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Form 3160-3
(March 2012)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
OMB No. 1004-0137
Expires October 31, 2014

APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No.: NMNM131588

6. If Indian, Allotee or Tribe Name:

1a. Type of work: ☑ DRILL ☐ REENTER

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

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

8. Lease Name and Well No.: 321456
CHEDDAR 2BS FEDERAL COM 1H

2. Name of Operator: CENTENNIAL RESOURCE PRODUCTION LLC (372165)

9. API Well No.: 30-025-44861

3a. Address: 1001 17th Street, Suite 1800 Denver CO 8020

3b. Phone No. (include area code): (720)499-1400

10. Field and Pool, or Exploratory: BILBREY BASIN / BONE SPRING (5695)

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

At surface: TR SWSW / 274 FSL / 370 FWL / LAT 32.414099 / LONG -103.704182

At proposed prod. zone: TR NWNW / 330 FNL / 330 FWL / LAT 32.44146 / LONG -103.7043

11. Sec., T. R. M. or Blk. and Survey or Area: SEC 5 / T22S / R32E / NMP

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

12. County or Parish: LEA

13. State: NM

15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any): 274 feet

16. No. of acres in lease: 886.41

17. Spacing Unit dedicated to this well: 320

18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.: 1040 feet

19. Proposed Depth: 10610 feet / 20821 feet

20. BLM/BIA Bond No. on file: FED: NMB001471

21. Elevations (Show whether DF, KDB, RT, GL, etc.): 3668 feet

22. Approximate date work will start*: 12/01/2017

23. Estimated duration: 45 days

24. Attachments

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No.1, must be attached to this form:

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 required by the BLM.

25. Signature	Name (Printed/Typed)	Date
(Electronic Submission)	Melissa Luke / Ph: (720)499-1482	06/28/2017
Title: Sr. Regulatory Analyst		
Approved by (Signature): (Electronic Submission)	Name (Printed/Typed): Cody Layton / Ph: (575)234-5959	Date: 04/13/2018
Title: Supervisor Multiple Resources	Office: CARLSBAD	

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

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

(Continued on page 2)

Requested OCD 05/30/18

*(Instructions on page 2)

APPROVED WITH CONDITIONS

Approval Date: 04/13/2018

KZ 05/31/18

INSTRUCTIONS

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

ITEM 1: If the proposal is to redrill to the same reservoir at a different subsurface location or to a new reservoir, use this form with appropriate notations. Consult applicable Federal regulations concerning subsequent work proposals or reports on the well.

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

ITEM 14: Needed only when location of well cannot readily be found by road from the land or lease description. A plat, or plats, separate or on the reverse side, showing the roads to, and the surveyed location of, the well, 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 directionally 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.

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 well 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 will 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 collects this information to allow 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 Collection Clearance Officer (WO-630), 1849 C Street, N.W., Mail Stop 401 LS, Washington, D.C. 20240.

(Continued on page 3)

Additional Operator Remarks

Location of Well

1. SHL: TR SWSW / 274 FSL / 370 FWL / TWSP: 22S / RANGE: 32E / SECTION: 5 / LAT: 32.414099 / LONG: -103.704182 (TVD: 0 feet, MD: 0 feet)
   PPP: TR SWSW / 330 FSL / 330 FWL / TWSP: 22S / RANGE: 32E / SECTION: 5 / LAT: 32.414252 / LONG: -103.704312 (TVD: 10360 feet, MD: 10870 feet)
   BHL: TR NWNW / 330 FNL / 330 FWL / TWSP: 21S / RANGE: 32E / SECTION: 32 / LAT: 32.44146 / LONG: -103.7043 (TVD: 10610 feet, MD: 20821 feet)

BLM Point of Contact

Name: Judith Yeager
Title: Legal Instruments Examiner
Phone: 5752345936
Email: jyeager@blm.gov

Approval Date: 04/13/2018

Review and Appeal Rights

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

APD ID: 10400014954 **Submission Date:** 06/28/2017

Operator Name: CENTENNIAL RESOURCE PRODUCTION LLC

Well Name: CHEDDAR 2BS FEDERAL COM **Well Number:** 1H

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

Highlighted data reflects the most recent changes

Show Final Text

Section 1 - General

APD ID: 10400014954 **Tie to previous NOS?** **Submission Date:** 06/28/2017

BLM Office: CARLSBAD **User:** Melissa Luke **Title:** Sr. Regulatory Analyst

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

Lease number: NMNM131588 **Lease Acres:** 886.41

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:** CENTENNIAL RESOURCE PRODUCTION LLC

Operator letter of designation:

Operator Info

Operator Organization Name: CENTENNIAL RESOURCE PRODUCTION LLC

Operator Address: 1001 17th Street, Suite 1800 **Zip:** 80202

Operator PO Box:

Operator City: Denver **State:** CO

Operator Phone: (720)499-1400

Operator Internet Address:

Section 2 - Well Information

Well in Master Development Plan? NO **Mater Development Plan name:**

Well in Master SUPO? NO **Master SUPO name:**

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

Well Name: CHEDDAR 2BS FEDERAL COM **Well Number:** 1H **Well API Number:**

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

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

Operator Name: CENTENNIAL RESOURCE PRODUCTION LLC

Well Name: CHEDDAR 2BS FEDERAL COM **Well Number:** 1H

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:** CHEDDAR WELLS **Number:** 1

Well Class: HORIZONTAL **Number of Legs:** 1

Well Work Type: Drill

Well Type: OIL WELL

Describe Well Type:

Well sub-Type: EVALUATION

Describe sub-type:

Distance to town: 25 Miles **Distance to nearest well:** 1040 FT **Distance to lease line:** 274 FT

Reservoir well spacing assigned acres Measurement: 320 Acres

Well plat: Submitted_Cheddar_2BS_Federal_Com_Plat_Package_02.05.18_20180212113504.pdf

Well work start Date: 12/01/2017 **Duration:** 45 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	274	FSL	370	FWL	22S	32E	5	Tract SWSW	32.414099	-103.704182	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 131588	3668	0	0
KOP Leg #1	274	FSL	370	FWL	22S	32E	5	Tract SWSW	32.414099	-103.704182	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 131588	-6367	10035	10035
PPP Leg #1	330	FSL	330	FWL	22S	32E	5	Tract SWSW	32.414252	-103.704312	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 131588	-6692	10870	10360

Operator Name: CENTENNIAL RESOURCE PRODUCTION LLC

Well Name: CHEDDAR 2BS FEDERAL COM **Well Number:** 1H

	NS-Foot	NS Indicator	EW-Foot	EW Indicator	Twsp	Range	Section	Aliquot/Lot/Tract	Latitude	Longitude	County	State	Meridian	Lease Type	Lease Number	Elevation	MD	TVD
EXIT Leg #1	330	FNL	330	FWL	21S	32E	32	Tract NWNW	32.44146	-103.7043	LEA	NEW MEXICO	NEW MEXICO	S	STATE	-6942	20821	10610
BHL Leg #1	330	FNL	330	FWL	21S	32E	32	Tract NWNW	32.44146	-103.7043	LEA	NEW MEXICO	NEW MEXICO	S	STATE	-6942	20821	10610

District I
1625 N. French Dr., Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone: (575) 748-1283 Fax: (575) 748-9720
District III
1000 Rio Brazos Road, Aztec, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

State of New Mexico
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-102
Revised August 1, 2011
Submit one copy to appropriate District Office

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

[1] API Number	[2] Pool Code	[3] Pool Name

[4] Property Code	[5] Property Name	[6] Well Number
	CHEDDAR 2BS FEDERAL COM	1H
[7] OGRID No.	[8] Operator Name	[9] Elevation
	CENTENNIAL RESOURCE PRODUCTION, LLC	3668.5'

[10] Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
M	5	22S	32E		274	SOUTH	370	WEST	LEA

[11] Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
D	32	21S	32E		330	NORTH	330	WEST	LEA

[12] Dedicated Acres	[13] Joint or Infill	[14] Consolidation Code	[15] Order No.
319.68			

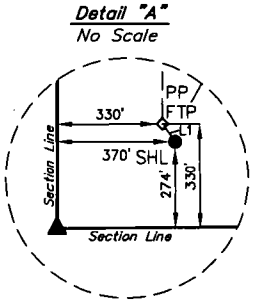
No allowable will be assigned to this completion until all interests have been consolidated or a non-standard unit has been approved by the division.

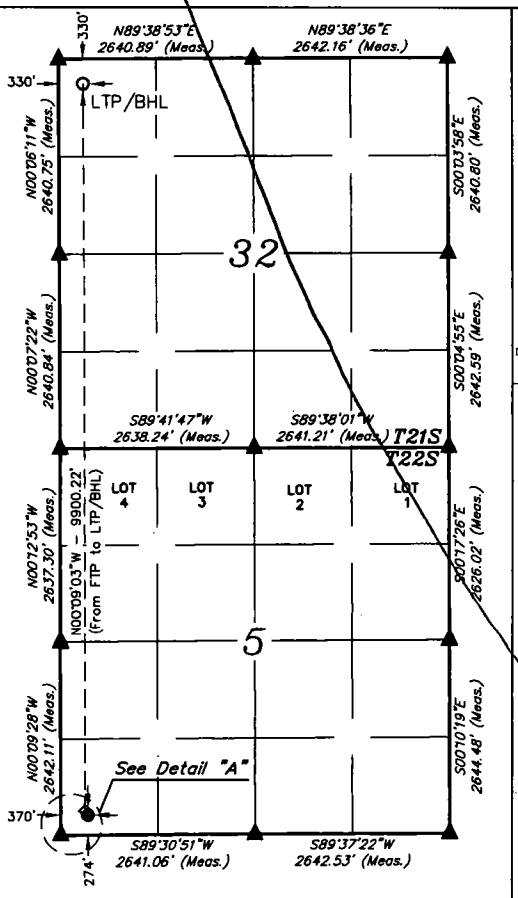
[16]

NAD 83 (SURFACE HOLE LOCATION)
LATITUDE = 32°24'50.76" (32.414099°)
LONGITUDE = 103°42'15.06" (103.704182°)
STATE PLANE NAD 83 (N.M. EAST)
Y: 514951.78' X: 735486.96'
UTM, NAD 83 (ZONE 13)
Y: 11768597.15' X: 2040179.97'

NAD 83 (PP/FTP)
LATITUDE = 32°24'51.31" (32.414252°)
LONGITUDE = 103°42'15.52" (103.704312°)
STATE PLANE NAD 83 (N.M. EAST)
Y: 515007.42' X: 735446.55'
UTM, NAD 83 (ZONE 13)
Y: 11768652.53' X: 2040139.22'

NAD 83 (LTP/BHL)
LATITUDE = 32°26'29.26" (32.441460°)
LONGITUDE = 103°42'15.63" (103.704343°)
STATE PLANE NAD 83 (N.M. EAST)
Y: 524905.59' X: 735378.80'
UTM, NAD 83 (ZONE 13)
Y: 11778548.41' X: 2040009.72'





LINE TABLE		
LINE	DIRECTION	LENGTH
L1	N35°45'01"W	68.78'

● = SURFACE HOLE LOCATION
◇ = FIRST TAKE POINT
○ = BOTTOM HOLE LOCATION
▲ = SECTION CORNER LOCATED

2000' 1000' 0' 2000'
SCALE

REV: 1 02-01-18 C.D. (BHL CHANGE)

NOTE:
- Distances referenced on plat to section lines are perpendicular.
- Basis of Bearing is a Transverse Mercator Projection with a Central Meridian of W103°53'00"

[17] OPERATOR CERTIFICATION

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

Signature

Digitally signed by Melissa Luke
DN: cn=Melissa Luke, c=US, o=Centennial Resources Production, LLC, ou=Sr. Regulatory Analyst, email=MLuke@cdevinc.com
Date: 2018.02.12 13:34:56 -07'00'

Melissa Luke
Printed Name

melissa.luke@cdevinc.com
E-mail Address

[18] SURVEYOR CERTIFICATION

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

January 27, 2018
Date of Survey

Signature and Seal of Professional Surveyor:

PAUL BUCHELE
NEW MEXICO
23782
02-01-18
PROFESSIONAL SURVEYOR

Certificate Number:

APD ID: 10400014954 **Submission Date:** 06/28/2017

Operator Name: CENTENNIAL RESOURCE PRODUCTION LLC

Well Name: CHEDDAR 2BS FEDERAL COM **Well Number:** 1H

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

Highlighted data reflects the most recent changes

Show Final Text

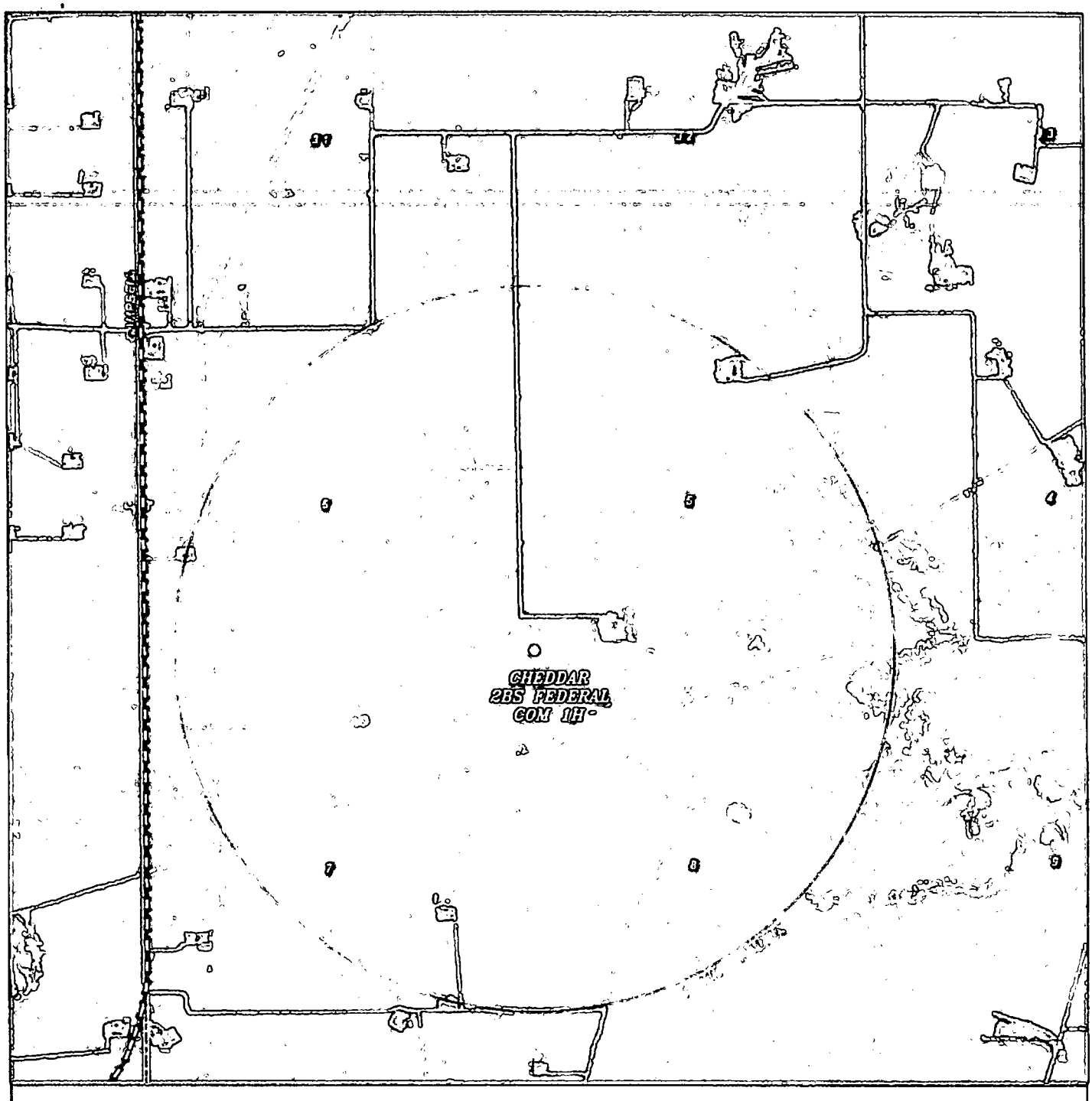
Section 1 - Geologic Formations

Formation ID	Formation Name	Elevation	True Vertical Depth	Measured Depth	Lithologies	Mineral Resources	Producing Formation
1	RUSTLER	3716	670	670	SANDSTONE	USEABLE WATER	No
2	TOP SALT	2716	1000	1000	SALT	NONE	No
3	DELAWARE	-914	4630	4630	SILTSTONE	NONE	No
4	BELL CANYON	-1019	4735	4735	LIMESTONE,SHALE,SANDSTONE	NATURAL GAS,OIL	No
5	CHERRY CANYON	-1844	5560	5560	LIMESTONE,SHALE,SANDSTONE	NATURAL GAS,OIL	No
6	BRUSHY CANYON	-3444	7160	7160	LIMESTONE,SHALE,MUDSTONE,SANDSTONE	NATURAL GAS,OIL	No
7	BRUSHY CANYON LOWER	-4624	8340	8340	LIMESTONE,SHALE,SANDSTONE	NATURAL GAS,OIL	No
8	BONE SPRING	-4889	8605	8605	LIMESTONE	NATURAL GAS,OIL	No
9	AVALON SAND	-5084	8800	8800	SHALE	NATURAL GAS,OIL	No
10	BONE SPRING 1ST	-5924	9640	9640	LIMESTONE,SANDSTONE	NATURAL GAS,OIL	No
11	BONE SPRING 2ND	-6599	10315	10315	SANDSTONE	NATURAL GAS,OIL	No
12	BONE SPRING 2ND	-6849	10565	10565	SANDSTONE	NATURAL GAS,OIL	Yes

Section 2 - Blowout Prevention

Pressure Rating (PSI): 5M **Rating Depth:** 10683

Equipment: The BOP and related equipment will meet or exceed the requirements of a 5M-psi system as set forth in On Shore Order No. 2. See attached BOP Schematic. A. Casinghead: 13" – 5000 psi SOW x 13" – 5000 psi WP Intermediate Spool: 13" – 5000 psi WP x 11" – 5000 psi WP Tubinghead: 11" – 5000 psi WP x 7 1/16" – 5000 psi WP B. Minimum Specified Pressure Control Equipment • Annular preventer • One Pipe ram, One blind ram • Drilling spool, or blowout preventer with 2 side outlets. Choke side will be a 3-inch minimum diameter, kill line shall be at least 2-inch diameter • 3 inch diameter choke line • 2 – 3 inch choke line valves • 2 inch kill line • 2 chokes with 1 remotely controlled from rig floor (see Figure 2) • 2 – 2 inch kill line valves and a check valve • Upper kelly cock valve with handle available • When the expected pressures approach working pressure of the system, 1 remote kill line tested to stack pressure (which shall run to the outer



CHEDDAR 2BS FEDERAL COM #1H

Located 274' FSL & 370' FWL

Section 5, Township 22 South, Range 32 East,
N.M.P.M., Lea County, New Mexico.

basin surveys
focused on excellence in the oilfield

P.O. Box 1786
1120 N. West County Rd.
Hobbs, New Mexico 88241
(575) 393-7316 - Office
(575) 392-2206 - Fax
basinsurveys.com

W.O. Number: KJG - 32958

Scale: 1" = 2000'

YELLOW TINT - USA LAND
BLUE TINT - STATE LAND
NATURAL COLOR - FEE LAND

GMT EXPLORATION CO., LLC

edge of the substructure and be unobstructed) • Lower kelly cock valve with handle available • Safety valve(s) and subs to fit all drill string connections in use • Inside BOP or float sub available • Pressure gauge on choke manifold • All BOPE connections subjected to well pressure shall be flanged, welded, or clamped • Fill-up line above the uppermost preventer. C. Auxiliary Equipment • Audio and visual mud monitoring equipment shall be placed to detect volume changes indicating loss or gain of circulating fluid volume. (OOS 1, III.C.2) • Gas Buster will be used below intermediate casing setting depth. • Upper and lower kelly cocks with handles, safety valve and subs to fit all drill string connections and a pressure gauge installed on choke manifold.

Requesting Variance? NO

Variance request:

Testing Procedure: The BOP test shall be performed before drilling out of the surface casing shoe and will occur at a minimum: a. when initially installed b. whenever any seal subject to test pressure is broken c. following related repairs d. at 30 day intervals e. checked daily as to mechanical operating conditions. The ram type preventer(s) will be tested using a test plug to 250 psi (low) and 5000 psi (high) (casinghead WP) with a test plug upon its installation onto the 13" surface casing. If a test plug is not used, the ram type preventer(s) shall be tested to 70% of the minimum internal yield pressure of the casing. The annular type preventer(s) shall be tested to 50% of its working pressure. Pressure will be maintained for at least 10 minutes or until provisions of the test are met, whichever is longer. • A Sundry Notice (Form 3160 5), along with a copy of the BOP test report, shall be submitted to the local BLM office within 5 working days following the test. • If the bleed line is connected into the buffer tank (header), all BOP equipment including the buffer tank and associated valves will be rated at the required BOP pressure. • The BLM office will be provided with a minimum of four (4) hours' notice of BOP testing to allow witnessing. The BOP Configuration, choke manifold layout, and accumulator system, will be in compliance with Onshore Order 2 for a 5000 psi system. A remote accumulator will be used. Pressures, capacities, and specific placement and use of the manual and/or hydraulic controls, accumulator controls, bleed lines, etc., will be identified at the time of the BLM witnessed BOP test. Any remote controls will be capable of both opening and closing all preventers and shall be readily accessible

Choke Diagram Attachment:

Cheddar_2BS_Choke_Manifold_Diagram_20180201155218.pdf

BOP Diagram Attachment:

Cheddar_2BS_Federal_Com_1H_BOP_20180130155633.pdf

Section 3 - Casing

Casing ID	String Type	Hole Size	Csg Size	Condition	Standard	Tapered String	Top Set MD	Bottom Set MD	Top Set TVD	Bottom Set TVD	Top Set MSL	Bottom Set MSL	Calculated casing length MD	Grade	Weight	Joint Type	Collapse SF	Burst SF	Joint SF Type	Joint SF	Body SF Type	Body SF
1	CONDUCTOR	26	20.0	NEW	API	N	0	80	0	80	-6947	-7027	80	H-40	94	OTHER - Weld						
2	SURFACE	17.5	13.375	NEW	API	N	0	700	0	700	-6947	-7647	700	J-55	48	STC	1.125	1	DRY	1.6	DRY	1.6
3	INTERMEDIATE	12.25	9.625	NEW	API	N	0	4760	0	4760	-6947	-11707	4760	J-55	40	LTC	1.125	1	DRY	1.6	DRY	1.6
4	PRODUCTION	8.5	5.5	NEW	API	N	0	20821	0	10610	-6947	-17557	20821	P-110	20	OTHER - Lonestar EZGO	1.125	1	DRY	1.6	DRY	1.6

Operator Name: CENTENNIAL RESOURCE PRODUCTION LLC

Well Name: CHEDDAR 2BS FEDERAL COM **Well Number:** 1H

Casing Attachments

Casing ID: 1 **String Type:** CONDUCTOR

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Casing ID: 2 **String Type:** SURFACE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Cheddar_2BS_Fed_Com_1H_Casing_Assumptions_06-09-2017.pdf

Casing ID: 3 **String Type:** INTERMEDIATE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Cheddar_2BS_Fed_Com_1H_Casing_Assumptions_06-09-2017.pdf

Operator Name: CENTENNIAL RESOURCE PRODUCTION LLC

Well Name: CHEDDAR 2BS FEDERAL COM **Well Number:** 1H

Casing Attachments

Casing ID: 4 **String Type:** PRODUCTION

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Cheddar_2BS_Fed_Com_1H_Casing_Assumptions_06-09-2017.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
CONDUCTOR	Lead		0	80	96	1.49	12.9	143		Class C	Bentonite 4% BWOC, Cellophane 0.25 pps CACL2 2% BWOC
SURFACE	Lead		0	700	320	1.74	13.5	556.8		Class C	Mix Water 9.18 gps Extender - Bentonite 4% BWOC Lost Circ - Cellophane 0.25 pps Accelerator - CACL2 2% BWOC
SURFACE	Tail		0	700	340	1.33	14.8	452.2		Class C	Mix Water 6.33 gps Accelerator - CACL2 2% BWOC
INTERMEDIATE	Lead		0	4760	320	2.32	11.9	742.4		50:50 Poz Class C	Mix Water 12.45 gps Extender 1 - Bentonite 7% BWOC Anti Foam - CPT-503P 0.40% Fluid Loss - COT-19 0.30% Gas Migration - CPT-45 0.80% Lost Circ - Kol Seal 3.0 pps pps Accelerator - Sodium 5% BWOC
INTERMEDIATE	Tail		0	4760	320	1.33	14.8	425.6		Class C	Mix Water 6.33 gps Fluid Loss - COT-19

Operator Name: CENTENNIAL RESOURCE PRODUCTION LLC

Well Name: CHEDDAR 2BS FEDERAL COM **Well Number:** 1H

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
											0.20% Gas Migration - CPT-45 0.80%
PRODUCTION	Lead		4000	20821	680	2.64	11.5	1795.2		50:50 Poz Class H	Mix Water 14.77 gps Extender 1 - Bentonite 7% BWOC Anti Foam - CPT-503P 0.40% Fluid Loss - COT-19 0.50% Gas Migration - CPT-45 0.30% Lost Circ - Kol Seal 3.0 pps pps Retarder - Citric Acid 0.10%
PRODUCTION	Tail		4000	20821	1930	1.62	13.2	3126.6		Class H	Mix Water 8.09 gps Extender 1 - Bentonite 1% BWOC Anti Foam - CPT-503P 0.25% Fluid Loss - COT-19 0.50% Accelerator - Sodium 3% Expander - CPT 49 0.30% Retarder - CPT 20 0.30% Fluid Loss - COT-15 0.80% Dispersant - CPT 35 0.40%

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 quantities of mud materials shall be maintained at the well site at all times for the purpose of assuring well control. From 0' to 700' we will employ fresh water mud mix. From 700' to 4760' a salt water brine will be used. The brine will be of sufficient density to prevent washouts in the salt section. From 4760' to TMD we will use weight non-dispersed mud of appropriate density to maintain control.
Describe the mud monitoring system utilized: Centrifugal separation and open tank monitoring of mud, cuttings and returns.

Circulating Medium Table

Operator Name: CENTENNIAL RESOURCE PRODUCTION LLC

Well Name: CHEDDAR 2BS FEDERAL COM **Well Number:** 1H

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
700	4760	SALT SATURATED	9.7	10							
0	700	WATER-BASED MUD	8.6	9							
4760	20821	LOW SOLIDS NON-DISPERSED (LSND)	8.7	9.4							

Section 6 - Test, Logging, Coring

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

MWD/LWD Intermediate to TD

List of open and cased hole logs run in the well:

GR

Coring operation description for the well:

N/A

Section 7 - Pressure

Anticipated Bottom Hole Pressure: 4873 **Anticipated Surface Pressure:** 2538.8

Anticipated Bottom Hole Temperature(F): 200

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

Describe:

Contingency Plans geoharzards description:

Contingency Plans geohazards attachment:

Hydrogen Sulfide drilling operations plan required? NO

Hydrogen sulfide drilling operations plan:

Section 8 - Other Information

Proposed horizontal/directional/multi-lateral plan submission:

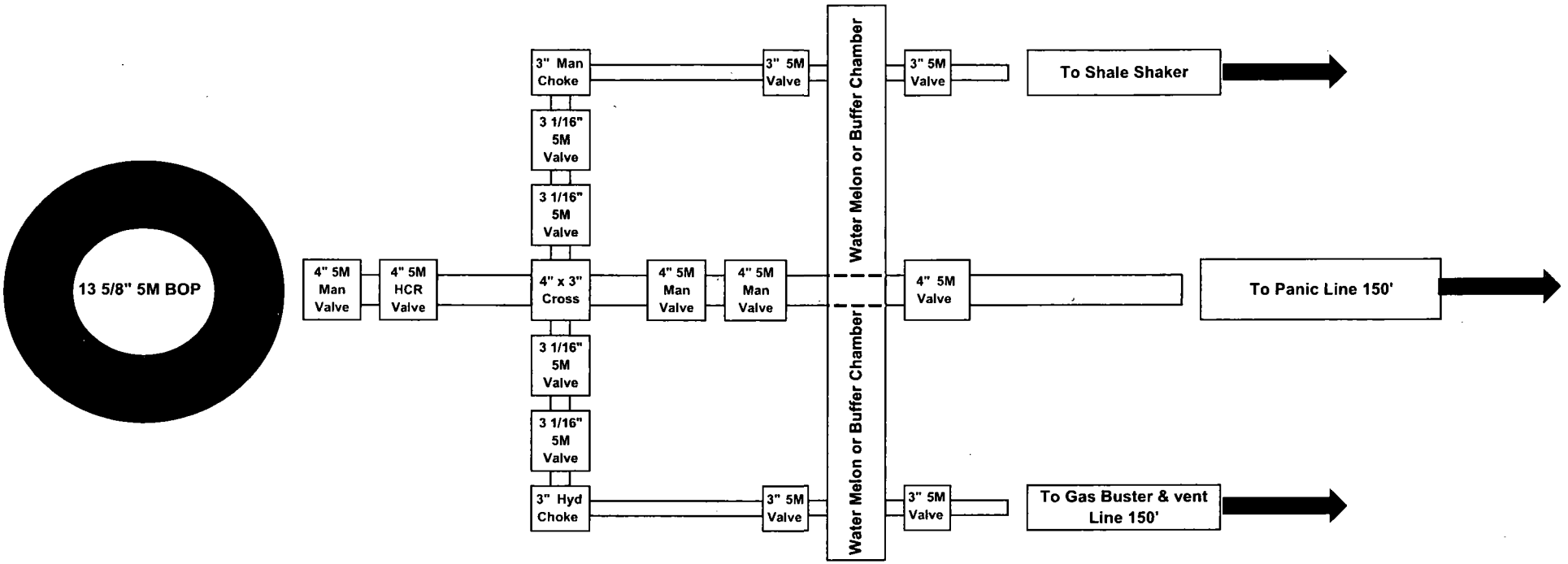
Cheddar_2BS_Federal_Com_1H_PLAN_4_AC_REPORT_06-20-2017.pdf
Cheddar_2BS_Federal_Com_1H_PLAN_4_REPORT_06-20-2017.pdf
Cheddar_2BS_Federal_Com_1H_PLAN_4_SM_DWG_06-20-2017.pdf

Other proposed operations facets description:

Other proposed operations facets attachment:

Other Variance attachment:

5M system - Minimum Configuration of Choke Side



For Well Design	
Surface	13 3/8
Intermediate	9 5/8
Production	5 1/2

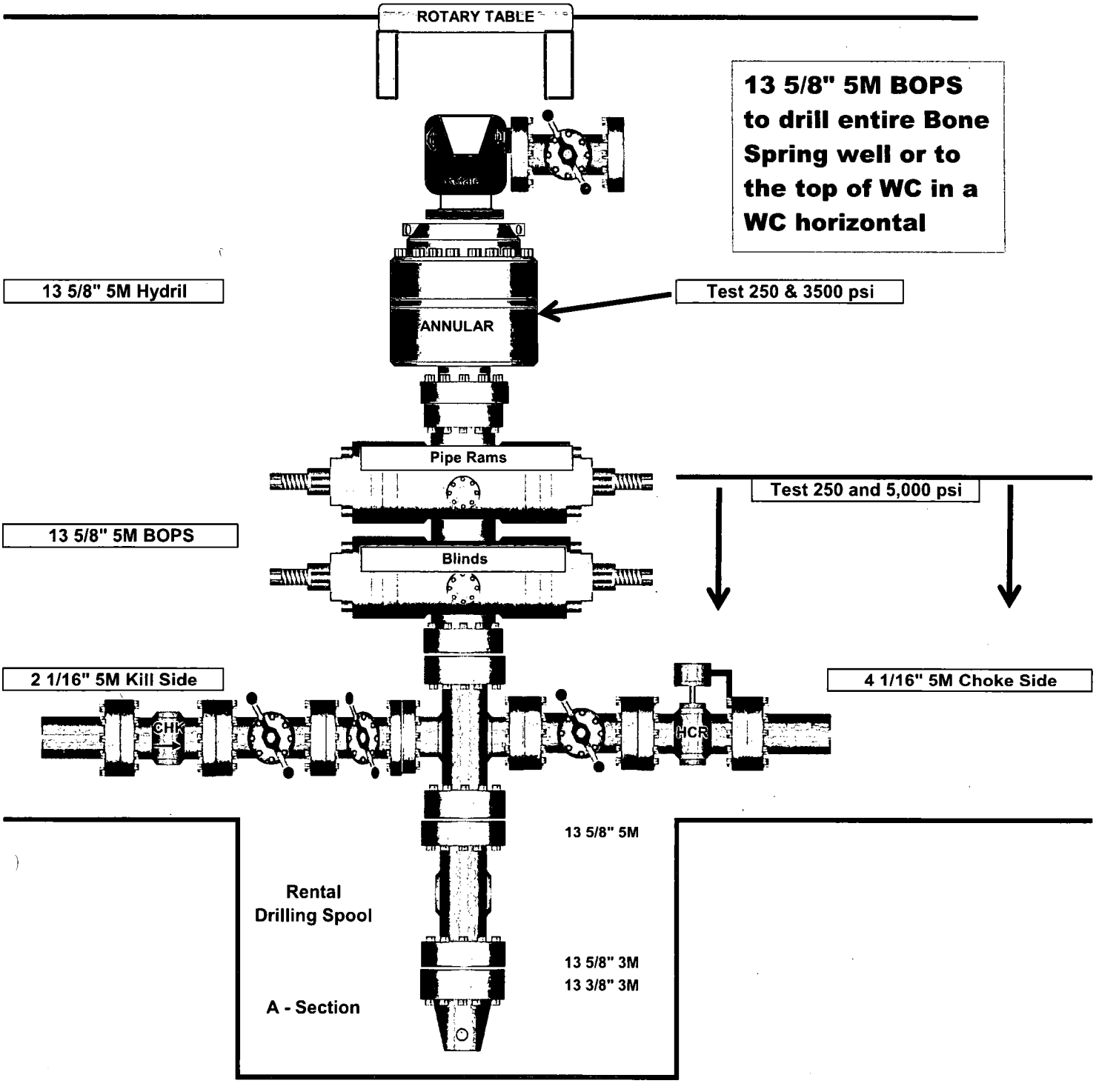
WELL: Cheddar 2BS Federal Com 1H

LOCATION: West of Jal NM

COUNTY: Lea STATE: New Mexico

RIG NAME & No. Any Rig

GL ELEVATION: KB



Centralizer Program:

Surface:
- 3 welded bow spring centralizers, one on each of the bottom 3 joints, plus one on the shoe joint (4 minimum)
- No Cement baskets will be run

Production:
- 1 welded bow spring centralizer on a stop ring 6' above float shoe
- 1 centralizer every other joint to the top of the tail cement
- 1 centralizer every 4 joints to 500' below the top of the lead cement
- The actual number and placement of centralizers will be determined from hole deviation and potential production zones. Centralizers will be run for maximum practical standoff and through all potential productive zones.

- All casing strings below the conductor shall be tested, prior to drilling out the casing shoe, to 0.22 psi/ft of casing string length or 1500 psi, whichever is greater, but not to exceed 70% of the internal yield pressure of the casing. If pressure declines more than 10 percent in 30 minutes, corrective action will be taken.

  No freshly hard banded pipe will be rotated in the surface casing

  - GMT will not employ an air-drill rig for the surface casing. The casing shoe will be tested by drilling 5'-10' out from under the shoe and pressure testing to the maximum expected mud weight equivalent as shown in the mud program listed in the drilling plan.

Centralizer Program:

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- 3 welded bow spring centralizers, one on each of the bottom 3 joints, plus one on the shoe joint (4 minimum)
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Access road engineering design attachment:

Access surfacing type: OTHER

Access topsoil source: ONSITE

Access surfacing type description: Caliche

Access onsite topsoil source depth: 4

Offsite topsoil source description:

Onsite topsoil removal process: Equipment will be used to strip 4in in depth and stockpile, utilizing berms for run-off

Access other construction information:

Access miscellaneous information:

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

Drainage Control

New road drainage crossing: CULVERT

Drainage Control comments: Will be using 18" CMP for our drainage corssing.

Road Drainage Control Structures (DCS) description: Please see attached.

Road Drainage Control Structures (DCS) attachment:

Cheddar_Access_Typical_20180212113845.pdf

Access Additional Attachments

Additional Attachment(s):

Section 3 - Location of Existing Wells

Existing Wells Map? YES

Attach Well map:

Cheddar_2BS_Fed_Com1H_Exhibit_4___Wells_in_1_Mile_Radius_of_BHL_and_SL_06-20-2017.pdf
Cheddar_2BS_Fed_Com_Radius_Map_06_20_2017_20180205155745.pdf

Existing Wells description: Devon - Bilbry 1H

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

Submit or defer a Proposed Production Facilities plan? SUBMIT

Production Facilities description: Facility will be set up with intent to commingle wells drilled from this pad.

Production Facilities map:

CHEDDAR_FACILITY_SITE___REV_1_31_2018_20180201155543.pdf

Operator Name: CENTENNIAL RESOURCE PRODUCTION LLC

Well Name: CHEDDAR 2BS FEDERAL COM **Well Number:** 1H

Section 5 - Location and Types of Water Supply

Water Source Table

Water source use type: DUST CONTROL, STIMULATION, SURFACE CASING **Water source type:** OTHER

Describe type: 3rd Party - Marathon fresh water pit (SESW Sec. 34, T21S, R34E)

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: FEDERAL

Water source volume (barrels): 350000 **Source volume (acre-feet):** 45.112583

Source volume (gal): 14700000

Water source and transportation map:

Cheddar_Source_Water_Map_01.12.18_20180112163619.pdf

Water source comments: Temporary surface lines will be used to transport water for drilling and completion operations from the Marathon fresh water pit to the Cheddar Drill Island.

New water well? NO

New Water Well Info

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

Well target aquifer:

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

Aquifer comments:

Aquifer documentation:

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

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

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

Drilling method: **Drill material:**

Grout material: **Grout depth:**

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

Well Production type: **Completion Method:**

Water well additional information:

State appropriation permit:

Operator Name: CENTENNIAL RESOURCE PRODUCTION LLC

Well Name: CHEDDAR 2BS FEDERAL COM **Well Number:** 1H

Additional information attachment:

Section 6 - Construction Materials

Construction Materials description: Caliche will be hauled from existing BLM caliche pits located in SWSW, Section 33, Township 21S, Range 32E (BLM Caliche Pit A) and SWNE, Section 4, Township 22S, Range 32E (BLM Caliche Pit A). Both BLM Caliche Pits have been identified for use in the attached exhibit. We can use the native caliche on the proposed site by "flipping" the location, and using all native soils.
Construction Materials source location attachment:

Cheddar_BLM_Caliche_Pit_1.15.18_20180116130717.pdf

Section 7 - Methods for Handling Waste

Waste type: GARBAGE

Waste content description: Garbage, and trash

Amount of waste: 0

Waste disposal frequency : Weekly

Safe containment description: Trash, junk, other waste material will be contained in trash cages or trash bins to prevent scattering. When the job is completed all contents will be removed and disposed of in an approved sanitary landfill.
Safe containmant attachment:

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

Disposal location description: Trucked to state approved facility

Waste type: DRILLING

Waste content description: Drill cutting

Amount of waste: 1950000 pounds

Waste disposal frequency : Daily

Safe containment description: Steel tanks, lined with a poly liner, that are hauled off daily and taken to 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: State approved disposal facility

Waste type: SEWAGE

Waste content description: Grey water and human waste

Amount of waste:

Waste disposal frequency : Monthly

Safe containment description: Human waste and grey water will be properly contained and disposed of properly in a state approved disposal facility, twice a week.

Safe containmant attachment:

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

Disposal location description: Hauled to state approved commercial facility.

Waste type: DRILLING

Waste content description: Drilling fluids and mud from the well

Amount of waste: 1000 barrels

Waste disposal frequency : Weekly

Safe containment description: Drilling fluids and mud from the well will be stored safely and disposed of properly in a state approved disposal facility, once a week
Safe containmant attachment:

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

Disposal location description: State 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? NO

Description of cuttings location

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

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

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

WCuttings area liner

Cuttings area liner specifications and installation description

Section 8 - Ancillary Facilities

Are you requesting any Ancillary Facilities?: NO

Ancillary Facilities attachment:

Comments:

Section 9 - Well Site Layout

Well Site Layout Diagram:

Well_Site_Layout_Cheddar_02.12.18_20180212114032.pdf

Comments:

Section 10 - Plans for Surface Reclamation

Type of disturbance: New Surface Disturbance

Multiple Well Pad Name: CHEDDAR WELLS

Multiple Well Pad Number: 1

Recontouring attachment:

Grading_Plan_Cheddar_02.13.18_20180213082048.pdf

Drainage/Erosion control construction: Drainage and Erosion will be constantly monitored to prevent compromising the well site integrity, and to protect the surrounding native topography.
Drainage/Erosion control reclamation: Upon reclamation, well site will be returned to its native contour. Water breaks will be added if needed, to prevent unnatural erosion, and loss of vegetation

Wellpad long term disturbance (acres): 18.446

Wellpad short term disturbance (acres): 18.446

Access road long term disturbance (acres): 0

Access road short term disturbance (acres): 0

Pipeline long term disturbance (acres): 0

Pipeline short term disturbance (acres): 0

Other long term disturbance (acres): 0

Other short term disturbance (acres): 0

Total long term disturbance: 18.446

Total short term disturbance: 18.446

Reconstruction method: No additional work will need to be done.

Topsoil redistribution: Surface disturbance will be limited to well site surveyed dimensions. Top soil will be stored along southeast edge of well site.
Soil treatment: Native Caliche will be used in the initial construction of the well pad. Pad will be compacted using fresh water. Dust control measures will be implemented as needed.
Existing Vegetation at the well pad: Sand Dropseed, Sand Lovegrass, and Plains Bristlegrass

Existing Vegetation at the well pad attachment:

Existing Vegetation Community at the road: None. using the existing access road into the Devon Bilbry 1H well site.

Existing Vegetation Community at the road attachment:

Existing Vegetation Community at the pipeline: Sand Dropseed, Sand Lovegrass, and Plains Bristlegrass

Existing Vegetation Community at the pipeline attachment:

Existing Vegetation Community at other disturbances: No additional surface disturbance is planned.

Existing Vegetation Community at other disturbances attachment:

Non native seed used? NO

Non native seed description:

Seedling transplant description:

Will seedlings be transplanted for this project? NO

Seedling transplant description attachment:

Will seed be harvested for use in site reclamation? NO

Seed harvest description:

Seed harvest description attachment:

Seed Management

Seed Table

Seed type:

Seed source:

Seed name:

Source name:

Source address:

Source phone:

Seed cultivar:

Seed use location:

PLS pounds per acre:

Proposed seeding season:

Seed Summary

Total pounds/Acre:

Seed Type	Pounds/Acre

Seed reclamation attachment:

Operator Name: CENTENNIAL RESOURCE PRODUCTION LLC

Well Name: CHEDDAR 2BS FEDERAL COM **Well Number:** 1H

Cheddar_Pad_Seed_Mixture_2_Sandy_Sites_06-21-2017.pdf

Operator Contact/Responsible Official Contact Info

First Name: Heidi **Last Name:** Kaczor

Phone: (720)499-1422 **Email:** heidi.kaczor@cdevinc.com

Seedbed prep: Prepare a 3-5-inch deep seedbed, with the top 3-4 inches consisting of topsoil.

Seed BMP: Seeing will be done in the proper season, and monitored for the re-establishment of native vegetation.

Seed method: Drill

Existing invasive species? NO

Existing invasive species treatment description:

Existing invasive species treatment attachment:

Weed treatment plan description: Spray for noxious weeds and bare ground as needed.

Weed treatment plan attachment:

Monitoring plan description: All disturbed areas will be closely monitored for any primary or secondary noxious weeds. Should any be found, chemical spraying in accordance with state regulations will be implemented.
Monitoring plan attachment:

Success standards: No primary or secondary noxious weeds will be allowed. Vegetation will be returned to its native stand.
Pit closure description: No open pits will be constructed.

Pit closure attachment:

Section 11 - Surface Ownership

Disturbance type: WELL PAD

Describe:

Surface Owner: BUREAU OF LAND MANAGEMENT

Other surface owner description:

BIA Local Office:

BOR Local Office:

COE Local Office:

DOD Local Office:

NPS Local Office:

State Local Office:

Military Local Office:

USFWS Local Office:

Other Local Office:

Operator Name: CENTENNIAL RESOURCE PRODUCTION LLC

Well Name: CHEDDAR 2BS FEDERAL COM **Well Number:** 1H

USFS Region:

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

Section 12 - Other Information

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

ROW Type(s):

ROW Applications

SUPO Additional Information:

Use a previously conducted onsite? YES

Previous Onsite information: Dana Ginanni from GMT and Richard Crawford from Centennial performed an onsite with Colleen Rios on June 27, 2017.

Other SUPO Attachment

Letter_to_BLM_GMT_as_Agent_for_Centennial_06-26-2017.pdf

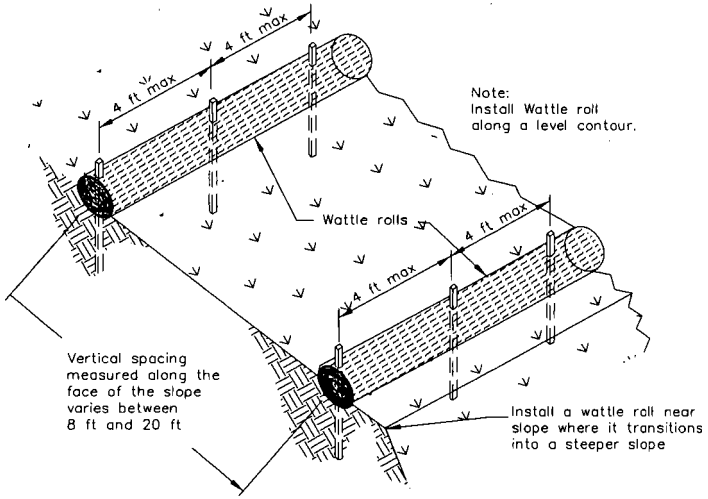
H2S_Plan___Cheddar_2BS_Federal_Com_1H_20180104143723.pdf

Existing Wells in 1 Mile Radius of SHL			
API	Company	Well Name	Location
30025336500000	OXY USA INC	EAST LIVINGSTON RIDGE UNIT #12	Sec 7 T22S R32E
30025312270000	EOG Y Resources INC	Rosemary SWD #1	Sec 6 T22S R32E
30025274730000	KAISER-FRANCIS OIL CO	FEDERAL`CK`COM #1	Sec 6 T22S R32E
30025276200000	EOG Resources INC	Bilbrey SWD #1	Sec 5 T22S R32E
30025409870000	Devon Energy	Bilbrey Basin 5 State 1H	Sec 5 T22S R32E
Plugged Wells in a 1 Mile Radius of SHL			
30025317430000	POGO PRODUCING CO	Federal LR 7 #1	Sec 7 T22S R32E
30025280770000	POGO PRODUCING CO	Pre-Ongard Well #1	Sec 7 T22S R32E
30025317910000	POGO PRODUCING CO	Federal LR 8 #2	Sec 8 T22S R32E
30025327100000	POGO PRODUCING CO	Federal 8 Com #2	Sec 8 T22S R32E
30025327090000	OXY USA INC	Federal 8 Com #1	Sec 8 T22S R32E
30025329810000	POGO PRODUCING CO	Livingston Ridge 8 Fed #3	Sec 8 T22S R32E

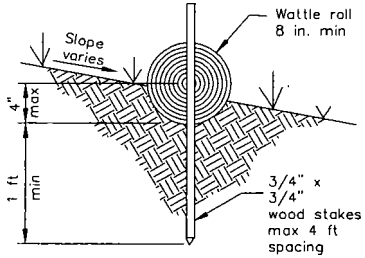
Existing Wells in 1 Mile Radius of BHL			
API	Company	Well Name	Location
30025314430000	TLT SWD LLC	Lost Tank SWD #1	Sec 31 T21S R32E
30025310890001	OXY USA INC	FEDERAL 31 #1	Sec 31 T21S R32E
Proposed Wells in a 1 Mile Radius of BHL			
30025420880000	GMT Exploration CO LLC	Gamay 32 State 1H	Sec 32 T21S R32E
Plugged Wells in a 1 Mile Radius of BHL			
30025359460000	CIMAREX ENERGY CO	BILBREY `32` STATE #2	Sec 32 T21S R32E
30025308860000	TEXACO EXPLORATION	Bilbrey 32 State Com #1	Sec 32 T21S R32E
30025269860001	CONOCOPHILLIPS CO	GETTY `32` STATE COM #1	Sec 32 T21S R32E
30025357380000	CHEVRON U S A INC	BILBREY `29` FEDERAL #2	Sec 29 T21S R32E
30025277790000	MEWBOURNE OIL COMPANY	BILBREY `29` FEDERAL COM #1	Sec 29 T21S R32E
30025336690000	TEXACO EXPL&PROD INC	BILBREY `30` FEDERAL #4	Sec 30 T21S R32E
30025336470000	CHI Operating INC	BILBREY `30` FEDERAL #5	Sec 30 T21S R32E
30025336690000	TEXACO EXPL&PROD INC	BILBREY `30` FEDERAL #2	Sec 30 T21S R32E
30025336690000	TEXACO EXPL&PROD INC	BILBREY `30` FEDERAL #6	Sec 30 T21S R32E
30025321930000	POGO PRODUCING CO	FEDERAL `31` #3	Sec 31 T21S R32E
30025321940000	POGO PRODUCING CO	FEDERAL `31` #2	Sec 31 T21S R32E
30025332150000	POGO PRODUCING CO	FEDERAL `31` #9	Sec 31 T21S R32E
30025314420000	OXY USA INC	LUKE FEDERAL #2	Sec 31 T21S R32E
30025322060000	POGO PRODUCING CO	FEDERAL `31` #5	Sec 31 T21S R32E
30025332160000	POGO PRODUCING CO	FEDERAL `31` #10	Sec 31 T21S R32E
30025274450000	POGO PRODUCING CO	FEDERAL `CLN` #1	Sec 31 T21S R32E

EROSION CONTROL/WATTLE ROLL INSTALLATION DETAIL (W)

N.T.S.



TYPICAL WATTLE ROLL INSTALLATION

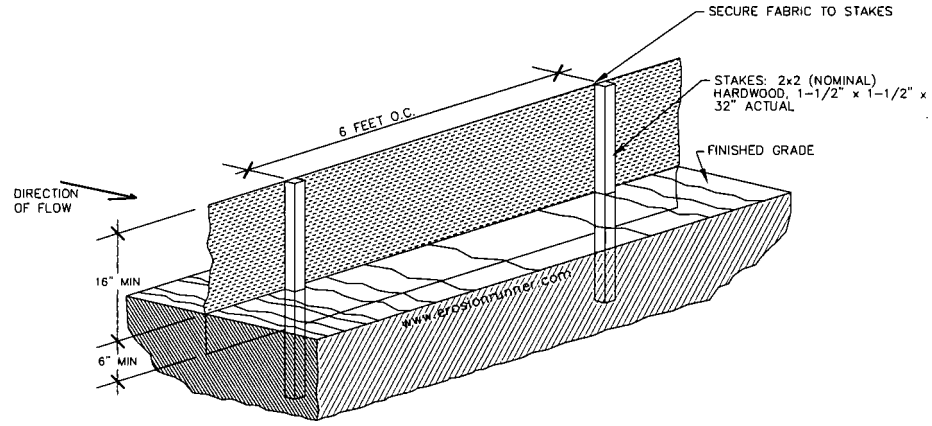


ENTRENCHMENT DETAIL

THE PLANS SHOW AN ESTIMATE OF THE AREA OF THE STORMWATER BMPS TO BE PLACED ON THE ROAD. THERE MAY NEED TO BE SOME FIELD ADJUSTMENTS MADE BY THE CONTRACTOR, AND/OR INSPECTOR/ENGINEER TO THE PLACEMENT AND AREA OF THE STORMWATER BMPS.

SILT FENCE INSTALLATION DETAIL

N.T.S.



1. SILT FENCE SHALL BE CONSTRUCTED BEFORE UPSLOPE GROUND COVER IS REMOVED. CLEARING, GRUBBING, AND STUMPING CAN OCCUR BEFORE SILT FENCE INSTALLATION IF GROUND COVER IS NOT REMOVED.
2. ALL SILT FENCE SHALL BE PLACED AS CLOSE TO THE CONTOUR AS POSSIBLE SO THAT WATER WILL NOT CONCENTRATE AT LOW POINTS IN THE FENCE AND SO THAT SMALL SWALES OR DEPRESSIONS THAT MAY CARRY SMALL CONCENTRATED FLOWS TO THE SILT FENCE ARE DISSIPATED ALONG ITS LENGTH.
3. ENDS OF THE SILT FENCES SHALL BE BROUGHT UPSLOPE SLIGHTLY SO THAT WATER PONDED BY THE SILT FENCE WILL BE PREVENTED FROM FLOWING AROUND THE ENDS.
4. SILT FENCE SHOULD PREFERABLY BE A MINIMUM OF 10 FEET FROM THE TOE OF SLOPE.
5. THE TRENCH SHALL BE MADE WITH A TRENCHER, CABLE LAYING MACHINE, SLICING MACHINE, OR OTHER SUITABLE DEVICE THAT WILL ENSURE AN ADEQUATELY UNIFORM TRENCH DEPTH.
6. WHERE TWO SECTIONS OF PREFABRICATED SILT FENCE ARE COMBINED INTO ONE RUN, THE END POSTS SHALL BE CONNECTED TOGETHER, NOT SIMPLY OVERLAPPED.
7. SILT FENCE SHALL ALLOW RUNOFF TO PASS ONLY AS DIFFUSE FLOW THROUGH THE GEOTEXTILE. IF RUNOFF OVERTOPS THE SILT FENCE, FLOWS AROUND THE ENDS, OR IN ANY OTHER WAY BECOMES A CONCENTRATED FLOW, ONE OF THE FOLLOWING SHALL BE PERFORMED, AS APPROPRIATE: A) AN ADDITIONAL RUN OF SILT FENCE SHALL BE PLACED UPSTREAM, B) THE LAYOUT OF THE SILT FENCE SHALL BE CHANGED, C) ACCUMULATED SEDIMENT SHALL BE REMOVED, OR D) OTHER PRACTICES SHALL BE IMPLEMENTED.
8. SEDIMENT DEPOSITS SHALL BE REMOVED WHEN THE DEPOSIT REACHES APPROXIMATELY ONE-HALF OF THE HEIGHT OF THE SILT FENCE.
9. ALL STOCKPILES SHALL BE INCIRCLED WITH SILT FENCE.
10. SILT FENCE FABRIC SHALL MEET THE FOLLOWING SPECIFICATIONS: MINIMUM TENSILE STRENGTH 120 LBS., ASTM D 4632; MAXIMUM ELONGATION AT 60 LBS., 15%, ASTM D 4632; MINIMUM PUNCTURE STRENGTH 50 LBS., ASTM D 4833; MINIMUM TEAR STRENGTH 40 LBS., ASTM D 4533, APPARENT OPENING SIZE <= 0.84MM, ASTM D 4751; MINIMUM PERMITTIVITY 1X10-2SEC.-1, ASTM D 4491; WATER FLOW RATE 15GAL./MIN/SQ. FT.; UV EXPOSURE STRENGTH RETENTION, 70%, ASTM G 4355.

CENTENNIAL RESOURCE PRODUCTION, LLC

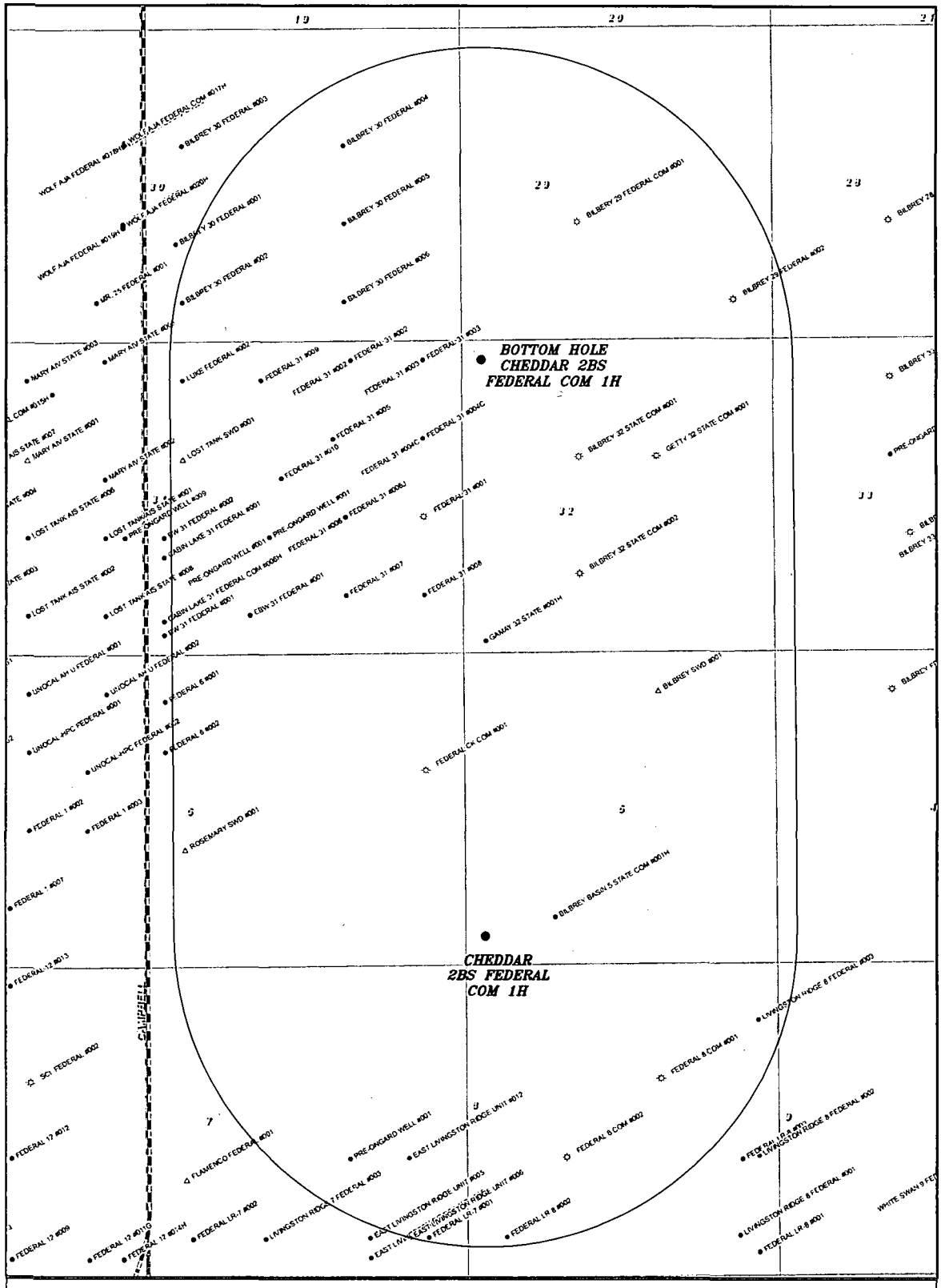
STORMWATER DETAILS

DATE	BY	REVISIONS

SCALE: No Scale
DRAWN BY:
E-FILE:
PROJECT NO:
DRAWING DATE: 02-09-18

UINTAH ENGINEERING & LAND SURVEYING
85 SOUTH 200 EAST
VERNAL, UTAH 84078
(435)789-1017
www.uintahgroup.com
- SINCE 1964 -

30025364360000	POGO PRODUCING CO	FEDERAL `31` #6	Sec 31 T21S R32E
30025364350000	POGO PRODUCING CO	FEDERAL `31` #4C	Sec 31 T21S R32E
30025322160000	POGO PRODUCING CO	FEDERAL `31` #8	Sec 31 T21S R32E
30025322050000	POGO PRODUCING CO	FEDERAL `31` #7	Sec 31 T21S R32E
30025314310000	COLLINS & WARE INC	EBW `31` FEDERAL	Sec 31 T21S R32E



CHEDDAR 2BS FEDERAL COM #1H

Located 274' FSL & 370' FWL

Section 5, Township 22 South, Range 32 East,

N.M.P.M., Lea County, New Mexico.

basin surveys
focused on excellence in the oilfield

P.O. Box 1786
1120 N. West County Rd.
Hobbs, New Mexico 88241
(575) 393-7316 - Office
(575) 392-2206 - Fax
basinsurveys.com

W.O. Number: KJG - 32958

Scale: 1" = 2000'

YELLOW TINT - USA LAND
BLUE TINT - STATE LAND
NATURAL COLOR - FEE LAND

GMT EXPLORATION CO., LLC

AFMSS

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

PWD Data Report
04/13/2018

Section 1 - General

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

Section 2 - Lined Pits

Would you like to utilize Lined Pit PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner:

PWD disturbance (acres):

Lined pit PWD on or off channel:

Lined pit PWD discharge volume (bbl/day):

Lined pit specifications:

Pit liner description:

Pit liner manufacturers information:

Precipitated solids disposal:

Decribe precipitated solids disposal:

Precipitated solids disposal permit:

Lined pit precipitated solids disposal schedule:

Lined pit precipitated solids disposal schedule attachment:

Lined pit reclamation description:

Lined pit reclamation attachment:

Leak detection system description:

Leak detection system attachment:

Lined pit Monitor description:

Lined pit Monitor attachment:

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

Is the reclamation bond a rider under the BLM bond?

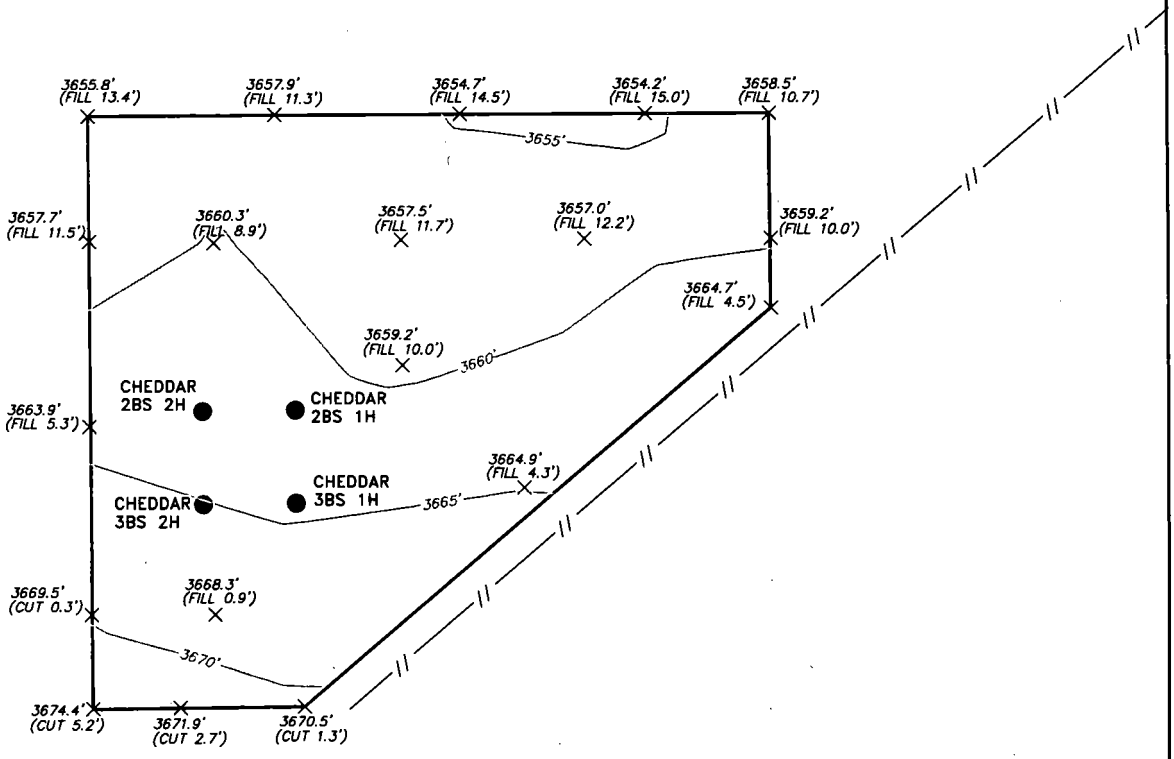
Lined pit bond number:

Lined pit bond amount:

Additional bond information attachment:

SECTION 5, TOWNSHIP 22 SOUTH, RANGE 32 EAST, N.M.P.M.,

LEA COUNTY, ***NEW MEXICO.***



300 0 300 600 FEET

I HEREBY CERTIFY THAT THIS PLAT WAS PREPARED FROM FIELD NOTES OF AN ACTUAL SURVEY AND MEETS OR EXCEEDS ALL REQUIREMENTS FOR LAND SURVEYS AS SPECIFIED BY THIS STATE.

GARY L. JONES NEW MEXICO No. 7977
TEXAS P.L.S. No. 5074

BASIN SURVEYS P.O. BOX 1786 – HOBBS, NEW MEXICO

GMT EXPLORATION CO., LLC

REF: CUT & FILL

A DRILLING ISLAND LOCATED ON USA LAND IN SECTION 5, TOWNSHIP 22 SOUTH, RANGE 32 EAST, N.M.P.M., LEA COUNTY, NEW MEXICO.

W.O. Number: 33057	Drawn By: J GOAD		
Date: 6-14-2017	Disk: JG 33057	Survey Date: 6-12-2017	Sheet 1 of 1 Sheets

Section 3 - Unlined Pits

Would you like to utilize Unlined Pit PWD options? NO

Produced Water Disposal (PWD) Location:

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

Unlined pit PWD on or off channel:

Unlined pit PWD discharge volume (bbl/day):

Unlined pit specifications:

Precipitated solids disposal:

Decribe precipitated solids disposal:

Precipitated solids disposal permit:

Unlined pit precipitated solids disposal schedule:

Unlined pit precipitated solids disposal schedule attachment:

Unlined pit reclamation description:

Unlined pit reclamation attachment:

Unlined pit Monitor description:

Unlined pit Monitor attachment:

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

Beneficial use user confirmation:

Estimated depth of the shallowest aquifer (feet):

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

TDS lab results:

Geologic and hydrologic evidence:

State authorization:

Unlined Produced Water Pit Estimated percolation:

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

Is the reclamation bond a rider under the BLM bond?

Unlined pit bond number:

Unlined pit bond amount:

Additional bond information attachment:

Section 4 - Injection

Would you like to utilize Injection PWD options? NO

Produced Water Disposal (PWD) Location:

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

Injection PWD discharge volume (bbl/day):

Injection well mineral owner:

Injection well type:

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

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

Injection well new surface disturbance (acres):

Minerals protection information:

Mineral protection attachment:

Underground Injection Control (UIC) Permit?

UIC Permit attachment:

Section 5 - Surface Discharge

Would you like to utilize Surface Discharge PWD options? NO

Produced Water Disposal (PWD) Location:

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

Surface discharge PWD discharge volume (bbl/day):

Surface Discharge NPDES Permit?

Surface Discharge NPDES Permit attachment:

Surface Discharge site facilities information:

Surface discharge site facilities map:

Section 6 - Other

Would you like to utilize Other PWD options? NO

Produced Water Disposal (PWD) Location:

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

Other PWD discharge volume (bbl/day):

Other PWD type description:

Other PWD type attachment:

Have other regulatory requirements been met?

Other regulatory requirements attachment:

AFMSS

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

Bond Info Data Report

04/13/2018

Bond Information

Federal/Indian APD: FED

BLM Bond number: NMB001471

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:

CENTENNIAL
RESOURCE PRODUCTION LLC

June 8, 2017

Bureau of Land Management
Carlsbad Field Office
620 E. Greene Street
Carlsbad, NM 88220-6292

Re: GMT as Agent for Centennial

To Whom It May Concern,

Centennial Resource Production, LLC (Centennial) recently acquired properties within your field office from GMT Exploration Company, LLC (GMT). GMT will be acting as agent for Centennial regarding matters of permitting and other regulatory filings with the BLM.

Should you have any questions or concerns regarding this, please feel free to contact me at (720) 499-1422 or at Heidi.Kaczor@cdevinc.com.

Respectfully,

Heidi Kaczor
Regulatory Manager

"EXHIBIT A-1"
R/W BLM SERIAL #: NM-xxxxxx
Project name:

Seed Mixture 2, for Sandy Sites

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

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

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

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

*Pounds of pure live seed:

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

HYDROGEN SULFIDE CONTINGENCY PLAN

CENTENNIAL
RESOURCE DEVELOPMENT INC

PRODUCTION OPERATIONS

TABLE OF CONTENTS

TABLE OF CONTENTS – CONTINUED

I. INTRODUCTION

This plan specifies precautionary measures, safety equipment, emergency procedures, responsibilities, duties, and the compliance status pertaining to the production operations of Hydrogen Sulfide producing wells on:

Cheddar 2BS Federal Com 1H

This plan will be in full effect prior to and continuing with all production operations for all wells producing potential Hydrogen Sulfide.

This plan was developed in response to the potential hazards involved when producing formations that may contain Hydrogen Sulfide (H_2S). It has been written in compliance with current rules and regulations.

This plan shall require the full cooperation and efforts of all individuals participating in the production of potential H_2S wells. Each individual is required to know their assigned responsibilities and duties in regard to normal production operations and emergency procedures. Each person should thoroughly understand and be able to use all safety related equipment on the production facility. Each person should become familiar with the location of all safety equipment and become involved in ensuring that all equipment is properly stored, easily accessible, and routinely maintained. An ongoing training program will remain in effect with regular drills, equipment inspections, and annual certifications for all personnel.

Centennial Resource Development
Here after referred to as
"Centennial"
Shall make every reasonable effort to provide all possible safeguards to protect all personnel, both on this location and in the immediate vicinity, from the harmful effects of H_2S exposure, if a release to the atmosphere should occur.

II. SAFETY EQUIPMENT

A summary of the procedures and equipment that will be operational prior to producing wells follows:

- The location production equipment, piping, vent/flare system, and all associated sensing and connecting lines, and process containment have been designed and evaluated with materials chosen considering corrosion from exposure to H2s and SO2. Process control Instrumentation media supply has been established as "Compressed "AIR ONLY" with no interface or alternate use of produced gas as a working supply source.
- All associated Simultaneous operations, SIMOPS, other special operations, wireline, slick line, well testing, bleed down or off of vessels, casings or instrumentation, valves etc. for testing, service, or inspection, will not be done until a JSA have been established directing all personnel onsite to observe all

established safety measures, and all dangers have been identified, anticipated, and prepared for with personnel safety equipment required to be employed.

- The Flare is equipped with two redundant SO2 sensors located within the vent scrubber entry line to the flare boom and are set at 5ppm minimum which will shut-in the location immediately and alarm locally, and must be manually reset.
- Atmospheric sensors strategically located as illustrated will be set to detect a minimum of 2 PPM SO2, and will effect a total shut-in. These sensors are located in the following locations:

  A.

  B.

  C.

Handheld portable SO2 detectors are for full variable specific sensor surveys and for redundant backup of the fixed sensor net.

- At any time that personnel detect an H2S or SO2 suspect odor or experience nasal irritation, sensor readings will be taken at the fixed sensor locations and in all areas of the location on an hourly basis. These readings will be documented and continued until the Centennial PIC and or the Safety Supervisor judge by the readings history that all is clear.

A. SAFE BRIEFING AREAS

Two areas will be designated as "SAFE BRIEFING AREAS".
The Primary Safe Briefing Area

If the Primary Safe Briefing Area cannot be used due to wind conditions; the designated secondary safe briefing area will be used.

These two areas are so designated for accessibility reasons related to self contained safe breathing air device locations, evacuation muster point utility, and for ease of overall communication, organizational support, as well as the all important prevailing wind directions. Drawings of the facility denoting these locations are included in Appendix D.
If H_2S is detected in concentrations equal to or in excess of 20 PPM, all personnel not assigned emergency duties are to assemble in the appropriate "SAFE BRIEFING AREA" for instructions.

B. WIND DIRECTION INDICATOR

Windsocks (2)

Allowing the wind direction to be observed from anywhere on the location.

C. Warning-DANGER SIGNS (For approaching traffic)

All signs shall also be illuminated under conditions of poor visibility.

DANGER
POISONOUS GAS
HYDROGEN SULFIDE
DO NOT APPROACH IF RED FLAGS ARE DISPLAYED

Additionally, an audible alarm will sound when H_2S exceeds 10 ppm, and a red strobe light system will be activated for H_2S concentrations of 20 PPM or greater. This condition will exist until the all clear is given.

D. SAFE BRIEFING AREA

High visibility Red background signs with white lettering indicating the designated safe briefing areas will be prominently posted designating the established Safe Briefing Area locations.

1. **(Primary Safe Briefing Area) @**_____

2. **(Secondary Safe Briefing Area) @**_____

E. H2s HAZARD CONDTION SIGNS

High visibility signs with lettering indicating the H2s Hazard Condition I or II signals and personnel response directions, as designated in Appendix B-1, will be posted in the following locations:

1. **Primary Safe Briefing Area**
2. **Secondary Safe Briefing Area,**
3.
4.

F. H_2S DETECTORS AND ALARMS

Continuous monitoring type H_2S sensor-detectors, capable of sensing a minimum of 10 PPM, Atmospheric H_2S sensors will be located at each of the following points:
(Note: see facility plot / Safety Equip Layout in Appendix D)

1.
2.
3.
4.

G. (2) Hand Held H2S / Gas Detectors

Two handheld H2S/gas detectors will be always available for specific monitoring requirements and periodic air quality testing checks.

H. Spot-check "Mini-Check type"

Personnel carried H2S Personal detectors will be available for general usage as is needed for **JSA** reviewed required work projects, or emergencies, to add an additional layer of detection, along with handheld detectors and the location fixed detector network.

I. Automatic detection response condition alarms

Automatic H_2S alarms (visual and audible alarms will be located at the following points:

1.
2.
3.
4.
5.
6.
7.

Additionally, other automatic visual alarms, red flashing strobe lights and automatic sirens will be activated as per the facility SAFE chart. A Pinpoint H_2S alarms display will be located in the _____.

J. FLARE LINE PIPING

Prior to opening wells for production, and at all times thereafter, the flare boom **shall** be fully operational so that gas can be flared (burned) if H_2S gas has to be bled (vented) from any process vessel. A remote ignition device with a secondary ignition system will be fully available and in-service at all times.

In the event that the flare goes out the location and all wells will automatically be shut-in until such time as the flare can be reignited. Electronic sensors are installed to monitor after-burn at the flare boom for S02 detection. If 2 ppm SO_2 detection is sensed, the location–wells will automatically be shut-in.

K. H_2S CORROSION CONTROL

A chemical injection pump system has been established to protect piping and production process vessels form H2S related corrosion.

L. BREATHING AIR

1. There will be self-contained breathing apparatus (SCBA) labeled (**"Safe Breathing Air"**) located at the following areas:

- These devices will be designed, selected, used, and maintained to conform to the ANSI Z88.2 AMERICAN NATIONAL STANDARD FOR RESPORITORY PROTECTION

a. Primary "SAFE BRIEFING AREA"

b. Secondary "SAFE BRIEFING AREA"

c.

d.

e.

f.

g.

h

TOTAL: 00 SCBA BREATHING AIR-PACK DEVICES

2. There will be a cascade rack of high pressure breathing air labeled "Safe Breathing Air" located at each of the following areas:

a. **Primary Safe Briefing Area**

b. **SECONDARY SAFE BRIEFING AREA**

Additionally, at each cascade station there will be two (2) each 50' extension hoses for emergency extended reach efforts.

M. LIST OF SAFETY EQUIPMENT

The description and quantity of all safety equipment (including but not limited to breathing air equipment, resuscitators, H_2S and SO_2 detectors, explosion meters, flare gun, etc.) is listed in Appendix C.

N. ADDITIONAL H_2S HARDWARE

1. **Flare boom with automatic remote lighting system.**
2. **Portable H2S / gas detection meters.**
3. **Mini-Check personal H2S detectors**
4. **H2S / SO2 / Gas detector calibrator kit**

O. FANS

Two (2) portable electric fans (48" or larger with explosion proof motor), with 50' of flexible cord shall be located _____. The fan frame-structure shall be of the tilt to roll type.

P. SULFATREAT SYSTEM

The SulfaTreat System will be used to reduce the average H_2S concentration from well stream flow of approximately, **500 PPM high / 39PPM low,** to an approximate maximum of 4 PPM. They will be installed and will be monitored daily to determine when the material is spent. In the event the H_2S concentration exceeds 8 PPM the location will be shut in. Additional information concerning these units may be found in Appendix E.

III. NORMAL OPERATING PROCEDURES

A. PRIOR TO PRODUCING WELLS

This H_2S Contingency Plan will be operational prior to producing wells at Cheddar 2BS Federal Com 1H.

1. Lists of emergency phone numbers will be maintained on the location and shall be posted at the following places:

   a. CENTENNIAL Facility Production Office
   b. CENTENNIAL Facility Production Person in charge Office
   c. CENTENNIAL muster area

2. All safety equipment and H_2S related hardware shall be set up as outlined under Section II "SAFETY EQUIPMENT" All safety equipment shall be inspected routinely, paying particular attention to resuscitators and breathing air equipment, with documentation of all inspections and service kept on file.

3. All personnel on site shall be assigned breathing air equipment and, as needed, personal H_2S detection devices. CENTENNIAL and Contract personnel required to work in the following areas will be provided with SCBA's.

   a.
   b.
   c.
   d.

4. Prior to producing wells, and continuing, all CENTENNIAL personnel, contract personnel, and all essential service company personnel shall be thoroughly trained in the hazardous nature of H2s within the production operations, and receive accredited certification from a certified, qualified technician instructor, in the use of breathing air equipment, emergency procedures, responsibilities, and first aid for H_2S victims.
   The Location Person in Charge will also be the primary certified, qualified Safety Supervisor, and will have the authority to delegate H2S safety supervision responsibilities to a designated certified – qualified person in the interest of comprehensive, efficient, and thorough control and oversight of all activities related to H2s operations. This designated Safety Supervisor will ensure that the integrity of this plan is fully adhered to, at all

times, and that all personnel and activities remain within full compliance.

The Safety Supervisor or Centennial Person in Charge shall keep a file listing all personnel that have completed the special training programs both off of, and onsite the platform. Copies of all H2s training certification of all personnel, service contractors, and visitors onsite shall also be kept on file with the;

Centennial Regulatory/Compliance supervisor

All personnel shall be given a copy of

SAFE PRACTICES DURING THE PRODUCTION OF HYDROGEN SULFIDE

As listed in Section B-1 of the Appendix. This document summarizes the steps to be taken during the three (3) conditions classifications, operational status, and personnel required responses.

This document lists general information about toxic gases, explains the physiological effects of H_2S, classifies operating conditions, and informs each reader of their general responsibilities concerning safety equipment and emergency procedures. The Safety Supervisor or Centennial Person in Charge shall keep a file listing of all persons that have copies of the document, with their signatures, verifying that they have read and understand it thoroughly.

B. DURING PRODUCTION / FLOWING OF SOUR GAS WELLS

1. During normal production operations, flowing of sour gas wells, the H_2S fixed detection system will be calibrated every fourteen **(14)** days under normal conditions by personnel trained to calibrate the installed specific systems sensor equipment by exposing the sensors to a known concentration in the range of 10 ppm to 30 ppm. In the event that H_2S is detected under normal working conditions, the units will be tested at least once every twenty-four (24) hours until an all clear can be determined. The time and results of each test will be logged by the Safety Supervisor or Centennial Person in Charge and reported each day to the CENTENNIAL PRODUCTION SUPERVISOR, until an all clear has been determined. All other associated H2S safety equipment shall be inspected during the required weekly drills.

- A third party Certified Technician will inspect and calibrate all H2s and SO2 sensors every 90 days by exposing the sensors to a known concentration of 10ppm to 30ppm.He will also follow-up, inspect and

verify all safety system functions of the detection system as stated in the SAFE chart; and inspect all breathing air equipment, and systems, as well as all other H2S related devices as inventoried on the H2S safety equipment inspection forms, including signs, flags, lights, strobes, alarms, storage containers, etc. that are weekly inspected by the location operations personnel.

The CENTENNIAL Person in Charge shall insure that the H_2S detection equipment calibrations and tests are recorded on the specific Daily Production Report forms and compliance files inspection records.

Note: In the event that any one H_2S detector does not test successfully, a temporary manned handheld certified sensor-detector will be employed until such time as the faulty sensor can be repaired-replaced. If more than one sensor fails to test, production operations will cease until all failed detectors are:

a. **Repaired, or Replaced and tested**
b. **Approval to proceed using temporary manned handheld detectors is received from the appropriate Regulatory authority.**

<u>Criteria for continuing operation:</u>

a. **No more than any one sensor may be out of service at one time.**
b. **A portable H_2S monitoring device must be temporarily substituted for fixed area monitor substitution.**
c. **A competent qualified person must monitor the portable H_2S device until the sensor is repaired.**

2. When entering the location, all personnel, without exception, shall proceed directly to, or as directed, to the location office for log in, location briefing and orientation. They will then be assigned breathing air equipment. An instructional H2S orientation briefing will also be held, unless personnel names and social security numbers are registered and current with the Safety Supervisor and/or Centennial Person in charge. If so then a walk through briefing will be held with the attendance documented. The Safety Supervisor and/or Centennial Person in Charge will be responsible for assigning all equipment to these individuals and instructing them in its use. JSA's will also record this process prior to commencing any project work on the facility.

3. All equipment brought on location by contract Service Company employees must be logged onsite, including the type, model number, and quantity of all H_2S related safety equipment.

4. Upon boarding the platform, each person shall be issued a copy of **"SAFE PRACTICES DURING THE PRODUCTION OF HYDROGEN SULFIDE"** from the Safety Supervisor or Centennial Person in Charge. They shall verify that it has been read by signing in the provided for acknowledgement space. If they have not previously done so, a copy of the signed page should be forwarded to the **CENTENNIAL AREA SUPERVISOR and the REGULATORY/COMPLIANCE SUPERVISOR.**

5. Hydrogen Sulfide drills will be regularly held as often as necessary to acquaint the crews and contract service company personnel with their responsibilities when a release has occurred from the well(s). After the CENTENNIAL Person in Charge is satisfied that all crews are trained, drills shall be conducted weekly.

6. Each person aboard the location shall be instructed on the proper use of breathing air equipment until supervisory personnel are satisfied that each person has demonstrated competency in using that equipment. This training must include all personnel that are allowed aboard the location during normal production operations.

7. After familiarization, each **on-duty** crew shall perform a weekly drill with breathing equipment. The drill should include removing equipment from stowage, inspecting the breathing air equipment, putting it on, and working for a short period. A record should be kept of the personnel drilled and the date. A complete "BREATHING AIR EQUIPMENT DRILL" procedure is given in Section B-5 of the Appendix, drill should be documented on daily morning production report.

8. Along with normal weekly fire drills and safety meetings, weekly breathing air equipment drills and H_2S training sessions shall also be held for all **off-duty** personnel and a record of attendance shall be kept.

9. All production personnel and contract service company personnel must be aware of the location of all SCBA's, cascade breathing air systems, resuscitation equipment, portable fire extinguishers, and H_2S detectors. Knowledge of the location of H_2S detection monitors is vital to understanding the "emergency conditions". In addition, key personnel shall be trained in the use of resuscitation equipment and the H_2S detection system equipment.

10. H_2S detection equipment shall be available for use by all working personnel. After any device has initially detected H_2S, periodic inspections of all areas of poor ventilation shall be made with a portable H_2S detector instrument.

11. All personnel on the location should become "wind-conscious" included in training drills, and be aware at all times of the direction of the prevailing winds. They should remember that H_2S is **heavier than air and will collect in low places in still air**.

12. There shall be no welding if H_2S is detected at the surface area, until the surrounding air is thoroughly tested with a handheld H2s detector, and an explosion meter, and the work area has been determined to be safe to proceed.

13. After production operations commence on H_2S wells, increased monitoring of the working area should be provided anytime the well is flowing. **If the H_2S concentration reaches 20 PPM in the air, all working personnel shall wear breathing air equipment,** and all personnel not assigned emergency duties must go to the appropriate "SAFE BRIEFING AREA".

IV. OPERATING CONDTIONS – CLASSIFICATIONS

Note: CENTENNIAL has elected to use the audible intermittent horn and amber strobe alarm for Condition I and the red strobe light with continuous horn in addition to the other warning signs for Condition II.

A. POSSIBLE HAZARDOUS CONDITIONS (H_2S NOT PRESENT)

NORMAL OPERATIONS

1. Warning Signs
(For notification of general public and operations):

"DANGER--POISONOUS GAS--HYDROGEN SULFIDE"
"Poisonous Gas Do Not Approach If Red Flags are displayed"

(See Section II).

These signs SHALL be illuminated at night and SHALL be continuously illuminated during times of reduced visibility.

2. **Production Process Upset Alarm**
(For notification of production and contract personnel):

3. **Characterized by:** Production operations under control: Routine production operations in production zones that may contain Hydrogen Sulfide. This condition will be in effect as "Normal OPS" continuously when producing wells, until it is necessary to go to a Condition I or II.

4. **General Action:**

   a. Be alert for condition change. There will be **NO SMOKING** except in approved designated areas as

permitted by the Person in charge or the Safety Supervisor.

b. Keep all safety equipment available and all monitors functioning properly.

c. Perform all required drills for familiarization and proficiency.

B. CONDITION I – POTENTIAL DANGER TO LIFE – H_2S PRESENT AT 10 TO LESS THAN 20 PPM

1. Warning Signs

(For notification of general public and operations):

"DANGER--POISONOUS GAS--HYDROGEN SULFIDE"
"Poisonous Gas Do Not Approach If Red Flags are displayed"

These signs SHALL be illuminated at night and SHALL be continuously illuminated during times of reduced visibility.

2. Alarm

A pinpoint alarm will activate showing the concentration and location of the detected H_2S gas. A Master system control card is located in the _____ Building that shows the area location and PPM of H_2S at the alarming sensor head. The pinpoint alarm is depicted on the facility drawing / safety equipment layout.

Work Areas:

Continuous Siren Alarm – Alarm signals will continue for as long as the H_2S concentration is present at or greater than 10 ppm and less then 20 ppm or until deactivated by the CENTENNIAL Person in Charge. When H_2S concentration is present at or greater than 10 and less than 20 ppm remote alarm can only be reset manually.

Note: Any alarm that is not answered in five (5) minutes will activate an automatic shut-in of the facility.

3. Living Areas

A continuous siren alarm will be activated automatically and continue for as long as the H2S concentration is present at greater than 10 PPM and less than 20 PPM, or until deactivated Centennial Person in Charge.

4. **Characterized By:**

Production operations under control:

Sour gas may be present in concentrations at threshold levels and may or may not be detectable by odor (See 'TOXICITY OF VARIOUS GASES" Section B-2 in the Appendix). This condition will be in effect continuously from the time H_2S concentration reaches 10 PPM unless it is necessary to go to Condition II. Action to be taken under Condition I is contained under Section V "H_2S EMERGENCY PROCEDURES".

5. **General Action**

a. Don SCBA and proceed immediately to the upwind "SAFE BRIEFING AREA" if not specifically assigned duties to correct or control the situation.

b. Be alert for a condition change. There will be **NO SMOKING** at this time.

c. **Check safety equipment for proper functioning. Keep it available. No welding or open fires without permission from the CENTENNIAL Person in Charge.**

d. Follow the instructions of the Centennial Supervisors.

e. Contact _____ and inform of H_2S release detection.

C. CONDITION II – MODERATE DANGER TO LIFE – H_2S PRESENT AT 20 PPM OR ABOVE

1. Warning Signs

(For notification of general public and operations):

"DANGER--POISONOUS GAS--HYDROGEN SULFIDE"

"Poisonous Gas Do Not Approach If Red Flags are displayed"

These signs SHALL be illuminated at night and SHALL be continuously illuminated during times of reduced visibility.

2. Alarm:

Work Areas, Living quarters and Pinpoint Alarms:

Continuous sounding of the H_2S siren and red strobe lights in _____ with red flags outdoors. All audible alarms and red lights will sound as long as the H_2S concentration is present at 20 ppm or greater or until deactivated by the CENTENNIAL Person in Charge. Exterior red flags will remain displayed until alarm condition clears and is manually reset at the Control Panel. System can only be reset when H_2S concentration levels fall below 20 ppm. **Location production will be terminated at 20 PPM atmospheric upset.**

3. Characterized By:

Critical well operations or well control problems. Poisonous gases are present above the threshold levels (as defined under 'TOXICITY OF VARIOUS GASES" Section B-1 in the Appendix). This condition shall be in effect when the H_2S concentration is present at 20 PPM or higher.

4. General Action

a. Go to Safe Briefing area and immediately don a Self Contained Breathing Apparatus if not specifically assigned duties to correct or control the situation.

b. Follow the instructions of the CENTENNIAL Person in Charge.

c. CENTENNIAL Person in Charge shall initiate emergency action as provided in this plan.

d. All persons working in the hazard area shall wear self-contained breathing apparatus.

e. Production will automatically be shut-in.

f. Contact _____ and inform of H_2S release detection.

V. H_2S EMERGENCY PROCEDURES
(According to the operating condition declared)

A. EMERGENCY PROCEDURES FOR CONDITION I

If at anytime greater than 10 ppm of H_2S detected the following steps will taken:

1. The person detecting the H_2S shall immediately notify the CENTENNIAL Person in Charge.

2. The CENTENNIAL Person in charge shall don self-contained breathing apparatus, take hand held detectors to the pinpoint location and verify the presence and source of H_2S.

3. When notified of a Condition I or II situation, the following personnel will immediately put on their breathing air units:

   a. All personnel in the immediate release area.
   b. All personnel in the operational area.
   c. All personnel downwind of the source of H_2S.

4. The on-duty CENTENNIAL Person in Charge will alert all personnel in work areas that a Condition I exists. He shall be prepared to shut off the air circulation system and to close all doorways downwind of and below the source of H_2S.

5. The CENTENNIAL Person in Charge will test air quality using a portable gas detector.

6. A concerted effort must be made by supervisory personnel to determine the source of the H_2S and to suppress the H_2S as quickly as possible. **Normal operations must not proceed until the source of the H_2S is determined** and conditions are stabilized. All personnel will keep breathing air equipment on while source of release is being identified and until the CENTENNIAL Person in Charge gives the all clear.

7. The CENTENNIAL Person in Charge will make sure all non-essential personnel are out of the potential danger area (i.e. well bay, plus ten). All personnel who remain in the potential danger areas must utilize the "Buddy System".

8. The CENTENNIAL Person in Charge will order all personnel to check their safety equipment to see that it is working properly and is in the proper location.

9. The CENTENNIAL Person in Charge shall notify the CENTENNIAL Production Supervisor of current conditions and actions taken.

10. The CENTENNIAL Person in Charge will see that all monitoring devices are functioning properly and reading accurately and will increase gas-monitoring activities with portable units.

11. Once breathing air equipment is on, the CENTENNIAL Person in Charge should:
Be ready to close master well control valve(s) if automatic functions fail.

B. EMERGENCY PROCEDURES FOR CONDITION II

If the H_2S concentration reaches 20 PPM the wells and production system will automatically be shut-in. In addition to items listed above under Condition I:

1. The person detecting the H_2S must immediately notify the CENTENNIAL Person in Charge.

2. The following personnel will immediately put on their breathing air units:

   a. CENTENNIAL Person in Charge
   b. All Production Personnel
   c. All Contract Personnel

3. Once breathing air equipment is on, the CENTENNIAL Person in Charge should:

   a. Be ready to close master well control valve if automatic functions fails.

4. The CENTENNIAL Person in Charge will alert all personnel in work areas that a Condition II exists. He shall be prepared to shut off any air circulation system.

5. All personnel on the location must don assigned self-breathing apparatus and report to the "SAFE BRIEFING AREA" for further instructions. If your assigned self-contained breathing apparatus and the "SAFE BRIEFING AREA" are upwind of the well, or source of the leakage, the self-contained breathing apparatus

may be carried to the briefing area. However, if there is any doubt, don and activate the unit immediately. If it becomes necessary to go through the production area to get to the "SAFE BRIEFING AREA", the breathing air equipment should be put on as soon as the equipment is reached. If you are located on the downwind end of the location when the Condition II alarm is sounded, hold your breath and proceed to the upwind "SAFE BRIEFING AREA", donning the nearest breathing air equipment available.

6. Always put on breathing air equipment before assisting someone affected by H_2S gas, and utilize the "Buddy System". If the affected person is stricken in a high concentration area turn respirator by-pass to full positive pressure and obtain stand-by assistance before entering the area. Always use the "Buddy System" when entering possibly contaminated areas.

7. The CENTENNIAL Person in Charge will assess the situation and assign duties to each person needed to bring the situation under control. When the severity of the situation has been determined, all persons will be advised. The CENTENNIAL Person in Charge will:

   a. Direct corrective action
   b. Notify the CENTENNIAL Production Supervisor

8. The CENTENNIAL Production Supervisor will be responsible for notifying the appropriate regulatory agencies (See Appendix B-7).

9. If an H_2S concentration exceeding 50 PPM in the air is recorded at the outer perimeter of the location, notify all appropriate regulatory agencies and alert by radio communication all known aircraft in the immediate vicinity of the production location.

VI. SPECIAL OPERATIONS

A. EQUIPMENT BLOW-DOWN / LINE PRESSURE RELEASES

1. All produced gases released from any production vessel or line must be vented and burned through a flare system equipped with continuous pilot and automatic igniter.

B. FACILITY START-UP PROTOCOL (AFTER EVACUATION)

1. After the facility has been evacuated and prior to re-starting generators, the system must be reset to bring H_2S systems back in service. The H_2S System must be checked and tested prior to performing any operations.

VII. PARTIAL EVACUATION PROCEDURE

Key personnel to remain onsite during a partial evacuation are:

a. Production Location Crew On-Duty
b. Centennial Person in Charge
c. Any other designated CENTENNIAL Supervisory Personnel.

VIII. RE-IGNITING THE FLARE

A. RESPONSIBILITY FOR DECISION

In the event of severe well control problems and failure of the flare and back-up systems, the final decision to re-ignite the flare is the responsibility of the CENTENNIAL Person in Charge. This decision should be made based upon conditions at the time. Two possible scenarios that might prevent re-ignition are:

1) **Human life is endangered or, 2) There is no hope of controlling the well under the prevailing conditions at the site.**

The Person in Charge should make such a decision only after consulting with the ranking CENTENNIAL Representative onsite at the location and only if time and circumstances permit. He must not delay his decision, however, if human life or safety of the location is threatened.

In all cases, an attempt should be made to notify the CENTENNIAL Production Supervisor as soon as possible prior to igniting the well.

If the well is ignited, the burning H_2S will be converted to sulfur dioxide (SO_2), which is also highly toxic and heavier than air. Hence, do not assume the area is safe after the well is ignited.

B. METHODS OF RE-LIGHTING THE FLARE

1. The primary method of re- igniting the flare will be the electronic ignition device built into the flare boom.
   The secondary method of re-igniting the flare will be a 25mm hand held flare gun, which has a range of approximately 500'. Always ignite the flare from upwind and do not approach the flare any closer than is necessary.

   Note: Before firing the flare gun or igniting flammable material, check the atmosphere at your location for combustible gases with an explosion meter.

2. Only after the primary method of ignition fails will the flare gun backup ignition method be used. Use good sound judgment as to which method is the proper one to employ based upon the actual specific circumstances at that time.

   Note: If both primary and secondary flare ignition systems fail, the location shall be immediately shut-in.

IX. RESPONSIBILITIES AND DUTIES

A. ALL PERSONNEL

1. It is the responsibility of all personnel on the location, as well as, any other personnel assisting in the production operations of the well to familiarize themselves with the procedures outlined in the "H_2S Contingency Plan".

2. Each individual is responsible for seeing that their assigned safety equipment is properly stored, easily accessible and routinely maintained.

3. Each person must familiarize themselves with the location of all safety equipment at the location, and be able to use all safety equipment at a moment's notice. The location and quantity of all safety equipment is given in the Appendix, Section C-1.

4. All personnel must read and understand the "SAFE PROCEDURES DURING THE PRODUCTION OF HYDROGEN SULFIDE'.

5. Report any indications of H_2S to those in the area and to the CENTENNIAL Person in Charge.

B. CENTENNIAL PERSON IN CHARGE

1. The CENTENNIAL Person in Charge is responsible for thoroughly understands and enforcing all aspects of the "H_2S Contingency Plan".

2. The CENTENNIAL Person in Charge is responsible for seeing that all safety and emergency procedures outlined the "**H_2S Contingency Plan**" are observed by all personnel participating in the production and testing of the H_2S well.

3. The CENTENNIAL Person in Charge is responsible for advising the CENTENNIAL Production Supervisor whenever the procedures as specified herein cannot be complied with.

4. The CENTENNIAL Person in Charge is responsible for setting up the location for production operations of Hydrogen Sulfide as described under Section II "Safety Equipment".

5. The CENTENNIAL Person in Charge in conjunction with CENTENNIAL Production Engineer is responsible for seeing that all hardware and replacement parts, manifold lines, and all other piping which may be required to carry H_2S contaminated fluids under high pressure, are suitable for H_2S.

6. The CENTENNIAL Person in Charge in conjunction with the Safety Supervisor shall be responsible for scheduling personnel training.

7. If the presence of H_2S is reported and confirmed, the CENTENNIAL Person in Charge is responsible for immediately advising the CENTENNIAL Production Supervisor

8. The CENTENNIAL Person in Charge in consultation with the Production Supervisor shall restrict the number of personnel on the location to a minimum during expected hazardous operations.

C. SAFETY SUPERVISORS OR CENTENNIAL PERSON IN CHARGE

1. The Safety Supervisors and Centennial Person in Charge are responsible for thoroughly understanding the contents of the "H_2S Contingency Plan".

2. It is the responsibility of the Safety Supervisors and the CENTENNIAL Person in Charge to see that all safety and emergency procedures outlined in the "H_2S Contingency Plan" are observed by all personnel aboard the platform.

3. The Safety Supervisors share the responsibility of the CENTENNIAL Person in Charge in scheduling training for personnel aboard the platform.

4. The on-duty Safety Supervisor or Centennial Person in Charge shares the responsibility for closing all doorways and hatches in the event that H_2S is detected in the atmosphere at any time.

5. The Safety Supervisor in conjunction with the CENTENNIAL Person in Charge will be responsible for inspecting the location to make sure that all passageways remain unobstructed.

6. The Safety Supervisor or Centennial Person in Charge is responsible for alerting all, on and off duty personnel during a "Condition I or II" alert and for confirming that warning alarms, signal lights, and red flags are operating properly as outline under Section IV "OPERATING CONDITIONS – CLASSIFICATION".

7. The Safety Supervisor or Centennial Person in Charge is responsible for notifying all personnel in the area of the location of a change in conditions.

8. The Safety Supervisor or Centennial Person in Charge is responsible for performing a weekly documented inventory inspection to assure that all safety equipment is being properly stored and maintained.

9. The Safety Supervisor or Centennial Person in Charge is responsible for logging the arrival and departure of all personnel on the location, per CENTENNIAL policy - compliance requirements.

10. The Safety Supervisor or Centennial Person in Charge is responsible for H_2S training, which includes the use, maintenance and storage of the safety equipment.

11. The Safety Supervisor or Centennial Person in Charge is responsible for issuing H_2S safety equipment to arriving

personnel on the location and for collection of same from departing personnel.

12. The Safety Supervisor or Centennial Person in Charge is responsible for assuring that a **competent person** performs all maintenance and completes repair of safety equipment.

13. The Safety Supervisor or Centennial Person in Charge is responsible for assuring that required inspection and sanitizing of the H_2S safety equipment is performed.

14. The Safety Supervisor or Centennial Person in Charge is responsible for the maintenance of the H_2S Safety Training Class Attendance Records, and other record keeping requirements. He shall furnish the Centennial Regulatory / Compliance Supervisor a copy of all class attendance records.

15. The Safety Supervisor or Centennial Person in Charge will observe and assist during **weekly** Hydrogen Sulfide drills.

16. The Safety Supervisor or Centennial Person in Charge will observe testing of the Hydrogen Sulfide monitors **every 14 days** for response. A copy of the test results will be given to the Centennial Production Supervisor.

17. The Safety Supervisor or Centennial Person in Charge will calibrate and maintain records of personal H_2S monitoring equipment.

X. PROCEDURE FOR INFORMING PERSONNEL OF THE H_2S CONTINGENCY PLAN

A. There will be several copies of the complete "**H_2S Contingency Plan**" available in the CENTENNIAL location operations office.

B. **All personnel** arriving at the location will report immediately to the Safety Supervisor or Centennial Person in Charge for familiarization with the "Safe Practices during the Production of Hydrogen Sulfide". Each person will be required to sign a log indicating that they have and do understand the "SAFE PRACTICES" syllabus. (See appendix C-4)

- All personnel entering the location during normal production operations will be required to have H2s safety certification. Specialist and or other temporary visitors not certified will receive

orientation and participate in a JSA as required for their specific task, and will work under the direct supervision of the designated Task specific safety supervisor.

C. The Safety Supervisor or Centennial Person in Charge will verify and document H2s training of all crews, personnel and familiarize them with the "Safe Practices during the Production of Hydrogen Sulfide". Written records will be maintained.

XI. APPENDICES

APPENDIX A

WELL CONTROL

A. All efforts should be made to maintain control of the H2S well(s), in the event the release exceeds 20 PPM, the well(s) will be automatically shut-in.

B. When the primary and secondary ignition system on the flare fails the well(s) shall be shut-in.

C. When a Hydrogen Sulfide Condition I or II occurs audible and visual alarms will be activated. When a Hydrogen Sulfide Condition II occurs the location will automatically shut-in. If any facility alarm is not answered in five (5) minutes, location will automatically shut-in.

D. CENTENNIAL will have the capability to shut-in all well(s) by manual remote control on the facility without accessing the well area. All system upsets due to H2S detection will be reported to the CENTENNIAL AREA PRODUCTION SUPERVISOR.

APPENDIX B-1

HAZARDOUS CONDITIONS

SAFETY PROCEDURES DURING THE PRODUCTION OF HYDROGEN SULFIDE

This memorandum is intended to familiarize you with the conditions that can exist when producing a well from formations that may contain H_2S and the precautions CENTENNIAL and the Safety Supervisor or Centennial Person in Charge have taken in designing the production program and the safety program to provide maximum safety.

You should become familiar with all safety equipment on the location, its use and availability. The windsock is provided to show which direction the wind is blowing so that "SAFE BRIEFING AREA" can be easily defined. You should become "wind conscious" and frequently observe these wind direction indicators. All persons aboard the location will receive instructions on the use of safety equipment and what to do during an H_2S emergency. The well(s) will be monitored with H_2S continuous monitoring-type detectors.

Production operations will be performed under four (4) possible conditions.

A. POTENTIAL HAZARDOUS CONDITIONS (H_2S NOT PRESENT)

1. Warning Signs
(For notification of general public and operations):

High visibility operational danger signs will be displayed in a manner visible to personnel approaching the location.

(See Section II).

These signs SHALL be illuminated at night and SHALL be continuously illuminated during times of reduced visibility.

2. Alarm (for notification of location crew): None

3. Characterized by:
Production operations under control. Routine production operations in zones that may contain hydrogen sulfide. This condition will be in effect continuously when well is flowing.

4. **General Action:**

   a. Be alert for condition change.

   b. Keep all safety equipment available and monitors functioning properly.

   c. Perform all drills for familiarization and proficiency.

B. CONDITION I – POTENTIAL DANGER TO LIFE – H_2S PRESENT GREATER THAT 10 BUT LESS THAN 20 PPM

1. **Warning Signs**
(For notification of general public and operations):

"DANGER--POISONOUS GAS--HYDROGEN SULFIDE":
"Poisonous Gas Do Not Approach If Red Flags are displayed"
(See Section II).

These signs SHALL be illuminated at night and SHALL be continuously illuminated during times of reduced visibility.

2. **Alarm**

A pinpoint alarm will activate showing the concentration and location of the H_2S gas.
The fixed area alarm H2S atmosphere control panel will be located in the _____ Building.

Work Areas

Audible intermittent alarm signals will continue for as long as the H_2S concentration is present at 10 ppm or greater until deactivated by the CENTENNIAL Person in Charge / Contract Person in Charge. A remote signal will be sent to main facility and inform CENTENNIAL Person in Charge that an upset has occurred when a concentration is present at 10 to 20 PPM.

Living Areas

The audible alarms will be activated automatically and will continue for as long as the condition exists. A remote alarm will be sent to inform the CENTENNIAL Production Supervisor that an upset has occurred.

3. **Characterized By:**

Production operations under control. Production operations in producing zones that may contain Hydrogen Sulfide.

Poisonous gases may be present in concentrations at threshold levels and may or may not be detectable by odor (See 'TOXICITY OF VARIOUS GASES" Section B-2 in the Appendix). This condition will be in effect continuously from the time H_2S concentration reaches 10 PPM unless it is necessary to go to Condition II. **Action to be taken under** Condition I is contained under Section V "H_2S EMERGENCY PROCEDURES".

4. **General Action**

a. Don SCBA and proceed immediately to the "SAFE BRIEFING AREA" if not specifically assigned duties to correct or control the situation.

b. Be alert for a condition change. There will be **NO SMOKING** at this time.

c. Check safety equipment for proper functioning. Keep it available. No welding or open fires without permission from the CENTENNIAL Person in Charge.

d. Follow instruction of the CENTENNIAL Person in Charge / Safety Supervisor.

C. CONDITION II – MODERATE DANGER TO LIFE – H_2S PRESENT AT 20 PPM OR ABOVE

1. Warning Signs

(For notification of general public and operations):

"DANGER--POISONOUS GAS--HYDROGEN SULFIDE"
"Poisonous Gas Do Not Approach If Red Flags are displayed"
(See Section II).

These signs SHALL be illuminated at night and SHALL be continuously illuminated during times of reduced visibility.

2. Alarm

Work Areas and Living Quarters:

Continuous sounding of the H_2S siren and red strobe lights and red flags outdoors. All audible alarms and red lights on interior of buildings will continue for as long as the H_2S concentration is present at 10 ppm atmosphere and less than 20 PPM or until deactivated by the Safety Supervisor or CENTENNIAL Person in Charge. A remote alarm will be sent. Exterior red flags will remain displayed until alarm condition clears and is manually reset. System can only be reset when H_2S concentration levels fall below 20 PPM. Location production will be terminated at a 20 PPM atmospheric upset.

3. Characterized By

Critical well operations or well control problems. Poisonous gases are present above the threshold levels (as defined under 'TOXICITY OF VARIOUS GASES" Section B-2 in the Appendix). This condition shall be in effect when the H_2S concentration is present at 20 ppm or higher.

4. General Action

a. Don SCBA and proceed immediately to the "SAFE BRIEFING AREA" with self-contained breathing apparatus if not specifically assigned duties to correct or control the situation.

b. Follow the instructions of the Safety Supervisor or the CENTENNIAL Person in Charge.

c. The Safety Supervisor or the CENTENNIAL Person in Charge shall initiate emergency action as provided in this plan.

d. All persons working in the hazard area will wear self-contained breathing apparatus. All personnel will restrict their movements as directed by the Safety Supervisor or the CENTENNIAL Person in Charge.

e. If the well is ignited, the burning Hydrogen Sulfide will be converted to Sulfur Dioxide that is also poisonous.

Therefore, **DO NOT ASSUME THAT THE AREA IS SAFE AFTER THE GAS IS IGNITED, CONTINUE TO OBSERVE EMERGENCY PROCEDURES AND FOLLOW THE INSTRUCTIONS OF SUPERVISORS.**

f. **Production will automatically be shut-in.**

During an emergency, persons will utilize the "Buddy System" preventing anyone from entering a gas area alone – whether he is using breathing equipment or not.

If you are wearing breathing air equipment, do not remove it until you are directed that it is safe to do so by the Centennial Person in Charge or the Safety Supervisor.

If a sudden gas release occurs without warning, you should:

1. Hold your breath and rapidly evacuate the area containing the H_2S and move upwind, if possible.

2. Put on breathing air equipment.

3. Help anyone who may be affected by the gas. **NOTE: PUT ON YOUR BREATHING AIR EQUIPMENT BEFORE HELPING ANYONE OVERCOME BY H_2S.**

4. Evacuate quickly to the "SAFE BRIEFING AREA" to receive instructions from the Safety Supervisor or the CENTENNIAL Person in Charge.

5. **DO NOT PANIC.**

CENTENNIAL Persons in Charge will make every effort to prevent any release of Hydrogen Sulfide gas. However, should an accidental release occur, this plan has been provided so that any such release may be handled with a minimum of trouble. If you are on the location during any operating condition, it is essential that you follow the instructions of the CENTENNIAL Person in Charge and or the Safety Supervisor.

Several copies of the "H_2S Contingency Plan" are available in the CENTENNIAL Person in Charge's office. This plan sets out precautionary measures, safety equipment, emergency procedures, responsibilities, and duties, pertaining to the production and testing of Hydrogen Sulfide. All personnel should become familiar with the contents of the "H_2S Contingency Plan" and afterward should sign the log indicating that they have received, read and understand the 'SAFE PROCEDURES DURING THE PRODUCTION OF HYDROGEN SULFIDE".

The table on the next page lists various poisonous gases and the concentrations at which they become dangerous.

APPENDIX B-2

TOXICITY OF VARIOUS GASES

TOXICITY OF GASES (Taken from API RP-49 September 1974 – Re-issued August 1978)					
Common Name	**Chemical Formula**	**Gravity (Air=1)**	**Threshold 1 Limit**	**Hazardous 2 Limit**	**Lethal 3 Limit**
Hydrogen Sulfide	H_2S	1.18	10 ppm	250 ppm/1hr	600 ppm
Sulfur Dioxide	SO_2	2.21	20 ppm	------	1000 ppm
Carbon Monoxide	CO	0.97	50 ppm	400 ppm/1hr	1000 ppm
Carbon Dioxide	CO_2	1.52	5000 ppm	5%	10%
Methane	CH_4	.55	90000 ppm	Combustible Above 5% in Air	

1. Threshold concentration at which it is believed that all workers may repeatedly be exposed day after day, without adverse effect.	2. Hazardous Concentration that may cause death.	3. Lethal Concentration that will cause death with short-term exposure.

Properties of Gases

The produced gas will probably be a mixture of Carbon Dioxide, Hydrogen Sulfide, and Methanes.

A. Carbon Dioxide

1. Carbon Dioxide (CO_2) is usually considered inert and is commonly used to extinguish fires. It is heavier than air (1.52 times) and it will concentrate in low areas of still air. Humans cannot breathe air containing more than 10% CO_2 without losing consciousness. Air containing 5% CO_2 will cause disorientation in a few minutes. Continued exposures to CO_2 after being affected will cause convulsions, coma, and respiratory failure.

2. The threshold limit of CO_2 is 5000 ppm. Short-term exposure to 50,000 PPM (5%) is reasonable. This gas is colorless and odorless and can be tolerated in relatively high concentrations.

B. Hydrogen Sulfide

1. Hydrogen Sulfide (H_2S) itself is a colorless, transparent gas and is flammable. It is heavier than air and, hence, may accumulate in low places.

2. Although the slightest presence of H_2S in the air is normally detectable by its characteristic "rotten egg" odor, it is dangerous to rely on the odor as a means of detecting excessive concentrations because the sense of smell is rapidly lost, allowing lethal concentrations to be accumulated without warning. The following table indicates the poisonous nature of Hydrogen Sulfide.

HYDROGEN SULFIDE TOXICITY			
Concentration			Effects
$\%H_2S$	PPM	GR/100 SCF 1	
0.001	10	.65	Safe for 8 hours without respirator. Obvious and unpleasant odor.
0.002	20	1.30	Burning in eyes and irritation of respiratory tract after one hour.
0.01	100	6.48	Kills smell in 3 to 15 minutes; may sting eyes and throat.
0.02	200	12.96	Kills smell shortly; stings eyes and throat.
0.05	500	32.96	Dizziness; breathing ceases in a few minutes; need prompt artificial respiration.
0.07	700	45.92	Unconscious quickly; death will result if not rescued promptly.
0.10	1000	64.80	Unconscious at once; followed by death within minutes.
Note: 1 Grain per 100 Cubic Feet			

C. Sulfur Dioxide

1. Sulfur Dioxide is a colorless, transparent gas and is non-flammable.

2. Sulfur Dioxide (SO_2) is produced during the burning of H_2S. Although SO_2 is heavier than air, it will be picked up by a breeze and carried downwind at elevated temperatures. Since Sulfur Dioxide is extremely irritating to the eyes and mucous membranes of the upper respiratory tract, it has exceptionally good warning powers in this respect. The following table indicates the toxic nature of the gas.

SULFUR DIOXIDE TOXICITY		
Concentration		Effects
% SO_2	PPM	
.0005	3 to 5	Pungent odor-normally a person can detect SO_2 in this range.
.0012	12	Throat irritation, coughing, and constriction of the chest tearing and smarting of eyes.
0.15	150	So irritating that it can only be endured for a few minutes.
.05	500	Causes a sense of suffocation, even with first breath.

APPENDIX B-3

FIRST AID TREATMENT PROCEDURES FOR HYDROGEN SULFIDE POISONING

A. Remove the victim to fresh air. If breathing has ceased or is labored, begin resuscitation immediately.

B. Apply resuscitator to help purge H_2S from the blood stream.

C. Keep victim at rest and prevent chilling.

D. Get victim under physician's care as soon as possible.

APPENDIX B-4

ACKNOWLEDGMENT STATEMENT

FOR SAFE PRCEDURES DURING THE PRODUCTION OF HYDROGEN SULFIDE

CENTENNIAL

Cheddar 2BS Federal Com 1H
Production Facility

Date: _____

I, _____ an

employee of _____, have

reviewed a copy of 'SAFE PROCEDURES DURING THE PRODUCTION OF

HYDROGEN SULFIDE", and thoroughly understand it.

_____
(Signature)

NOTE: This signed form will be kept on the facility.

APPENDIX B-5

BREATHING AIR EQUIPMENT DRILLS FOR ON-DUTY PERSONNEL

On-duty personnel include the location Production Crew, Safety Supervisor and the CENTENNIAL Person in Charge.

An H_2S drill and training session must be given once a week to all on-duty personnel in coincidence with off-duty personnel off-duty personnel will reverse roles on alternate drills.

The purpose of the drill is to instruct the crew in the operation and use of breathing air and H_2S related emergency equipment and to allow them to become acquainted with using the equipment under working conditions. The crews should be trained to put on their breathing air equipment within one (1) minute after an H_2S emergency has been alerted.

The following procedure should be used for weekly drills. The CENTENNIAL Person in Charge and Safety Supervisor must be satisfied that the crews are proficient with the equipment. **Note**: It is to be outlined under "EMERGENCY PROCEDURES FOR CONDITION I AND CONDTION II, Section V, and Subsection B.

1. All onsite personnel should be informed that a drill will be held.

2. The Safety Supervisor -Centennial Person in Charge should initiate the drill by signaling as he would if he detected H_2S.

3. The Safety Supervisor or Centennial Person in Charge and all CENTENNIAL personnel should don their breathing air equipment.

4. The Person in Charge should proceed as if a release of H_2S was present and simulate preparation to shutting the well in.

5. The Safety Supervisor or Centennial Person in Charge should perform a grab air quality check as pinpointed from the fixed H_2S monitors to confirm any readings. CENTENNIAL wants to make it standard practice that an air sample test is performed every time anything unusual happens. **(Note: Even if conditions return to normal.)** In a drill it may not be necessary to perform a grab air sample test.

6. During the drill the CENTENNIAL Person in Charge- Safety Supervisor will make sure that everyone is using their equipment properly and the site contingency plan is implemented.

7. Resume normal operations.

8. The CENTENNIAL Person in Charge- Safety Supervisor will hold a review to discuss results of the drill with those participating.

    1. Condition I and II alerts and steps to be taken by all personnel.

    2. The importance of wind direction when dealing with H_2S.

    3. Proper use and storage of all types of breathing equipment.

    4. Proper use and storage of oxygen resuscitators.

    5. Proper use and storage of H_2S detectors

    6. The "Buddy System" and the procedure for rescuing a person overcome by H_2S.

    7. Responsibilities and duties.

    8. Location of H_2S safety equipment.

    9. Other parts of the **"H_2S Contingency Plan"** that should be reviewed.

Note: A record of attendance must be kept for weekly drills and training sessions. These drills and training sessions must also be documented on the CENTENNIAL Daily Report.

APPENDIX B-6

EMERGENCY CONTACT NUMBERS

Initial detection, but less than 10 ppm - Initiate verification and notification actions

Latitude: 32.414664 Longitude: 103.704311

Driving Directions

911 is Available

Lea County

Hobbs Police Dept.	575-397-0330
Lea County Sheriff Dept.	432-458-4025
Hobbs Fire Dept.	505-397-9308
Lee Regional Hospital	575-492-5251

Eddy County

Carlsbad City Police	575-885-2111
Eddy County Sheriff's Dept.	575-885-4835
Carlsbad Fire Dept.	575-885-3125
Carlsbad Medical Center	575-887-4100

Centennial Contacts

Centennial:

Superintendent - Rickie Mills/John Helm-(432) 967-9520

HSE- Reggie Phillips (432) 638-3380

Regulatory Agency

Bureau of Land Mgmt.	**Carlsbad Field Office 575-234-5972**

Tiger Safety - H_2S Services

Bob Luke	**(888) 365-5220**
Craig McGeHee	**(888) 365-5220 or Cell: (432) 248-2416**
Joel Wirtz	**(888) 365-5220 or Cell: (432) 231-5872**

APPENDIX B-7

EVACUATION PLAN

The following general plan has been developed in the event that any public evacuation becomes necessary:
CENTENNIAL has requested and been assured the support of various public safety entities in the area.

1. The Sheriff's Department will conduct any evacuations of local residents.
2. Assistance from other public safety entities may be requested if required.
3. The included maps detail the area of the well site, including the inventory of public homes within the radius of exposure of the well.
4. In the event that there is any suspected problem on the well, the well site supervisor will notify the Sheriff's Office for alert status.
5. Alert status will require that available public support personnel will proceed to the Sheriff's Office and stand by for instructions.
6. If isolation and evacuation are necessary, then units will be dispatched to points marked on the map with instructions to maintain roadblocks.
7. Evacuation teams will then proceed to sectors to be evacuated. Evacuation procedures will follow appropriate consideration for wind conditions.
8. Personnel from the prime contractor on the site will establish safe perimeters using H2S detectors.
9. The Texas Railroad Commission and other authorities will be notified as soon as possible.
10. Other supplemental contractors will be contacted and called as needed.

    Company guidelines state that where hydrogen sulfide concentrations could exceed 10 ppm, contractors shall follow minimum requirements for protecting personnel. Company's action level is in agreement with the NIOSH Recommended Exposure Limit. Company shall notify contractors of locations where hydrogen sulfide concentrations could exceed 10 ppm and a plan to address site design and emergency response will be addressed in the contingency plan where hydrogen sulfide is known or suspected.

Resident Emergency List

Determining Exposure Radius for Onshore Drilling & Workover

Potentially hazardous volume means a volume of gas of such H2S concentration and flow rate that it may result in radius of exposure-calculated ambient concentrations of 100 ppm H2S at any occupied residence, school, church, park, school bus stop, place of business or other area where the public could reasonably be expected to frequent, or 500 ppm H2S at any Federal, State, County or municipal road or highway.

Radius of exposure means the calculation resulting from using the Pasquill -Gifford derived equation, or by such other method(s) that may be approved by the authorized officer.

Residents within the 100 ppm ROE:

Name:	Address:	Phone #

Residents within the 500 ppm ROE:

Name:	Address:	Phone #

APPENDIX B-8

KEY PERSONNEL TO REMAIN DURING PARTIAL EVACUATION

1. Production Crew On-Duty
2. Other designated Personnel
3. Safety Supervisor or Centennial Person in Charge
4.

Note: Once the emergency is better defined, consider transferring any of the above personnel to the stand-by boat if reasonably sure they will not be needed.

If the emergency requires considerable time, consideration should be given to evacuating some of the personnel to rest when they are not needed.

APPENDIX C

H_2S EQUIPMENT LIST

	RESPIRATORY SAFETY SYSTEMS	
	Qty.	Description
	DETECTION AND ALARM SYSTEM	
	Qty.	Description
	ADDITIONAL SAFETY RELATED ITEMS	
	Qty.	Description

APPENDIX D

FACILITY DIAGRAMS / AS ATTACHED

DRAWINGS		
Number	**Revision**	**Description**
	O	Safety Equipment Layout
	O	Equipment Layout Plan
	O	Area Classification
	O	Flow Schematic
	O	SAFE Chart

APPENDIX E

SULFATREAT INFORMATION

Please see the attached manufacturer's information.

APPENDIX F

DEPARTURES AND APPROVALS

REGULATORY REQUIREMENT	DATE	COMMENTS	MMS CONTACT

APPENDIX G

PLAN REVISION / ADDITION RECORD

REVISION	DATE	DESCRIPTION OF REVISION / ADDITION

APD ID: 10400014954 **Submission Date:** 06/28/2017

Operator Name: CENTENNIAL RESOURCE PRODUCTION LLC

Well Name: CHEDDAR 2BS FEDERAL COM **Well Number:** 1H

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

Highlighted data reflects the most recent changes

Show Final Text

Section 1 - Existing Roads

Will existing roads be used? YES

Existing Road Map:

CHEDDAR_DRILLING_ISLAND_LEASE_ROAD_32958_06-22-2017.pdf

Existing Road Purpose: ACCESS **Row(s) Exist?** YES

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:

Proposed_Access_Road_Cheddar_02.12.18_20180212111632.pdf

New road type: COLLECTOR

Length: 1155 Feet **Width (ft.):** 32

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

Army Corp of Engineers (ACOE) permit required? NO

ACOE Permit Number(s):

New road travel width: 20

New road access erosion control: Please see attached.

New road access plan or profile prepared? YES

New road access plan attachment:

Cheddar_Access_Typical_20180212112523.pdf

Access road engineering design? NO

AFMSS

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

Operator Certification Data Report

04/13/2018

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: Melissa Luke **Signed on:** 06/28/2017

Title: Sr. Regulatory Analyst

Street Address: 1001 17th Street, Suite 1800

City: Denver **State:** CO **Zip:** 80202

Phone: (720)499-1482

Email address: Melissa.Luke@cdevinc.com

Field Representative

Representative Name: Richard Crawford

Street Address: 400 W ILLINOIS AVE, SUITE 1601

City: MIDLAND **State:** TX **Zip:** 79701

Phone: (432)219-5450

Email address: rcrawford@centennialresource.com