAP FEDERAL COM **Well Number:** 603H

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

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

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

Drilling method: **Drill material:**

Grout material: **Grout depth:**

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

Well Production type: **Completion Method:**

Water well additional information:

State appropriation permit:

Additional information attachment:

Section 6 - Construction Materials

Construction Materials description: 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 Quail Ranch LLC (CONCHO) caliche pit located in Section 6. T24S. R35E. Phone: 575-748-6940

Construction Materials source location attachment:

Section 7 - Methods for Handling Waste

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

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:

Operator Name: COG OPERATING L

Well Name: BASEBALL CAP FEDERAL COM **Well Number:** 603H

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.

Reserve Pit

Reserve Pit being used? NO

Temporary disposal of produced water into reserve pit?

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

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

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

Reserve pit liner

Reserve pit liner specifications and installation description

Cuttings Area

Cuttings Area being used? NO

Are you storing cuttings on location? YES

Description of cuttings location 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

Operator Name: COG OPERATING L_ _

Well Name: BASEBALL CAP FEDERAL COM **Well Number:** 603H

Cuttings area liner specifications and installation description

Section 8 - Ancillary Facilities

Are you requesting any Ancillary Facilities?: YES

Ancillary Facilities attachment:

COG_Baseball_603H_GCP_20181029134326.pdf

Comments: Gas Capture Plan attached

Section 9 - Well Site Layout

Well Site Layout Diagram:

COG_Baseball_603H_Layout_20181029134341.pdf

COG_Baseball_603H_Reclamation_20190208075020.pdf

Comments: A Central Tank Battery and facilities will be permitted and constructed at a later date, once the well is completed. 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: BASEBALL CAP FEDERAL COM

Multiple Well Pad Number: 603H, 605H AND 705H

Recontouring attachment:

Drainage/Erosion control construction: Immediately following construction approximately 200' of straw waddles will be placed on the north side of the notheast corner, 200' on the east side starting on the northeast corner, and 200' on the south side eastern side extending from the southeast corner back to the west of the location, to reduce sediment impacts to fragile/sensitive soils.

Drainage/Erosion control reclamation: N/A

Well pad proposed disturbance (acres): 3.67	**Well pad interim reclamation (acres):** 0.15	**Well pad long term disturbance (acres):** 2.35
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: 3.67	**Total interim reclamation:** 0.15	**Total long term disturbance:** 2.35

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.

Operator Name: COG OPERATING L

Well Name: BASEBALL CAP FEDERAL COM **Well Number:** 603H

Topsoil redistribution: Due to future wells being located on this location, no reclamation will be necessary.

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? NO

Non native seed description:

S dling transplant description:

Will seedlings be transplanted for this project? NO

Seedling transplant description attachment:

Will seed be harvested for use in site reclamation? NO

Seed harvest description:

Seed harvest description attachment:

Seed Management

Seed Table

Seed type:

Seed source:

Seed name:

Source name:

Source address:

Source phone:

Seed cultivar:

Seed use location:

PLS pounds per acre:

Proposed seeding season:

Operator Name: COG OPERATING L[illegible]

Well Name: BASEBALL CAP FEDERAL COM **Well Number:** 603H

Seed Summary	
Seed Type	**Pounds/Acre**

Total pounds/Acre:

Seed reclamation attachment:

Operator Contact/Responsible Official Contact Info

First Name: Gerald **Last Name:** Herrera

Phone: (432)260-7399 **Email:** gherrera@concho.com

Seedbed prep:

Seed BMP:

Seed method:

Existing invasive species? NO

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:

COG_Baseball_603H_Closed_Loop_20181029134459.pdf

Section 11 - Surface Ownership

Disturbance type: WELL PAD

Describe:

Surface Owner: PRIVATE OWNERSHIP

Other surface owner description:

BIA Local Office:

BOR Local Office:

Operator Name: COG OPERATING L[illegible]

Well Name: BASEBALL CAP FEDERAL COM **Well Number:** 603H

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:**

Fee Owner: Quail Ranch LLC **Fee Owner Address:** 600 W. Illinois Ave Midland, TX 79701

Phone: (575)748-6940 **Email:**

Surface use plan certification: NO

Surface use plan certification document:

Surface access agreement or bond: Agreement

Surface Access Agreement Need description: Bert Madera sold Pitchfork Ranch to Quail Ranch LLC (Concho)

Surface Access Bond BLM or Forest Service:

BLM Surface Access Bond number:

USFS Surface access bond number:

Section 12 - Other Information

Right of Way needed? NO **Use APD as ROW?**

ROW Type(s):

ROW Applications

SUPO Additional Information: Surface Use & Operating Plan.

Use a previously conducted onsite? YES

Previous Onsite information: Onsite completed on 8/07/2018 by Gerald Herrera (COG) and Jeff Robertson (BLM).

Operator Name: COG OPERATING L[illegible]

Well Name: BASEBALL CAP FEDERAL COM **Well Number:** 603H

Other SUPO Attachment

COG_Baseball_603H_1Mile_Data_20181029134530.pdf
COG_Baseball_603H_Brine_H20_20181029134542.pdf
COG_Baseball_603H_C102_20181029134549.pdf
COG_Baseball_603H_Certif_20181029134600.pdf
COG_Baseball_603H_Closed_Loop_20181029134615.pdf
COG_Baseball_603H_Ext._Rd_20181029134627.pdf
COG_Baseball_603H_Fesh_H20_20181029134638.pdf
COG_Baseball_603H_Layout_20181029134649.pdf
COG_Baseball_603H_Maps_Plats_20181029134700.pdf
COG_Baseball_603H_SUP_20181029160007.pdf
COG_Baseball_603H_Reclamation_20190208075053.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? NO

Produced Water Disposal (PWD) Location:

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

Lined pit PWD on or off channel:

Lined pit PWD discharge volume (bbl/day):

Lined pit specifications:

Pit liner description:

Pit liner manufacturers information:

Operator Name: COG OPERATING LLC

Well Name: BASEBALL CAP FEDERAL COM **Well Number:** 603H

Precipitated solids disposal:

Decribe precipitated solids disposal:

Precipitated solids disposal permit:

Lined pit precipitated solids disposal schedule:

Lined pit precipitated solids disposal schedule attachment:

Lined pit reclamation description:

Lined pit reclamation attachment:

Leak detection system description:

Leak detection system attachment:

Lined pit Monitor description:

Lined pit Monitor attachment:

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

Is the reclamation bond a rider under the BLM bond?

Lined pit bond number:

Lined pit bond amount:

Additional bond information attachment:

Section 3 - Unlined Pits

Would you like to utilize Unlined Pit PWD options? NO

Produced Water Disposal (PWD) Location:

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

Unlined pit PWD on or off channel:

Unlined pit PWD discharge volume (bbl/day):

Unlined pit specifications:

Precipitated solids disposal:

Decribe precipitated solids disposal:

Precipitated solids disposal permit:

Unlined pit precipitated solids disposal schedule:

Unlined pit precipitated solids disposal schedule attachment:

Unlined pit reclamation description:

Unlined pit reclamation attachment:

Unlined pit Monitor description:

Unlined pit Monitor attachment:

Operator Name: COG OPERATING L[illegible]

Well Name: BASEBALL CAP FEDERAL COM **Well Number:** 603H

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

Beneficial use user confirmation:

Estimated depth of the shallowest aquifer (feet):

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

TDS lab results:

Geologic and hydrologic evidence:

State authorization:

Unlined Produced Water Pit Estimated percolation:

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

Is the reclamation bond a rider under the BLM bond?

Unlined pit bond number:

Unlined pit bond amount:

Additional bond information attachment:

Section 4 - Injection

Would you like to utilize Injection PWD options? NO

Produced Water Disposal (PWD) Location:

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

Injection PWD discharge volume (bbl/day):

Injection well mineral owner:

Injection well type:

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

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

Injection well new surface disturbance (acres):

Minerals protection information:

Mineral protection attachment:

Underground Injection Control (UIC) Permit?

UIC Permit attachment:

Section 5 - Surface Discharge

Would you like to utilize Surface Discharge PWD options? NO

Operator Name: COG OPERATING LL

Well Name: BASEBALL CAP FEDERAL COM **Well Number:** 603H

Produced Water Disposal (PWD) Location:

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

Surface discharge PWD discharge volume (bbl/day):

Surface Discharge NPDES Permit?

Surface Discharge NPDES Permit attachment:

Surface Discharge site facilities information:

Surface discharge site facilities map:

Section 6 - Other

Would you like to utilize Other PWD options? NO

Produced Water Disposal (PWD) Location:

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

Other PWD discharge volume (bbl/day):

Other PWD type description:

Other PWD type attachment:

Have other regulatory requirements been met?

Other regulatory requirements attachment:

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 Name: COG OPERATING L[illegible]

Well Name: BASEBALL CAP FEDERAL COM **Well Number:** 603H

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: Mayte Reyes **Signed on:** 10/27/2018

Title: Regulatory Analyst

Street Address: 2208 W Main Street

City: Artesia **State:** NM **Zip:** 88210

Phone: (575)748-6945

Email address: Mreyes1@concho.com

Field Representative

Representative Name: Gerald Herrera

Street Address: 2208 West Main Street

City: Artesia **State:** NM **Zip:** 88210

Phone: (575)748-6940

Email address: gherrera@concho.com

Payment Info

Payment

APD Fee Payment Method: PAY.GOV

pay.gov Tracking ID: 26D4UE0M

COG Operating, LLC - Baseball Cap Federal Com 603H

1. Geologic Formations

TVD of target	12,630'	Pilot hole depth	NA
MD at TD:	22,491'	Deepest expected fresh water:	300'

Formation	Depth (TVD) from KB	Water/Mineral Bearing/ Target Zone?	Hazards*
Quaternary Fill	Surface	Water	
Rustler	914	Water	
Top of Salt	1411	Salt	
Base of Salt	5209	Salt	
Lamar	5506	Salt Water	
Bell Canyon	5542	Salt Water	
Cherry Canyon	6539	Oil/Gas	
Brushy Canyon	8125	Oil/Gas	
Bone Spring Lime	9427	Oil/Gas	
U. Avalon Shale	9635	Oil/Gas	
L. Avalon Shale	9953	Oil/Gas	
1st Bone Spring Sand	10606	Oil/Gas	
2nd Bone Spring Sand	11318	Oil/Gas	
3rd Bone Spring Sand	12248	Target Oil/Gas	
Wolfcamp	12680	Not Penetrated	

2. Casing Program

Hole Size	Casing From	Casing To	Csg. Size	Weight (lbs)	Grade	Conn.	SF Collapse	SF Burst	SF Tension
17.5"	0	1300	13.375"	54.5	J55	STC	1.94	5.42	7.25
12.25"	0	11800	9.625"	47	HCL80	BTC	1.49	1.06	2.02
8.5	0	22,491	5.5"	23	P110	BTC	1.77	2.09	2.49
			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. Intermediate burst based on 0.7 frac gradient at the shoe with Gas Gradient 0.1 psi/ft to surface.
All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.h

	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.	590	13.5	1.75	9	12	Lead: Class C + 4% Gel
	250	14.8	1.34	6.34	8	Tail: Class C + 2% CaCl2
Inter. Stage1	940	11	2.8	19	48	Lead: NeoCem
	300	16.4	1.1	5	8	Tail: Class H
DV Tool @ 5500'						
Inter. Stage2	760	11	2.8	19	48	Lead: NeoCem
	100	14.8	1.35	6.34	8	Tail: Class C + 2% Cacl
5.5 Prod	400	12.7	2	10.6	16	Lead: 35:65:6 H Blend
	2950	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'	50%
1st Intermediate	0'	50%
Production	11,300'	35%

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:
12-1/4"	13-5/8"	5M	Annular	x	2500 psi
			Blind Ram	x	5M
			Pipe Ram	x	
			Double Ram	x	
			Other*		
8 1/2"	13-5/8"	10M	5M Annular	x	5000 psi
			Blind Ram	x	10M
			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.

Y	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?
N	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	8.4 - 8.6	28-29	N/C
Surf csg	Int shoe	Diesel Brine Emul	8.6 - 9.4	30-40	N/C
Int shoe	Lateral TD	OBM	10.5 - 12.5	30-40	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.
N	Are 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	8210 psi at 12630' TVD
Abnormal Temperature	NO 180 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?
N	Is casing pre-set?

x	H2S Plan.
x	BOP & Choke Schematics.
x	Directional Plan
x	5M Annular Variance

CONCHO

Concho Resources

Lea County, NM
Baseball Cap Federal Com
Baseball Cap Federal Com #603H

Wellbore #1

Plan: plan1

Standard Planning Report

25 October, 2018

SCOUT DOWNHOLE INC™

CONCHO

Project: Lea County, NM
Site: Baseball Cap Federal Com
Well: Baseball Cap Federal Com #603H
Depth Reference: GL 3387.7' + 26' KB @ 3413.70usft (Independence 205)
SHL Northing: 431145.50
SHL Easting: 781902.60
Rig: Independence 205
Plan: plan1

SCOUT DOWNHOLE INC ™

SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Annotation
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
4000.00	0.00	0.00	4000.00	0.00	0.00	0.00	0.00	0.00	Start Build 2.00
4250.00	5.00	98.51	4249.68	-1.61	10.78	2.00	98.51	-1.70	Start 4679.33 hold at 4250.00 MD
8929.33	5.00	98.51	8911.21	-61.99	414.12	0.00	0.00	-65.16	Start Drop -2.00
9179.33	0.00	0.00	9160.89	-63.60	424.90	2.00	180.00	-66.86	Start 2894.97 hold at 9179.33 MD
12074.30	0.00	0.00	12055.86	-63.60	424.90	0.00	0.00	-66.86	Start DLS 10.00 TFO 359.56
12986.06	91.18	359.56	12628.70	521.10	420.40	10.00	359.56	517.85	Start 9504.28 hold at 12986.06 MD
22490.34	91.18	359.56	12433.70	10023.10	347.30	0.00	0.00	10020.14	TD @ 22490.34' MD

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
912.70	912.70	Rustler
1409.70	1409.70	TOS
5207.70	5211.68	BOS (Fletcher)
5504.70	5509.81	LMAR (Top Delaware)
5540.70	5545.95	BLCN
6537.70	6546.76	CYCN
8123.70	8138.82	BYCN
9425.70	9444.14	Bone Sprg (BSGL)
9633.70	9652.14	U Avalon Sh
9951.70	9970.14	L Avalon Sh
10469.70	10488.14	B Avalon Sh
10604.70	10623.14	FBSG_sand
11316.70	11335.14	SBSG_sand
11647.70	11666.14	SBSG_sand_Base
12246.70	12268.86	TBSG_sand

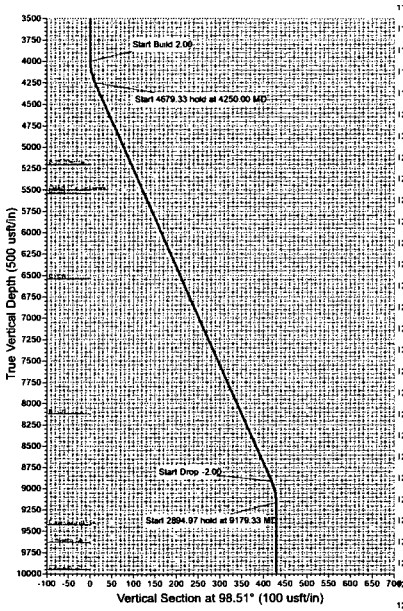
DESIGN TARGET DETAILS

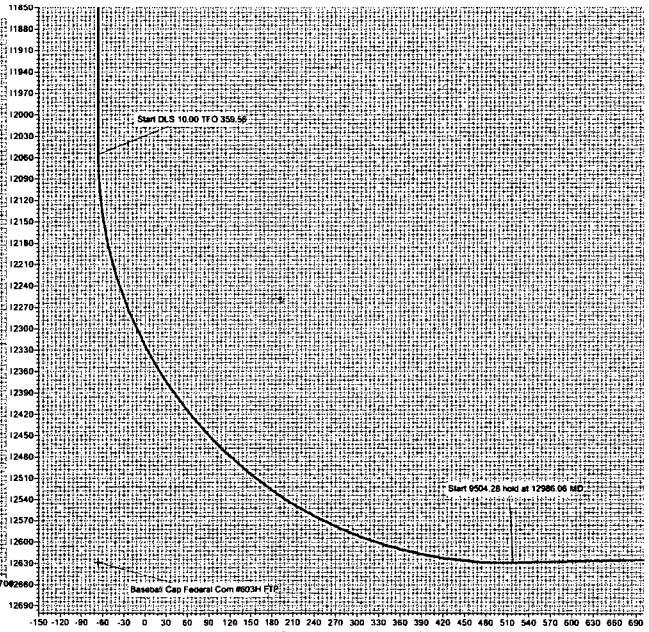
Name	TVD	+N/-S	+E/-W	Northing	Easting
Baseball Cap Federal Com #603H FTP	12628.70	-63.60	424.90	431081.90	782327.50
Baseball Cap Federal Com #603H LTP	12433.70	9893.20	348.40	441038.70	782251.00
Baseball Cap Federal Com #603H PBHL	12433.70	10023.10	347.30	441168.60	782249.90

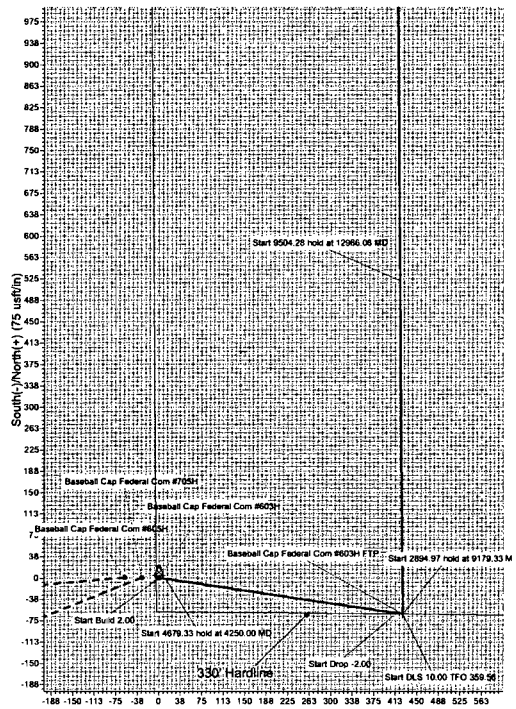
T G M

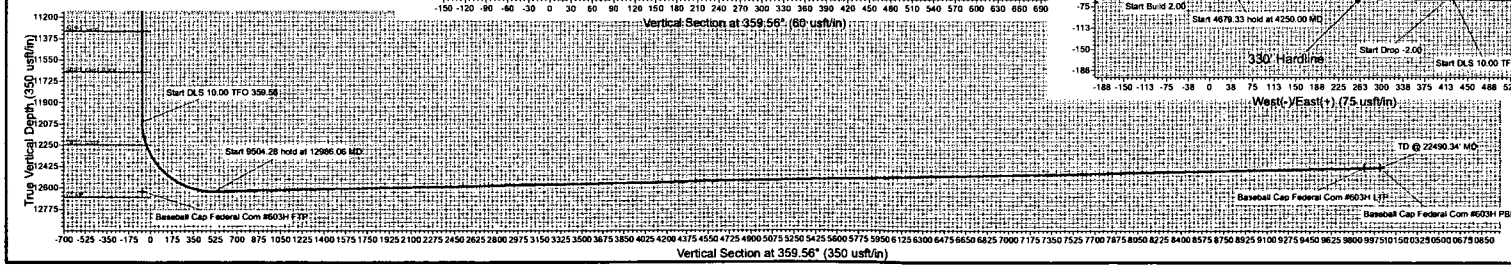
Azimuths to Grid North
True North: -0.48°
Magnetic North: 6.20°

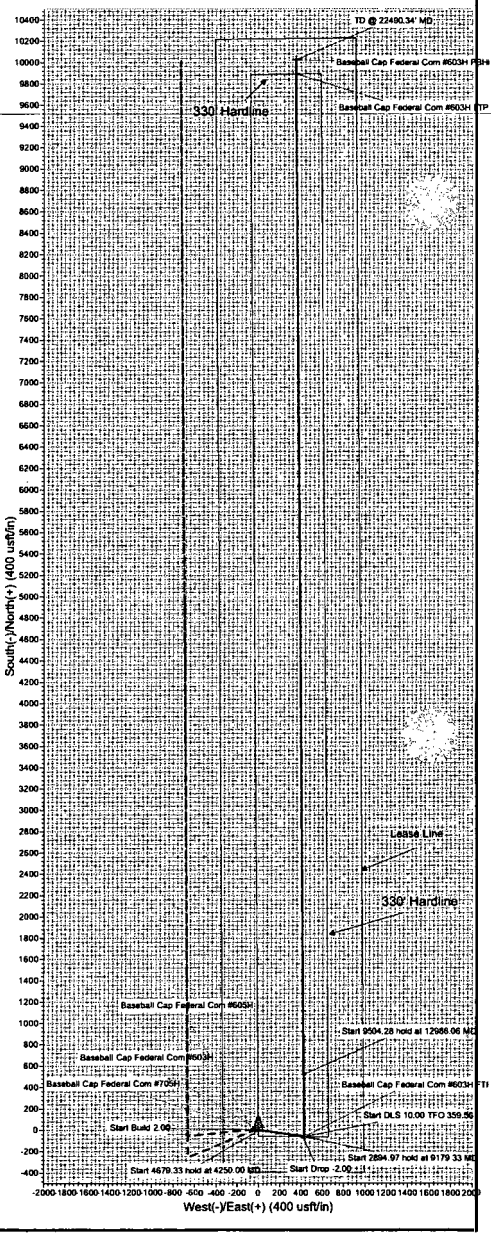
Magnetic Field
Strength: 47869.0snT
Dip Angle: 59.85°
Date: 10/25/2018
Model: HDGM











Database:	EDM 5000.14 Single User Db	**Local Co-ordinate Reference:**	Well Baseball Cap Federal Com #603H
Company:	Concho Resources	**TVD Reference:**	GL 3387.7' + 26' KB @ 3413.70usft (Independence 205)
Project:	Lea County, NM	**MD Reference:**	GL 3387.7' + 26' KB @ 3413.70usft (Independence 205)
Site:	Baseball Cap Federal Com	**North Reference:**	Grid
Well:	Baseball Cap Federal Com #603H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	plan1		

Project Lea 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 Baseball Cap Federal Com

Site Position:		**Northing:**	431,145.50 usft	**Latitude:**	32° 10' 55.394 N
From:	Map	**Easting:**	781,902.60 usft	**Longitude:**	103° 25' 19.799 W
Position Uncertainty:	0.00 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	0.49 °

Well Baseball Cap Federal Com #603H

Well Position	**+N/-S**	0.00 usft	**Northing:**	431,145.50 usft	**Latitude:**	32° 10' 55.394 N
	+E/-W	0.00 usft	**Easting:**	781,902.60 usft	**Longitude:**	103° 25' 19.799 W
Position Uncertainty		0.00 usft	**Wellhead Elevation:**		**Ground Level:**	3,387.70 usft

Wellbore Wellbore #1

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	10/25/18	6.68	59.85	47,869.00000000

Design plan1

Audit Notes:

Version:		**Phase:**	PROTOTYPE	**Tie On Depth:**	0.00

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	359.56

Plan Survey Tool Program **Date** 10/25/18

	Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	22,490.34	plan1 (Wellbore #1)	MWD+HRGM	
				OWSG MWD + HRGM	

Database:	EDM 5000.14 Single User Db	**Local Co-ordinate Reference:**	Well Baseball Cap Federal Com #603H
Company:	Concho Resources	**TVD Reference:**	GL 3387.7' + 26' KB @ 3413.70usft (Independence 205)
Project:	Lea County, NM	**MD Reference:**	GL 3387.7' + 26' KB @ 3413.70usft (Independence 205)
Site:	Baseball Cap Federal Com	**North Reference:**	Grid
Well:	Baseball Cap Federal Com #603H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	plan1		

Plan Sections

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
4,000.00	0.00	0.00	4,000.00	0.00	0.00	0.00	0.00	0.00	0.00	
4,250.00	5.00	98.51	4,249.68	-1.61	10.78	2.00	2.00	0.00	98.51	
8,929.33	5.00	98.51	8,911.21	-61.99	414.12	0.00	0.00	0.00	0.00	
9,179.33	0.00	0.00	9,160.89	-63.60	424.90	2.00	-2.00	0.00	180.00	
12,074.30	0.00	0.00	12,055.86	-63.60	424.90	0.00	0.00	0.00	0.00	
12,986.06	91.18	359.56	12,628.70	521.10	420.40	10.00	10.00	-0.05	359.56	
22,490.34	91.18	359.56	12,433.70	10,023.10	347.30	0.00	0.00	0.00	0.00	

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Site:	Baseball Cap Federal Com	**North Reference:**	Grid
Well:	Baseball Cap Federal Com #603H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	plan1		

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)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00
2,100.00	0.00	0.00	2,100.00	0.00	0.00	0.00	0.00	0.00	0.00
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00
2,300.00	0.00	0.00	2,300.00	0.00	0.00	0.00	0.00	0.00	0.00
2,400.00	0.00	0.00	2,400.00	0.00	0.00	0.00	0.00	0.00	0.00
2,500.00	0.00	0.00	2,500.00	0.00	0.00	0.00	0.00	0.00	0.00
2,600.00	0.00	0.00	2,600.00	0.00	0.00	0.00	0.00	0.00	0.00
2,700.00	0.00	0.00	2,700.00	0.00	0.00	0.00	0.00	0.00	0.00
2,800.00	0.00	0.00	2,800.00	0.00	0.00	0.00	0.00	0.00	0.00
2,900.00	0.00	0.00	2,900.00	0.00	0.00	0.00	0.00	0.00	0.00
3,000.00	0.00	0.00	3,000.00	0.00	0.00	0.00	0.00	0.00	0.00
3,100.00	0.00	0.00	3,100.00	0.00	0.00	0.00	0.00	0.00	0.00
3,200.00	0.00	0.00	3,200.00	0.00	0.00	0.00	0.00	0.00	0.00
3,300.00	0.00	0.00	3,300.00	0.00	0.00	0.00	0.00	0.00	0.00
3,400.00	0.00	0.00	3,400.00	0.00	0.00	0.00	0.00	0.00	0.00
3,500.00	0.00	0.00	3,500.00	0.00	0.00	0.00	0.00	0.00	0.00
3,600.00	0.00	0.00	3,600.00	0.00	0.00	0.00	0.00	0.00	0.00
3,700.00	0.00	0.00	3,700.00	0.00	0.00	0.00	0.00	0.00	0.00
3,800.00	0.00	0.00	3,800.00	0.00	0.00	0.00	0.00	0.00	0.00
3,900.00	0.00	0.00	3,900.00	0.00	0.00	0.00	0.00	0.00	0.00
4,000.00	0.00	0.00	4,000.00	0.00	0.00	0.00	0.00	0.00	0.00
Start Build 2.00									
4,100.00	2.00	98.51	4,099.98	-0.26	1.73	-0.27	2.00	2.00	0.00
4,200.00	4.00	98.51	4,199.84	-1.03	6.90	-1.09	2.00	2.00	0.00
4,250.00	5.00	98.51	4,249.68	-1.61	10.78	-1.70	2.00	2.00	0.00
Start 4679.33 hold at 4250.00 MD									
4,300.00	5.00	98.51	4,299.49	-2.26	15.09	-2.37	0.00	0.00	0.00
4,400.00	5.00	98.51	4,399.11	-3.55	23.71	-3.73	0.00	0.00	0.00
4,500.00	5.00	98.51	4,498.73	-4.84	32.33	-5.09	0.00	0.00	0.00
4,600.00	5.00	98.51	4,598.35	-6.13	40.95	-6.44	0.00	0.00	0.00
4,700.00	5.00	98.51	4,697.97	-7.42	49.57	-7.80	0.00	0.00	0.00
4,800.00	5.00	98.51	4,797.59	-8.71	58.19	-9.16	0.00	0.00	0.00

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Project:	Lea County, NM	**MD Reference:**	GL 3387.7' + 26' KB @ 3413.70usft (Independence 205)
Site:	Baseball Cap Federal Com	**North Reference:**	Grid
Well:	Baseball Cap Federal Com #603H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	plan1		

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)
4,900.00	5.00	98.51	4,897.21	-10.00	66.81	-10.51	0.00	0.00	0.00
5,000.00	5.00	98.51	4,996.83	-11.29	75.43	-11.87	0.00	0.00	0.00
5,100.00	5.00	98.51	5,096.45	-12.58	84.05	-13.23	0.00	0.00	0.00
5,200.00	5.00	98.51	5,196.07	-13.87	92.67	-14.58	0.00	0.00	0.00
5,300.00	5.00	98.51	5,295.69	-15.16	101.29	-15.94	0.00	0.00	0.00
5,400.00	5.00	98.51	5,395.31	-16.45	109.91	-17.29	0.00	0.00	0.00
5,500.00	5.00	98.51	5,494.93	-17.74	118.53	-18.65	0.00	0.00	0.00
5,600.00	5.00	98.51	5,594.55	-19.03	127.15	-20.01	0.00	0.00	0.00
5,700.00	5.00	98.51	5,694.17	-20.32	135.76	-21.36	0.00	0.00	0.00
5,800.00	5.00	98.51	5,793.78	-21.61	144.38	-22.72	0.00	0.00	0.00
5,900.00	5.00	98.51	5,893.40	-22.90	153.00	-24.08	0.00	0.00	0.00
6,000.00	5.00	98.51	5,993.02	-24.19	161.62	-25.43	0.00	0.00	0.00
6,100.00	5.00	98.51	6,092.64	-25.48	170.24	-26.79	0.00	0.00	0.00
6,200.00	5.00	98.51	6,192.26	-26.77	178.86	-28.15	0.00	0.00	0.00
6,300.00	5.00	98.51	6,291.88	-28.06	187.48	-29.50	0.00	0.00	0.00
6,400.00	5.00	98.51	6,391.50	-29.35	196.10	-30.86	0.00	0.00	0.00
6,500.00	5.00	98.51	6,491.12	-30.64	204.72	-32.21	0.00	0.00	0.00
6,600.00	5.00	98.51	6,590.74	-31.93	213.34	-33.57	0.00	0.00	0.00
6,700.00	5.00	98.51	6,690.36	-33.22	221.96	-34.93	0.00	0.00	0.00
6,800.00	5.00	98.51	6,789.98	-34.51	230.58	-36.28	0.00	0.00	0.00
6,900.00	5.00	98.51	6,889.60	-35.80	239.20	-37.64	0.00	0.00	0.00
7,000.00	5.00	98.51	6,989.22	-37.09	247.82	-39.00	0.00	0.00	0.00
7,100.00	5.00	98.51	7,088.84	-38.38	256.44	-40.35	0.00	0.00	0.00
7,200.00	5.00	98.51	7,188.46	-39.67	265.06	-41.71	0.00	0.00	0.00
7,300.00	5.00	98.51	7,288.08	-40.96	273.68	-43.07	0.00	0.00	0.00
7,400.00	5.00	98.51	7,387.70	-42.25	282.30	-44.42	0.00	0.00	0.00
7,500.00	5.00	98.51	7,487.32	-43.55	290.92	-45.78	0.00	0.00	0.00
7,600.00	5.00	98.51	7,586.94	-44.84	299.54	-47.13	0.00	0.00	0.00
7,700.00	5.00	98.51	7,686.55	-46.13	308.16	-48.49	0.00	0.00	0.00
7,800.00	5.00	98.51	7,786.17	-47.42	316.78	-49.85	0.00	0.00	0.00
7,900.00	5.00	98.51	7,885.79	-48.71	325.39	-51.20	0.00	0.00	0.00
8,000.00	5.00	98.51	7,985.41	-50.00	334.01	-52.56	0.00	0.00	0.00
8,100.00	5.00	98.51	8,085.03	-51.29	342.63	-53.92	0.00	0.00	0.00
8,200.00	5.00	98.51	8,184.65	-52.58	351.25	-55.27	0.00	0.00	0.00
8,300.00	5.00	98.51	8,284.27	-53.87	359.87	-56.63	0.00	0.00	0.00
8,400.00	5.00	98.51	8,383.89	-55.16	368.49	-57.98	0.00	0.00	0.00
8,500.00	5.00	98.51	8,483.51	-56.45	377.11	-59.34	0.00	0.00	0.00
8,600.00	5.00	98.51	8,583.13	-57.74	385.73	-60.70	0.00	0.00	0.00
8,700.00	5.00	98.51	8,682.75	-59.03	394.35	-62.05	0.00	0.00	0.00
8,800.00	5.00	98.51	8,782.37	-60.32	402.97	-63.41	0.00	0.00	0.00
8,900.00	5.00	98.51	8,881.99	-61.61	411.59	-64.77	0.00	0.00	0.00
8,929.33	5.00	98.51	8,911.21	-61.99	414.12	-65.16	0.00	0.00	0.00
Start Drop -2.00									
9,000.00	3.59	98.51	8,981.68	-62.77	419.35	-65.99	2.00	-2.00	0.00
9,100.00	1.59	98.51	9,081.57	-63.44	423.81	-66.69	2.00	-2.00	0.00
9,179.33	0.00	0.00	9,160.89	-63.60	424.90	-66.86	2.00	-2.00	-124.18
Start 2894.97 hold at 9179.33 MD									
9,200.00	0.00	0.00	9,181.56	-63.60	424.90	-66.86	0.00	0.00	0.00
9,300.00	0.00	0.00	9,281.56	-63.60	424.90	-66.86	0.00	0.00	0.00
9,400.00	0.00	0.00	9,381.56	-63.60	424.90	-66.86	0.00	0.00	0.00
9,500.00	0.00	0.00	9,481.56	-63.60	424.90	-66.86	0.00	0.00	0.00
9,600.00	0.00	0.00	9,581.56	-63.60	424.90	-66.86	0.00	0.00	0.00

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Wellbore:	Wellbore #1		
Design:	plan1		

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)
9,700.00	0.00	0.00	9,681.56	-63.60	424.90	-66.86	0.00	0.00	0.00
9,800.00	0.00	0.00	9,781.56	-63.60	424.90	-66.86	0.00	0.00	0.00
9,900.00	0.00	0.00	9,881.56	-63.60	424.90	-66.86	0.00	0.00	0.00
10,000.00	0.00	0.00	9,981.56	-63.60	424.90	-66.86	0.00	0.00	0.00
10,100.00	0.00	0.00	10,081.56	-63.60	424.90	-66.86	0.00	0.00	0.00
10,200.00	0.00	0.00	10,181.56	-63.60	424.90	-66.86	0.00	0.00	0.00
10,300.00	0.00	0.00	10,281.56	-63.60	424.90	-66.86	0.00	0.00	0.00
10,400.00	0.00	0.00	10,381.56	-63.60	424.90	-66.86	0.00	0.00	0.00
10,500.00	0.00	0.00	10,481.56	-63.60	424.90	-66.86	0.00	0.00	0.00
10,600.00	0.00	0.00	10,581.56	-63.60	424.90	-66.86	0.00	0.00	0.00
10,700.00	0.00	0.00	10,681.56	-63.60	424.90	-66.86	0.00	0.00	0.00
10,800.00	0.00	0.00	10,781.56	-63.60	424.90	-66.86	0.00	0.00	0.00
10,900.00	0.00	0.00	10,881.56	-63.60	424.90	-66.86	0.00	0.00	0.00
11,000.00	0.00	0.00	10,981.56	-63.60	424.90	-66.86	0.00	0.00	0.00
11,100.00	0.00	0.00	11,081.56	-63.60	424.90	-66.86	0.00	0.00	0.00
11,200.00	0.00	0.00	11,181.56	-63.60	424.90	-66.86	0.00	0.00	0.00
11,300.00	0.00	0.00	11,281.56	-63.60	424.90	-66.86	0.00	0.00	0.00
11,400.00	0.00	0.00	11,381.56	-63.60	424.90	-66.86	0.00	0.00	0.00
11,500.00	0.00	0.00	11,481.56	-63.60	424.90	-66.86	0.00	0.00	0.00
11,600.00	0.00	0.00	11,581.56	-63.60	424.90	-66.86	0.00	0.00	0.00
11,700.00	0.00	0.00	11,681.56	-63.60	424.90	-66.86	0.00	0.00	0.00
11,800.00	0.00	0.00	11,781.56	-63.60	424.90	-66.86	0.00	0.00	0.00
11,900.00	0.00	0.00	11,881.56	-63.60	424.90	-66.86	0.00	0.00	0.00
12,000.00	0.00	0.00	11,981.56	-63.60	424.90	-66.86	0.00	0.00	0.00
12,074.30	0.00	0.00	12,055.86	-63.60	424.90	-66.86	0.00	0.00	0.00
Start DLS 10.00 TFO 359.56									
12,100.00	2.57	359.56	12,081.55	-63.02	424.90	-66.28	10.00	10.00	-1.72
12,200.00	12.57	359.56	12,180.55	-49.86	424.79	-53.13	10.00	10.00	0.00
12,300.00	22.57	359.56	12,275.77	-19.72	424.56	-22.98	10.00	10.00	0.00
12,400.00	32.57	359.56	12,364.30	26.51	424.21	23.25	10.00	10.00	0.00
12,500.00	42.57	359.56	12,443.46	87.40	423.74	84.14	10.00	10.00	0.00
12,513.54	43.92	359.56	12,453.32	96.68	423.67	93.42	10.00	10.00	0.00
Baseball Cap Federal Com #603H FTP									
12,600.00	52.57	359.56	12,510.84	161.11	423.17	157.86	10.00	10.00	0.00
12,700.00	62.57	359.56	12,564.40	245.41	422.52	242.16	10.00	10.00	0.00
12,800.00	72.57	359.56	12,602.51	337.72	421.81	334.48	10.00	10.00	0.00
12,900.00	82.57	359.56	12,624.01	435.25	421.06	432.01	10.00	10.00	0.00
12,986.06	91.18	359.56	12,628.70	521.10	420.40	517.85	10.00	10.00	0.00
Start 9504.28 hold at 12986.06 MD									
13,000.00	91.18	359.56	12,628.41	535.04	420.29	531.80	0.00	0.00	0.00
13,100.00	91.18	359.56	12,626.36	635.01	419.53	631.77	0.00	0.00	0.00
13,200.00	91.18	359.56	12,624.31	734.99	418.76	731.75	0.00	0.00	0.00
13,300.00	91.18	359.56	12,622.26	834.97	417.99	831.73	0.00	0.00	0.00
13,400.00	91.18	359.56	12,620.20	934.94	417.22	931.71	0.00	0.00	0.00
13,500.00	91.18	359.56	12,618.15	1,034.92	416.45	1,031.69	0.00	0.00	0.00
13,600.00	91.18	359.56	12,616.10	1,134.89	415.68	1,131.67	0.00	0.00	0.00
13,700.00	91.18	359.56	12,614.05	1,234.87	414.91	1,231.65	0.00	0.00	0.00
13,800.00	91.18	359.56	12,612.00	1,334.85	414.14	1,331.63	0.00	0.00	0.00
13,900.00	91.18	359.56	12,609.95	1,434.82	413.37	1,431.61	0.00	0.00	0.00
14,000.00	91.18	359.56	12,607.89	1,534.80	412.60	1,531.58	0.00	0.00	0.00
14,100.00	91.18	359.56	12,605.84	1,634.77	411.83	1,631.56	0.00	0.00	0.00
14,200.00	91.18	359.56	12,603.79	1,734.75	411.06	1,731.54	0.00	0.00	0.00

Database:	EDM 5000.14 Single User Db	**Local Co-ordinate Reference:**	Well Baseball Cap Federal Com #603H
Company:	Concho Resources	**TVD Reference:**	GL 3387.7' + 26' KB @ 3413.70usft (Independence 205)
Project:	Lea County, NM	**MD Reference:**	GL 3387.7' + 26' KB @ 3413.70usft (Independence 205)
Site:	Baseball Cap Federal Com	**North Reference:**	Grid
Well:	Baseball Cap Federal Com #603H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	plan1		

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)
14,300.00	91.18	359.56	12,601.74	1,834.73	410.30	1,831.52	0.00	0.00	0.00
14,400.00	91.18	359.56	12,599.69	1,934.70	409.53	1,931.50	0.00	0.00	0.00
14,500.00	91.18	359.56	12,597.64	2,034.68	408.76	2,031.48	0.00	0.00	0.00
14,600.00	91.18	359.56	12,595.58	2,134.65	407.99	2,131.46	0.00	0.00	0.00
14,700.00	91.18	359.56	12,593.53	2,234.63	407.22	2,231.44	0.00	0.00	0.00
14,800.00	91.18	359.56	12,591.48	2,334.61	406.45	2,331.42	0.00	0.00	0.00
14,900.00	91.18	359.56	12,589.43	2,434.58	405.68	2,431.40	0.00	0.00	0.00
15,000.00	91.18	359.56	12,587.38	2,534.56	404.91	2,531.37	0.00	0.00	0.00
15,100.00	91.18	359.56	12,585.33	2,634.53	404.14	2,631.35	0.00	0.00	0.00
15,200.00	91.18	359.56	12,583.27	2,734.51	403.37	2,731.33	0.00	0.00	0.00
15,300.00	91.18	359.56	12,581.22	2,834.49	402.60	2,831.31	0.00	0.00	0.00
15,400.00	91.18	359.56	12,579.17	2,934.46	401.84	2,931.29	0.00	0.00	0.00
15,500.00	91.18	359.56	12,577.12	3,034.44	401.07	3,031.27	0.00	0.00	0.00
15,600.00	91.18	359.56	12,575.07	3,134.41	400.30	3,131.25	0.00	0.00	0.00
15,700.00	91.18	359.56	12,573.02	3,234.39	399.53	3,231.23	0.00	0.00	0.00
15,800.00	91.18	359.56	12,570.96	3,334.37	398.76	3,331.21	0.00	0.00	0.00
15,900.00	91.18	359.56	12,568.91	3,434.34	397.99	3,431.18	0.00	0.00	0.00
16,000.00	91.18	359.56	12,566.86	3,534.32	397.22	3,531.16	0.00	0.00	0.00
16,100.00	91.18	359.56	12,564.81	3,634.29	396.45	3,631.14	0.00	0.00	0.00
16,200.00	91.18	359.56	12,562.76	3,734.27	395.68	3,731.12	0.00	0.00	0.00
16,300.00	91.18	359.56	12,560.71	3,834.25	394.91	3,831.10	0.00	0.00	0.00
16,400.00	91.18	359.56	12,558.65	3,934.22	394.14	3,931.08	0.00	0.00	0.00
16,500.00	91.18	359.56	12,556.60	4,034.20	393.37	4,031.06	0.00	0.00	0.00
16,600.00	91.18	359.56	12,554.55	4,134.17	392.61	4,131.04	0.00	0.00	0.00
16,700.00	91.18	359.56	12,552.50	4,234.15	391.84	4,231.02	0.00	0.00	0.00
16,800.00	91.18	359.56	12,550.45	4,334.13	391.07	4,331.00	0.00	0.00	0.00
16,900.00	91.18	359.56	12,548.40	4,434.10	390.30	4,430.97	0.00	0.00	0.00
17,000.00	91.18	359.56	12,546.34	4,534.08	389.53	4,530.95	0.00	0.00	0.00
17,100.00	91.18	359.56	12,544.29	4,634.05	388.76	4,630.93	0.00	0.00	0.00
17,200.00	91.18	359.56	12,542.24	4,734.03	387.99	4,730.91	0.00	0.00	0.00
17,300.00	91.18	359.56	12,540.19	4,834.01	387.22	4,830.89	0.00	0.00	0.00
17,400.00	91.18	359.56	12,538.14	4,933.98	386.45	4,930.87	0.00	0.00	0.00
17,500.00	91.18	359.56	12,536.09	5,033.96	385.68	5,030.85	0.00	0.00	0.00
17,600.00	91.18	359.56	12,534.03	5,133.93	384.91	5,130.83	0.00	0.00	0.00
17,700.00	91.18	359.56	12,531.98	5,233.91	384.14	5,230.81	0.00	0.00	0.00
17,800.00	91.18	359.56	12,529.93	5,333.89	383.38	5,330.79	0.00	0.00	0.00
17,900.00	91.18	359.56	12,527.88	5,433.86	382.61	5,430.76	0.00	0.00	0.00
18,000.00	91.18	359.56	12,525.83	5,533.84	381.84	5,530.74	0.00	0.00	0.00
18,100.00	91.18	359.56	12,523.78	5,633.81	381.07	5,630.72	0.00	0.00	0.00
18,200.00	91.18	359.56	12,521.72	5,733.79	380.30	5,730.70	0.00	0.00	0.00
18,300.00	91.18	359.56	12,519.67	5,833.77	379.53	5,830.68	0.00	0.00	0.00
18,400.00	91.18	359.56	12,517.62	5,933.74	378.76	5,930.66	0.00	0.00	0.00
18,500.00	91.18	359.56	12,515.57	6,033.72	377.99	6,030.64	0.00	0.00	0.00
18,600.00	91.18	359.56	12,513.52	6,133.69	377.22	6,130.62	0.00	0.00	0.00
18,700.00	91.18	359.56	12,511.47	6,233.67	376.45	6,230.60	0.00	0.00	0.00
18,800.00	91.18	359.56	12,509.41	6,333.65	375.68	6,330.57	0.00	0.00	0.00
18,900.00	91.18	359.56	12,507.36	6,433.62	374.91	6,430.55	0.00	0.00	0.00
19,000.00	91.18	359.56	12,505.31	6,533.60	374.15	6,530.53	0.00	0.00	0.00
19,100.00	91.18	359.56	12,503.26	6,633.57	373.38	6,630.51	0.00	0.00	0.00
19,200.00	91.18	359.56	12,501.21	6,733.55	372.61	6,730.49	0.00	0.00	0.00
19,300.00	91.18	359.56	12,499.16	6,833.53	371.84	6,830.47	0.00	0.00	0.00
19,400.00	91.18	359.56	12,497.10	6,933.50	371.07	6,930.45	0.00	0.00	0.00

Database:	EDM 5000.14 Single User Db	**Local Co-ordinate Reference:**	Well Baseball Cap Federal Com #603H
Company:	Concho Resources	**TVD Reference:**	GL 3387.7' + 26' KB @ 3413.70usft (Independence 205)
Project:	Lea County, NM	**MD Reference:**	GL 3387.7' + 26' KB @ 3413.70usft (Independence 205)
Site:	Baseball Cap Federal Com	**North Reference:**	Grid
Well:	Baseball Cap Federal Com #603H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	plan1		

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)
19,500.00	91.18	359.56	12,495.05	7,033.48	370.30	7,030.43	0.00	0.00	0.00
19,600.00	91.18	359.56	12,493.00	7,133.45	369.53	7,130.41	0.00	0.00	0.00
19,700.00	91.18	359.56	12,490.95	7,233.43	368.76	7,230.39	0.00	0.00	0.00
19,800.00	91.18	359.56	12,488.90	7,333.41	367.99	7,330.36	0.00	0.00	0.00
19,900.00	91.18	359.56	12,486.85	7,433.38	367.22	7,430.34	0.00	0.00	0.00
20,000.00	91.18	359.56	12,484.79	7,533.36	366.45	7,530.32	0.00	0.00	0.00
20,100.00	91.18	359.56	12,482.74	7,633.33	365.69	7,630.30	0.00	0.00	0.00
20,200.00	91.18	359.56	12,480.69	7,733.31	364.92	7,730.28	0.00	0.00	0.00
20,300.00	91.18	359.56	12,478.64	7,833.29	364.15	7,830.26	0.00	0.00	0.00
20,400.00	91.18	359.56	12,476.59	7,933.26	363.38	7,930.24	0.00	0.00	0.00
20,500.00	91.18	359.56	12,474.54	8,033.24	362.61	8,030.22	0.00	0.00	0.00
20,600.00	91.18	359.56	12,472.48	8,133.21	361.84	8,130.20	0.00	0.00	0.00
20,700.00	91.18	359.56	12,470.43	8,233.19	361.07	8,230.17	0.00	0.00	0.00
20,800.00	91.18	359.56	12,468.38	8,333.17	360.30	8,330.15	0.00	0.00	0.00
20,900.00	91.18	359.56	12,466.33	8,433.14	359.53	8,430.13	0.00	0.00	0.00
21,000.00	91.18	359.56	12,464.28	8,533.12	358.76	8,530.11	0.00	0.00	0.00
21,100.00	91.18	359.56	12,462.23	8,633.09	357.99	8,630.09	0.00	0.00	0.00
21,200.00	91.18	359.56	12,460.17	8,733.07	357.22	8,730.07	0.00	0.00	0.00
21,300.00	91.18	359.56	12,458.12	8,833.05	356.46	8,830.05	0.00	0.00	0.00
21,400.00	91.18	359.56	12,456.07	8,933.02	355.69	8,930.03	0.00	0.00	0.00
21,500.00	91.18	359.56	12,454.02	9,033.00	354.92	9,030.01	0.00	0.00	0.00
21,600.00	91.18	359.56	12,451.97	9,132.97	354.15	9,129.99	0.00	0.00	0.00
21,700.00	91.18	359.56	12,449.92	9,232.95	353.38	9,229.96	0.00	0.00	0.00
21,800.00	91.18	359.56	12,447.86	9,332.93	352.61	9,329.94	0.00	0.00	0.00
21,900.00	91.18	359.56	12,445.81	9,432.90	351.84	9,429.92	0.00	0.00	0.00
22,000.00	91.18	359.56	12,443.76	9,532.88	351.07	9,529.90	0.00	0.00	0.00
22,100.00	91.18	359.56	12,441.71	9,632.85	350.30	9,629.88	0.00	0.00	0.00
22,200.00	91.18	359.56	12,439.66	9,732.83	349.53	9,729.86	0.00	0.00	0.00
22,300.00	91.18	359.56	12,437.61	9,832.81	348.76	9,829.84	0.00	0.00	0.00
22,360.46	91.18	359.56	12,436.36	9,893.25	348.30	9,890.29	0.00	0.00	0.00
Baseball Cap Federal Com #603H LTP									
22,400.00	91.18	359.56	12,435.55	9,932.78	347.99	9,929.82	0.00	0.00	0.00
22,490.34	91.18	359.56	12,433.70	10,023.10	347.30	10,020.14	0.00	0.00	0.00
TD @ 22490.34' MD - Baseball Cap Federal Com #603H PBHL									

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
Baseball Cap Federal	0.00	0.00	12,433.70	9,893.20	348.40	441,038.70	782,251.00	32° 12' 33.260 N	103° 25' 14.768 W
- plan misses target center by 2.67usft at 22360.46usft MD (12436.36 TVD, 9893.25 N, 348.30 E)									
- Point									
Baseball Cap Federal	0.00	0.00	12,433.70	10,023.10	347.30	441,168.60	782,249.90	32° 12' 34.545 N	103° 25' 14.768 W
- plan hits target center									
- Point									
Baseball Cap Federal	0.00	0.00	12,628.70	-63.60	424.90	431,081.90	782,327.50	32° 10' 54.729 N	103° 25' 14.861 W
- plan misses target center by 237.59usft at 12513.54usft MD (12453.32 TVD, 96.68 N, 423.67 E)									
- Point									

Database:	EDM 5000.14 Single User Db	**Local Co-ordinate Reference:**	Well Baseball Cap Federal Com #603H
Company:	Concho Resources	**TVD Reference:**	GL 3387.7' + 26' KB @ 3413.70usft (Independence 205)
Project:	Lea County, NM	**MD Reference:**	GL 3387.7' + 26' KB @ 3413.70usft (Independence 205)
Site:	Baseball Cap Federal Com	**North Reference:**	Grid
Well:	Baseball Cap Federal Com #603H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	plan1		

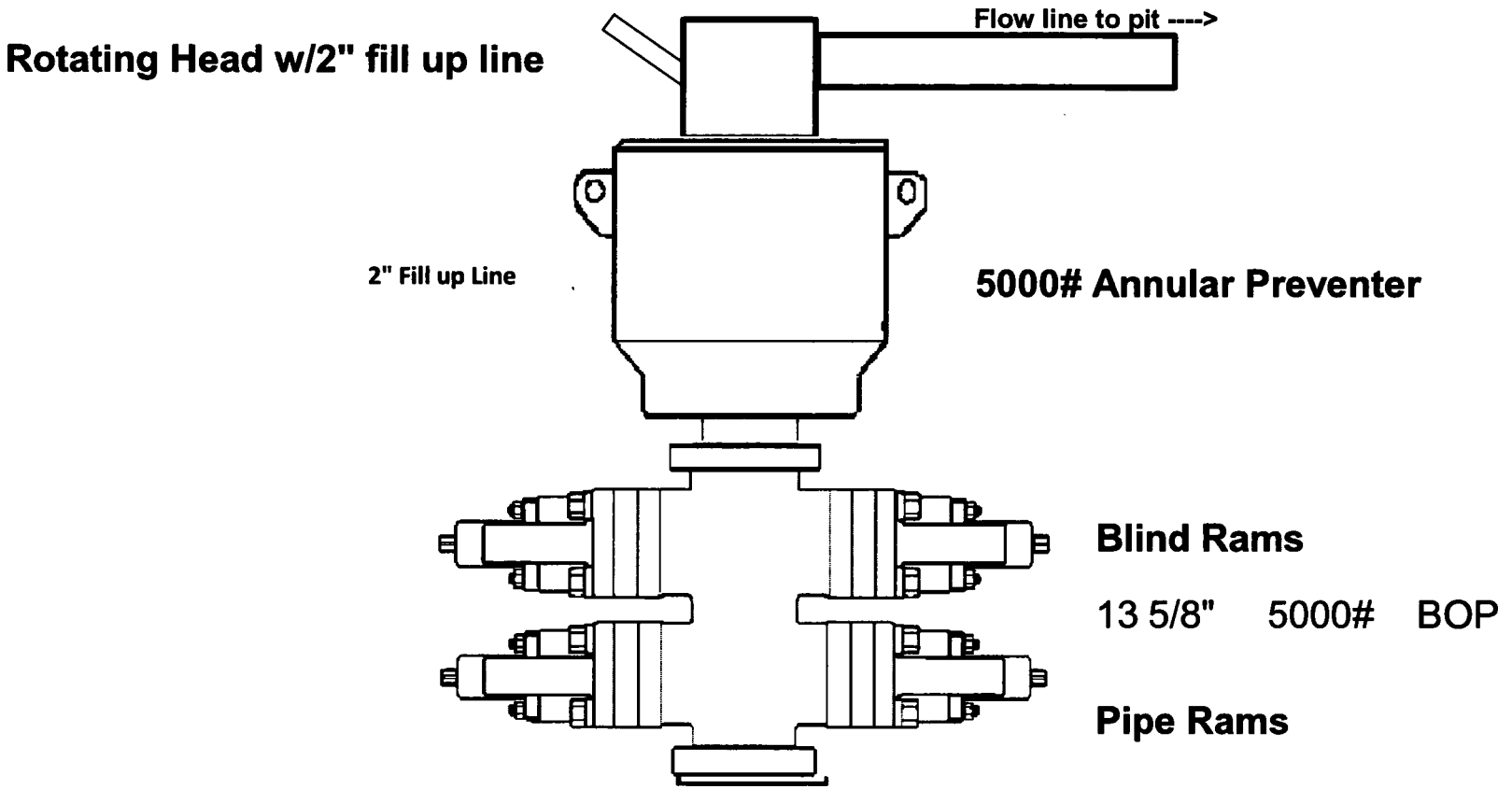
Formations

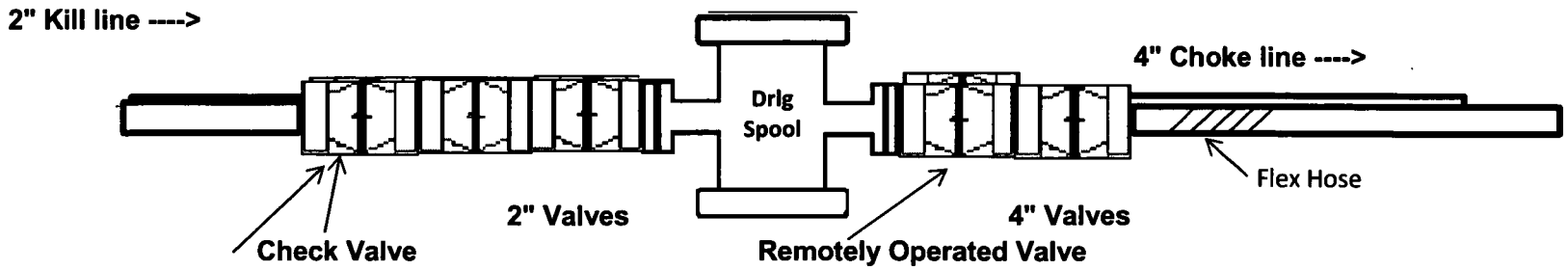
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
912.70	912.70	Rustler			
1,409.70	1,409.70	TOS			
5,211.68	5,207.70	BOS (Fletcher)			
5,509.81	5,504.70	LMAR (Top Delaware)			
5,545.95	5,540.70	BLCN			
6,546.76	6,537.70	CYCN			
8,138.82	8,123.70	BYCN			
9,444.14	9,425.70	Bone Sprg (BSGL)			
9,652.14	9,633.70	U Avalon Sh			
9,970.14	9,951.70	L Avalon Sh			
10,488.14	10,469.70	B Avalon Sh			
10,623.14	10,604.70	FBSG_sand			
11,335.14	11,316.70	SBSG_sand			
11,666.14	11,647.70	SBSG_sand_Base			
12,268.86	12,246.70	TBSG_sand			

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
4,000.00	4,000.00	0.00	0.00	Start Build 2.00
4,250.00	4,249.68	-1.61	10.78	Start 4679.33 hold at 4250.00 MD
8,929.33	8,911.21	-61.99	414.12	Start Drop -2.00
9,179.33	9,160.89	-63.60	424.90	Start 2894.97 hold at 9179.33 MD
12,074.30	12,055.86	-63.60	424.90	Start DLS 10.00 TFO 359.56
12,986.06	12,628.70	521.10	420.40	Start 9504.28 hold at 12986.06 MD
22,490.34	12,433.70	10,023.10	347.30	TD @ 22490.34' MD

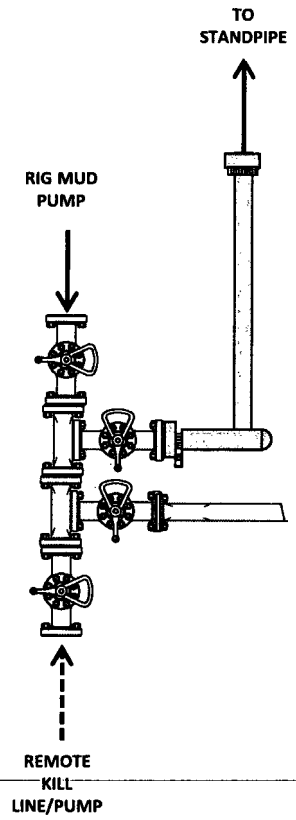
5,000 psi BOP Schematic



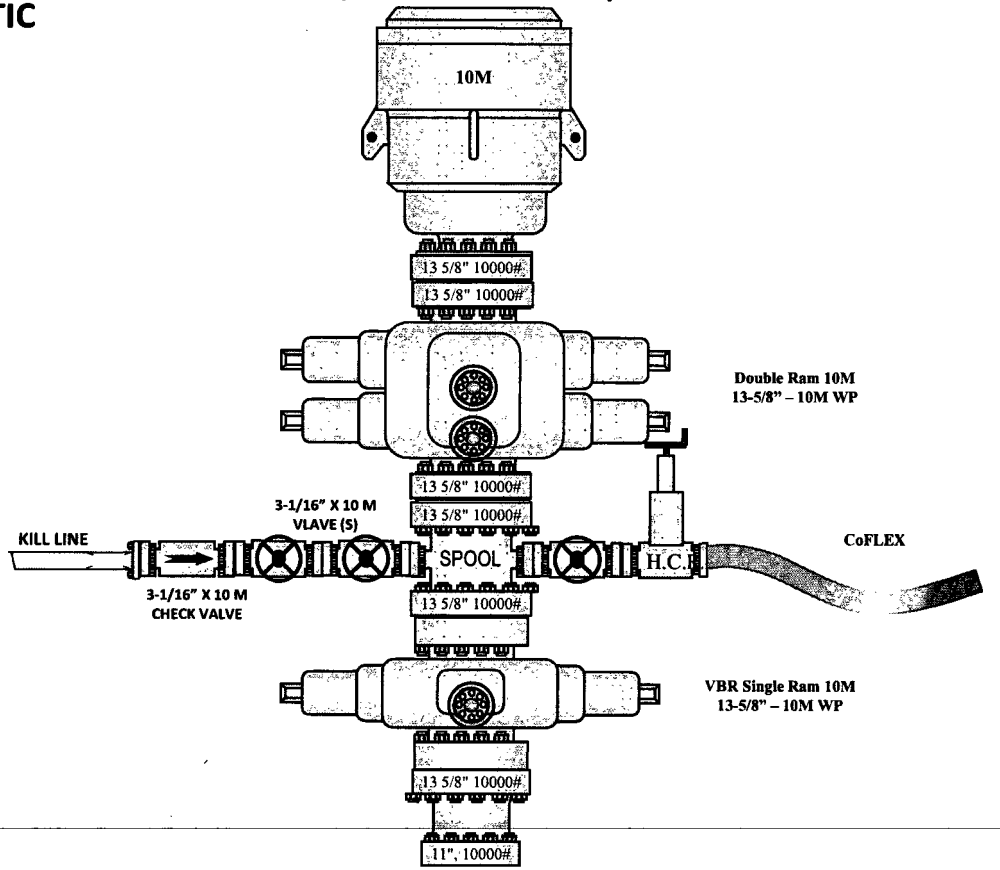


10M BOP Stack

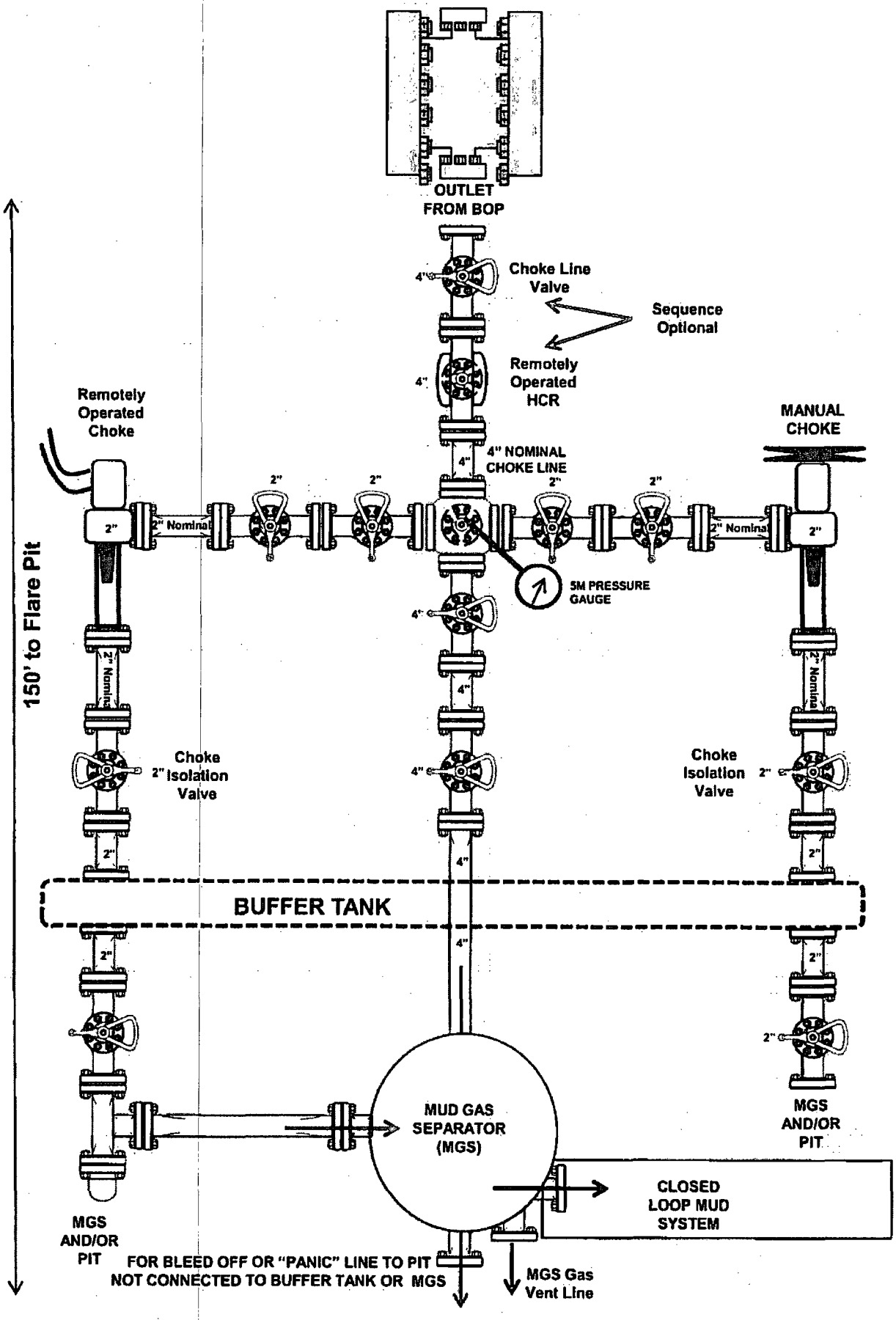
10M REMOTE KILL SCHEMATIC



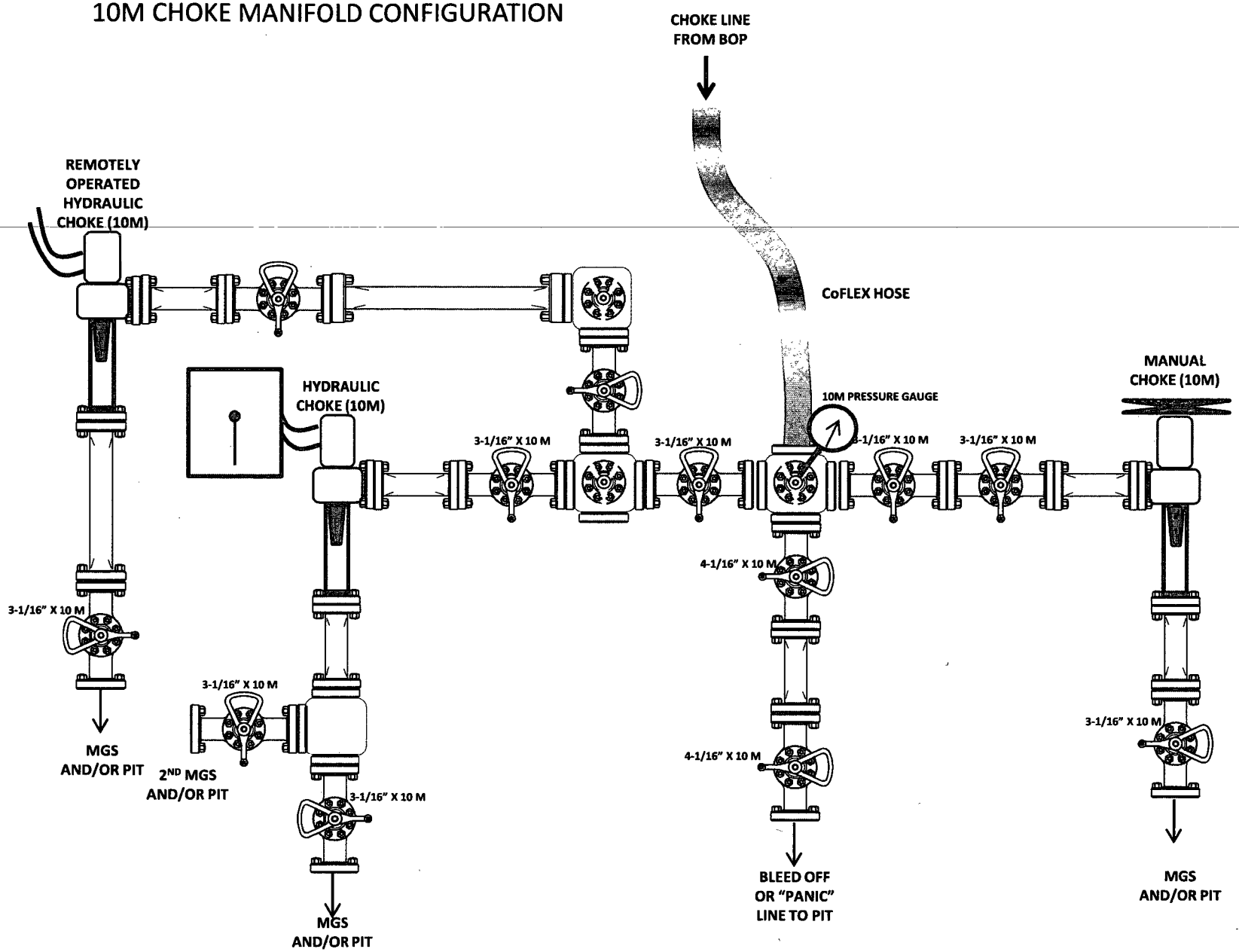
10M BOP Stack
(10M Annular)



5M Choke Manifold Equipment (WITH MGS + CLOSED LOOP)



10M CHOKE MANIFOLD CONFIGURATION



INDEPENDENCE CONTRACT DRILLING
11601 N. GALAYDA STREET
HOUSTON, TX. 77086

PURCHASE ORDER NO.: PO00116446

DATE: February 23, 2018

COPPER STATE RUBBER/SPECIALTIES COMPANY
FILE: CSR / SPECO- 81069

TAB 1

I. CERTIFICATE OF REGISTRATION ISO 9001:2015
APIQR REGISTRATION NO.: 3042
II. API CERTIFICATE OF ACCREDITATION FOR Q1
AND SPEC. 16C CERTIFICATE NO.:16C-0383

COPPER STATE RUBBER CHOKE / KILL HOSE, API SPEC. 16C MONOGRAMMED, FSL 3, TEMP RANGE B/P, 10,000 PSI WP, 15,000 PSI TEST, FIRE RESISTANT, WITH BUTTWELD 4-1/16'' 10K API FLANGE WITH S.S. LINED BX-155 RING GROOVE EACH END. H2S SUITED.
1 EA. 3'' ID X 75 FT.
S/N- 33851

TAB 2

I. CSR CERTIFICATE OF COMPLIANCE
II. COMPLETE ASSEMBLIES VISUAL INSPECTION/HYDROSTATIC TEST REPORTS
III. PRESSURE GAUGE CALIBRATION CERTIFICATE, S/N.: 111291-2
IV. CHART RECORDER CALIBRATION CERTIFICATE, S/N.: 07459

TAB 3

I. METAL COMPONENT REPORTS
   A. INSERTS:
      1. BRENDELL 14C1, ENCORE METALS HT-418595
   B. 4-1/16" 10K API MAWP 6A FLANGE
      1. MACHINE SPECIALTY & MFG. HT-V4760

TAB 4

I. WELDING PROCEDURES AND QUALIFICATION RECORDS
   A. COPPER STATE RUBBER WPS/PQR NOS.: 911171-1 AND 911171-2, REV. 5 FOR INSERTS TO TERMINATING CONNECTOR WELDMENTS

TAB 5

I. NDE REPORTS FOR END FITTINGS TO INSERT WELDMENTS
   A. STRESS RELIEVING
      1. **REPUBLIC HEAT TREAT**
         CERT. ID NO.: 38120-1
         P.O. NO.: 7494
   B. RADIOGRAPHIC INSPECTION
      1. **RADIOGRAPHIC SPECIALISTS**
         P.O. NO.: 7815

TAB 6

I. FIELD TEST PROCEDURES FOR USED COPPER STATE RUBBER ROTARY AND VIBRATOR HOSE ASSEMBLIES
II. COPPER STATE RUBBER 12 MONTH WARRANTY TERMS AND CONDITION

QMS REGISTERED

Certificate of Registration

APIQR® REGISTRATION NUMBER

3042

This certifies that the quality management system of

COPPER STATE RUBBER, INC.
750 S. 59th Avenue
Phoenix, AZ

has been assessed by the American Petroleum Institute Quality Registrar (APIQR®) and found it to be in conformance with the following standard:

ISO 9001:2015

The scope of this registration and the approved quality management system applies to the

Design and Manufacture of Oilfield, Marine and Other Industrial Hoses

APIQR® approves the organization's justification for excluding:

No Exclusions Identified as Applicable

Effective Date:	**MARCH 28, 2017**
Expiration Date:	**APRIL 21, 2019**
Registered Since:	**APRIL 21, 2016**

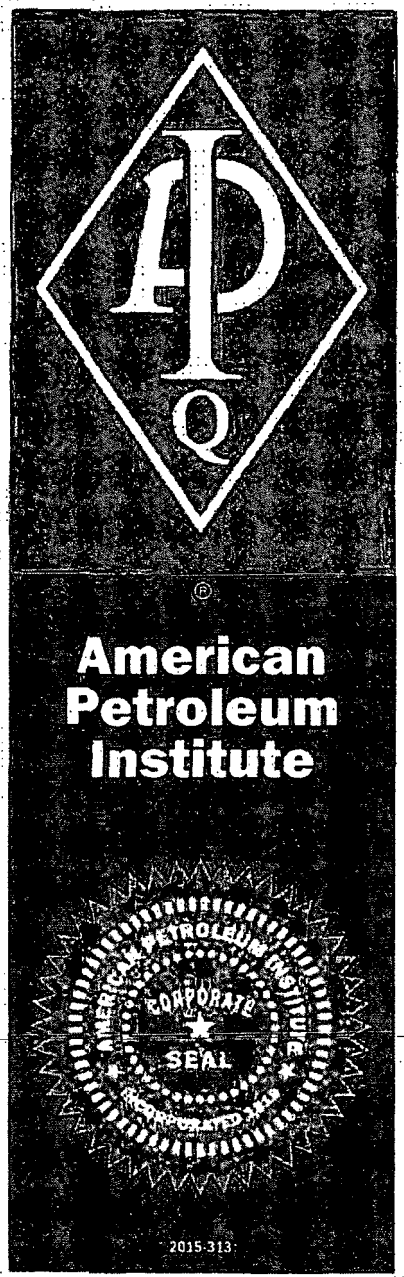
Vice President, API Global Industry Services

Accredited by Member of the International Accreditation Forum Multilateral Recognition Arrangement for Quality Management Systems

This certificate is valid for the period specified herein. The registered organization must continually meet all requirements of APIQR's Registration Program and the requirements of the Registration Agreement. Registration is maintained and regularly monitored through annual full system audits. Further clarifications regarding the scope of this certificate and the applicability of ISO 9001 standard requirements may be obtained by consulting the registered organization. This certificate has been issued from APIQR offices located at 1220 L Street, N.W., Washington, D.C. 20005-4070, U.S.A., it is the property of APIQR, and must be returned upon request. To verify the authenticity of this certificate, go to www.api.org/compositelist.

QUALITY REGISTRAR

2015-04-01 16



Certificate of Authority to use the Official API Monogram

License Number: 16C-0383 **ORIGINAL**

The American Petroleum Institute hereby grants to

COPPER STATE RUBBER, INC.
750 S. 59th Avenue
Phoenix, AZ

the right to use the Official API Monogram® on manufactured products under the conditions in the official publications of the American Petroleum Institute entitled API Spec Q1® and **API-16C** and in accordance with the provisions of the License Agreement.

In all cases where the Official API Monogram is applied, the API Monogram shall be used in conjunction with this certificate number: **16C-0383**

The American Petroleum Institute reserves the right to revoke this authorization to use the Official API Monogram for any reason satisfactory to the Board of Directors of the American Petroleum Institute.

The scope of this license includes the following: Flexible Choke and Kill Lines atFSL 0, FSL 1, FSL 2, FSL 3

QMS Exclusions: No Exclusions Identified as Applicable

Effective Date: MARCH 28, 2017
Expiration Date: APRIL 21, 2019

To verify the authenticity of this license, go to www.api.org/compositelist.

Vice President, API Global Industry Services

copper state rubber
CSR
Specialties Company

14141 S. Wayside Drive
Houston, Texas 77048

Phone 713-644-1491
Fax 713-644-9830
www.copperstaterubber.com
sales@copperstaterubber.com

February 23, 2018

Independence Contracting Drilling
11601 N. Galayda St.
Houston, Texas 77086

Subject: Purchase Order No.: PO00116446
Date: February 23, 2018
Specialties Company File No.: CSR / SPECO-81069

Equipment: Copper State Rubber Choke/Kill Hose Assembly, 10KSI MAWP X 15KSI T/P, API 16C FSL3, Fire Resistant Cover, Complete 4-1/16" 10KSI MAWP Flange With BX155 SS Lined Ring Groove Each End. H2S Suited.
1EA: 3" ID X 75Ft. S/N-33851

CERTIFICATE OF COMPLIANCE

This is to certify the above referenced equipment meets or exceeds the following requirements and were manufactured from same material specification and manufacturing methods as prototype assemblies for referenced specifications.

I. COMPLETE HOSE ASSEMBLY
- A. API Certificate of Accreditation for Spec: Q1 (Quality Programs) and Spec.: 16C
  1. Copper State Rubber, Inc. Certificate No.: 16C-0383
- B. **CSR** Specification No.: 090-1915C

II. PHYSICAL/CHEMICAL PROPERTIES OF METAL COMPONENTS
- A. **API** Spec. 6A, latest edition
- B. **API** Spec. 16A, latest edition
- C. **NACE** Standard MR0175, latest edition

III. WELDMENTS/NDE REQUIREMENTS
- A. Section IX, **ASME** Boiler & Pressure Code, 1986 Ed., 1987 Add.
- B. CSR/Specialties Company WPS/PQR Nos.: 911171-1, and 911171-2, Rev. 05 dated June 2005

III. WELDMENTS/NDE REQUIREMENTS (continued)

C. **API** Spec. 6A, latest edition

D. **API** Spec. 16A, latest edition

Sincerely,

Joe Leeper,
Technical Department

copper state rubber

Visual Inspection / Hydrostatic Test Report

Manufacturer	Copper State Rubber Inc.
Hose Type	Choke and Kill
Pressure Rating	10,000 PSI MAWP X 15,000 PSI T/P
Spec Number	090-1915C-48
FSL Rating	FSL 3

Serial Number	33851
Size ID	3"
Length	75'
Date	December 9, 2017
Shop Order Number	31162

Connections Description: 4 1/16" 10K API FLANGE WITH SS INLAID BX-155 RING GROOVE EACH END

Traceability of Terminating Connectors

	Insert	Male	Nut	Female	Flanges	Hubs	Other
Connector 1	14C1				V4760		CSR-H1263
Connector 2	14C1				V4760		CSR-H1265

Comments

Calibrated Devices

Pressure Recorder	07459	Calibration Date	1/23/2017
Pressure Gauge	111291-2	Calibration Date	1/23/2017

*This report signifies that the product has been visually inspected for defects in the interior tube, recess, gasket, cover and branding and all have been found to be conforming.

Comments

Hydrostatic Testing Requirements

60 Min @ 15,000 psi (-0/+500 psi)

Length after test

75' OAL

Witness By: Phil Snider

Supervisor

INDEPENDENCE CONTRACT DRILLING
P.O. NO.: PO00116446
DATE: FEBRUARY 23, 2018
FILE NO.: CSR / SPECO-81069

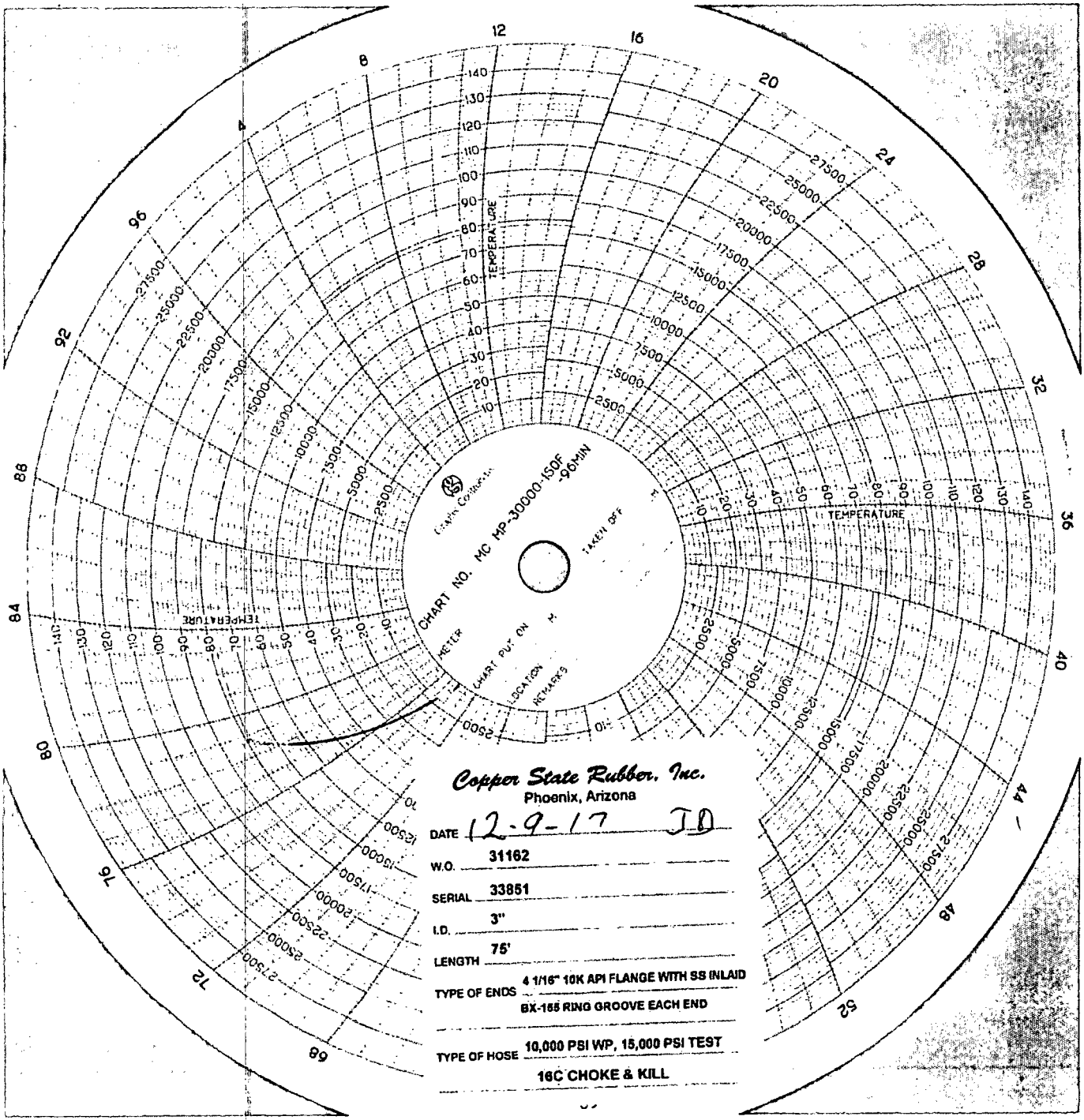


CHART NO. MC MP-30000-1SQF-96MIN
TEMPERATURE
METER
CHART PUT ON
TAKEN OFF
LOCATION
REMARKS
Copper State Rubber, Inc.
Phoenix, Arizona
DATE 12-9-17 JD
W.O. 31162
SERIAL 33851
I.D. 3"
LENGTH 75'
TYPE OF ENDS 4 1/16" 10K API FLANGE WITH SS INLAID
BX-155 RING GROOVE EACH END
TYPE OF HOSE 10,000 PSI WP, 15,000 PSI TEST
16C CHOKE & KILL

PRECISION
TECHNICAL SERVICES
2400 W Southern Avenue # 104
Tempe, Arizona 85282
480 921 1021

LABORATORY ACCREDITATION BUREAU ACCREDITED

Certificate of Calibration

Certificate # 1702331

Issued to: **Copper State Rubber, Inc.**
750 South 59th Avenue
Phoenix, Arizona 85043

Approved RS II Quality Dir

Equipment Tested

Description : **McDaniel Pressure Gauge**	Calibration Date : **January 23, 2017** Calibration Due : **January 23, 2018**
Model # : **None Visible**	Identification # : **111291-2**
Range : **0-30000 PSIG**	Serial # : **None Visible**
Accuracy : .50 % of Full Scale	
Physical Condition as Received : Good	Service Performed : Calibration to Manufacturers Specifications and ASME B40.100-2013

Measurement Data

% of Span	Gauge Reading	Actual Pressure	Reading Error	Maximum Allowable
20 %	6000	6054.9	54.9	150.0
40 %	12000	11995.2	-4.8	150.0
60 %	18000	17976.6	-23.4	150.0
80 %	24000	23965.8	-34.2	150.0
100 %	30000	29943.9	-56.1	150.0

Ambient Temperature : 19.5° C Relative Humidity : Between 20 & 60%

Comments :

Uncertainty of Measurement is +/- (19 + 0.6*R*) psi
Measurement uncertainties stated represent an expanded uncertainty at approximately the 95% confidence level and a coverage factor k=2
The results obtained relate only to the item calibrated
Precision Technical Services makes Pass/Fail statements of compliance by comparing the calibration data against the tolerance(s) without factoring in the measurement uncertainty.
It is your responsibility to determine if the uncertainty adversely affect your instrument(s) or process(es). Other decision rules may be employed upon request

Standards Used

Procedures :PTS Procedure Manual Section **SCP-01 High Pressure Gauge**	Standard : PTS 123 Sensotec Pressure System Cert # 1-132212 Due: 12 Jan 2018

Calibration Performed By K Conridge

The standards and calibration program at Precision Technical Services complies with the requirements of ANSI/NCSL Z540.3-2006, ANSI/ISO/IEC 17025:2005 and also to PTS Quality Manual, Rev 12, dated September 1, 2014 and where applicable to ISO 9001:2008.
Standards used in this calibration are traceable to the International System of Units (SI) through N.I.S.T. or recognized standard organizations.

INDEPENDENCE CONTRACT DRILLING
P.O. NO.: PO00116446
DATE: FEBRUARY 23, 2018
FILE NO.: CSR / SPECO-81069

PRECISION
TECHNICAL SERVICES
2400 W Southern Avenue # 104
Tempe, Arizona 85282
480.921.1021

LABORATORY ACCREDITATION BUREAU ACCREDITED

Certificate of Calibration

Certificate # 1702332

Issued to: **Copper State Rubber, Inc.**
750 South 59th Avenue
Phoenix, Arizona 85043

Equipment Tested

Description : **TechCal Pressure Gauge**	Calibration Date : **January 23, 2017** Calibration Due : **January 23, 2018**
Model # : **Chart Recorder**	Identification # : **07459**
Range : **0-30000 PSIG**	Serial # : **07459**
Accuracy : .50 % of Full Scale	
Physical Condition as Received : Good	Service Performed : Calibration to Manufacturers Specifications and ASME B40.100-2013

Measurement Data

% of Span	Gauge Reading	Actual Pressure	Reading Error	Maximum Allowable
20 %	6000	5911.8	-88.2	150.0
40 %	12000	12075.7	75.7	150.0
60 %	18000	18085.6	85.6	150.0
80 %	24000	24090.2	90.2	150.0
100 %	30000	30045.1	45.1	150.0

Ambient Temperature : 19.5° C Relative Humidity : Between 20 & 60%

Comments :

Uncertainty of Measurement is +/- (19 + 0.6*R*) psi
Measurement uncertainties stated represent an expanded uncertainty at approximately the 95% confidence level and a coverage factor k=2
The results obtained relate only to the item calibrated
Precision Technical Services makes Pass/Fail statements of compliance by comparing the calibration data against the tolerance(s) without factoring in the measurement uncertainty.
It is your responsibility to determine if the uncertainty adversely affect your instrument(s) or process(es). Other decision rules may be employed upon request

Standards Used

Procedures :PTS Procedure Manual Section **SCP-01 High Pressure Gauge**	Standard : PTS 123 Sensotec Pressure System Cert # 1-132212 Due: 12 Jan 2018

Calibration Performed By K Cassidy

The standards and calibration program at Precision Technical Services complies with the requirements of ANSI/NCSL Z540.3-2006, ANSI/ISO/IEC 17025:2005 and also to PTS Quality Manual, Rev 12, dated September 1, 2014 and where applicable to ISO 9001:2008.
Standards used in this calibration are traceable to the International System of Units (SI) through N.I.S.T. or recognized standard organizations.

PRECISION
TECHNICAL SERVICES
2400 W Southern Avenue # 104
Tempe, Arizona 85282
480.921 1021

LABORATORY ACCREDITATION BUREAU

Certificate of Calibration

Certificate # 1702332

Issued to: **Copper State Rubber, Inc.**
750 South 59th Avenue
Phoenix, Arizona 85043

Equipment Tested

Description : **TechCal Temperature Gauge**	Calibration Date : **January 23, 2017** Due Date : **January 23, 2018**
Model # : **Chart Recorder**	Identification # : **07459**
Range : **0-150° F**	Serial # : 07459
Accuracy : 1.5 F	
Physical Condition as Received : Good	Service Performed : Calibration to Manufacturers Specifications and ASME B40.200 - 2008 (R2013)

Measurement Data in degrees F

Actual	Unit Under Test
50.06	50
100.11	100
150.09	150

Ambient Temperature : 19.5°C Relative Humidity : Between 20 & 60%

Comments : AS RETURNED - Gauge Adjusted

Uncertainty of Measurement is +/- .12 Deg C

Measurement uncertainties stated represent an expanded uncertainty at approximately the 95% confidence level and a coverage factor k=2

The results obtained relate only to the item calibrated

Precision Technical Services makes Pass/Fail statements of compliance by comparing the calibration data against the tolerance(s) without factoring in the measurement uncertainty. It is your responsibility to determine if the uncertainty adversely affect your instrument(s) or process(es). Other decision rules may be employed upon request

Standards Used

Procedures : PTS Procedure Manual Section : **SCP 25 – Thermometer – Analog, Digital, Glass**	**Standard :** PTS 111 ThermoWorks Reference Thermometer Certificate # 222834 Due: 02 Sep 2017 PTS 118 Techne Temperature Well Certificate # 161536 Due: 01 Jun 2017

Calibration Performed By K Cavridge

The standards and calibration program at Precision Technical Services complies with the requirements of ANSI/NCSL Z540.3-2006, ANSI/ISO/IEC 17025:2005 and also to PTS Quality Manual, Rev 12, dated September 1, 2014 and where applicable to ISO 9001:2008.
Standards used in this calibration are traceable to the International System of Units (SI) through N.I.S.T. or recognized standard organizations.

INDEPENDENCE CONTRACT DRILLING
P.O. NO.: PO00116446
DATE: FEBRUARY 23, 2018
FILE NO.: CSR / SPECO-81069

14C1

encore metals

CERTIFICATE OF TEST

Certification Date
14-JUL-2014

CUSTOMER ORDER NUMBER
15916

CUSTOMER PART NUMBER
SERIAL#G87

ENCORE METALS US
789 NORTH 400 WEST
NORTH SALT LAKE UT 84054

Invoice Number
S160494

SOLD TO: BRENDELL MANUFACTURING INC
580 NORTH 400 WEST
NORTH SALT LAKE UT 84054

SHIP TO: BRENDELL MANUFACTURING INC.
580 NORTH 400 WEST
NORTH SALT LAKE UT 84054

Description: E4130 HR NORM Q&T BAR API 6A PSL3 NACE MR0175
6-1/2 RD X 20' R/L Line Total: 19.5 FT
HEAT: 418595 ITEM: 505824

Specifications:
NACE MR-01-75
AMS H 6875 A
ASTM A370 11
API 6A PSL 3
ASTM A29 12
ASTM A304 04
EN 10204 3.1
ASTM A322 07

CHEMICAL ANALYSIS

C	MN	SI	P	S	CR	NI	MO
0.313	0.56	0.25	0.014	0.003	1.0600	0.17	0.23

AL	CU	SN	TI	V	NB	AS	CA
0.025	0.28	0.014	0.0027	0.027	0.003	0.006	0.0015

SB	CO	PB
0.001	0.011	0.002

RCPT: R120906

COUNTRY OF ORIGIN : ITALY

MECHANICAL PROPERTIES

DESCRIPTION	YLD STR PSI	ULT TEN PSI	%ELONG IN 02 IN	%RED IN AREA	HARDNESS BHN
TEST PC/QTC	85862.0	104572.0	22.0	60.0	229

DESCRIPTION	YLD STR	ULT TEN	%ELONG	%RED IN AREA	HARDNESS BHN
SURFACE					229

The above data were transcribed from the manufacturer's Certificate of Test after verification for completeness and specification requirements of the information on the certificate. All test results remain on file subject to examination.

We hereby certify that the material covered by this report will meet the applicable requirements described herein, including any specification forming a part of the description.

The willful recording of false, fictitious, or fraudulent statements in connection with test results may be punishable as a felony under federal statutes.

Material did not come in contact with mercury while in our possession. DIANA JOHNSON

INSERT MATERIAL
INDEPENDENCE CONTRACT DRILLING
P.O. NO.: PO00116446
DATE: FEBRUARY 23, 2018
FILE NO.: CSR / SPECO-81069

encore metals

CERTIFICATE OF TEST

Certification Date
14-JUL-2014

CUSTOMER ORDER NUMBER
15916

CUSTOMER PART NUMBER
SERIAL#G87

ENCORE METALS US
789 NORTH 400 WEST
NORTH SALT LAKE UT 84054

Invoice Number
S160494

SOLD TO: BRENDELL MANUFACTURING INC
580 NORTH 400 WEST
NORTH SALT LAKE UT 84054

SHIP TO: BRENDELL MANUFACTURING INC.
580 NORTH 400 WEST
NORTH SALT LAKE UT 84054

Description: E4130 HR NORM Q&T BAR API 6A PSL3 NACE MR0175
6-1/2 RD X 20' R/L Line Total: 19.5 FT
HEAT: 418595 ITEM: 505824

GRAIN SIZE :7 -

IMPACT TEST TYPE	TEMP	ORNT	UOM ft-lbs SMPL#1	#2	#3	AVG	% SHEAR	LAT EXPN	DESCRIPTION
CHARPY	-75 F	LONG	33.0	36.0	36.0	35.0			10mm x 10mm

MATERIAL IS FREE FROM MERCURY CONTAMINATION
NO WELD REPAIR PERFORMED ON MATERIAL
THERMAL TREATMENT: OK
NORMALIZED 1652 DEG F X 353'
QUENCHED 1616 DEG F WATER X 353'
TEMPERED 1300 DEG F AIR X 390'
WATER TEMP BEFORE 86 DEG F AFTER 86 DEG F

The above data were transcribed from the manufacturer's Certificate of Test after verification for completeness and specification requirements of the information on the certificate. All test results remain on file subject to examination.

We hereby certify that the material covered by this report will meet the applicable requirements described herein, including any specification forming a part of the description.

The willful recording of false, fictitious, or fraudulent statements in connection with test results may be punishable as a felony under federal statutes.

Material did not come in contact with mercury while in our possession.

DIANA JOHNSON

TECHNICAL MANAGER

MACHINE SPECIALTY & MFG., INC.
215 ROUSSEAU ROAD
YOUNGSVILLE, LA 70592
Phone: 337-837-0020
Fax: 337-837-0062

Material Test Report

SOLD TO:	SHIP TO:
SPECIALTIES CO./COPPER STATE RUBBER INC. 14141 S WAYSIDE DRIVE HOUSTON, TX 77048	SPECIALTIES CO./COPPER STATE RUBBER INC. 14141 S WAYSIDE DRIVE HOUSTON, TX 77048

DATE	SALES ORDER #	CUST P.O.#	TAG NUMBER	ITEM TAG
11/17/2016	0260385	110816WL		

ITEM #	QTY	ITEM DESCRIPTION	HEAT CODE	HEAT NUMBER	STARTING MATERIAL
2	8	4 1/16 10M RTJ WN 3 ID 4.5 OD TAPER BORE PSL-3 316SS INLAY SO# 13056-01 THRU -08	V4760	G1207	API 6A 75K 4130

CHEMICAL ANALYSIS

C	Si	Mn	S	P	Cr	Cu	Al	Ni	Mo	V
.32	.22	.51	.011	.013	.98			.065	.17	.008

PHYSICAL PROPERTIES

Yield PSI	Tensile PSI	Elongation	REDUCTION OF AREA %	Hardness Brinell
87898	104257	27.65	70.24	201-233

IMPACT TESTING

TYPE	TEMP	SMPL# 1	# 2	# 3	AVG	%SHEAR	LAT EXP
CHPY-75	- 75F	54 L	58 L	52 L	55	32-31-34	.032-.031-.030

SUPPLEMENTAL INFORMATION

NORMALIZE@1680F FOR 180MIN AUSTENITIZE@1600F FOR 180MIN TEMPER@1260F FOR 240MIN QTC: SACRIFICIAL PIECE CHARPY: 10 X 10 X 55 MELT PRACTICE: EAF-LRF-VD-CCM W/ EMS

WE HEREBY CERTIFY THAT ALL TEST RESULTS CONTAINED HEREIN ARE CORRECT AND TRUE AS CONTAINED IN THE RECORDS OF THE COMPANY. ALL TEMPERATURES ARE IN FAHRENHEIT AND IMPACT TESTING IN FT LBS MANUFACTURED IN USA. EN10204 3.1

Q.A. DEPARTMENT

FLANGE MATERIAL
INDEPENDENCE CONTRACT DRILLING
P.O. NO.: PO00116446
DATE: FEBRUARY 23, 2018
FILE NO.: CSR / SPECO-81069

Specialties Company
copper state rubber, inc.

6401 McGrew St.
Houston, Texas 77087
713-644-1491
713-644-9830 Fax
csrhouston@msn.com

WELDING PROCEDURE SPECIFICATION, WPS NO: 911171-1
SECTION IX, ASME BOILER 7 PRESSURE VESSEL CODE, 1989 EDITION, 1990 ADDENDA

COMPANY: COPPER STATE RUBBER, INC. SUBSIDIARY OF SPECIALTIES CO.

BY: KEN FORDYCE DATE: 10/07/91 REVISED BY: ROGER PEACE
TECHNICAL MANAGER
COPPER STATE RUBBER

REVISION NO: 5 DATE: 5-31-2005

SUPPORTING PQR(s): 911171-2

REVIEWED REV. 5
24 JUNE 2005

INDEPENDENCE CONTRACT DRILLING
P.O. NO.: PO00116446
DATE: FEBRUARY 23, 2018
FILE NO.: CSR / SPECO-81069

SwL **SOUTHWESTERN LABORATORIES**

Materials, environmental and geotechnical engineering, nondestructive, metallurgical and analytical services
222 Cavalcade St. • P.O. Box 8768, Houston, Texas 77249 • 713/692-9151

REVIEWED as indicated in ABS Letter dated DEC 20 1995 ABS HOUSTON

Welding Procedure Specification, WPS No. 911171-1
Section IX, ASME Boiler & Pressure Vessel Code, 1989 Edition, 1990 Addenda

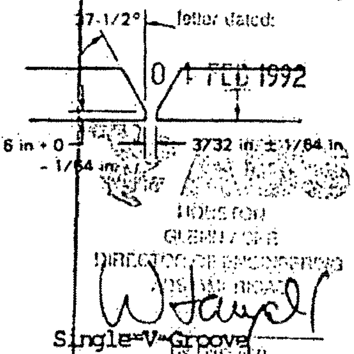
Company: Copper State Rubber, Inc. subsidiary of Specialties Co.

By: Ken Fordyce Date: 10/07/91 Revised By: ROGER PEACE Date: 7-16-93
REVISION 4.
TECHNICAL MANAGER
COPPER STATE RUBBER

Supporting PQR(s): 911171-2

WELDING PROCESS(es)
Auto: ——— Semi-auto: GMAW-S Machine: ——— Manual: SMAW

APPROVED
This approval covers only ABS requirements and does not include items not required by ABS. See comments in ABS letter dated: 04 FEB 1992
[illegible] DIRECTOR OF ENGINEERING



Range Qual to 8" thk for non impacts to 2.5" for impacts
MDT -30°C
Acceptable for H_2S service NACE MR0175
ASME IX Only (no) Dezl

JOINTS (QW-402)
Joint Design: The joint may be changed from that shown to any other type (e.g. double-V, single-, double-U, single-, double-J, etc.) which is consistent with design and application requirements, including those of the construction code; changes in the design (root gap, use of retainers, etc.) beyond that permitted in this WPS must be specified in a new or revised WPS.

Backing: Use backing or backgouging w/SMAW.

Backing Type: weld metal or base metal

Retainers: metallic/nonmetallic may be used

BASE METALS (QW-403)
Specification: AISI 4130 API 6A 75K material designation, 207-235 BHN

Groove Thickness Range: 3/16"-8" f/nonimpacts Fillet Thickness Range: all

Pipe Groove Diameter Range: all Pipe Fillet Diameter Range: all

Other Base Metal Thickness Limitations:
(1) 1.65" maximum for any single weld pass thicker than 1/2."
(2) 5/8" minimum to 2.5" maximum for impacts

DET NORSKE VERITAS 1864

For compliance with the applicable parts of the Norwegian Petroleum Directorate's "ACTS, REGULATIONS AND PROVISIONS FOR THE PETROLEUM INDUSTRY"

FILLER METALS (QW-404)
AWS Class No.: Only A-No. 11 low hydrogen electrodes (E10018-D2, Exxx15-D2, & Exxx16-D2) are qualified for impacts; only ER80S-D2 is qualified for impacts.
Specification: 5.28, GMAW; 5.5, SMAW F-No.: 6, GMAW; 4, SMAW A-No.: 11
Size: 0.035"-0.045" diameter for GMAW-S; 1/8"-1/4" diameter for SMAW
Groove Weld Size/Deposit Range: 0.14" max. for GMAW-S; 2.36" max. for SMAW impacts; 7.86" max. for SMAW nonimpacts
Fillet Size Range: any
Other: The maximum SMAW bead size qualified for impacts is 3/16" thick x 1/2" wide x 6" long. See foot note to Table 1. Solid bare wire must be used for GMAW. Supplementary filler metal or powder not permitted.

For compliance with UK DEN OFFSHORE INSTALLATIONS (CONSTRUCTION AND SURVEY) REGULATIONS, 1974

POSITIONS (QW-405)
Groove: flat for impacts
Fillet: flat for impacts
Vertical Progression: up or down

WELD & BASE METAL TEMPERATURES (QW-406)
Preheat: 200°F for T to 1"; 300°F over 1"
Interpass: 600°F for impacts
Maintenance: none

POSTWELD HEAT TREATMENT (QW-407)
Temperature Range: 1200°F-1225°F or 20°F-30°F below base metal tempering temperature.
Time Range: 1 hour per inch of section thickness

SHIELDING, BACKING, TRAILING GAS (QW-408)

GMAW-S	Gas Type/Mix	Percent Mixture	Flow Rate (cfh)
Shielding:	Argon/CO2*	75% Ar/25%CO2*	30 Minimum
Backing:	none*	none	none
Trailing:	none	none	none

ELECTRICAL CHARACTERISTICS (QW-409)
Current & Polarity: DC reverse (DCEP) Heat Input: See Table 1 note.
Voltage: See Table 1. Transfer Mode:: short-circuiting for GMAW-S

TECHNIQUE (QW-410)
String or Weave: string only for impacts*
Cleaning: wire brush, chip, grind, or other suitable means to remove slag, rust, scale, grease, or other harmful materials from the weld fusion zone
Method of Back Gouging: mechanical or thermal cutting (w/specified preheat)
Tube to Work Distance: 1/4"-1/2" Passes per Side: multiple only for impacts
Electrodes: single only for impacts Peening: may be used on intermediate
GMAW Gas Cup Size: Nos. 3-8 passes to reduce shrinkage stresses

TABLE 1
ESSENTIAL & NONESSENTIAL PROCEDURE VARIABLES

Pass		Filler Metal		Current			Travel	
No.	Process	Class	Dia.	Type	Amps.	Volts	Direction	Speed
1	GMAW-S	ER80S-D2	0.035	DCEP	60-130	15-20	Flat	7.0 ipm
Any	SMAW	E10018-D2	1/8	DCEP	110-140	18-25	Flat	7.0 ipm

*NOTE: The maximum bead size that may be deposited for impacts in any pass is 3/16" thick x 1/2" wide x 6" long with 1/8" diameter electrodes.

This WPS was documented to code requirements by Ron Dodgen of SwL as Report No. 911171-1. It gives the values and/or limits of essential, supplementary essential, and nonessential welding variables permitted by Section IX of the ASME Code as a result of successful procedure qualification. The essential and supplementary essential variables may be changed within the limitations of ASME Section IX, QW-250 without requalification. Changes outside those limits require requalification of the altered procedure.

Reviewed By: Date: 10/07/91 File No.: 12-8075-00

SwL SOUTHWESTERN LABORATORIES

Materials, environmental and geotechnical engineering, nondestructive, metallurgical and analytical services

222 Cavalcade St. • P.O. Box 8768, Houston, Texas 77249 • 713/692-9151

Prodecure Qualification Record, PQR No. 911171-2

Section IX, ASME Boiler & Pressure Vessel Code, 1989 Edition, 1990 Addenda

Date: 10/07/91 WPS No.(s): 911171-1

WELDING PROCESS(es)

Auto: ——— Semi-auto: GMAW-S Machine: ——— Manual: SMAW

JOINTS (QW-402)

Single-V-Groove Weld with No Backing
Root Gap = 1/8"
Root Face = 1/16"
Groove Angle = 70° 1st 3/4"
Groove Angle = 33° 2nd 3/4"

Joint Design

BASE METALS (QW-403)

Material Spec.: AISI 4130
Type & Grade: API 75k designation
P-No.: — to P-No.: —
Thickness of Test Coupon: 1-1/2"
Diameter of Test Coupon: 10" OD
Other: normalized, quenched, tempered to 228 BHN (Heat No.A2769)

FILLER METALS (QW-404)

	Spec	Class.	F-No.	A-No.	Dia.
GMAW:	5.28	ER80S-D2	6	11	0.035"
SMAW:	5.5	E10018-D2	4	11	1/8"

POSITION (QW-405)

Position of Joint: 1G Rolled
Progression of Weld See Table 1.

PREHEAT TEMPERATURE (QW-406)

Preheat: 300°F minimum
Interpass: 500°F maximum
Maintenance: ——

POSTWELD HEAT TREATMENT (QW-407)

Temperature: 1230°F
Time: 2-1/2 hours
Other: ——

GAS (QW-408)

Shielding Gas: Argon & CO2
Mixture: 75% Ar, 25% CO2
Shielding Flow Rate: 30 cfh
Backing Flow Rate: ———

ELECTRICAL (QW-409)

Voltage: See Table 1.
Current: See Table 1.
Mode of Transfer: Short Circuiting
Heat Input: See Table 1 note.

TECHNIQUE (QW-410)

String or Weave: String & Weave
Passes per Side: multiple
Machine Oscillation: NA
Number of Electrodes: NA
Deposit Thickness 1/8" GMAW; 1-3/8" SMAW

TABLE 1

ESSENTIAL & NONESSENTIAL PROCEDURE VARIABLES

Pass		Filler Metal		Current			Travel	
No.	Process	Class	Dia.	Type	Amps.	Volts	Direction	Speed
1	GMAW-S	ER80S-D2	0.035	DCEP	60-130	15-20	Flat	7.0 ipm
2-24	SMAW	E10018-D2	1/8	DCEP	110-140	18-25	Flat	7.0 ipm

NOTE: The maximum volume of weld metal deposited during any single pass was a 3/16" thick x 1/2" wide bead in a 6" length using a 1/8" diameter E10018-D2 electrode.

TENSILE TEST Nos. 57022 & 57103 (QW-150)

Specimen No.	Width or Dia. (in.)	Thickness (in.)	Area ($in.^2$)	Ultimate Load (lb.)	Ultimate Stress (psi.)	Failure Location
1	0.748	1.296	0.9694	98,710	101,800	Weld Metal
2	0.748	1.378	1.0307	105,700	102,500	Weld Metal

GUIDED BEND TEST Nos. 57022 & 57103 (QW-160)

Type & Figure No.	Result
Four Side Bends per QW-462.2	Satisfactory

TOUGHNESS TEST No. 57103 (QW-170)

Specimen No.	Notch Location	Notch Type	Test Temp(°C)	Impact Values	Lateral Exp Mils	Lateral Exp Shear%	Section Size at Notch (mm)	
1	Weld	Vee	-15	88	60	75	8	10
2	Weld	Vee	-15	29	39	30	8	10
3	Weld	Vee	-15	32	42	30	8	10
			Fusion Line (FL)					
1	FL	Vee	-15	52	37	60	8	10
2	FL	Vee	-15	47	36	60	8	10
3	FL	Vee	-15	56	43	60	8	10
1	FL+2mm	Vee	-15	104	70	75	8	10
2	FL+2mm	Vee	-15	118	74	75	8	10
3	FL+2mm	Vee	-15	102	68	75	8	10
1	FL+5mm	Vee	-15	108	70	75	8	10
2	FL+5mm	Vee	-15	106	68	75	8	10
3	FL+5mm	Vee	-15	105	66	75	8	10

Rockwell Hardness Survey (2mm below Face of Weld)

Left Base Metal Zones Unaffected		Left Base Metal Zones Heat Affected		Weld		Right Base Metal Zones Unaffected		Right Base Metal Zones Heat Affected	
No.	HRB	No.	HRB	No.	HRB	No.	HRB	No.	HRB
1.	97.2	2.	98.7	3.	96.6	6.	98.3	7.	96.7
				4.	96.9				
				5.	96.6				

Rockwell Hardness Survey (at midwall)

Left Base Metal Zones				Weld		Right Base Metal Zones			
Unaffected		Heat Affected				Unaffected		Heat Affected	
No.	HRB	No.	HRB	No.	HRB	No.	HRB	No.	HRB
8.	93.6	9.	93.5	10.	92.9	12.	95.8	13.	98.3
				11.	97.7				

Rockwell Hardness Survey (2mm below root of weld)

Left Base Metal Zones				Weld		Right Base Metal Zones			
Unaffected		Heat Affected				Unaffected		Heat Affected	
No.	HRB	No.	HRB	No.	HRB	No.	HRB	No.	HRB
14.	95.6	15.	99.9	16.	96.4	17.	97.9	18.	99.9

This PQR was documented to code requirements by Roy Rodges of SwL as Report No. 911171-2 from the welding variables recorded by Copper State Rubber, Inc. during the welding of the test coupons and the results of tensile, guided-bend, hardness, and charpy impact tests performed by SwL.

Reviewed By: [signature] Date: 10/07/91 Client No.: 12-8075-00

Welder: Randy Wiseman ID/Stamp No.: 234-48-95

We, the undersigned, certify that the statements in this record are correct and that the test welds were prepared and tested in accordance with code requirements.

Signed: Copper State Rubber, Inc.

Date: OCT 8, 1991 By: ROGER D PEACE

ROGER D. PEACE

SwL

SWL

SOUTHWESTERN LABORATORIES

Materials,environmental and geotechnical engineering, nondestructive, metallurgical and analytical services
222 Cavalcade St.• P.O.Box 6768, Houston, Texas 77249 • 713/692 9251

Welder Qualification Test Record, WQTR No. 930635-1

Section IX, ASME Boiler & Pressure Vessel Code, 1992 Edition

Using WPS No. 911171-1 Rev. 1, Welder Jay B. Williams, ID No. 453-06-6487, qualified for the following ranges.

Test Variables	Test Values	Qualification Range
PROCESS:	GMAW-S	GMAW-S Only
BACKING:	Without	With or Without
MATERIAL SPECIFICATION:	Quenched & Tempered AISI 4130 to API 6A TP 75K	P-No. 1 through P-No. 11, P-No. 4X and unassigned metals of similar chemical composition
DEPOSIT THICKNESS:		
GROOVE	1/8"	9/64" Maximum
FILLET	Not Applicable	Any
DIAMETER:		
GROOVE	4-1/2" OD	2-7/8" OD & Over
FILLET	Not Applicable	Any
FILLER METAL:		
SPECIFICATION	SFA-5.28	
CLASSIFICATION	AWS ER80S-D2	
F-NO.	6	6, or any bare wire conforming to an analysis listed in QW-442
POSITION:	1G	Flat Only
VERTICAL WELDING DIRECTION:	Not Applicable	—
BACKING GAS:	Without	With or Without

Examination & Test Results

GUIDED-BEND TEST NO. 60596 PER QW-160:	RESULT:
Two Side Bends per QW-462.2	Satisfactory

NOTE:	The Guided-bend tests were witnessed by Glen R. Lauritsen, Principal surveyor, ABS AMERICA, a division of The AMERICAN BUREAU of SHIPPING.

This WQTR was documented to Code requirements by Ray Jordyn *of SwL as Report No. 930635-1 from the welding variables recorded by Copper State Rubber, Inc., Specialties Co. during the welding of the test coupon and the results of guided-bend tests performed by SwL.*

REVIEWED BY

DATE:	May 12, 1993	FILE NO.:	12-8075-00

SWL

SOUTHWESTERN LABORATORIES

SwL

Materials, environmental and geotechnical engineering, nondestructive, metallurgical and analytical services
222 Cavalcade St.• P.O.Box 8768, Houston, Texas 77249 • 713/692 9251

Welder Qualification Test Record, WQTR No. 930635-2

Section IX, ASME Boiler & Pressure Vessel Code, 1992 Edition

Using WPS No. 911171-1 Rev. 1, Welder Jay B. Williams, ID No. 453-06-6487, qualified for the following ranges.

Test Variables	Test Values	Qualification Range
PROCESS:	SMAW	SMAW Only
BACKING:	With	With Only
MATERIAL SPECIFICATION:	Quenched & Tempered AISI 4130 to API 6A TP 75K	P-No. 1 through P-No. 11, P-No. 4X and unassigned metals of similar chemical composition
DEPOSIT THICKNESS:		
GROOVE	5/8"	1-1/4" Maximum
FILLET	Not Applicable	Any
DIAMETER:		
GROOVE	4-1/2" OD	2-7/8" OD & Over
FILLET	Not Applicable	Any
FILLER METAL:		
SPECIFICATION	SFA-5.5	
CLASSIFICATION	AWS E10018-D2	
F-NO.	4	1, 2, 3, & 4
POSITION:	1G	Flat Only
VERTICAL WELDING DIRECTION:	Not Applicable	–
BACKING GAS:	Not Applicable	–

Examination & Test Results

GUIDED-BEND TEST NO. 60596 PER QW-160:	RESULT:
Two Side Bends per QW-462.2	Satisfactory

NOTE:	The Guided-bend tests were witnessed by Glen R. Lauritsen, Principal surveyor, ABS AMERICA, a division of The AMERICAN BUREAU of SHIPPING.

This WQTR was documented to Code requirements by Ken Jordyn *of SwL as Report No. 930635-2 from the welding variables recorded by Copper State Rubber, Inc., Specialties Co. during the welding of the test coupon and the results of guided-bend tests performed by SwL.*

REVIEWED BY:

DATE:	May 12, 1993	FILE NO.:	12-8075-00

American Bureau of Shipping

TWO WORLD TRADE CENTER, 106TH FLOOR
NEW YORK, NEW YORK 10048

93-HS57593 1 6 May 1993

WELDER QUALIFICATION TEST

Jay Williams
Welder's Name:

S.S. No:453-06-6487
Identification

QUALIFICATION TESTS:
SPECIFICATION - ASME CODE, SECTION IX, Boiler & Pressure vessel code, 1989 Ed, 1990 ad.
WELDING PROCESS - Semi-Auto: GMAW-S - Manual: SMAW
JOINT TYPE - Single-V-Groove Weld with no backing
BASE MATERIAL TYPE - AISI 4130, API 75k designation
BASE MATERIAL THICKNESS/SIZE - 1-1/2" thick
FILLER METAL TYPE - GMAW Spec 5.28 ER805-D2
SMAW Spec 5.5 E10018-D2
FILLER METAL "F" - NO. F-6, F-4
TEST POSITION - 1G Rolled

GUIDED BEND TEST RESULTS:

Specimen No.	Type	Results
S-1	Side	Satisfactory
S-2	Side	Satisfactory

POSITION AND TYPE WELD QUALIFIED:
MATERIAL GROUP: API 75k designation
FILLER METAL GROUP: GMAW 5.28 Spec ER805-D2
SMAW 5.5 Spec E10018-D2

	MATERIAL	THICKNESS/SIZE	POSITION
GROOVE WELD:	PLATE & PIPE	MAX TO BE WELDED	FLAT
FILLET WELD	PLATE & PIPE	ALL	FLAT
	PLATE & PIPE	ALL	FLAT

R.G. Carver, Surveyor

G.R. Lauritsen, Surveyor

NOTE: This Report evidences that the survey reported herein was carried out in compliance with one or more of the Rules, guides, standards or other criteria of American Bureau of Shipping and is issued solely for the use of the Bureau, its committees, its clients or other authorized entities. This Report is a representation only that the vessel, structure, item of material, equipment, machinery or any other item covered by this Report has been examined for compliance with, or has met one or more of the Rules, guides, standards or other criteria of American Bureau of Shipping. The validity, applicability and interpretation of this Report is governed by the Rules and standards of American Bureau of Shipping who shall remain the sole judge thereof. Nothing contained in this Report or in any notation made in contemplation of this Report shall be deemed to relieve any designer, builder, owner, manufacturer, seller, supplier, repairer, operator or other entity of any warranty express or implied.

AB 141 Revised 12/85

American Bureau of Shipping

STATEMENT OF FACT

CERTIFICATE No. 93-HS57593

PORT OF Houston, Texas

DATE 6 May 1993

This is to Certify that the undersigned Surveyor to this Bureau, did, at the request of Copper State Rubber/Specialties of Houston, Texas on the28th day of April 1993 and in order to witness and report on Welder Qualification Test. For further particulars, see report as follows:

1. The following welder was tested in accordance with Section IX of ASME Boiler and Pressure Vessel Code and the American Welding Society Structural Welding Code. Weld Specimens were physically tested, examined and found satisfactory.

   Jay Williams S.S. NO. 453-06-6487

2. For particulars on tests performed, material, electrodes and positions qualified for, see attached sheet.

R.G. Carver, Surveyor

G.R. Lauritsen, Surveyor

SOUTHWESTERN LABORATORIES, INC.

222 Cavalcade
P.O. Box 8768
Houston, Texas 77249
Phone: (713) 692-9151
Fax: (713) 696-6307

Report No.: 930949
Date: July 16, 1993
Client No.: 12-8075-00
Page No.: 1 of 2

Copper State Rubber, Inc.
P.O. Box 266084
Houston, TX 77207

Attention: Mr. Roger Peace

Projects: **Charpy Impact Testing of a Procedure Qualification Test Weld**

PROJECT INFORMATION

WELDING PROCEDURE:	*Previously qualified WPS No. 911171-1 (supported by PQR No. 911171-2)*
WELDMENT AS-RECEIVED:	*AISI 4130, as-welded condition*
IDENTIFICATION:	*Heat No. A2769*
SPECIFICATIONS:	*ABS, Guide for the Certification of Drilling Systems, 1990*

Post Weld Heat Treatment

SPECIFICATION:	*PQR No. 911171-2*
TIME:	*2 hours at temperature*
TEMPERATURE:	*1200° F-1210° F*
HEATING RATE:	*212° F per hour from 700° F*
COOLING RATE:	*318° F per hour to 700° F*

HEAT TREATMENT:	*No. 60973*	HEAT TREATMENT DATE:	*July 12, 1993*

Charpy Impact Test Results

SPECIFICATIONS:	*0.015" lateral expansion*	TEST TEMPERATURE:	*Minus 30° C*
LINEAR HAMMER VELOCITY:			*16.8 feet per second*
EFFECTIVE ENERGY:	*264 foot pound force*	TECHNICIAN:	*M. Petersen*
SPECIMEN TYPE & SIZE:	*ASTM A 370, E 23, Type A; 10 mm x 10 mm*		
LOCATION & ORIENTATION:	*Weld metal, HAZ, and base metal, 2mm and 5mm from the fusion line, 1/16" below the surface and transverse to the weld axis*		
TEST EQUIPMENT:	*Tinius Olsen Serial No. 103222*	TEST PROCEDURE:	*ASTM A 370, E 23*
TEST NO.:	*60988*	TEST DATE:	*July 14, 1993*

SPECIMEN IDENTIFICATION	WIDTH, INCHES	EFFECTIVE THICKNESS, INCHES	IMPACT ENERGY, FT-LBF	LATERAL EXPANSION, MILS	PERCENT DUCTILE FRACTURE
930949-1-1 (WELD)	*0.394*	*0.316*	*60*	*40*	*25*
930949-1-2 (WELD)	*0.394*	*0.316*	*59*	*40*	*25*
930949-1-3 (WELD)	*0.394*	*0.316*	*62*	*42*	*25*
930949-2-1 (HAZ)	*0.394*	*0.316*	*49*	*32*	*25*
930949-2-2 (HAZ)	*0.394*	*0.316*	*101*	*60*	*50*
930949-2-3 (HAZ)	*0.394*	*0.316*	*40*	*22*	*25*

REPORT NO. : 930949

COPPER STATE RUBBER COMPANY

SPECIMEN IDENTIFICATION	WIDTH, INCHES	EFFECTIVE THICKNESS, INCHES	IMPACT ENERGY, FT-LBF	LATERAL EXPANSION, MILS	PERCENT DUCTILE FRACTURE
930949-3-1 (2 MM)	0.394	0.315	76	50	60
930949-3-2 (2 MM)	0.394	0.315	71	47	60
930949-3-3 (2 MM)	0.394	0.315	114	69	90
930949-4-1 (5 MM)	0.394	0.315	80	47	70
930949-4-2 (5 MM)	0.394	0.315	82	51	70
930949-4-3 (5 MM)	0.394	0.315	75	45	70

COMPLIANCE:	*The impact test results met the specification.*

KF/kf

Reviewed By:

Prepared By:

Det norske Veritas Industry, Inc.
16340 Park Ten Place, Suite 100
Houston, Texas 77084
Tel: (713) 579-9003
Facsimile: (713) 579-1360

INSPECTION REPORT

QAS Project Number: 51-05428-63	**QAS Report Number:** 51-05428-63-1
P.O. Number: 2322RP	**Inspection Date:** February 18, 1994
Main Vendor: Copper State Rubber	**Insp. Location:** Houston, Texas
Sub Vendor: N/A	**Vendor Contact:** Roger Peace
Vendor Ref: wps 911171-1	**Vendor Phone:** 713 644 1491
Req. No: N/A	**Quantity:** N/A
Part No: N/A	**Serial No:** N/A
EQUIPMENT DESCRIPTION:	Weld Procedure Review

Inspection Comments:

Purpose of Inspection: Review Weld Procedure.

Acceptance Criteria: ASME IX
NACE MR-0175
DNV Rules Drill(N), MOU

Reference Documents: None

Scope of Activity:

DNV reviewed the above Weld Procedure and found it to be in compliance with the above referenced standards with comments (see front page of WPS for comments).

FAX: Yes **Date:** 02/18/94 **Signature:** Harold Melton

Distribution:		**Attn:**	**FAX #:**
Original to Client:	Copper State Rubber	Roger Peace	713 644 9830
Copy to File:	51-05428-63 (D-217)		

February 18, 1994

Copper State Rubber
Attn: Roger Peace
6401 McGrew Street
Houston, Texas 77087

Reference: WPS No: 911171-1 Rev. 4

DNV Reference: 51-05428-63

Dear Mr. Peace

Please find enclosed one copy of the referenced weld procedures for your review and action as noted below:

- Reviewed with comments - for your records (For comments - see front page of W.P.S.)

The referenced weld procedure was reviewed against the following standards (latest revision):

X	ASME IX	__	DNV Tech. Note B-108
__	AWS D1.1	__	DNV Rules - Lifting Appliances
__	API 6A	__	DNV Rules - Submarine Pipelines
X	NACE MR-01-75	X	DNV Rules - Drill(N) for Mobile Offshore Units

If you should have questions or comments regarding this review, please do not hesitate to contact us and discuss it.

Regards,

Harold Melton
Q.A. Specialist

Procedure # RT-3

Radiographic Specialists, Inc.

4110 Mohawk Houston, Tx 77093

Phone: 281-449-1634 Fax: 281-449-1640

IP-Inadequate Penetration
IF-Inadequate Fusion
BTA-Burn Through Area
SL-Slag Line
SI-Slag Inclusion
P-Porosity
GP-Gas Pocket
C-Crack
IU-Internal Undercut
OU-Outside Undercut
LC-Low Crown

Page: 1 OF: 1
Date: 5-17-07
S/O: CSR48608-A 1&B
P/O: 3051 RP
Spec/Heat/Other: ASME Sec VIII & API 1104
Customer: Cooper State Rubber Job Location: RST

#	Seam #	Film #	Matl Dia.	Thk	Acc Y	Acc N	Remarks	#	Seam #	Film #	Matl Dia.	Thk	Acc Y	Acc N	Remarks
1	06	1-2	4½ .337		1			23							
2		2-3			1			24							
3		3-4			1			25							
4		4-1			1			26							
5								27							
6								28							
7								29							
8	2 Barrels		Ranks		1			30							
9								31							
10	06-1	BHW	240				188 BAC	32							
11	BM	"	240					33							
12	BM		240					34							
13								35							
14								36							
15								37							
16								38							
17								39							
18								40							
19								41							
20								42							
21								43							
22								44							

IDENTIFICATION
5" PIPE PQR TEST TONY ADAMS

Single Or Double Wall: DW
Material: C/S
Thickness: 3/4"
Single Or Double Viewing: SV
Penetrameter: 2F
Screen: 160 S
Mapping Loc.When App.: 90°
No. Of Exp: 4
Film Brand: AGFA
Min.Source To Film Distance: Cont.
Focal Spot Size: .146
Isotope Used: Ir192
Designation: D4

Depart Shop: _____ Arrive Job: _____ Depart Job: _____ Arrive Shop: _____

Film Total: 4
Stand-By: _____ No Of Film Per Cassette: _____

Technician: Montford Level: III Customer: [illegible]

RADIOGRAPHIC SPECIALISTS, INC.

4110 MOHAWK
HOUSTON TX 77093

PHONE (281) 449-1634
PAX (281) 449-1640

RESULTS OF TEST ON STEEL SPECIMENS

TO: COPPER STATES RUBBER/SPECIALTIES COMPANY

DATE: 05-31-05

LAB TEST NO: 05-31-9036

MATERIAL: _____

CUSTOMER JOB NO: _____

SPEC. IDENTIFICATION: 5" PIPE PQR TEST TONY ADAMS

Other Test

CHARPY IMPACT -30 DEG F

WELD METAL	HAZ.
55 FT LBS 30% SHEAR .048 LAT EXP	125 FT LBS 60 % SHEAR .091 LAT EXP
60 FT LBS 30% SHEAR .062 LAT EXP	120 FT LBS 60% SHEAR .085 LAT EXP
55 FT LBS 30% SHEAR .048 LAT EXP	125 FT LBS 60 % SHEAR .091 LAT EXP

WITNESS BY: _____

RADIOGRAPHIC SPECICALISTS, INC.

COPIES: _____

BY: TIM BRADLEY III

REPUBLIC

8902 N. MAIN
HOUSTON, TX 770220
Ph: 713-692-3410 Fax: 713-692-3910

Certification

Order Number
35022

Customer: 00000074
SPECIALTIES COMPANY
6401 MC GREW
HOUSTON, TX 77087

Shipped To:
WILL CALL
6401 MC GREW
HOUSTON, TX 77087

Customer Purchase Order No.	Customer Shipper No.	Material Type	Mat'l Heat Code	Lot Number
48619		ANY		

Process: STRESS RELIEVE

PROCESSING SPECIFICATIONS

Requirement	Specified	Qty Tested	Test Results

Line#	Quantity	Weight	Part Number/Description	Revision
1 2 3	1	21.0	6" OD X 4-1/4" ID X 13" LENGTH WELD TEST COUPON ID NOS:CSR-48608-1-A & 48608-2-B	

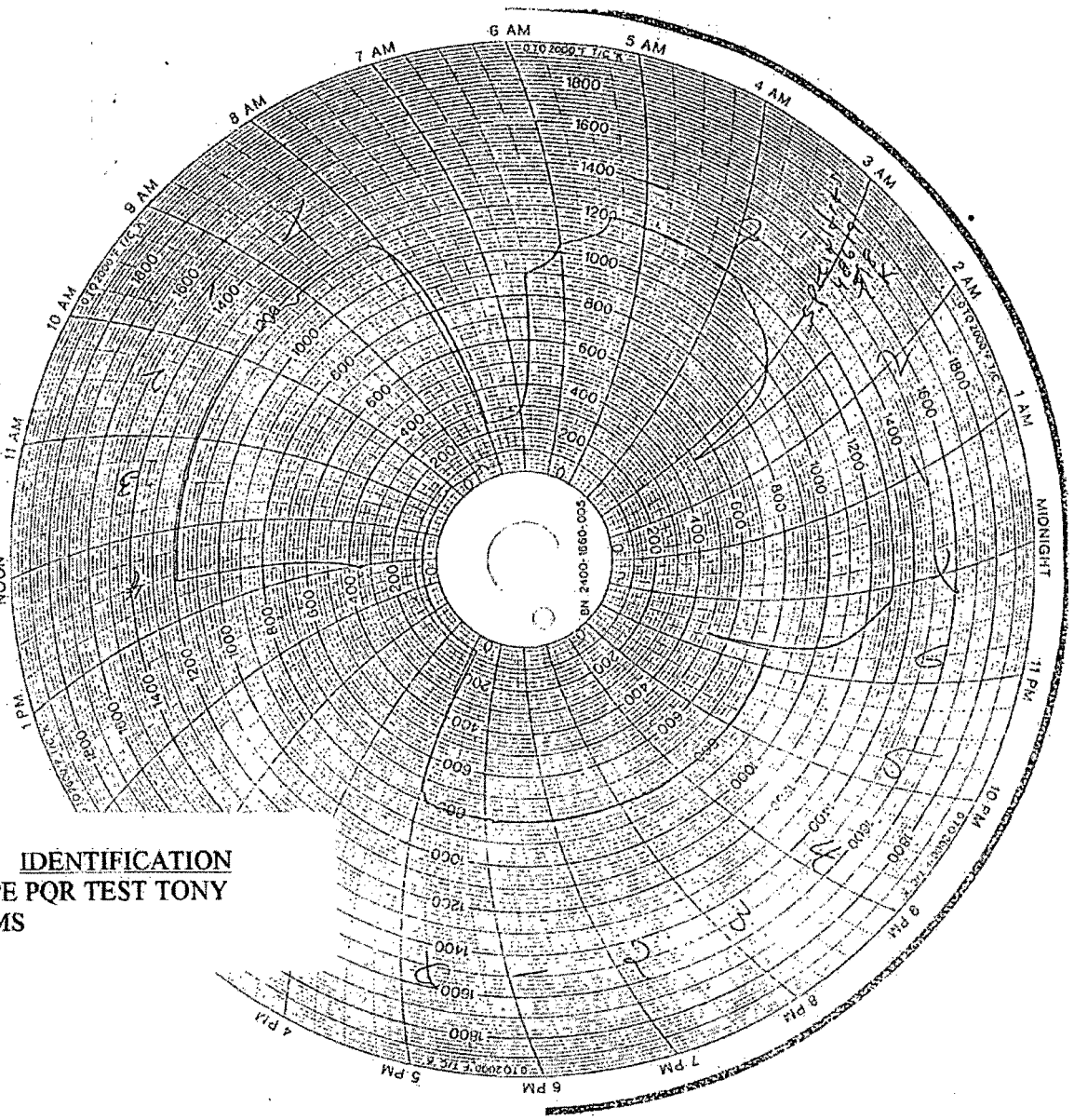
Operation	Spec Temp Range	Specified Soak Time	Furnace# Load#	Atmos/Dpt CarbPot	Q-Media Q-Temp	Start Date	Time In	Time Out	Date Complete
STRESS	1200	1:00	3			05/18/2005	2:45	6:30	05/18/2005

COMMENTS

JAMES MUSGROVE 5/18/05
Date Signed

IDENTIFICATION
5" PIPE PQR TEST TONY
ADAMS

REVIEW OF REPUBLIC
WORK ORDER ☐ DEBITS ☑
TO CUSTOMER REQUIREMENTS
DATE 5/18/05



IDENTIFICATION
5" PIPE PQR TEST TONY
ADAMS

HOUSTON HEAT TREAT, INC.
Houston, Texas

Customer Specialties Company
Description @ 6"OD X 4 1/4" ID X 12" Length Weld Test Coupon
P.O. 48619 SO
Furnace #3 Serial No.
Date 5-18-05 Heat No.
Temperature 1200° Time 12e

ID Nos: CSR-48608-1-A-4
48608-2-0.

LTV COPPERWELD
TUBULAR PRODUCTS

LTV COPPERWELD
MECHANICAL GROUP SHELBY
SHELBY, OHIO 44875-1471
Telephone 419/342-1200 FAX: 419/342-1437

MATERIAL TEST REPORT

FAXED

QS9000/ISO 9002 CERTIFIED

SHELBY ORDER NO: 140562

CUSTOMER	SPECIFICATION	CUSTOMER ORDER
TUBULAR STEEL INC 1031 EXECUTIVE PARKWAY DRIVE ST LOUIS MO 63141	ASTM A519 96	4538

GRADE	SIZE(O.D x ID / WALL)	QUANTITY	SHIPPED	DATE
4130	6.000 X 4.000 X 1.000	8214 LB 153.83 FT	02/15/01	02/15/01

CONDITION: SMLS HF HEAT TREATED QUENCH & TEMPER ELECTRIC FUR

PART NO.:

S# 00099194
50043089

CHEMICAL ANALYSIS

HEAT NO.	C	Mn	P	S	Si	Ni	Cr	Mo	Cu	V	Al	OTHER	GRAIN SIZE
14086	.31	.52	.009	.018	.230	.110	.960	.180	.120	.004	.022	CA .0002	6-8

MECHANICAL PROPERTIES — MAGNAFLUX

HEAT NO.	LOAD NO.	YIELD PSI	TENSILE PSI	ELONG %	RED AREA %	HARDNESS BHN	HARDNESS ROCKWELL	IMPACT FT.-LBS	FREQ	SEVERITY
14086	T2692147	84100	103800	2.0" 28	68		RC 19	SIZE 10.0X10.0 TEMP F -50 RESULTS 112 77 115		

JOMINY HARDENABILITY (EXPRESSED IN 16THS)

HEAT NO.	1	2	3	4	5	6	7	8	10	12	14	16	20	24	28	32
14086	51	50	49	47	42	39	36	33	31	29	29	28	25	26	24	24

J-K RATING

HEAT NO.	A	B	C	D

SLAG-OXIDE RATING

INGOT	OXIDE	SLAG

IDENTIFICATION
5" PIPE PQR TEST TONY ADAMS

MELT SOURCE: ESG

OTHER INSPECTION: MACRO ETCH: S2 R1 C2
NON DESTRUCIVE TESTED
Non-Destructive Tested
NACE STD, MR0175, REV-1993 PARAGRAPH 3.

THIS TEST REPORT NOTARIZED WHEN REQUIRED
SWORN AND SUBSCRIBED BEFORE ME
THIS _____ DAY OF _____

NOTARY PUBLIC

Brian M. Clark
Brian M. Clark, Chief Metallurgist

Specialties Company
copper state rubber, inc.

6401 McGrew St.
Houston, Texas 77087
713-644-1491
713-644-9830 Fax
csrhouston@msn.com

ADDENDUM

WELDING PROCEDURE SPECIFICATION, WPS NO.: 911171-1
PROCEDURE QUALIFICATION RECORD, PQR NO.: 911171-2

COMPANY: COPPER STATE RUBBER, INC./SUBSIDIARY OF SPECIALTIES COMPANY

REVISION 1:	DATE 1-31-92 – CORRECT TYPOGRAPHIC ERROR STRINGER PASS, AMPERES AND VOLTS
REVISION 2:	DATE 5-12-93 – JAY B. WILLIAMS I.D. NO.: 453-06-6487 QUALIFIED TO THIS WPS; WQTR NOS.: 930635-1 AND 930635-2
REVISION 3:	DATE 6-14-93 – CORRECT TYPOGRAPHIC ERROR SMAW PROCESS, AMPERES AND VOLTS
REVISION 4:	DATE 7-16-93 – WPS QUALIFIED FOR CHARPY IMPACTS AT -30°C; SwL REPORT NO.: 930949
REVISION 5:	DATE 5-31-2005 – CHANGE STRESS RELIEVE TIME FROM 2 HOURS TO 1 HOUR

REVIEWED REV. 5
24 JUNE 2005

REPUBLIC HEAT TREAT

CERTIFICATION

Specialties Company
14141 S. WAYSIDE DR.
Houston, TX 77048 USA

Certification ID: 38120-1
Date: 11/21/2017
Cert Date: 11/21/2017
Purchase Order: 7494
Material: ANY

We are pleased to provide you with the following Certification.

Part Number	Part Description	Qty	Weight
NONE	3"CK W/4-1/16 10M FLANGE, S/N: H1253-H1266	4	820.00
NONE	4"CK W/4-1/16 10K HUBS, S/N: 80868-1,2	2	0.00

Customer Requirements

Inspection Type	U Of M	Lower Spec	Lower Control	Target Value	Upper Control	Upper Spec

Results

Inspection Type	Scale	Minimum	Maximum

Operation

STRESS RELIEVE:1200 FOR 1HR

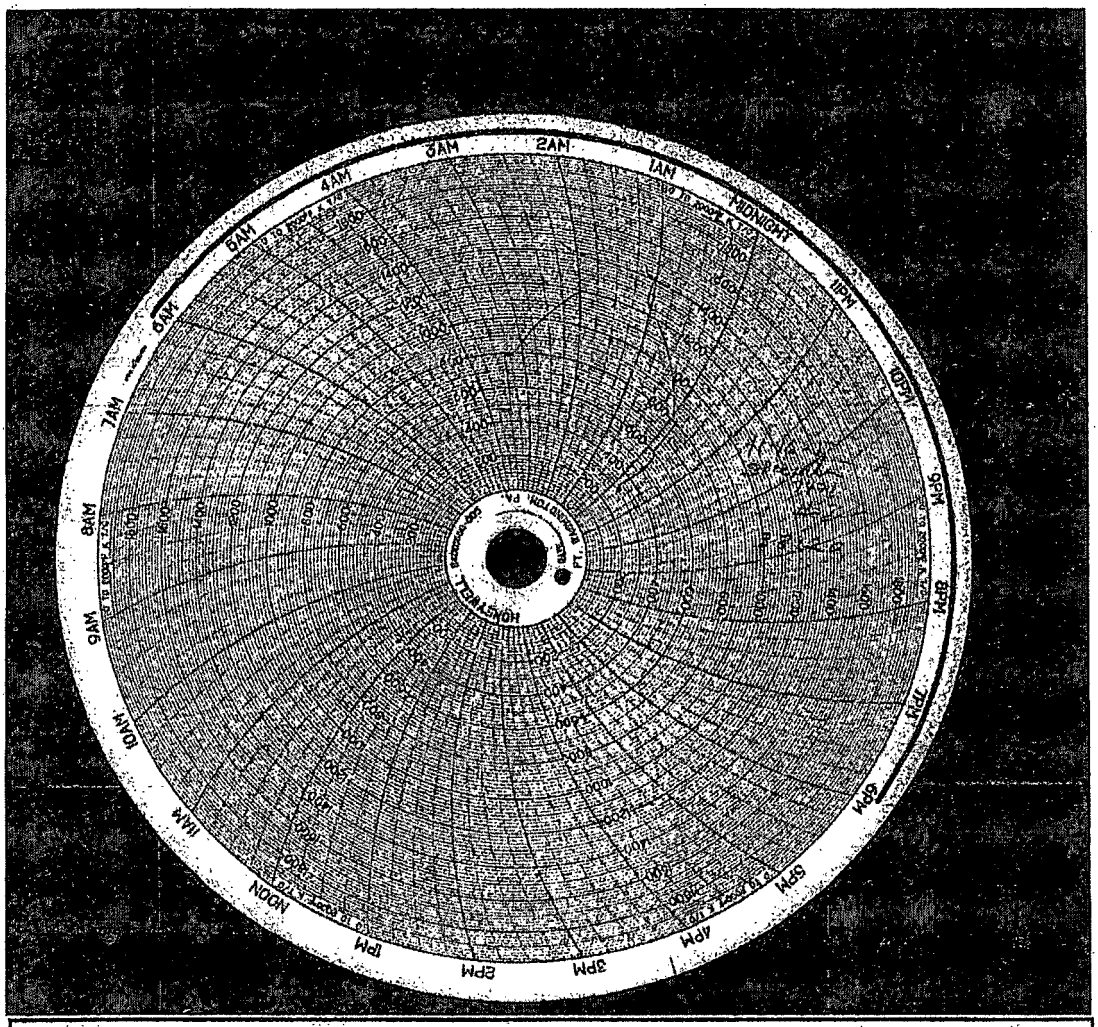
Certification Statement

THIS MATERIAL HAS BEEN STRESSED PER CUSTOMER REQUIREMENTS

Certified By: Chris Yeppez
Title: General Manager
Date: 11/21/2017

All work is accepted subject to the following conditions (adopted by the Metal Treating Institute) : It is generally recognized that even after all science known to us and capable men with years of training, there remain hazards in heat treating. Therefore, our liability to our customers shall not exceed twice the amount of our charges for the work done on any materials, (first I reimburse for the charges and second to compensate in the amount of the charges); except by written agreement. Warranty will be assumed only when made in writing and signed by both you and us. In such event, a higher charge will be made for our services. No claims for shortages in weight or amount will be entertained unless presented within five (5) working days after receipt of materials by customer. No claims will be allowed for shrinkage, expansion, deformity, or rupture in treating or straightening except by written agreement, as above, nor in any case for rupture caused by subsequent grinding. Whenever we are given material with detailed instructions as to treatment, our responsibility shall end with the carrying out of those instructions. Failure by a customer to indicate plainly and correctly the kind of materials, (Make, Brand, and Grade of Steel), to be treated, shall cause an extra charge to be made to cover any additional expense incurred as a result thereof. It shall be the duty of the customer to inspect the merchandise immediately upon return, and in any event claims must be reported prior to the time that any further processing, assembling or any other work has been done on said material. We will accept no responsibility for Gas Nitrided surface hardness, case depth, or dimensional change on material which has not been pretreated to a Martensitic Microstructure with a base hardness of 26-34 RC. Nitride absorption and surface hardness are directly correlated to the precondition of the material to be Gas Nitrided. No agent or representative is authorized to alter these rules and conditions, except in writing duly approved by us.

INDEPENDENCE CONTRACT DRILLING
P.O. NO.: PO00116446
DATE: FEBRUARY 23, 2018
FILE NO.: CSR / SPECO-81069



Part Number	Part Description	Quantity	Wt. Each	Wt. Extended
NONE	3"CK W/4-1/16 10M FLANGE	4	205.00	820.00
S/N: H1263-H1266				
NONE	4"CK W/4-1/16 10K HUBS	2	0.00	0.00
S/N: 80868-1,2				

[illegible]	SPECIALTIES COMPANY		
[illegible]	SEE ABOVE		
[illegible]	7494	[illegible]	38120
[illegible]	3	[illegible]	SEE ABOVE
[illegible]	11/16/17	[illegible]	SEE ABOVE
[illegible]	S/R	[illegible]	1200F [illegible] 1 HRS

Procedure # RT-3

Radiographic Specialists, Inc.

41 1 0 Mohawk Houston, Tx 77093

Phone: 281-449-1634 Fax: 281-449-1640

IP-Inadequate Penetration
IF-Inadequate Fusion
BTA-Burn Through Area
SL-Slag Line
SI-Slag Inclusion
P-Porosity
GP-Gas Pocket
C-Crack
IU-Internal Undercut
OU-Outside Undercut
LC-Low Crown

Page: _____ Of: _____
Date: 11/20/17
S/O:
P/O: 7815
Spec/Heat/0ther: ASME SEC VIII SEC. VIII DIV.1 UW 51

Customer: COPPER STATE RUBBER Job Location: R.S.I.

#	Seam #	Film #	Matl Dia.	Thk	Acc y	Acc N	Remarks	#	Seam #	Film #	Matl Dia.	Thk	Acc y	Acc N	Remarks
1	H1263	1 2	3"	7/8"	X			23							
2		2 3			X			24							
3		3 4			X			25							
4		4 1			X			26							
5	H1264	1 2			X			27							
6		2 3			X			28							
7		3 4			X			29							
8		4 1			X			30							
9	H1265	1 2			X			31							
10		2 3			X			32							
11		3 4			X			33							
12		4 1			X			34							
13	H1266	1 2			X			35							
14		2 3			X			36							
15		3 4			X			37							
16		4 1			X			38							
17								39							
18								40							
19								41							
20								42							
21								43							
22								44							

Single Or Double Wall: D.W. Material- C/S Thickness- 7/8"

Single Or Double Viewing: S.V. Penetrameter: B PACK Screen: .005

Mapping Loc.When App.: 90 DEG. No. Of Exp: 16 Film Brand: AGFA

Min.Source To Film Distance: CONT. Focal Spot Size: .146

Min. Film to Obj. Distance: Contact Isotope Used: IR192 Designation: D5

Depart Shop: _____ Arrive Job: _____ Depart Job: _____ Arrive Shop: _____

Film Total: 16 Stand-By: _____ No Of Film Per Cassette: 1

Technician: TIM BRADLEY Level: III Customer: _____

The results reported represent opinions only and are not to be considered as warranties or guarantees of quality, classification, or usability of material examined. We shall assume not further responsibility for radiographs following the acceptance by the customer's field representative upon signing of field report. In no event shall the liability of Radiographic Specialists, Inc., as to any items inspected or tested (including any liability as to selection and/or results of such test) exceed the charge of Radiographic Specialists, Inc. for the inspection of such items.

INDEPENDENCE CONTRACT DRILLING
P.O. NO.: PO00116446
DATE: FEBRUARY 23, 2018
FILE NO.: CSR / SPECO-81069

RADIOGRAPHIC SPECIALISTS, INC.

4110 MOHAWK
HOUSTON TX 77093

Ph. 281-449-1634
Fax 281-449-1640

TO: COPPER STATES

DATE: 11/20/17
P. O. NO. 7815
JOB NO.
DEL SLIP

LOCATION: R.S.I.

MAGNETIC PARTICLE INSPECTION REPORT

ITEM NO.	DESCRIPTION	REJ	ACC	COMMENTS
4	3" CK FTG. W/4-1/16" 10M FLANGE H1263 THRU H1266		X	

Materials Used 1 CAN 850A

APPLICABLE SPECIFICATION SE709

ACCEPTANCE STANDARD ASME SEC VIII APP6 PAR6.4

SCOPE OF EXAMINATION 100% OF WELDED AREA

PROCEDURE NO. MT-5 Rev. 14

METHOD: WET X DRY

INSTRUMENT USED CONTOUR PROBE

MODEL: DA100 S/N. 7178

AMPERES: 10 #LIFT 6.5 AMP.

CURRENT: AC X DC

FLUORESCENT

BLACK LIGHT:

CALIBRATION:

LIGHT METER:

PREPARED BATH CIRCLE SAFE

TYPE: 850A

BATCH NO: 19685

TECHNICIAN TIM BRADLEY LEVEL III

WITNESSED BY

CUSTOMER

TIME LEFT RSI: TIME ARRIVED RSI:

Radiographic Specialists,Inc

(281)449-1634 4110 Mohawk Houston,Texas 77093 Fax (281)449-1640

To: COPPER STATE RUBBER

Date: 11-20-17

P.O.: 7815

Job No.:

Location: R.S.I.

BRINELL HARDNESS

LOCATION	BASE	WELD	BASE
H1263	200	206	198
H1264	214	206	206
H1265	223	214	223
H1266	214	206	214

API 16C

TECHNICIAN: TIM BRADLEY **CUSTOMER:** III

copper state rubber
CSR
Specialties Company

14141 S. Wayside Drive
Houston, Texas 77048

Phone 713-644-1491
Fax 713-644-9830
www.copperstaterubber.com
sales@copperstaterubber.com

FIELD TEST PROCEDURES FOR USED COPPER STATE RUBBER CHOKE/KILL AND SUPER CHOKE/KILL HOSE

VISUAL INSPECTION
ASSEMBLIES WITHOUT STAINLESS STEEL PROTECTIVE ARMOR

1. ARRANGE HOSE SO THAT IT CAN BE OBSERVED FROM ALL ANGLES.
2. CONDUCT THE EXAMINATION FOR EXTERNAL DAMAGE TO THE COVER, END STRUCTURE, AND TERMINATING CONNECTORS.
3. IF THE COVER HAS GOUGING OR TEARS FROM NORMAL ABRASION, THIS CAN BE REPAIRED BY UTILIZING A RUBBER REPAIR KIT. THE SOLE PURPOSE OF THE COVER IS TO PROTECT THE INTERNAL REINFORCEMENT WIRES THAT HOLD THE PRESSURE.
4. IF NO INTERNAL WIRES ARE EXPOSED, REPAIR THE COVER DAMAGE BEFORE IT BECOMES WORSE AND EXPOSES THE INTERNAL REINFORCEMENT WIRES TO THE EFFECTS OF THE ELEMENTS. FULL PRESSURE INTEGRITY REMAINS.
5. IF ANY OF THE INTERNAL REINFORCEMENT WIRES ARE EXPOSED, CHECK FOR ANY TYPE OF RUST/DETERIORATION OR BREAKS. IF THE WIRES ARE NOT DAMAGED, CLEAN THE AREA AND REPAIR WITH RUBBER REPAIR KIT. FULL PRESSURE INTEGRITY REMAINS.
6. IF ANY OF THE INTERNAL REINFORCEMENT WIRES ARE DAMAGED, THE HOSE SHOULD BE REMOVED FROM SERVICE IMMEDIATELY AND CONSIDERED UNSAFE FOR FURTHER SERVICE.

INDEPENDENCE CONTRACT DRILLING
P.O. NO.: PO00116446
DATE: FEBRUARY 23, 2018
FILE NO.: CSR / SPECO-81069

VISUAL INSPECTION
ASSEMBLIES WITH STAINLESS STEEL PROTECTIVE ARMOR

1. FOLLOW STEPS 1 AND 2 FOR ASSEMBLIES WITHOUT STAINLESS STEEL PROTECTIVE ARMOR.
2. IF THE OUTER STL/ST PROTECTIVE ARMOR HAS BEEN BROKEN, EXAMINE THE RUBBER COVER FOR GOUGES OR TEARS FROM NORMAL ABRASION. THEN FOLLOW STEP 4 FOR ASSEMBLIES WITHOUT STAINLESS STEEL PROTECTIVE ARMOR.
3. SECURE LOOSE ENDS OF PROTECTIVE ARMOR TO PROTECT AGAINST ADDITIONAL GOUGES OR TEARS TO RUBBER COVER.
4. HOSE ASSEMBLY SHOULD BE RETURNED TO COPPER STATE RUBBER, PHOENIX, ARIZONA USA AS SOON AS POSSIBLE FOR REPAIRS TO PROTECTIVE ARMOR.
5. IF ANY OF THE INTERNAL REINFORCEMENT WIRES ARE EXPOSED, CHECK FOR ANY TYPE OF RUST/DETERIORATION OR BREAKS. IF THE WIRES ARE NOT DAMAGED, CLEAN THE AREA AND REPAIR WITH RUBBER REPAIR KIT. FULL PRESSURE INTEGRITY REMAINS.
6. IF ANY OF THE INTERNAL REINFORCEMENT WIRES ARE DAMAGED, THE HOSE SHOULD BE REMOVED FROM SERVICE IMMEDIATELY AND CONSIDERED UNSAFE FOR FURTHER SERVICE.

CSR RECOMMENDS VISUAL INSPECTION WHENEVER POSSIBLE, ON A DAILY BASIS.

HYDROSTATIC TEST

1. TEST HOSE TO 1-1/4 TIMES MAX. ALLOWABLE WORKING PRESSURE WITH WATER, OIL, OR MUD BEING SURE ALL AIR HAS BEEN BLED OFF. HOLD FOR 15 MINUTES AFTER PRESSURE HAS STABILIZED

CSR RECOMMENDS HYDROSTATIC TEST AT APPROXIMATELY 6 MONTH INTERVALS ON RIG AND HOSE BE RETURNED TO OEM FOR INSPECTION AND RECERTIFICATION AT 5 YEARS FROM MANUFACTURE

COPPER STATE RUBBER

14141 S WAYSIDE DR.
HOUSTON, TEXAS 77048
TEL: (713) 644-1491
FAX: (713) 644-9830

WARRANTY TERMS AND CONDITONS

COPPER STATE RUBBER DRILLING HOSES ARE GUARANTEED FOR THE PERIOD OF 12 MONTHS (FROM DATE OF FIRST SERVICE) TO BE FREE FROM DEFECTS IN MATERIALS AND/OR WORKMANSHIP.

IN ORDER TO ESTABLISH A VALID WARRANTY CLAIM, CUSTOMER MUST GIVE NOTICE TO COPPER STATE RUBBER WITHIN 10 DAYS AFTER DISCOVERING THE DEFECT. WE WILL ADVISE IF HOSE SHOULD BE RETURNED TO FACTORY FOR INSPECTION (FREIGHT PREPAID). IF COPPER STATE DETERMINES HOSE TO BE DEFECTIVE, COPPER STATE WILL REPAIR OR REPLACE (AT ITS OPTION) THE HOSE IN QUESTION. ALL REPAIRS AND REPLACEMENTS WILL BE F.O.B. COPPER STATE RUBBER'S PLANT.

REMOVAL OR WELDING OF END FITTINGS WILL VOID WARRANTY

INDEPENDENCE CONTRACT DRILLING
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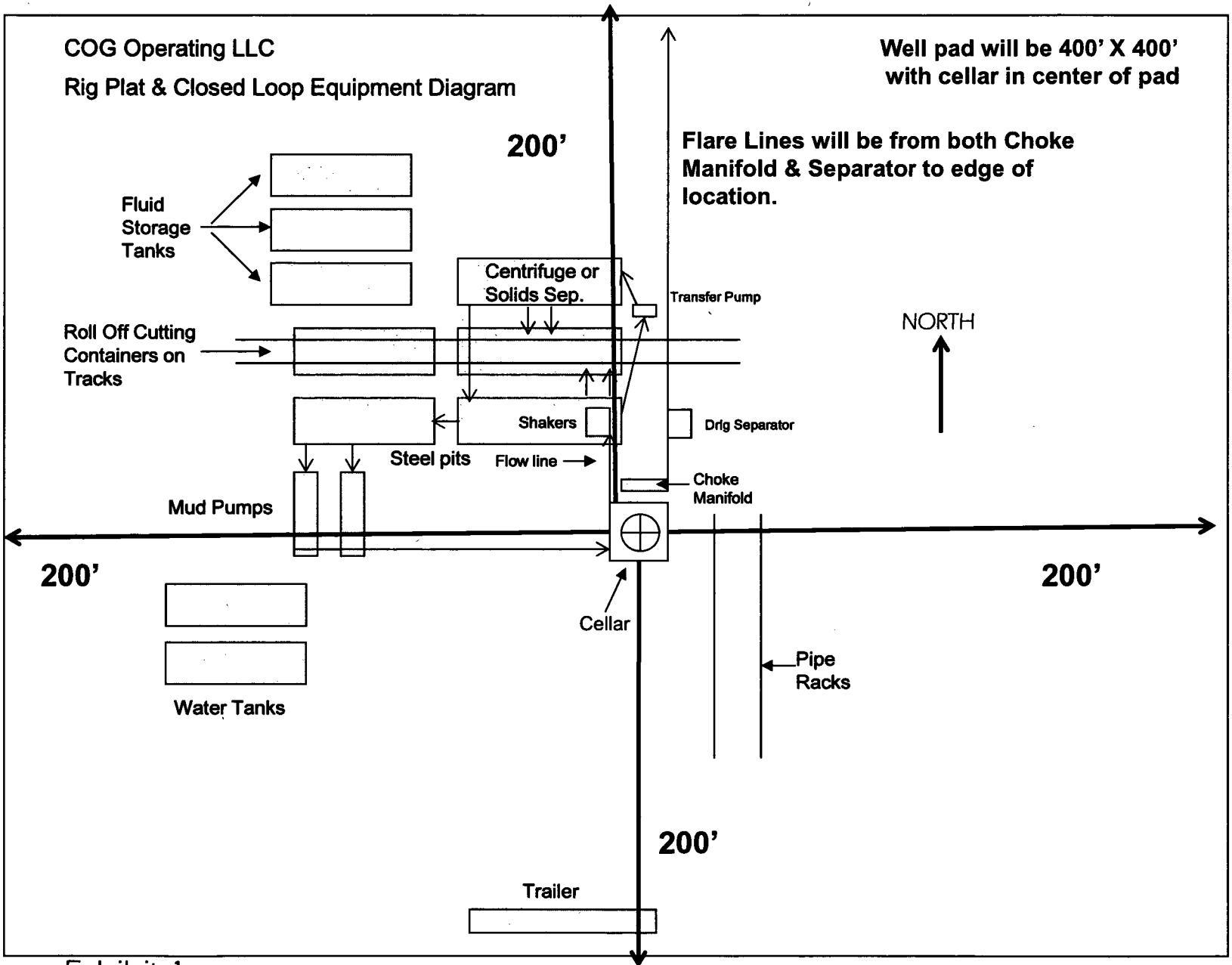
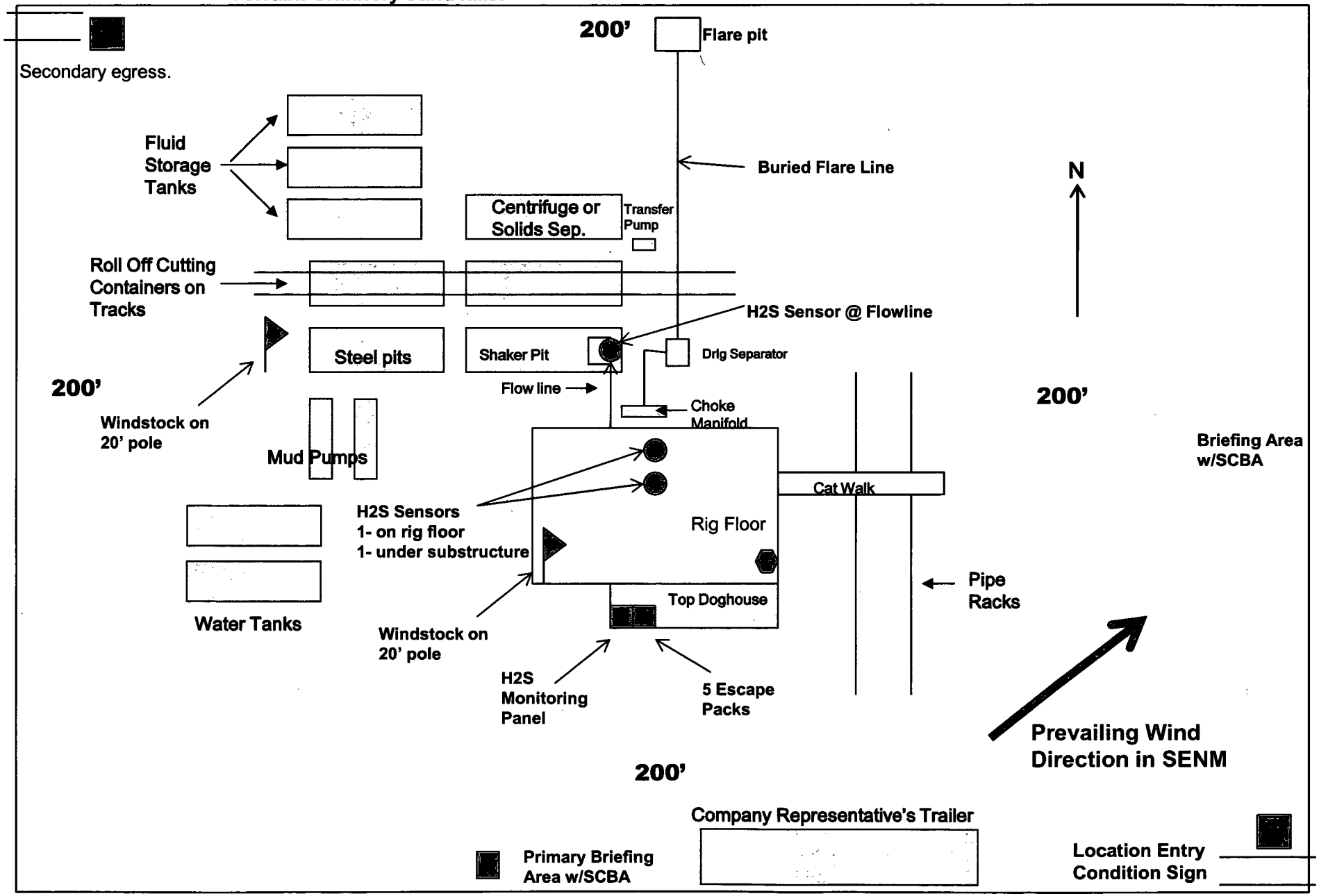


Exhibit 1

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

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
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.

W A R N I N G

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
WALTER ROYE	575-748-6940	432-934-1886

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

PECOS DISTRICT
DRILLING CONDITIONS OF APPROVAL

OPERATOR'S NAME:	COG Operating LLC
WELL NAME & NO.:	Baseball Cap Federal Com 603H
SURFACE HOLE FOOTAGE:	390'/S & 2305'/E
BOTTOM HOLE FOOTAGE	200'/N & 1880'/E
LOCATION:	Section 25, T.24 S., R.34 E., NMPM
COUNTY:	Lea County, New Mexico

Potash	◉ None	○ Secretary	○ R-111-P
Cave/Karst Potential	◉ Low	○ Medium	○ High
Variance	○ None	◉ Flex Hose	○ Other
Wellhead	◉ Conventional	○ Multibowl	
Other	☐ 4 String Area	☐ Capitan Reef	☐ WIPP

A. HYDROGEN SULFIDE

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

B. CASING

1. The **13 3/8** inch surface casing shall be set at approximately **1300** feet (a minimum of 25 feet into the Rustler Anhydrite and above the salt) and cemented to the surface.

    a. If cement does not circulate to the 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 six hours after pumping cement and ideally between 8-10 hours after completing the cement job.

    b. Wait on cement (WOC) time for a primary cement job will be a minimum of **8 hours** or 500 pounds compressive strength, whichever is greater. (This is to include the lead cement)

    c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.

d. If cement falls back, remedial cementing will be done prior to drilling out that string.

2. The minimum required fill of cement behind the **9 5/8** inch intermediate casing is:

   Operator has proposed a DV tool, the depth may be adjusted as long as the cement is changed proportionally. The DV tool may be cancelled if cement circulates to surface on the first stage.

   a. First stage to DV tool: Cement to circulate. If cement does not circulate off the DV tool, contact the appropriate BLM office before proceeding with second stage cement job.

   b. Second stage above DV tool:

      - Cement to surface. If cement does not circulate, contact the appropriate BLM office.

3. The minimum required fill of cement behind the **5 1/2** inch production casing is:

      - Cement should tie-back at least **200** feet into previous casing string. Operator shall provide method of verification.

C. PRESSURE CONTROL

1. Variance approved to use flex line from BOP to choke manifold. Manufacturer's specification to be readily available. No external damage to flex line. Flex line to be installed as straight as possible (no hard bends).

2. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **5000 (5M)** psi.

3. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the **9 5/8** intermediate casing shoe shall be **10,000 (10M)** psi. **Variance is approved to use 5M Annular, which shall be tested to 5000 psi.**

D. SPECIAL REQUIREMENT (S)

Communitization Agreement

- The operator will 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.

- If the operator does not comply with this condition of approval, the BLM may take enforcement actions that include, but are not limited to, those specified in 43 CFR 3163.1.
- In addition, the well sign shall include the surface and bottom hole lease numbers. When the Communitization Agreement number is known, it shall also be on the sign.

MHH 03192019

GENERAL REQUIREMENTS

The BLM is to be notified in advance for a representative to witness:

a. Spudding well (minimum of 24 hours)
b. Setting and/or Cementing of all casing strings (minimum of 4 hours)
c. BOPE tests (minimum of 4 hours)

☒ Chaves and Roosevelt Counties
Call the Roswell Field Office, 2909 West Second St., Roswell NM 88201.
During office hours call (575) 627-0272.
After office hours call (575)

☒ Eddy County
Call the Carlsbad Field Office, 620 East Greene St., Carlsbad, NM 88220, (575) 361-2822

☒ Lea County
Call the Hobbs Field Station, 414 West Taylor, Hobbs NM 88240, (575) 393-3612

1. 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
      - Notify the BLM when moving in and removing the Spudder Rig.
      - 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.
      - BOP/BOPE test to be conducted per Onshore Oil and Gas Order No. 2 as soon as 2nd Rig is rigged up on well.

2. 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.

3. 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 submitted to the BLM office as well as all other logs run on the borehole 30 days from completion. If available, a digital copy of the logs is to be submitted in addition to the paper copies. 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.

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.

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 that portion of any 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: 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. 5M or higher system requires an HCR valve, remote kill line and annular to match. The remote kill line is to be installed prior to testing the system and tested to stack pressure.

4. 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. Whenever any seal subject to test pressure is broken, all the tests in OOGO2.III.A.2.i must be followed.
    e. 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.

5. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the 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.

c. The tests shall be done by an independent service company utilizing a test plug not a cup or J-packer. The operator also has the option of utilizing an independent tester to test without a plug (i.e. against the casing) pursuant to Onshore Order 2 with the pressure not to exceed 70% of the burst rating for the casing. Any test against the casing must meet the WOC time for water basin (8 hours) or potash (24 hours) or 500 pounds compressive strength, whichever is greater, prior to initiating the test (see casing segment as lead cement may be critical item).

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 results of the test shall be reported to the appropriate BLM office.

f. All tests are required to be recorded on a calibrated test chart. A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.

g. 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 if test is done with a test plug and 30 minutes without a test plug. This test shall be performed prior to the test at full stack pressure.

h. BOP/BOPE must be tested by an independent service company 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

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

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.

Porto-johns and trash containers will be on-location during fracturing operations or any other crew-intensive operations.