ATS-08-989
EA-09-167

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Form 3160-3
(April 2004)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

SECRETARY'S POTASH

FORM APPROVED
OMB No 1004-0137
Expires March 31, 2007

APPLICATION FOR PERMIT TO DRILL OR REENTER

1a Type of work: ☑ DRILL ☐ REENTER	5 Lease Serial No: NM12412
1b Type of Well: ☑ Oil Well ☐ Gas Well ☐ Other ☑ Single Zone ☐ Multiple Zone	6. If Indian, Allotee or Tribe Name: N/A
2 Name of Operator: Edge Petroleum Operating Company <224400>	7 If Unit or CA Agreement, Name and No.: N/A
3a Address: 1301 Travis Suite 2000, Houston, TX 77002	3b Phone No. (include area code): 713-335-9808
4 Location of Well (Report location clearly and in accordance with any State requirements *): At surface: 660' FSL & 2250' FEL Unit O; At proposed prod zone: 660' FSL & 2250' FEL	8 Lease Name and Well No. <36920>: Southeast Lusk 27 Federal #3
	9 API Well No.: 30-025-39483
	10 Field and Pool, or Exploratory: Lusk Bone Spring South
	11. Sec., T R. M. or Blk and Survey or Area: Sec 27, T- 19S, R- 32E
14 Distance in miles and direction from nearest town or post office*: 6 miles southwest direction from Malaga NM	12 County or Parish: Lea Co; 13 State: NM
15 Distance from proposed* location to nearest property or lease line, ft (Also to nearest drig. unit line, if any): 708' / 708'	16 No of acres in lease: 2320 acres; 17. Spacing Unit dedicated to this well: SE/4 SW/4 of Sec 27
18 Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft: 1155'	19 Proposed Depth: 8000'; 20 BLM/BIA Bond No on file: NMB000121
21 Elevations (Show whether DF, KDB, RT, GL, etc): 3573.8' GL	22 Approximate date work will start*: 10/31/2008; 23 Estimated duration: 30 days

24. Attachments

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No.1, shall 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 shall 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 authorized officer.

25 Signature: Angela Lightner	Name (Printed/Typed): Angela Lightner angela@rkford.com	Date: 09/29/2008
Title: Consultant 432-682-0440 office		
Approved by (Signature): /s/ Jesse J. Juen	Name (Printed/Typed):	Date: JUL 16 2009
Title: STATE DIRECTOR	Office: NM STATE OFFICE	

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

APPROVAL FOR TWO YEARS

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

*(Instructions on page 2)

KZ

CAPITAN CONTROLLED WATER BASIN

SEE ATTACHED FOR
CONDITIONS OF APPROVAL

APPROVAL SUBJECT TO
GENERAL REQUIREMENTS
AND SPECIAL STIPULATIONS
ATTACHED

United States Department of the Interior
Bureau of Land Management
Roswell Field Office
2909 Second Street
Roswell, New Mexico 88201-1287

Statement Accepting Responsibility for Operations

Operator Name:	Edge Petroleum Operating Company, Inc.
Street or Box:	1301 Travis, Suite 2000
City, State:	Houston, Texas
Zip Code:	77002

The undersigned accepts all applicable terms, conditions, stipulations, and restrictions concerning operations conducted on the leased land or portion thereof, as described below:

Lease No: NM 12412

Legal Description of Land:

Township 19 South, Range 32 East, Eddy, New Mexico

SE/4 SW/4 of Section 27

Bond Coverage:

Statewide Oil and Gas Surety Bond, Edge Petroleum Operating Company, Inc.

BLM Bond File No.: NMB-000121

Angela Lightner
Agent
September 29, 2008

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DISTRICT I
1625 N. FRENCH DR., HOBBS, NM 88240

DISTRICT II
1301 W. GRAND AVENUE, ARTESIA, NM 88210

DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410

DISTRICT IV
1220 S. ST. FRANCIS DR., SANTA FE, NM 87505

State of New Mexico
Energy, Minerals and Natural Resources Department

OIL CONSERVATION DIVISION
1220 SOUTH ST. FRANCIS DR.
Santa Fe, New Mexico 87505

Form C-102
Revised October 12, 2005
Submit to Appropriate District Office
State Lease - 4 Copies
Fee Lease - 3 Copies

WELL LOCATION AND ACREAGE DEDICATION PLAT

☐ AMENDED REPORT

API Number	Pool Code	Pool Name
30-025-39483	41460	Lusk Bone Spring South

Property Code	Property Name	Well Number
36920	SOUTHEAST LUSK 27 FEDERAL	3

OGRID No.	Operator Name	Elevation
224400	EDGE PETROLEUM OPERATING CO.	3574'

Surface Location

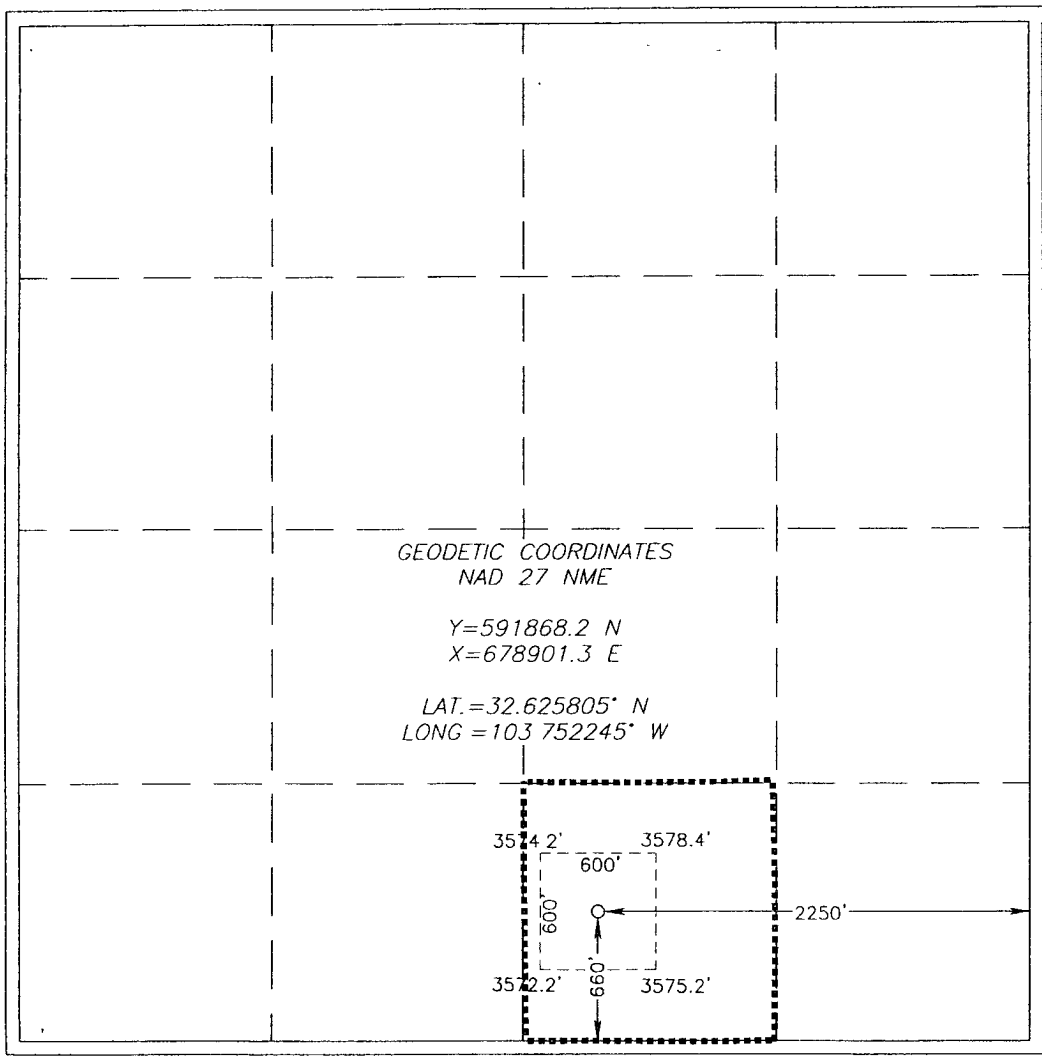
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
O	27	19-S	32-E		660	SOUTH	2250	EAST	LEA

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

Dedicated Acres	Joint or Infill	Consolidation Code	Order No.
40			

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



OPERATOR CERTIFICATION

I hereby certify that the information 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 mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

Angela Lightner 9-29-08
Signature Date

Angela Lightner
Printed Name

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.

SEPTEMBER 19, 2008
Date Surveyed

Signature & Seal of Professional Surveyor

RONALD J. EIDSON
NEW MEXICO
3239
REGISTERED PROFESSIONAL SURVEYOR
LA

Ronald J. Eidson 9/26/08

Certificate No. GARY EIDSON 12641
RONALD J. EIDSON 3239

8 POINT DRILLING PROGRAM

EDGE PETROLEUM OPERATING COMPANY, INC.
SOUTHEAST LUSK "27" FEDERAL #3
Section 27 T-19-S, R-32-E
Lea County, New Mexico

The following items supplement Form 3160-3 in accordance with instructions contained in Onshore Oil and Gas Orders #1 and #2, and all other applicable federal and state regulations.

1. ESTIMATED TOPS OF GEOLOGIC MARKERS (TVD)

Anhydrite	Water	890'
Yates	Water	2,665'
Capitan	Water	3,525'
Delaware	Oil	4,240'
Cherry Canyon	Oil	4,748'
Brushy Canyon	Oil	5,877'
Lwr Brushy Canyon	Oil	7,174'
1st Bone Springs Lm	Oil	7,424'
Bone Springs Lm Pay	Oil	7,616'
Total Depth		8,000'

2. PRESSURE CONTROL EQUIPMENT The blow out preventer equipment (BOP) shown in Exhibit #1 will consist of a 3000 psi double ram type preventer for drilling the 13-1/2" hole. The blowout preventer stack for the production 6-3/4" hole as shown on Exhibit #2 will consist of at least a double-ram blowout preventer and annular preventer rated to 5000 psi working pressure. A diagram of the BOPs and choke manifold is attached. All BOPs and accessory equipment will be tested according to Onshore Order #2 before drilling out.

3. PROPOSED CASING PROGRAM

Hole Sz	Interval	Csg	Wt	Grade, Joint	Collapse	Tension	Burst
24"	0 – 40'	24"	52.8#	X-42, BPE			
18-1/2"	0 – 890'	16"	65#	H-40, STC	1.65	4.03	8.76
13-1/2"	0 – 3,080'	10-3/4"	45.5#	J-55, STC	1.28	2.19	6.73
9-1/2"	0 – 4,270'	7-5/8"	29.7#	HPC-110, LTC	2.07	4.39	6.77
6-3/4"	0 – 8,000'	5-1/2"	17#	P-110, Ultra FJ	2.72	3.29	3.38

See COA

All casing for this project is new casing

See COA

There will be a DV Tool above an External Casing Packer (ECP) which is to be set inside the 10-3/4" casing at 3000 +/-. Cement will be circulated to surface. Equivalent or adequate grades and weights of casing may be substituted at time casing is run, depending on availability. Changes will be relayed to BLM prior to running.

4. PROPOSED CEMENTING PROGRAM ← See COA

20" conductor	cemented with ready mix to surface
16" surf.	Lead Slurry - 385 sxs "C" cement + 4% D20 + 2% S1 + 3 pps D42 slurry wt.- 13.5, yield – 1.75 ft³/sk Tail Slurry - 155 sks "C" cement + 2% S1, slurry wt.- 14.8; yield – 1.34 ft³/sk, TOC - surface
10-3/4"1st inter.	Lead Slurry - 1015 sxs 35:65 Poz: "C" cement + 5% D44 bwow + 6% D20 + 3 pps D42 + 0.25 pps D29, slurry wt.- 12.4, yield- 2.17 ft³/sk Tail Slurry - 375 sxs "C" cement + 1% S1, slurry wt.- 14.8, yield – 1.33 ft³/sk, TOC – surface.
7-5/8" 2nd inter.	1st stage Lead Slurry - 70 sxs 50:50 Poz: "C" cement + 6% D44 bwow + 10% D20 + 0.25 pps D29 + 3 pps D42, slurry wt.- 11.9, yield – 2.51 ft³/sk 1 stageTail Slurry - 105 sxs "C" cement + 0.25 pps D29, slurry wt.-14.8, yield – 1.32 ft³/sk, TOC – 3,000' 2nd stage Lead Slurry- 300 sxs 50:50 Poz: "C" cement + 6% D44 bwow + 10% D20 + 0.25 pps D29 + 1 pps D42, slurry wt.- 11.9, yield- 2.5 ft³/sk, TOC- surface 2nd stage Tail Slurry- 60 sxs "C" cement + 0.25 pps D29, slurry wt.- 14.8, yield – 1.32 ft³/sk, TOC- surface
5-1/2" prod.	Lead Slurry- 485 sxs 50:50 Poz: "H" cement + 5% D44 bwow + 2% D20 + 0.125 pps D29 + 1 pps D42, slurry wt. - 14.2, yield – 1.36 ft³/sk, TOC- surface

See COA

See COA

5. PROPOSED MUD SYSTEM

DEPTH	DESCRIPTION	MUD WEIGHT	VISCOSITY	WATER LOSS
0 – 890'	Fresh water	8.4 – 9.4 ppg	32 – 34	NC
890' – ~~3,080'~~	Brine water	10.0 ppg	28	NC
~~3,080'~~ – 4,270'	Fresh water	8.3 – 8.5 ppg	28	NC
4,270' – 7,200'	Fresh water	8.4 – 8.5 ppg	28	NC
7,200' – 8,000'	Fresh water	8.5 – 8.7 ppg	30 – 32	12cc

See COA

6. TESTING, LOGGING AND CORING PROGRAM

Samples	None are planned
DST's	None are planned
Logging	Neutron/Density and Resistivity
Coring	Possible sidewall core

7. ABNORMAL PRESSURES AND TEMPERATURES

None anticipated. Maximum bottom hole pressure should not exceed 4,000 psi. Maximum bottom hole temperature should not exceed 117°.
This area has a potential H_2S hazard. An H_2S drilling plan is attached and a contingency program has been done and on file with the BLM.

8. ANTICIPATED STARTING DATE AND DURATION OF OPERATIONS

It is planned that operations will commence on or about October 31, 2008. Drilling should be completed within 30 days followed by completion operations.

HYDROGEN SULFIDE DRILLING OPERATIONS PLAN

EDGE PETROLEUM OPERATING COMPANY, INC.

Southeast Lusk "27" Federal #3

I. HYDROGEN SULFIDE TRAINING

A. All regularly assigned personnel, contracted or employed by Edge Petroleum Corporation, will receive training from a qualified instructor in the following areas prior to commencing drilling potential hydrogen sulfide bearing formations in this well:

1. The hazards and characteristics of hydrogen sulfide (H_2S).

2. The proper use and maintenance of personal protective equipment and life support systems.

3. The proper use of H_2S detectors, alarms, warning systems, briefing areas, evacuation procedures and prevailing winds.

4. The proper techniques for first aid and rescue procedures.

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

1. The effects of H_2S on metal components. If high tensile tubulars are to be used, personnel will be trained in their special maintenance requirements.

2. Corrective action and shut-in procedures when drilling or reworking a well and blowout prevention and well control procedures.

3. The contents and requirements of the H_2S Drilling Operations Plan.

C. There will be an initial training session just prior to encountering a known or probable H_2S zone (within 3 days or 500 feet) and weekly H_2S and well control drills for all personnel in each crew. The initial training session shall include a review of the site specific H_2S Drilling Operations Plan. This plan shall be available at the well site. All personnel will be required to carry documentation that they have received the proper training.

II. H_2S SAFETY EQUIPMENT AND SYSTEMS

Note: All H_2S safety equipment and systems will be installed, tested and operational when drilling reaches a depth of 500 feet above, or three days prior to penetrating the first zone containing or reasonably expected to contain H_2S.

A. Well Control Equipment

1. Flare line with continuous pilot.

2. Choke manifold with a minimum of one remote choke.

3. Blind rams and pipe rams to accommodate all pipe sizes with properly sized closing unit.

4. Auxiliary equipment to include: annular preventer, mud-gas separator, rotating head and flare.

B. Protective Equipment for Essential Personnel

Mark II Surviveair 30-minute units located in the doghouse and at briefing areas, as indicated on well site diagram.

C. H_2S Detection and Monitoring Equipment

1. Two portable H_2S monitors positioned on location for best coverage and response. These units have warning lights and audible sirens when H_2S levels of 20 ppm are reached.

2. One portable SO_2 monitor positioned near flare line.

D. Visual Warning Systems

1. Wind direction indicators are shown on well site diagram.

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

E. Mud Program

1. The Mud Program has been designed to minimize the volume of H_2S circulated to the surface. Proper mud weights, safe drilling practices and the use of H_2S scavengers will minimize hazards when penetrating H_2S bearing zones.

2. A mud-gas separator will be utilized as needed.

F. Metallurgy

All drill strings, casing, tubing, wellhead, blowout preventers, drilling spool, kill lines, choke manifold and line and valves shall be suitable for H_2S service.

G. Communication

Cellular telephone communications in company vehicles, rig floor and mud logging trailer.

H. Well Testing

Drill stem testing will be performed with a minimum number of personnel in the immediate vicinity, which are necessary to safely and adequately conduct the test. The drill stem testing and an H_2S environment will be conducted during the daylight hours.

Schlumberger

PRIMARY CEMENTING PROPOSAL

4 CASING STRINGS

Edge Petroleum

SE Lusk 27 Fed. 3

Well Location

County : Lea
State : New Mexico
Country : USA

Prepared for : Angela

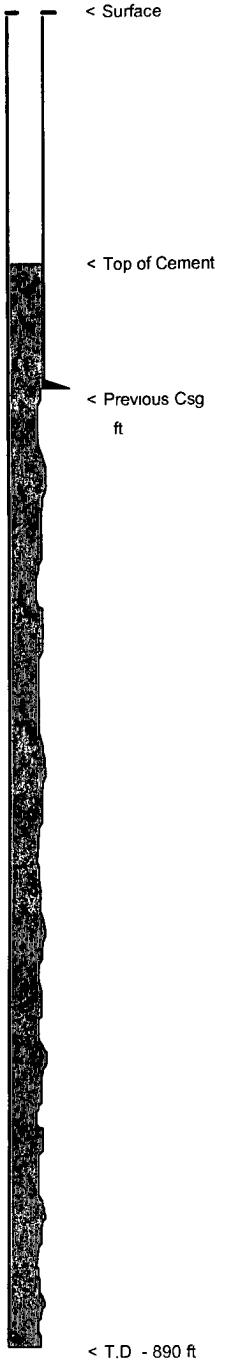
Date Prepared : 5-Sep-08

Service Point : HOBBS, NM
Business Phone : 505-393-6186
FAX No. : 505-393-2132

Prepared by : Bear Bryant
Phone : 505-393-6186
FAX : 505-393-2132
E-Mail address : bryant8@hobbs.oilfield.slb.com

Schlumberger

Well Data: 13 3/8 in. Surface Casing



Depth	890	ft.
Casing Size	13 3/8	in., 54.5 lbs./ft.
Open Hole Diameter	17 1/2	in.
BHST	80	°F
BHCT	80.0	°F
Total Excess	100	%
Lead Excess (calculated O.H.)	100.0	%
Tail Excess	100	%

Mud Wt./Type: 8.5 ppg Fresh Wtr. Based

Calculations:

Volume Factors:

Casing x Open Hole	0.6946 cu.ft./ft
Casing (Internal)	0.8675 cu.ft./ft

Top of Lead	**Surface**
Top of Tail	**720 ft.**

Lead System:

Total Lead Fill (720 x 0.6946 x 2.0) / 1.75 = 570 sks.

Tail System:

Open Hole Fill	(170 x 0.6946 x 2.) / 1.34 = 176 sks.
Casing Shoe Cement	(40 x 0.8675) / 1.34 = 26 sks.
	Total Tail Cement = 202 sks.

Cementing Systems

Lead System: 570 sks.

Class C + 4% D20 + 2% S1 + 3 pps D42

Mix Weight	:	13.5 PPG	
Yield	:	1.75 cu.ft./sk.	
Mix Water	:	8.95 gal./sk.	(Fresh Water)

Tail System: 200 sks.

Class C + 2% S1

Mix Weight	:	14.8 PPG	
Yield	:	1.34 cu.ft./sk.	
Mix Water	:	6.3 gal./sk.	(Fresh Water)

Schlumberger

Well Data: 10 3/4 in. Intermediate Casing

Depth	3,080	ft.
Casing Size	10 3/4	in., 45.5 lbs./ft.
Open Hole Diameter	12 1/4	in.
Previous Csg. Depth	890	ft.
Previous Csg. Size	13 3/8	in., 54.5 lbs./ft.
BHST	95	°F
BHCT	80.0	°F
Total Excess	165	%
Lead Excess (calculated O.H.)	241.5	%
Tail Excess	50	%

Mud Wt./Type: 8.5 ppg Brine Based

Calculations:

Volume Factors:

Casing x Open Hole	0.1882 cu.ft./ft
Casing x Previous Casing	0.2372 cu.ft./ft
Casing (Internal)	0.54 cu.ft./ft

Top of Lead	**Surface**
Top of Tail	**2,205 ft.**

Lead System:

Open Hole Fill	(1,315 x 0.1882 x 3.42) / 2.17 = 390 sks.
Previous Casing Fill	(890 x 0.2372) / 2.17 = 98 sks.
	Total Lead Cement = 487 sks.

Tail System:

Open Hole Fill	(875 x 0.1882 x 1.5) / 1.33 = 186 sks.
Casing Shoe Cement	(40 x 0.54) / 1.33 = 16 sks.
	Total Tail Cement = 202 sks.

Cementing Systems

Lead System: 485 sks.

35:65 Poz:Class C + 5% D44 (bwow) + 6% D20 + 3 pps D42 + 0.25 pps D29

Mix Weight	:	12.4	PPG	
Yield	:	2.17	cu.ft./sk.	
Mix Water	:	11.86	gal./sk.	(Fresh Water)

Tail System: 200 sks.

Class C + 1% S1

Mix Weight	:	14.8	PPG	
Yield	:	1.33	cu.ft./sk.	
Mix Water	:	6.3	gal./sk.	(Fresh Water)

Schlumberger

Well Data: 7 5/8 in. 2Nd Intermediate - Stage 1

Depth	4,270	ft.
Casing Size	7 5/8	in., 26 lbs./ft.
Open Hole Diameter	9 1/2	in.
Previous Csg. Depth	3,080	ft.
Previous Csg. Size	10 3/4	in., 45.5 lbs./ft.
BHST	115	°F
BHCT	80.0	°F
Total Excess	50	%
Lead Excess (calculated O.H.)	50.0	%
Tail Excess	50	%
Stage Collar Depth	3,000	ft.

Mud Wt./Type: 9.5 ppg Brine Based

Calculations:

Volume Factors:

Casing x Open Hole	0.1751 cu.ft./ft
Casing x Previous Casing	0.2229 cu.ft./ft
Casing (Internal)	0.2655 cu.ft./ft

Top of Lead	**3,080 ft.**
Top of Tail	**3,770 ft.**

Lead System:

Total Lead Fill (690 x 0.1751 x 1.5) / 2.51 = 72 sks.

Tail System:

Open Hole Fill	(500 x 0.1751 x 1.5) / 1.32 = 99 sks.
Casing Shoe Cement	(40 x 0.2655) / 1.32 = 8 sks.
	Total Tail Cement = 107 sks.

Cementing Systems

Lead System: 70 sks.

50:50 Poz:Class C + 6% D44 (bwow) + 10% D20 + 0.25 pps D29 + 3 pps D42

Mix Weight	:	11.9	PPG	
Yield	:	2.51	cu.ft./sk.	
Mix Water	:	14.22	gal./sk.	(Fresh Water)

Tail System: 105 sks.

Class C + 0.25 pps D29

Mix Weight	:	14.8	PPG	
Yield	:	1.32	cu.ft./sk.	
Mix Water	:	6.3	gal./sk.	(Fresh Water)

Schlumberger

Well Data: 7 5/8 in. 2Nd Intermediate - Stage 2

Depth	4,270	ft.
Casing Size	7 5/8	in., 26 lbs./ft.
Open Hole Diameter	9 1/2	in.
Previous Csg. Depth	3,080	ft.
Previous Csg. Size	10 3/4	in., 45.5 lbs./ft.
BHST	115	°F
BHCT	94.8	°F
Total Excess	15	%
Lead Excess (calculated O.H.)	0.0	%
Tail Excess	50	%
Stage Collar Depth	3,000	ft.

Mud Wt./Type: 9.5 ppg Fresh Wtr. Based

Calculations:

Volume Factors:

Casing x Open Hole	0.1751 cu.ft./ft
Casing x Previous Casing	0.2229 cu.ft./ft
Casing (Internal)	0.2655 cu.ft./ft

Top of Lead	**Surface**
Top of Tail	**2,800 ft.**

Lead System:

Previous Casing Fill (2,800 x 0.2229 x 1.15) / 2.5 = 287 sks.

Tail System:

Previous Casing Fill	(200 x 0.2229 x 1.5) / 1.32 = 50 sks.
Casing Shoe Cement	(40 x 0.2655) / 1.32 = 8 sks.
	1Total Tail Cement = 58 sks.

Schlumberger

Well Data: 7 5/8 in. 2Nd Intermediate - Stage 2

Depth	4,270	ft.
Casing Size	7 5/8	in., 26 lbs./ft.
Open Hole Diameter	9 1/2	in.
Previous Csg. Depth	3,080	ft.
Previous Csg. Size	10 3/4	in., 45.5 lbs./ft.
BHST	115	°F
BHCT	94.8	°F
Total Excess	15	%
Lead Excess (calculated O.H.)	0.0	%
Tail Excess	50	%
Stage Collar Depth	3,000	ft.

Mud Wt./Type: 9.5 ppg Fresh Wtr. Based

Calculations:

Volume Factors:

Casing x Open Hole	0.1751 cu.ft./ft
Casing x Previous Casing	0.2229 cu.ft./ft
Casing (Internal)	0.2655 cu.ft./ft

Top of Lead	**Surface**
Top of Tail	**2,800 ft.**

Lead System:

Previous Casing Fill (2,800 x 0.2229 x 1.15) / 2.5 = 287 sks.

Tail System:

Previous Casing Fill	(200 x 0.2229 x 1.5) / 1.32 = 50 sks.
Casing Shoe Cement	(40 x 0.2655) / 1.32 = 8 sks.
	1Total Tail Cement = 58 sks.

Cementing Systems

Lead System: 285 sks.

50:50 Poz:Class C + 6% D44 (bwow) + 10% D20 + 0.25 pps D29 + 1 pps D42

Mix Weight	:	11.9 PPG	
Yield	:	2.5 cu.ft./sk.	
Mix Water	:	14.28 gal./sk.	(Fresh Water)

Tail System: 60 sks.

Class C + 0.25 pps D29

Mix Weight	:	14.8 PPG	
Yield	:	1.32 cu.ft./sk.	
Mix Water	:	6.3 gal./sk.	(Fresh Water)

Schlumberger

Well Data: 5 1/2 in. Production Casing

Depth	8,000	ft.
Casing Size	5 1/2	in., 17 lbs./ft.
Open Hole Diameter	6 1/2	in.
Previous Csg. Depth	4,270	ft.
Previous Csg. Size	7 5/8	in., 26 lbs./ft.
BHST	120	°F
BHCT	80.0	°F
Total Excess	50	%
Tail Excess	100	%

Mud Wt./Type: 9.5 ppg Brine Based

Calculations:

Volume Factors:

Casing x Open Hole	0.0654 cu.ft./ft
Casing x Previous Casing	0.1005 cu.ft./ft
Casing (Internal)	0.1312 cu.ft./ft

Top of Cement **4,000 ft.**

Cement System:

Open Hole Fill	(3,730 x 0.0654 x 2.) / 1.36 = 359 sks.
Previous Casing Fill	(270 x 0.1005) / 1.36 = 20 sks.
Casing Shoe Cement	(40 x 0.1312) / 1.36 = 4 sks.
	Total Tail Cement = 383 sks.

Cementing Systems

Spacer System: 20 bbls .

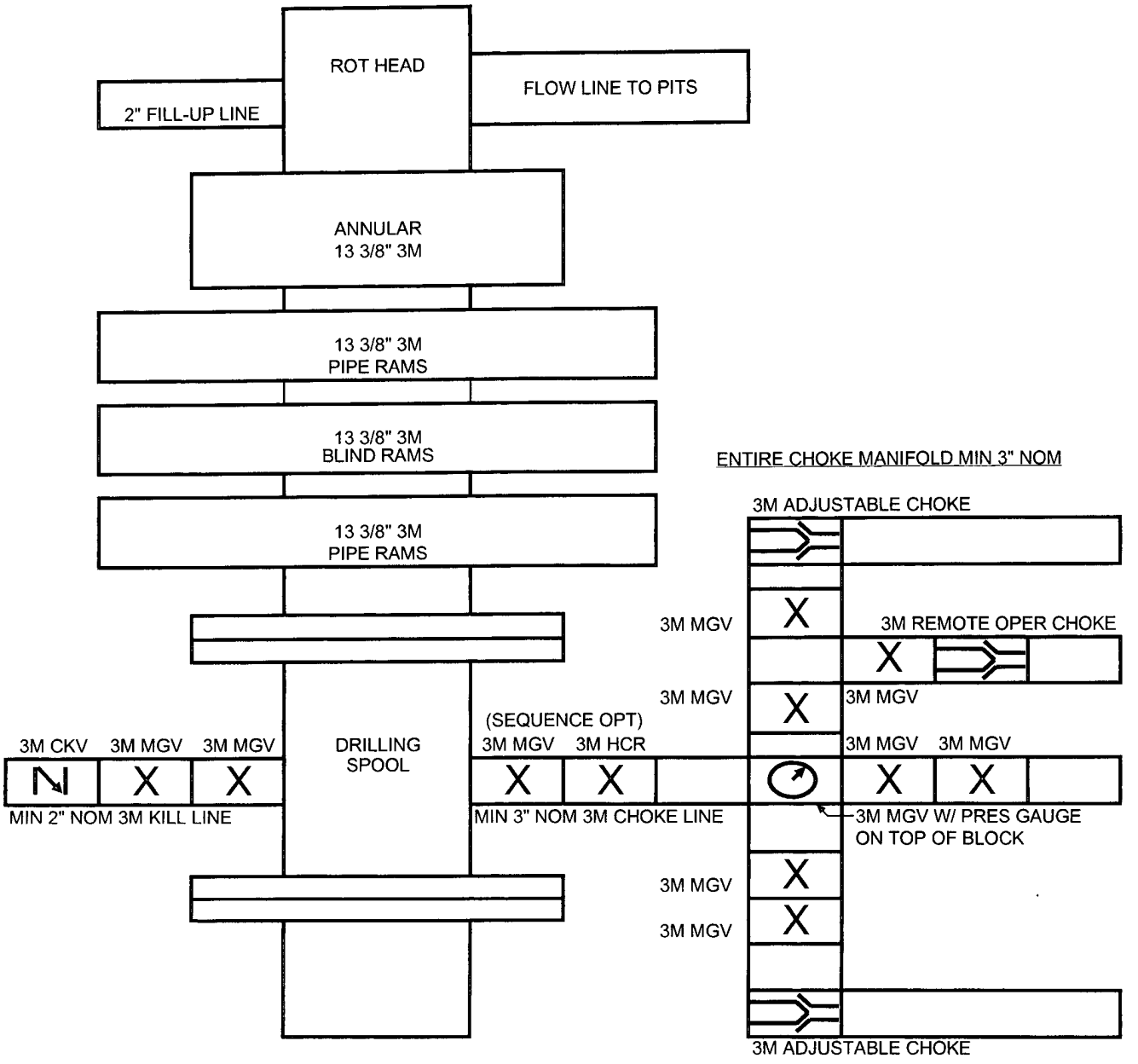
CW-100 Chemical Wash

Cement System: 385 sks.

50:50 Poz:Class H + 5% D44 (bwow) + 2% D20 + 0.125 pps D29 + 1 pps D42

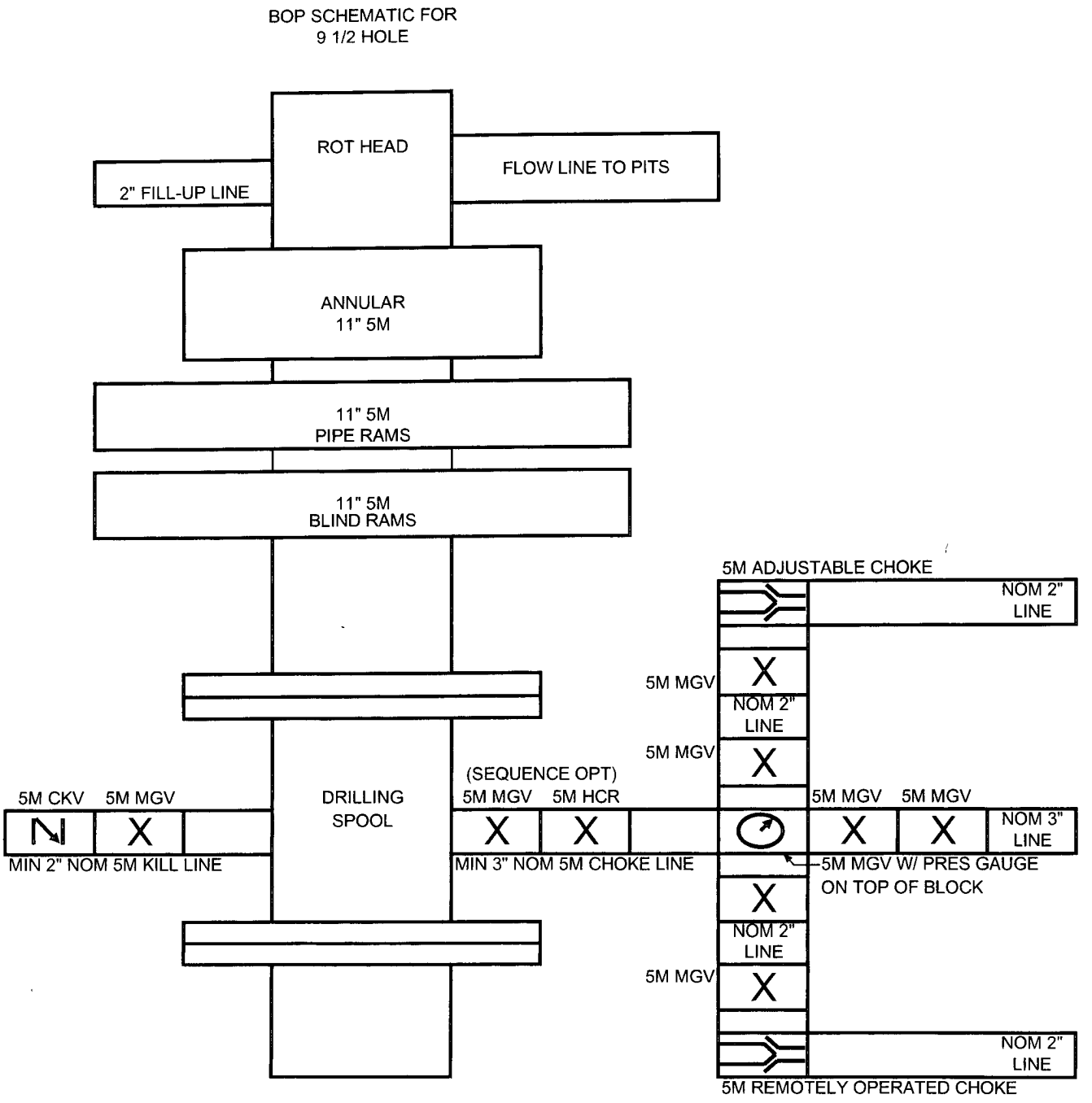
Mix Weight	:	14.2	PPG	
Yield	:	1.36	cu.ft./sk.	
Mix Water	:	6.28	gal./sk.	(Fresh Water)

BOP SCHEMATIC FOR
12 1/4" Hole



Edge Petroleum
Southeast Lusk 27 Federal #3
Lea County, New Mexico

Exhibit 1



Edge Petroleum
Southeast Lusk 27 Federal #3
Lea County, New Mexico

Exhibit 2

EMERGENCY EQUIPMENT REQUIREMENTS

1. SIGNS

   A. ONE SIGN LOCATED AT LOCATION ENTRANCE WITH THE FOLLOWING LANGUAGE:

(LEASE)
CAUTION – POTENTIAL POISON GAS
HYDROGEN SULFIDE
NO ADMITTANCE WITHOUT AUTHORIZATION

2. WIND SOCK – WIND STREAMERS

   A. ONE 36" (IN LENGTH) WIND SOCK LOCATED AT PROTECTION CENTER, AT HEIGHT VISIBLE FROM RIG FLOOR.
   B. ONE 36" (IN LENGTH) WIND SOCK LOCATED AT HEIGHT VISIBLE FROM PIT AREAS.

3. HYDROGEN SULFIDE DETECTOR AND ALARMS

   A. H2S MONITORS WITH ALARMS WILL BE LOCATED ON THE RIG FLOOR, AT THE BELL NIPPLE, AND AT THE FLOW LINE. THESE MONITORS WILL BE SET TO ALARM AT 10 PPM WITH RED LIGHT, AND TO ALARM AT 15 PPM WITH RED LIGHT AND AUDIBLE ALARM.
   B. HAND OPERATED DETECTORS WITH TUBES.
   C. H2S MONITOR TESTER.

4. CONDITION FLAGS

   A. ONE EACH OF ORANGE, YELLOW, AND RED CONDITION FLAGS TO BE DISPLAYED TO DENOTE CONDITIONS.

GREEN – NORMAL CONDITIONS
YELLOW – POTENTIAL DANGER
RED – DANGER, H2S PRESENT

   B. CONDITION FLAG SHALL BE POSTED AT LOCATION SIGN ENTRANCE.

EMERGENCY EQUIPMENT REQUIREMENTS

5. AUXILIARY RESCUE EQUIPMENT

   A. STRETCHER
   B. 100' LENGTH OF 5/8" NYLON ROPE.

6. MUD INSPECTION DEVICES

   GARRETT GAS TRAIN OR HACH TESTER FOR INSPECTION OF SULFIDE CONCENTRATION IN MUD SYSTEM.

7. FIRE EXTINGUISHER

   ADEQUATE FIRE EXTINGUISHERS SHALL BE LOCATED AT STRATEGIC LOCATIONS.

8. BLOW OUT PREVENTION EQUIPMENT

   THE WELL SHALL HAVE HYDRAULIC BOP EQUIPMENT FOR THE ANTICIPATED BHP OF 1500 PSI. EQUIPMENT IS TO BE TESTED ON INSTALLATION.

9. COMBUSTIBLE GAS DETECTOR

   THERE SHALL BE ONE COMBUSTIBLE GAS DETECTOR ON LOCATION AT ALL TIMES.

10. BOP TESTING

    BOP AND CHOKE LINE AND KILL LINE WILL BE TESTED.

11. AUDIO SYSTEM

    RADIO COMMUNICATION WILL BE AVAILABLE AT THE RIG.
    A. RIG FLOOR OR TRAILER
    B. VEHICLE

12. SPECIAL CONTROL EQUIPMENT

    A. HYDRAULIC BOP EQUIPMENT WITH REMOTE CONTROL ON GROUND.
    B. ROTATING HEAD

EMERGENCY EQUIPMENT REQUIREMENTS

13. EVACUATION PLAN

EVACUATION ROUTES SHOULD BE ESTABLISHED PRIOR TO SPUDDING EACH WELL AND DISCUSSED WITH ALL RIG PERSONNEL.

14. DESIGNATED AREA

A. PARKING AND VISITOR AREA: ALL VEHICLES ARE TO BE PARKED AT A PREDETERMINED SAFE DISTANCE FROM THE WELLHEAD. THIS WILL BE THE DESIGNATED SMOKING AREA.
B. TWO BRIEFING AREAS ON EITHER SIDE OF THE LOCATION AT THE MAXIMUM ALLOWABLE DISTANCE FROM THE WELL BORE SO THEY OFFSET PREVAILING WINDS PERPENDICULARLY, OR AT A 45-DEGREE ANGLE IF WIND DIRECTION TENDS TO SHIFT IN THE AREA.
C. PROTECTION CENTERS OR IF A MOVABLE TRAILER IS USED, IT SHOULD BE DEPT UPWIND OF EXISTING WINDS. WHEN WIND IS FROM THE PREVAILING DIRECTIONS, BOTH PROTECTION CENTERS SHOULD BE ACCESSIBLE.

STATUS CHECK LIST

NOTE: ALL ITEMS ON THIS LIST MUST BE COMPLETED BEFORE DRILLING TO PRODUCTION CASING POINT .

1. SIGN AT LOCATION ENTRANCE.
2. TWO (2) WIND SOCKS LOCATED AS REQUIRED.
3. TWO (2) 30-MINUTE PRESSURE DEMAND AIR PACKS ON LOCATION FOR ALL RIG PERSONNEL AND MUD LOGGERS.
4. AIR PACK INSPECTED FOR READY USE.
5. CASCADE SYSTEM AND HOSE LINE HOOK-UP.
6. CASCADE SYSTEM FOR REFILLING AIR BOTTLES.
7. SAFE BREATHING AREAS SET UP.
8. CONDITION FLAG ON LOCATION AND READY FOR USE.
9. H2S DETECTION SYSTEM HOOKED UP.
10. H2S ALARM SYSTEM HOOKED UP AND READY.
11. OXYGEN RESUSCITATOR ON LOCATION AND TESTED FOR USE.
12. STRETCHER ON LOCATION AT SAFETY TRAILER.
13. 1 – 100' LENGTH OF NYLON ROPE ON LOCATION.
14. ALL RIG CREW AND SUPERVISORS TRAINED AS REQUIRED.
15. ALL OUTSIDE SERVICE CONTRACTORS ADVISED OF POTENTIAL H2S HAZARD ON WELL.
16. NO SMOKING SIGN POSTED.
17. HAND OPERATED H2S DETECTOR WITH TUBES ON LOCATION.

CHECKED BY:_____ DATE:_____

PROCEDURAL CHECK LIST

PERFORM EACH TOUR:

1. CHECK FIRE EXTINGUISHERS TO SEE THAT THEY HAVE THE PROPER CHARGE.

2. CHECK BREATHING EQUIPMENT TO ENSURE THAT IT HAS NOT BEEN TAMPERED WITH.

3. MAKE SURE ALL THE H2S DETECTION SYSTEM IS OPERATIVE.

PERFORM EACH WEEK:

1. CHECK EACH PIECE OF BREATHING EQUIPMENT TO MAKE SURE THAT DEMAND REGULATOR IS WORKING. THIS REQUIRES THAT THE BOTTLE BE OPENED AND THE MASK ASSEMBLY BE PUT ON TIGHT ENOUGH SO THAT WHEN YOU INHALE, YOU RECEIVE AIR.

2. BLOW OUT PREVENTER SKILLS.

3. CHECK SUPPLY PRESSURE ON BOP ACCUMULATOR STAND BY SOURCE.

4. CHECK ALL SKA-PAC UNITS FOR OPERATION: DEMAND REGULATOR, ESCAPE BOTTLE AIR VOLUMES, SUPPLY BOTTLE OF AIR VOLUME.

5. CHECK BREATHING EQUIPMENT MASK ASSEMBLY TO SEE THAT STRAPS ARE LOOSENED AND TURNED BACK, READY TO PUT ON.

6. CHECK PRESSURE ON BREATHING EQUIPMENT AIR BOTTLES TO MAKE SURE THEY ARE CHARGED TO FULL VOLUME.

7. CONFIRM PRESSURE ON ALL SUPPLY AIR BOTTLES.

8. PERFORM BREATHING EQUIPMENT DRILLS WITH ON-SITE PERSONNEL.

9. CHECK THE FOLLOWING SUPPLIES FOR AVAILABILITY.

   A. EMERGENCY TELEPHONE LIST.
   B. HAND OPERATED H2S DETECTORS AND TUBES.

GENERAL EVACUATION PLAN

THE DIRECT LINES OF ACTION PREPARED BY **INDIAN FIRE & SAFETY, INC.** TO PROTECT THE PUBLIC FROM HAZARDOUS GAS SITUATIONS ARE AS FOLLOWS:

1. WHEN THE COMPANY APPROVED SUPERVISOR (DRILLING FOREMAN, CONSULTANT, RIG PUSHER, OR DRILLER) DETERMINES THE H2S GAS CANNOT BE LIMITED TO THE WELL LOCATION AND THE PUBLIC WILL BE INVOLVED, HE WILL ACTIVATE THE EVACUATION PLAN. ESCAPE ROUTES ARE NOTED ON AREA MAP.

2. "COMPANY MAN" OR DESIGNEE WILL NOTIFY LOCAL GOVERNMENT AGENCY THAT A HAZARDOUS CONDITION EXISTS AND EVACUATION NEEDS TO BE IMPLEMENTED.

3. COMPANY SAFETY PERSONNEL THAT HAVE BEEN TRAINED IN THE USE OF H2S DETECTION EQUIPMENT AND SELF-CONTAINED BREATHING EQUIPMENT WILL MONITOR H2S CONCENTRATIONS, WIND DIRECTIONS, AND AREA OF EXPOSURE. THEY WILL DELINEATE THE OUTER PERIMETER OF THE HAZARDOUS GAS AREA. EXTENSION TO THE EVACUATION AREA WILL BE DETERMINED FROM INFORMATION GATHERED.

4. LAW ENFORCEMENT PERSONNEL (STATE POLICE, POLICE DEPT., FIRE DEPT., AND SHERIFF'S DEPT.) WILL BE CALLED TO AID IN SETTING UP AND MAINTAINING ROAD BLOCKS. ALSO, THEY WILL AID IN EVACUATION OF THE PUBLIC IF NECESSARY.

IMPORTANT: LAW ENFORCEMENT PERSONNEL WILL NOT BE ASKED TO COME INTO A CONTAMINATED AREA. THEIR ASSISTANCE WILL BE LIMITED TO UNCONTAMINATED AREAS. CONSTANT RADIO CONTACT WILL BE MAINTAINED WITH THEM.

5. AFTER THE DISCHARGE OF GAS HAS BEEN CONTROLLED, COMPANY SAFETY PERSONNEL WILL DETERMINE WHEN THE AREA IS SAFE FOR RE-ENTRY.

EMERGENCY ACTIONS

WELL BLOWOUT – IF EMERGENCY

1. EVACUATE ALL PERSONNEL IF POSSIBLE.
2. IF SOUR GAS – EVACUATE RIG PERSONNEL.
3. IF SOUR GAS – EVACUATE PUBLIC WITHIN 3000 FT RADIUS OF EXPOSURE.
4. DON SCBA AND RESCUE.
5. CALL 911 FOR EMERGENCY HELP (FIRE DEPT AND AMBULANCE) AND NOTIFY SR. DRILLING FOREMAN AND DISTRICT FOREMAN.
6. GIVE FIRST AID.

PERSON DOWN LOCATION/FACILITY

1. IF IMMEDIATELY POSSIBLE, CONTACT 911. GIVE LOCATION AND WAIT FOR CONFIRMATION.
2. DON SCBA AND RESCUE.

EMERGENCY PHONE LIST

GOVERNMENTAL AGENCIES

Lea County Sheriff's Office	575	911
Non emergency	505-397-7546	
Fire Department	575	911
Lovington - Non-emergency	505-396-2359	
State Police Department	575	911
Non-emergency	505-392-5588	
Hospital –Nor-Lea General	575 505-396-6611	
Bureau of Land Management	575 505-887-6544	
New Mexico Oil Conservation.....	575 505-393-6161	
Indian Fire & Safety, Inc.....	575 505-393-3093	
24 Hour Emergency & Haz Mat.....	800-530-8693	

Emergency Contact List

Edge Petroleum

Daniel Hurd:
Office: 713-427-8892 direct line
Cell: 281-814-7084
Office: 713-654-8660 main line

R.K. Ford & Associates

Randell Ford:
Home: 432-570-7216
Cell: 432-559-2222
Alt. Cell: 432-559-3351
Office: 432-682-0440

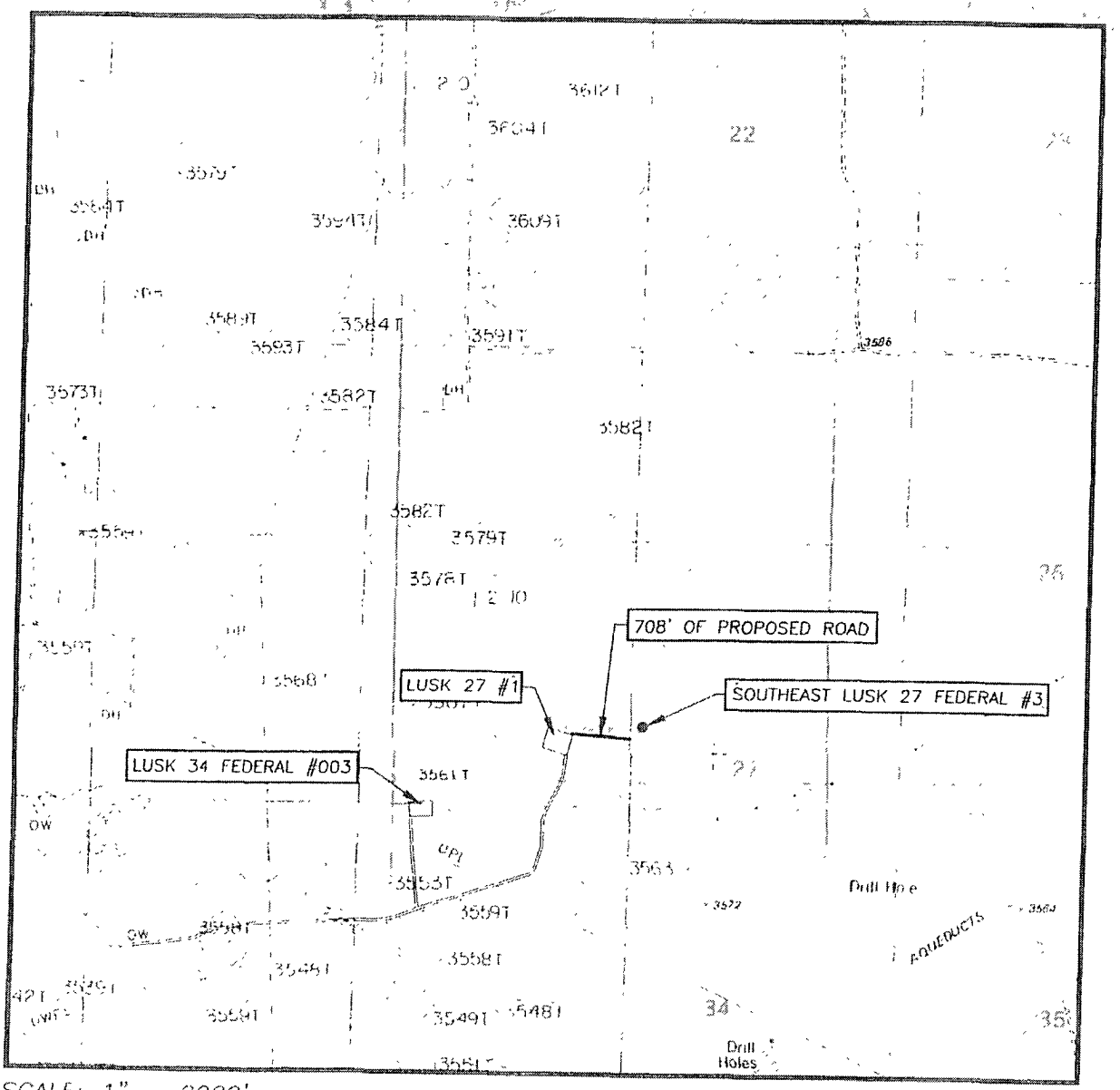
Lindsey Truesdell:
Office: 432-682-0440

Indian Fire & Safety, Inc.
3317 W. County Road
505-393-3093 - office
800-530-8693 – toll free
505-392-6274 – fax

Personnel Contact List

	Cell Phone	Home Phone
James Spurgeon	390-8582	492-9354
Scott Dudenhoeffer	631-9753	392-4833
Sam Abney	631-9712	393-5427
Curtis Newton	631-1255	393-3762
Chris Spurgeon	806-215-1087	806-592-0079

LOCATION VERIFICATION MAP



SCALE: 1" = 2000'

CONTOUR INTERVAL:
WILLIAMS SINK, N.M. - 10'
LAGUNA GATUNA, N.M. - 10'
LAGUNA GATUNA NW, N.M. - 10'
GREENWOOD LAKE, N.M. 10'

SEC 27 TWP 19-S RGE. 32-E

SURVEY N.M.P.M.

COUNTY LEA STATE NEW MEXICO

DESCRIPTION 660' FSL & 2250' FEL

ELEVATION 3574'

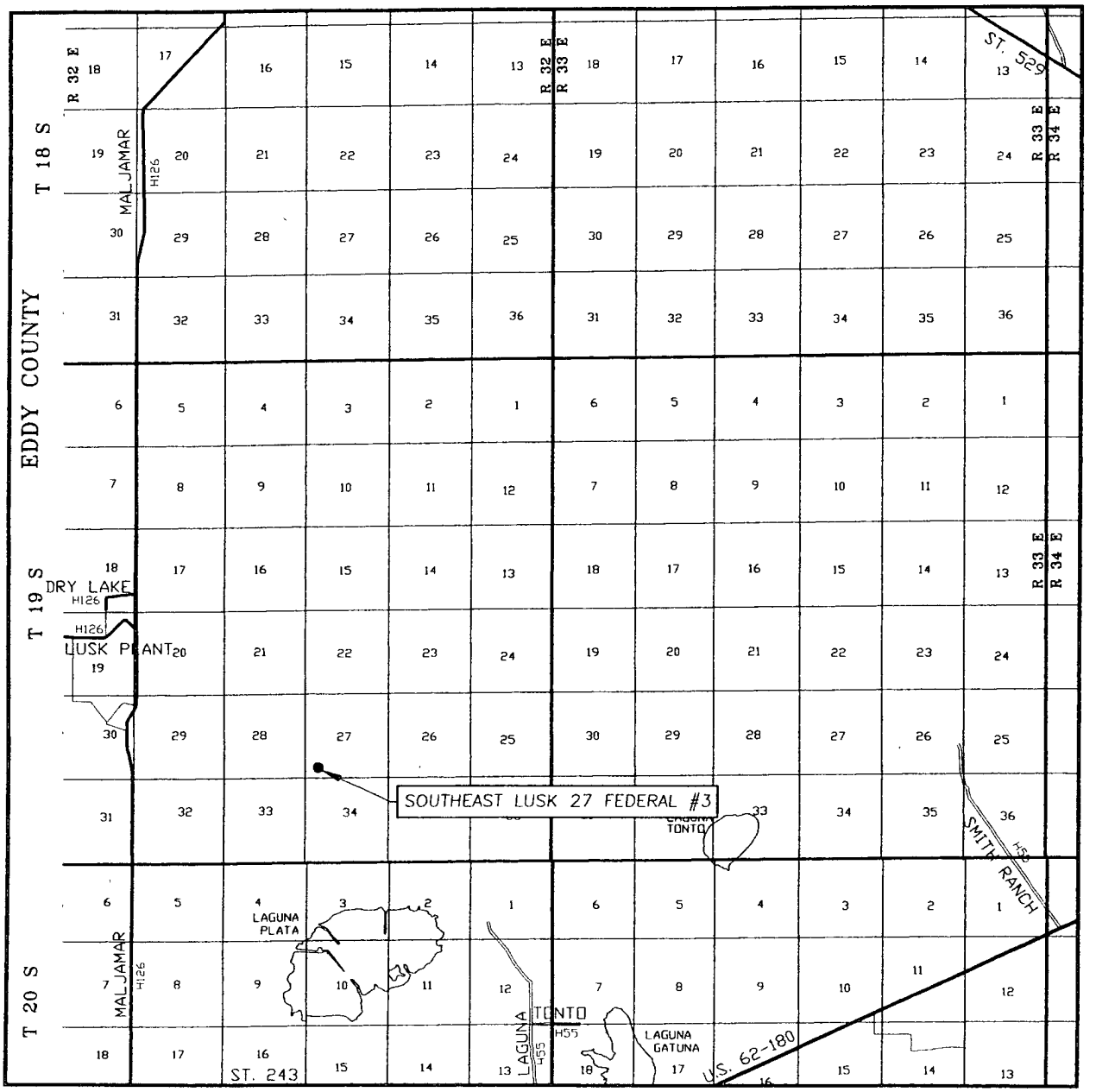
OPERATOR EDGE PETROLEUM OPERATING CO.

LEASE SOUTHEAST LUSK 27 FEDERAL

U.S.G.S. TOPOGRAPHIC MAP
GREENWOOD LAKE, N.M.

PROVIDING SURVEYING SERVICES
SINCE 1946
JOHN WEST SURVEYING COMPANY
412 N. DAL PASO
HOBBS, N.M 88240
(505) 393-3117

VICINITY MAP



SCALE: 1" = 2 MILES

SEC. 27 TWP. 19-S RGE. 32-E .

SURVEY N.M.P.M.

COUNTY LEA STATE NEW MEXICO

DESCRIPTION 660' FSL & 2250' FEL

ELEVATION 3574'

OPERATOR EDGE PETROLEUM OPERATING CO.

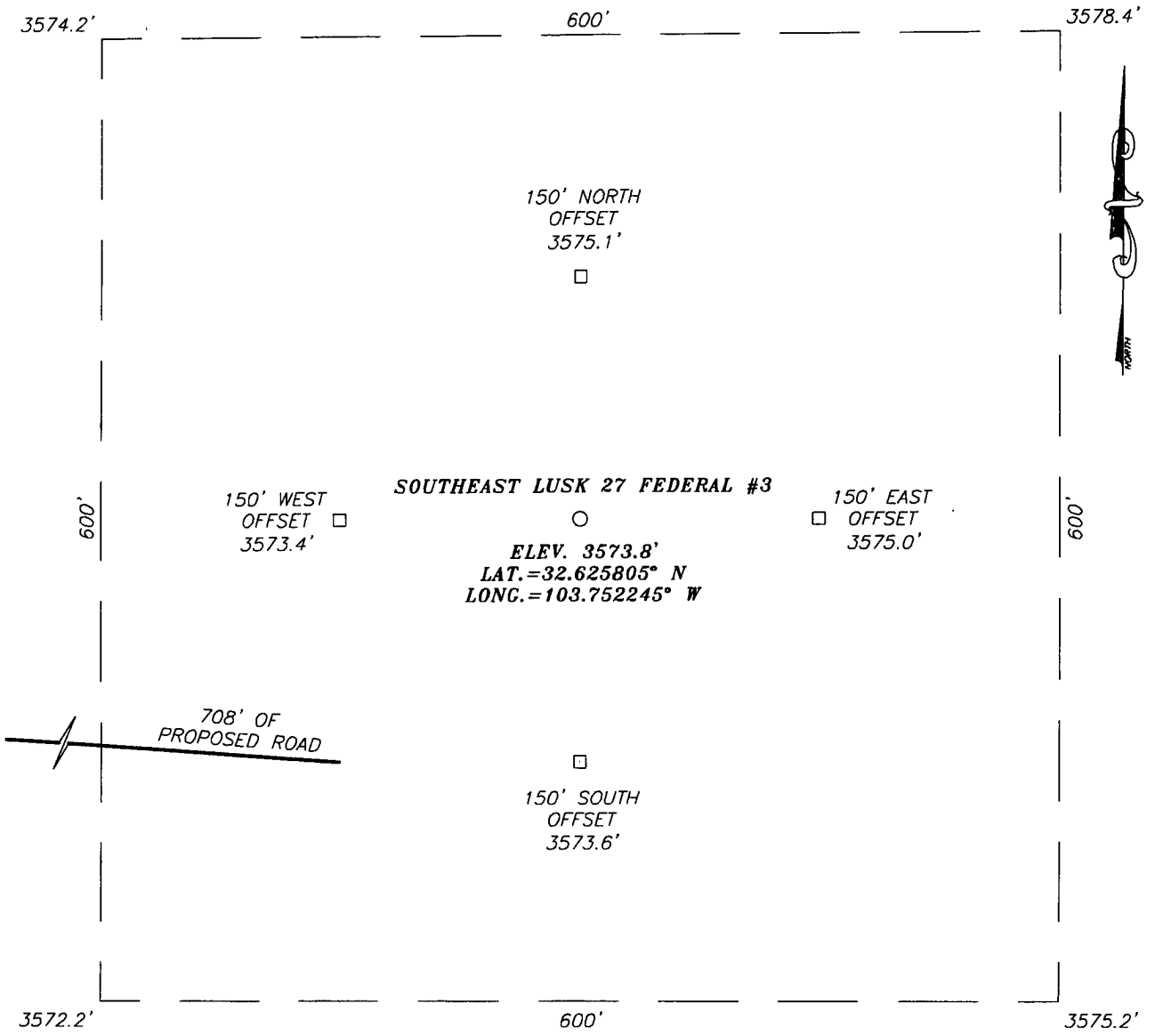
LEASE SOUTHEAST LUSK 27 FEDERAL

PROVIDING SURVEYING SERVICES
SINCE 1946
JOHN WEST SURVEYING COMPANY
412 N. DAL PASO
HOBBS, N.M. 88240
(505) 393-3117

Exhibit B

SECTION 27, TOWNSHIP 19 SOUTH, RANGE 32 EAST, N.M.P.M.,

LEA COUNTY, NEW MEXICO



DIRECTIONS TO LOCATION

FROM THE INTERSECTION OF ST. HWY. #243 AND CO. RD. H126, GO NORTH ON CO. RD. H126 APPROX. 4.0 MILES. TURN RIGHT AND GO EAST APPROX. 1.1 MILE. TURN RIGHT AND GO SOUTH-SOUTHEAST APPORX. 0.5 MILES. VEER LEFT GO EAST APPROX. 1.0 MILE. TURN LEFT AND GO NORTH APPROX. 0.3 MILES TO THE SOUTHEAST LUSK 27 FED #1 WELL PAD AND A PROPOSED ROAD SURVEY. FOLLOW ROAD SURVEY APPROX. 708 FEET EAST TO THIS LOCATION.

100 0 100 200 Feet

Scale: 1"=100'

PROVIDING SURVEYING SERVICES
SINCE 1946
JOHN WEST SURVEYING COMPANY
412 N. DAL PASO
HOBBS, N.M. 88240
(505) 393-3117

EDGE PETROLEUM OPERATING CO.

SOUTHEAST LUSK 27 FEDERAL #3 WELL
LOCATED 660 FEET FROM THE SOUTH LINE
AND 2250 FEET FROM THE EAST LINE OF SECTION 27,
TOWNSHIP 19 SOUTH, RANGE 32 EAST, N.M.P.M.,
LEA COUNTY, NEW MEXICO.

Survey Date: 9/19/08	Sheet 1 of 1 Sheets		
W.O. Number: 08.11.1543	Dr By: LA		Rev 1:N/A
Date: 9/26/08		08111543	Scale: 1"=100'

Exhibit C

PECOS DISTRICT
CONDITIONS OF APPROVAL

OPERATOR'S NAME:	Edge Petroleum Operating Company
LEASE NO.:	NM12412
WELL NAME & NO.:	Southeast Lusk 27 Federal # 3
SURFACE HOLE FOOTAGE:	660' FSL & 2250' FEL
BOTTOM HOLE FOOTAGE	660' FSL & 2250' FEL
LOCATION:	Section 27, T. 19 S., R 32 E., NMPM
COUNTY:	Lea County, New Mexico

TABLE OF CONTENTS

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

I. GENERAL PROVISIONS

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

II. PERMIT EXPIRATION

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

III. ARCHAEOLOGICAL, PALEONTOLOGY & HISTORICAL SITES

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

IV. NOXIOUS WEEDS

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

V. SPECIAL REQUIREMENT(S)

1. Timing Limitation Stipulation/Condition of Approval for Lesser Prairie-Chicken: Oil and gas activities including 3-D geophysical exploration, and drilling will not be allowed in lesser prairie-chicken habitat during the period from March 1st through June 15th annually. During that period, other activities that produce noise or involve human activity, such as the maintenance of oil and gas facilities, geophysical exploration other than 3-D operations, and pipeline, road, and well pad construction, will be allowed except between 3:00 am and 9:00 am. The 3:00 am to 9:00 am restriction will not apply to normal, around-the-clock operations, such as venting, flaring, or pumping, which do not require a human presence during this period. Additionally, no new drilling will be allowed within up to 200 meters of leks known at the time of permitting. Normal vehicle use on existing roads will not be restricted. Exhaust noise from pump jack engines must be muffled or otherwise controlled so as not to exceed 75 db measured at 30 ft. from the source of the noise.
2. Ground-level Abandoned Well Marker to avoid raptor perching: Upon the plugging and subsequent abandonment of the well, the well marker will be installed at ground level on a plate containing the pertinent information for the plugged well. For more installation details, contact the Carlsbad Field Office at 575-234-5972.

Southeast Lusk 27 Federal # 3: Closed loop System; V- Door East

VI. CONSTRUCTION

A. NOTIFICATION

The BLM shall administer compliance and monitor construction of the access road and well pad. Notify the Carlsbad Field Office at (575) 234-5972 at least 3 working days prior to commencing construction of the access road and/or well pad.

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

B. TOPSOIL

The operator shall stockpile the topsoil of the well pad. The topsoil shall not be used to backfill the reserve pit and will be used for interim and final reclamation.

C. Closed Loop System

Southeast Lusk 27 Federal # 2: Closed loop System; V- Door Northeast

Tanks are required for drilling operations: No Pits.

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

D. FEDERAL MINERAL MATERIALS PIT

If the operator elects to surface the access road and/or well pad, mineral materials extracted during construction of the reserve pit may be used for surfacing the well pad and access road and other facilities on the lease.

Payment shall be made to the BLM prior to removal of any additional federal mineral materials from any site other than the reserve pit. Call the
Carlsbad Field Office at (575) 234-5972.

E. WELL PAD SURFACING

Surfacing of the well pad is not required.

If the operator elects to surface the well pad, the surfacing material may be required to be removed at the time of reclamation.

The well pad shall be constructed in a manner which creates the smallest possible surface disturbance, consistent with safety and operational needs.

F. ON LEASE ACCESS ROADS

Road Width
The access road shall have a driving surface that creates the smallest possible surface disturbance and does not exceed fourteen (14) feet in width. The maximum width of surface disturbance, when constructing the access road, shall not exceed thirty (30) feet.

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

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

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

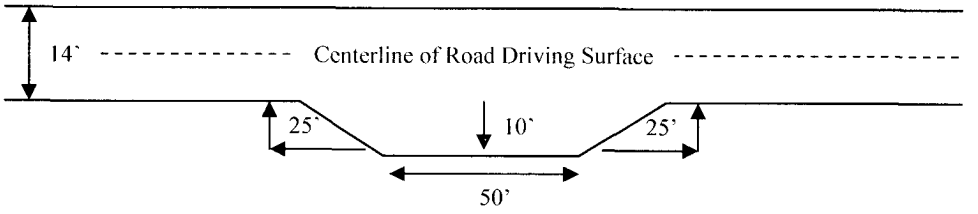
Crowning
Crowning shall be done on the access road driving surface. The road crown shall have a grade of approximately 2% (i.e., a 1" crown on a 14' wide road). The road shall conform to Figure 1; cross section and plans for typical road construction.

Ditching

Ditching shall be required on both sides of the road.

Turnouts
Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall be constructed on all blind curves. Turnouts shall conform to the following diagram:

Standard Turnout – Plan View

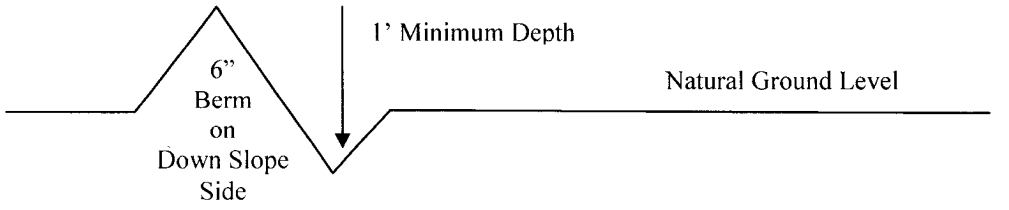


Drainage

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

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

Cross Section of a Typical Lead-off Ditch



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

Formula for Spacing Interval of Lead-off Ditches

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

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

Culvert Installations
Appropriately sized culvert(s) shall be installed at the deep waterway channel flow crossing.

Cattleguards
An appropriately sized cattleguard(s) sufficient to carry out the project shall be installed and maintained at fence crossing(s).

Any existing cattleguard(s) on the access road shall be repaired or replaced if they are damaged or have deteriorated beyond practical use. The operator shall be responsible for the condition of the existing cattleguard(s) that are in place and are utilized during lease operations.

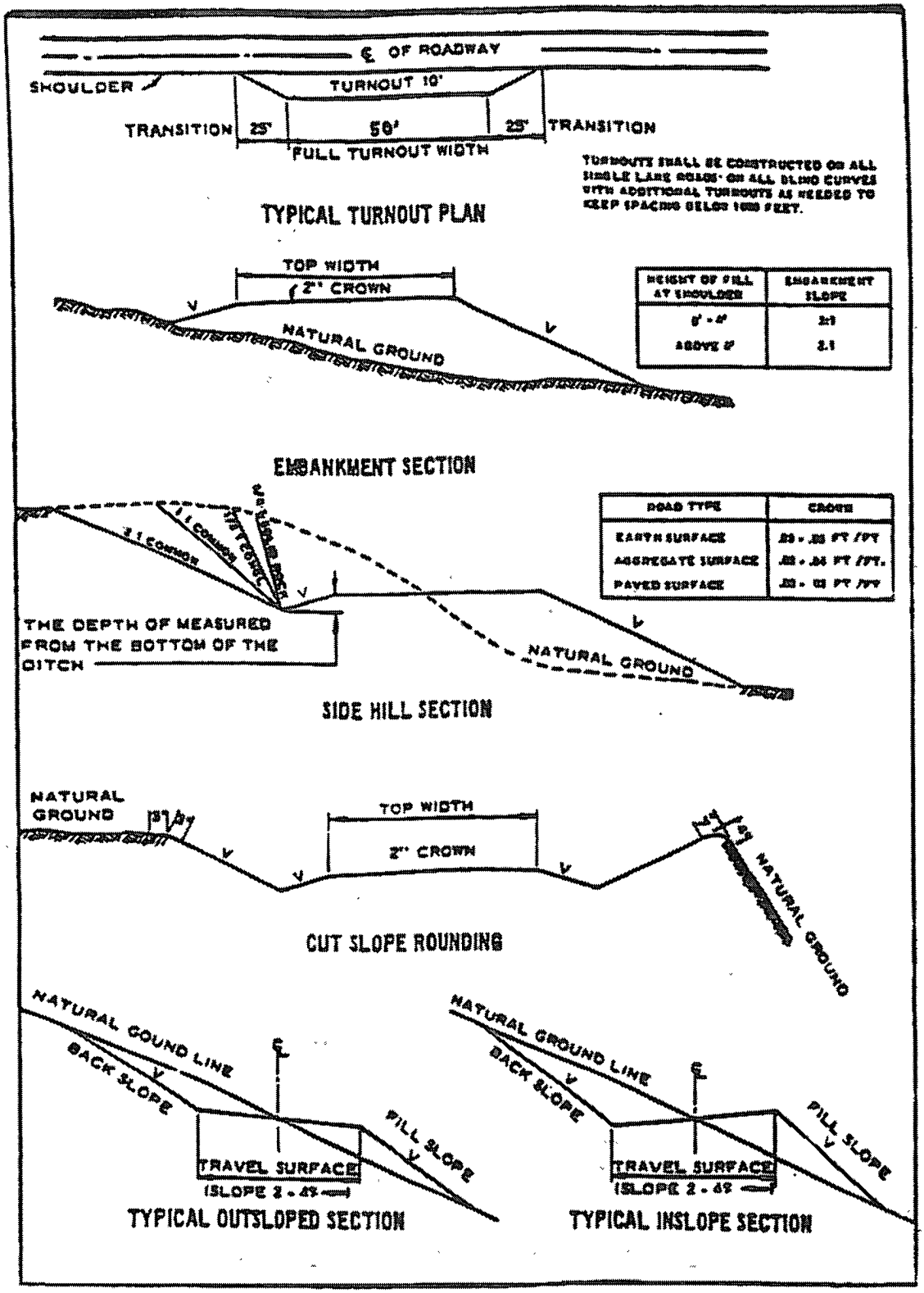
A gate shall be constructed and fastened securely to H-braces.

Fence Requirement
Where entry is required across a fence line, the fence shall be braced and tied off on both sides of the passageway prior to cutting.

The operator shall notify the private surface landowner or the grazing allotment holder prior to crossing any fence(s).

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

Figure 1 – Cross Sections and Plans For Typical Road Sections



VII. DRILLING

A. DRILLING OPERATIONS REQUIREMENTS

The BLM is to be notified a minimum of 4 hours in advance for a representative to witness:

a. Spudding well
b. Setting and/or Cementing of all casing strings
c. BOPE tests

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

1. A Hydrogen Sulfide (H2S) Drilling Plan should be activated 500 feet prior to drilling into the **Yates** formation. **If Hydrogen Sulfide is encountered, please report measurements and formations to the BLM.**

2. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval.

3. When floor controls are required, (3M or Greater) controls will be on the rig floor, unobstructed, readily accessible to the driller and will be operational at all times during drilling and/or completion activities. Rig floor is defined as the area immediately around the rotary table; the area immediately above the substructure on which the draw works are located, this does not include the dog house or stairway area.

B. CASING

Changes to the approved APD casing and cement program require submitting a sundry and receiving approval prior to work. Failure to obtain approval prior to work will result in an Incident of Non-Compliance being issued.

Centralizers required on surface casing per Onshore Order 2.III.B.1.f.

Wait on cement (WOC) time for a primary cement job will be a minimum 18 hours for a water basin, 24 hours in the potash area, or 500 pounds compressive strength, whichever is greater for all casing strings. Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. See individual casing strings for details regarding lead cement slurry requirements.

No pea gravel permitted for remedial or fall back remedial without prior authorization from the BLM engineer.

Possible lost circulation in the Artesia Group and the Capitan Reef.
Possible water flows in the Artesia and Salado Groups.

1. The **16** inch surface casing shall be set **a minimum of 25 feet into the Rustler Anhydrite and above the salt at approximately 890** feet and cemented to the surface.

    a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with a surface log readout will be used or a cement bond log shall be run to verify the top of the cement.

    b. Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry.

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

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

2. The minimum required fill of cement behind the **10-3/4** inch intermediate casing is:

    ☒ Cement to surface. If cement does not circulate see B.1.a, c-d above. **Casing to be set at approximately 2850 feet within the Seven Rivers formation and above the Bowers Member. Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to Secretary's Potash.**

3. The minimum required fill of cement behind the **7-5/8** inch intermediate casing is:

    a. First stage to DV tool, cement shall:

    ☒ Cement to circulate. If cement does not circulate, contact the appropriate BLM office, before proceeding with second stage cement job. **Casing to be set at approximately 4300 feet at the base of the Goat Seep Reef. Additional cement may be needed as excess cement calculates to 14%.**

    External Casing Packer and DV tool are to be set a minimum of 50 feet above the 10-3/4" casing shoe.

b. Second stage above DV tool, cement shall:

☒ Cement to surface. If cement does not circulate, contact the appropriate BLM office. **Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to protection for Capitan Reef.**

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

☒ Cement to surface. If cement does not circulate, contact the appropriate BLM office. **Additional cement will be required to circulate as excess calculated to a negative 8%.**

5. If hardband drill pipe is rotated inside casing, returns will be monitored for metal. If metal is found in samples, drill pipe will be pulled and rubber protectors which have a larger diameter than the tool joints of the drill pipe will be installed prior to continuing drilling operations.

C. PRESSURE CONTROL

1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API RP 53 Sec. 17.

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

   a. The tests shall be done by an independent service company.

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

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

   d. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes if test is done with a test plug and 30 minutes without a test plug.

D. DRILL STEM TEST

If drill stem tests are performed, Onshore Order 2.III.D shall be followed.

WWI 111708

VIII. PRODUCTION (POST DRILLING)

A. WELL STRUCTURES & FACILITIES

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

Containment Structures
The containment structure shall be constructed to hold the capacity of the entire contents of the largest tank, plus 24 hour production, unless more stringent protective requirements are deemed necessary by the Authorized Officer.

Painting Requirement
All above-ground structures including meter housing that are not subject to safety requirements shall be painted a flat non-reflective paint color
Shale Green, Munsell Soil Color Chart # 5Y 4/2

B. PIPELINES

STANDARD STIPULATIONS FOR SURFACE INSTALLED PIPELINES

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

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

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

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

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

4. The holder shall be liable for damage or injury to the United States to the extent provided by 43 CFR Sec. 2883.1-4. The holder shall be held to a standard of strict liability for damage or injury to the United States resulting from pipe rupture, fire, or spills caused or substantially aggravated by any of the following within the right-of-way or permit area:

a. Activities of the holder including, but not limited to construction, operation, maintenance, and termination of the facility.

b. Activities of other parties including, but not limited to:

(1) Land clearing.
(2) Earth-disturbing and earth-moving work.
(3) Blasting.
(4) Vandalism and sabotage.

c. Acts of God.

The maximum limitation for such strict liability damages shall not exceed one million dollars ($1,000,000) for any one event, and any liability in excess of such amount shall be determined by the ordinary rules of negligence of the jurisdiction in which the damage or injury occurred.

This section shall not impose strict liability for damage or injury resulting primarily from an act of war or from the negligent acts or omissions of the United States.

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

of any responsibility as provided herein.

6. All construction and maintenance activity will be confined to the authorized right-of-way width of **25** feet.

7. No blading or clearing of any vegetation will be allowed unless approved in writing by the Authorized Officer.

8. The holder shall install the pipeline on the surface in such a manner that will minimize suspension of the pipeline across low areas in the terrain. In hummocky of duney areas, the pipeline will be "snaked" around hummocks and dunes rather then suspended across these features.

9. The pipeline shall be buried with a minimum of **24** inches under all roads, "two-tracks," and trails. Burial of the pipe will continue for 20 feet on each side of each crossing. The condition of the road, upon completion of construction, shall be returned to at least its former state with no bumps or dips remaining in the road surface.

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

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

12. Excluding the pipe, all above-ground structures not subject to safety requirement shall be painted by the holder to blend with the natural color of the landscape. The paint used shall be a color which simulates "Standard Environmental Colors" – **Shale Green**, Munsell Soil Color No. 5Y 4/2; designated by the Rocky Mountain Five State Interagency Committee.

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

14. The holder shall not use the pipeline route as a road for purposes other than routine maintenance as determined necessary by the Authorized Officer in consultation with the holder. The holder will take whatever steps are necessary to ensure that the pipeline route is not used as a roadway.

15. Any cultural and/or paleontological resource (historic or prehistoric site or object) discovered by the holder, or any person working on his hehalf, on public or Federal land shall be immediately reported to the authorized officer. Holder shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the authorized officer. An evaluation of the discovery will be made by the authorized officer to determine appropriate cultural or scientific values. The holder will be responsible for the cost of evaluation and any decision as to proper mitigation measures will be made by the authorized officer after consulting with the holder.

(March 1989)

IX. INTERIM RECLAMATION & RESERVE PIT CLOSURE

A. INTERIM RECLAMATION

If the well is a producer, interim reclamation shall be conducted on the well site in accordance with the orders of the Authorized Officer. The operator shall submit a Sundry Notices and Reports on Wells (Notice of Intent), Form 3160-5, prior to conducting interim reclamation.

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

The operators should work with BLM surface management specialists to devise the best strategies to reduce the size of the location. Any reductions should allow for remedial well operations, as well as safe and efficient removal of oil and gas.

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

BLM Serial #:
Company Reference:
Well Name and Number:

Seed Mixture for LPC Sand/Shinnery 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
Plains Bristlegrass	5lbs/A
Sand Bluestem	5lbs/A
Little Bluestem	3lbs/A
Big Bluestem	6lbs/A
Plains Coreopsis	2lbs/A
Sand Dropseed	1lbs/A
**Four-winged Saltbush	5lbs/A

* This can be used around well pads and other areas where caliche cannot be removed.

*Pounds of pure live seed:

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

(Insert Seed Mixture Here)

X. FINAL ABANDONMENT & REHABILITATION REQUIREMENTS

Upon abandonment of the well and/or when the access road is no longer in service the Authorized Officer shall issue instructions and/or orders for surface reclamation and restoration of all disturbed areas.

On private surface/federal mineral estate land the reclamation procedures on the road and well pad shall be accomplished in accordance with the private surface land owner agreement.