ATS-11-215

OCD Artesia

BLM-CARLSBAD FIELD OFFICE

Form 3160-3
(August 2007)

FORM APPROVED
OMB No 1004-0137
Expires July 31, 2010

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

SECRETARY'S POTASH

**APPLICATION FOR PERMIT TO DRILL OR REENTER**

5. Lease Serial No. NM NM SWD-649-A LC-29234

6. If Indian, Allotee or Tribe Name

1a. Type of work: ☐ DRILL ☑ REENTER NO NOS

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.
Bran SWD #1

2. Name of Operator Mesquite SWD, Inc

9. API Well No.
30-015-25697

3a. Address P.O. Box 1479 Carlsbad, NM 88221

3b. Phone No. *(include area code)*
575-706-1840

10. Field and Pool, or Exploratory
SWD; Bell Canyon-Cherry Canyon

4. Location of Well *(Report location clearly and in accordance with any State requirements.*)*
At surface 660' FSL & 660' FEL
At proposed prod. zone same

11. Sec., T. R. M. or Blk. and Survey or Area
Sec. 11, T24S-R31E

14 Distance in miles and direction from nearest town or post office*
35 miles west of Jal, New Mexico

12. County or Parish
Eddy

13. State
NM

15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) 660'

16. No. of acres in lease
NA

17. Spacing Unit dedicated to this well
NA

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

19. Proposed Depth
OTD 6794'
ASTD -6900

20. BLM/BIA Bond No. on file
NMB000389 / NMB000612

21 Elevations (Show whether DF, KDB, RT, GL, etc.)
GL 3552 KB 3562

22. Approximate date work will start*

23. Estimated duration
15 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 |
|---|---|---|
| Kay Havenor | Kay Havenor | 12/23/2010 |

Title
Agent 575-626-4518

| Approved by *(Signature)* | Name *(Printed/Typed)* | Date |
|---|---|---|
| /s/ Don Peterson | | 8/1/2011 |
| Title **FIELD MANAGER** | Office **CARLSBAD FIELD OFFICE** | |

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

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.

(Continued on page 2)

SWD-649-B

*(Instructions on page 2)

Accepted for record
NMOCD JDS 3/5/2012

**Approval Subject to General Requirements & Special Stipulations Attached**

RECEIVED
FEB 28 2012
NMOCD ARTESIA

**SEE ATTACHED FOR CONDITIONS OF APPROVAL**

# United States Department of the Interior
## BUREAU OF LAND MANAGEMENT
CARLSBAD FIELD OFFICE
CARLSBAD, NEW MEXICO 88220

In Reply
Refer To:
3160 (NMP0201)
**NMLC-29234**

Memorandum

To: Manager, Carlsbad Field Office (NMP0201)

From: Division of Land and Minerals (NMP0220)

Subject: Application for Permit to Drill

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| | |
|---|---|
| Applicant: | Mesquite SWD, Inc. |
| Lease: | NMLC – 29234 |
| Well Name: | **Bran SWD No. 1** |
| Surface Location: | 660' FSL & 660' FEL T24S, R31E: Sec. 11 NMLC-29234 |
| Bottom Hole Location: | Same (Vertical Well) |
| Well Type: | Produced-Water Disposal Well; TVD: 6,794'; re-entry well |
| Disposal Formation: | Bell Canyon |

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# Approval Recommendation

## Objective

The APD was evaluated with respect to the following objectives as stated in the Secretary's 1986 Potash Order:

1. Drilling for oil and gas shall be permitted only in the event that the lessee establishes to the satisfaction of the authorized officer, Bureau of Land Management, that such will not interfere with the mining and recovery of potash deposits (Section III A 1).
2. No Wells shall be drilled for oil or gas at a location which, in the opinion of the authorized officer, would result in undue waste of potash deposits or constitute a hazard to or unduly interfere with mining operations being conducted for the extraction of potash deposits. (Section III A 2)
3. When the authorized officer, determines that unitization is necessary for orderly oil and gas development and proper protection of potash deposits, no well shall be drilled for oil or gas except pursuant to a unit plan approved by the authorized

officer. (Section III A 3)

4. The drilling or the abandonment of any well on said lease shall be in accordance with applicable oil and gas operating regulations, including such requirements as the authorized officer may prescribe as necessary to prevent the infiltration of oil, gas or water into formations containing potash deposits or into mines or workings being utilized in the extraction of such deposits. (Section III A 4)
5. In taking any action under Part A, Items 1, 2, 3, and 4 of this Order, the authorized officer shall take into consideration the applicable rules and regulations of the Oil Conservation Division of the State of New Mexico.

## Chronology and Data

The APD was evaluated using all the pertinent information and data available at the date of the application. The information and data pertinent to this decision are:

1. The area was included within the Secretary's Potash Area on October 31, 1975.
2. The proposed well is a re-entry into a non-commercial Bell Canyon and Cherry Canyon test well. Oil and gas lease NMLC-29234 was issued on December 20, 1976 with the potash stipulation.
3. The proposed well will be re-entered to a total vertical depth of 6,794 feet.
4. The proposed well is not located within the potash enclave.
5. The proposed location is not within one mile of a Three Year Mine Plan.
6. The proposed location is not leased for potassium.
7. The proposed location is not within one mile of open mine workings.
8. The proposed location was not protested by an affected party.
9. The proposed location does not interfere with access to potash ore deposits.
10. The proposed well casing requirements will have three casing strings; first two will be cemented to the surface.

## Rationale:

**Buffer Zones Established by the BLM** - Buffer zones may be established by the BLM around measured potash reserves in areas where the BLM has determined the reserves need the additional protection. A buffer of ¼ mile is established for shallow (oil) wells and a buffer of ½ mile for deep (gas) wells.

Buffer zones have not been established in this area.

**Base of Delaware General** – The BLM differentiates between shallow and deep wells with respect to the base of the Delaware Mountain Group, correlated from existing wells, for the respective area within the Secretary's Potash Area. The BLM generally defines shallow and deep zones for oil and gas as:

**Shallow Zone** - all formations above the base of the Delaware Mountain Group as defined by the BLM geological report for the respective area within the Secretary's Potash Area.

**Deep Zone** - all formations below the base of the Delaware Mountain Group as defined by the BLM geological report for the respective area within the Secretary's Potash Area.

The BLM, at its discretion, uses the base of the Delaware Mountain Group as a liberally defined demarcation between shallow oil wells and deep gas wells. The Delaware Formation Group is often produced for oil at or very near the bottom of the formation. The BLM allows wells to be drilled 100 feet below the base of the Delaware Mountain Group to accommodate logging the zones at the base of the formation, and still be classified as shallow oil wells.

The proposed location is to be re-entered to a total vertical depth of 6,794 feet. The base of the Delaware Mountain Group is given in the BLM's geological report as 8,358 feet. The proposed well is 1,564 feet within the base of the Delaware Mountain Group and is therefore classified as "shallow" by BLM definitions.

**Drill Islands & Three Year Mine Plans** - The Secretary's 1986 Order allows for the establishment of drill islands within the potash enclave when: (1) there are no barren areas within the enclave or drilling is not permitted on the established barren area(s) within the enclave because of interference with mining operations; (2) the objective oil and gas formation beneath the lease cannot be reached by a well which is vertically or directionally drilled from a permitted location within the barren area(s); or (3) in the opinion of the authorized officer, the target formation beneath a remote interior lease cannot be reached by a well directionally drilled from a surface location outside the potash enclave. Under these circumstances, the authorized officer shall establish an island within the potash enclave from which the drilling of that well and subsequent wells will be permitted. The authorized officer, in establishing any such island, will, consistent with present directional drilling capabilities, select a site which shall minimize the loss of potash ore. No islands shall be established within one mile of any area where approved mining operations will be conducted within three years. Three-year mine plans are filed to make this determination. BLM considers open mine workings as part of a company's three-year mine plan.

A three-year mine plan has been filed by Mosaic for CY 2010. Mosaic's Three Year Mine Plan is approximately 7.4 miles northwest of proposed location.

**Open Mine Workings** - The proposed location is not within one mile of open mine workings. Mosaic's active mine workings are located approximately 7.9 miles northwest of the proposed location.

In areas where there are no mineable ore reserves, or the reserves have been completely mined and no mining is being conducted in that mine, drilling is allowed no closer to open mine workings than ½ mile for deep wells and ¼ mile for shallow wells.

**Access to Measured Potash Ore Reserves** - The proposed location is not in an area which if drilled will limit access to currently defined Measured Ore reserves.

**Measured Potash Ore Reserves** - The proposed location is outside of currently defined Measured Ore reserves. Changes to the boundary of the Potash Enclave as a result of the pending "potash enclave standards" evaluation ordered by the IBLA (*IMC Kalium*, IBLA 2003-334, et al.), will not affect the recommendation for the approval of this APD.

In 2007, the BLM contracted Sandia National Laboratory to conduct a study to determine whether geophysical logs can be used to identify and quantify potash reserves in southeastern, New Mexico. On August 24, 2009, Sandia National Laboratory submitted a Final Report regarding the use of oil and gas geophysical data to determine and quantify potash mineralization. The conclusion of the report states ..."that the available set of oil and gas well logs cannot provide sufficient information to determine the full mineralogy of the

McNutt Member and therefore cannot directly meet the current ore standard. This is because of the complex mineralogy of the ore zones and the limited number of logs available from cased oil and gas wells." Because of the level of uncertainty in geophysical logs, BLM will continue to process APD's respective to core-holes' mineralization and thickness.

In the area of the proposed location the Fourth Ore Zone is defined by the core holes listed below.

| Core-Hole | $4^{th}$ Ore Zone Thickness(ft) | $\%K_2O$ as Langbeinite |
|---|---|---|
| S-4 | MM | Barren |
| PP-9 | 3.89 | 6.0 |
| PP-8 | 4.0 | 3.78 |

MM = Minor Mineralization

***The above information is considered confidential and shall not be disclosed***

**Protests or Objections** – The proposed location has not been protested by an affected party.

**Casing Requirements**- The Authorized Officer shall take into consideration the applicable rules and regulations of the Oil Conservation Division of the State of New Mexico as necessary to prevent the infiltration of oil, gas or water into formations containing potash deposits or into mines or workings being utilized in the extraction of such deposits.

The Casing and Cementing requirements in the Secretary's Potash Area are delineated by whether the proposed well is inside or outside of the R-111-P boundary.

**Secretary's Potash**—Casing design is for three strings of casing. The first two strings, which protect the fresh water and the salt formation, are cemented to surface. The intermediate casing may be set deeper than the base of the salt. The requirement for the third casing string is that it tie-back a minimum of 500 feet into the next larger casing string.

**R-111-P**—Casing design is for three or four strings of casing. With three casing strings, all will be cemented to surface. With four casing strings, the fourth casing string will have a tie-back of at least 500 feet into the next larger casing. The first casing protects surface water; the second casing is a salt string and is set within 100 to 600 feet of the salt base. The third and possibly fourth casings are producing casings.

The proposed disposal well is not within R-111-P and will not require R-111-P casing design. The original casing is still in the hole and first two strings were cemented to the surface. The proposed disposal well's intermediate casing will be squeezed and circulated to surface.

**Determination**

Considering the above analysis, it has been determined that the re-entry of this well satisfies all conditions of the Secretary's 1986 Potash Order and the applicable oil and gas development stipulations. The re-entry of the proposed well is in accordance with applicable oil and gas operating regulations, including such requirements as necessary to prevent the

infiltration of oil, gas or water into formations containing potash deposits or into mines or workings being utilized in the extraction of such deposits. Disposing at this location will not result in undue waste of potash deposits, nor will it constitute a hazard to or unduly interfere with mining operations being conducted for the extraction of potash deposits. Unitization is not applicable because the adjoining lease is open to oil and gas drilling.

This APD was evaluated with consideration of Instruction Memorandum No. NM-2011-003, titled: *Interim Processing Guidelines, Oil and Gas Applications for Permit to Drill (APDs) within the "Secretary's Designated Potash Area" (Potash Area), Carlsbad Field Office.*

**Recommendation of Bran SWD No. 1**

The APD was evaluated using the above findings and is recommended for **approval** at the requested location. A well re-entered for disposal of produced water at the proposed location will not result in the undue waste of potash deposits, and will not constitute a hazard to or unduly interfere with mining operations being conducted for the extraction of potash deposits.

See Attachments:

Date: 07/29/2011

James Rutley
Geologist

**Concurrence of Recommendation of Bran SWD No. 1**

Date: 7/29/11

James Stovall
Field Manager

Date:

Jesse J. Juen
Acting State Director

UNITED STATES DEPT OF INTERIOR

BUREAU OF LAND MANAGEMENT

BOND ABSTRACT

BLM BOND NO: NMB000612
DOCUMENT ID: LOC90409
CASE TYPE: 310434 O&G BOND ALL LANDS

DISPOSITION: ACCEPTED

**NAME AND ADDRESS OF BOND PARTIES**

B20040168 BONDED PRINCIPAL
MESQUITE SWD INC
PO BOX 1479
CARLSBAD NM 882211479

**NAME AND ADDRESS OF SURETY PARTIES**

**SERIAL NUMBER(s):**

BOND AREA: STATEWIDE
TYPE OF LAND: FEDERAL-PUBLIC
BOND TYPE LETTER OF CREDIT

STATES COVERED: NM
BOND AMOUNT: $25,000

**BONDED ACTIVITY/PURPOSE**

GENERAL LSE/DRILLING
PROTECTION SURFACE OWNER
EXPLORATION
OPERATOR

**COMMODITY(IES)**

OIL & GAS L

| ACTION CODE | ACTION DATE | ACTION TAKEN | ACTION REMARKS | PENDING |
|---|---|---|---|---|
| 468 | 09/08/2009 | BOND FILED | | NM09210 |
| 112 | 09/18/2009 | ADDTL INFO RQSTD | CORPORATE SEAL | |
| 113 | 09/21/2009 | ADDTL INFO RECD | | |
| 469 | 09/21/2009 | BOND ACCEPTED | EFF 08/18/2009; | |
| 974 | 09/21/2009 | AUTOMATED RECORD VERIF | JS | |

**GENERAL REMARKS**

| LINE # | REMARK |
|---|---|
| 001 | - |
| 002 | FINANCIAL INSTITUTION THE CARLSBAD NATIONAL BANK |
| 003 | 202 WEST STEVENS, CARLSBAD, NM 88221 |

Mesquite SWD, Inc.
Bran SWD #1
API: 3001525697
Sec. 11, T24S-R31E Eddy Co., NM

Original survey plat 30-015-25697 updated from NM OCD digital file
GL 3552'

NEW MEXICO OIL CONSERVATION COMMISSION
WELL LOCATION AND ACREAGE DEDICATION PLAT

Form C-102
Supersedes C-128
Effective 14-65

All distances must be from the outer boundaries of the Section.

| Operator | Lease | Well No. |
|---|---|---|
| Mesquite SWD, Inc. | Bran SWD | 1 |

| Unit Letter | Section | Township | Range | County |
|---|---|---|---|---|
| P | 11 | 24 South | 31 East | Eddy |

Actual Footage Location of Well: 660 feet from the East line and 660 feet from the South line

| Ground Level Elev. | Producing Formation | Pool | Dedicated Acreage: |
|---|---|---|---|
| 3552. | Delaware | | NA Acres |

1 Outline the acreage dedicated to the subject well by colored pencil or hachure marks on the plat below.

2. If more than one lease is dedicated to the well, outline each and identify the ownership thereof (both as to working interest and royalty).

3 If more than one lease of different ownership is dedicated to the well, have the interests of all owners been consolidated by communitization, unitization, force-pooling. etc?

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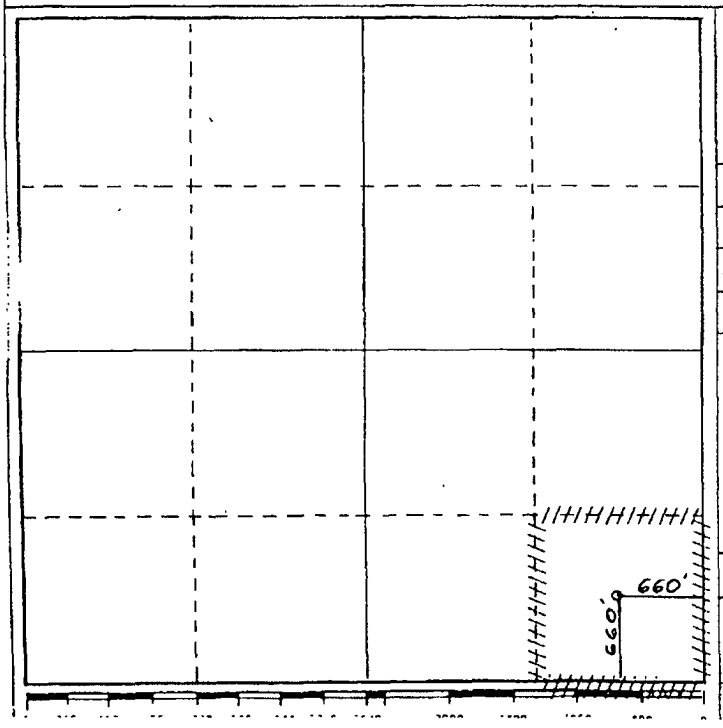
DEC -5 1986
O. C. D.
ARTESIA, OFFICE

☐ Yes ☐ No If answer is "yes," type of consolidation _____

If answer is "no," list the owners and tract descriptions which have actually been consolidated. (Use reverse side of this form if necessary.) _____

No allowable will be assigned to the well until all interests have been consolidated (by communitization, unitization, forced-pooling, or otherwise) or until a non-standard unit, eliminating such interests, has been approved by the Commission.




CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief.

Kay Havenor

Name: Kay Havenor
Position: Agent
Company: Mesquite SWD, Inc
Date: 11/12/2010

DAN R. REDDY NEW MEXICO 5412 REGISTERED PROFESSIONAL ENGINEER AND LAND SURVEYOR

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 knowledge and belief.

Date Surveyed: November 5, 1986
Registered Professional Engineer and/or Land Surveyor
Dan R Reddy
Certificate No. NM PE&LS NO 5412

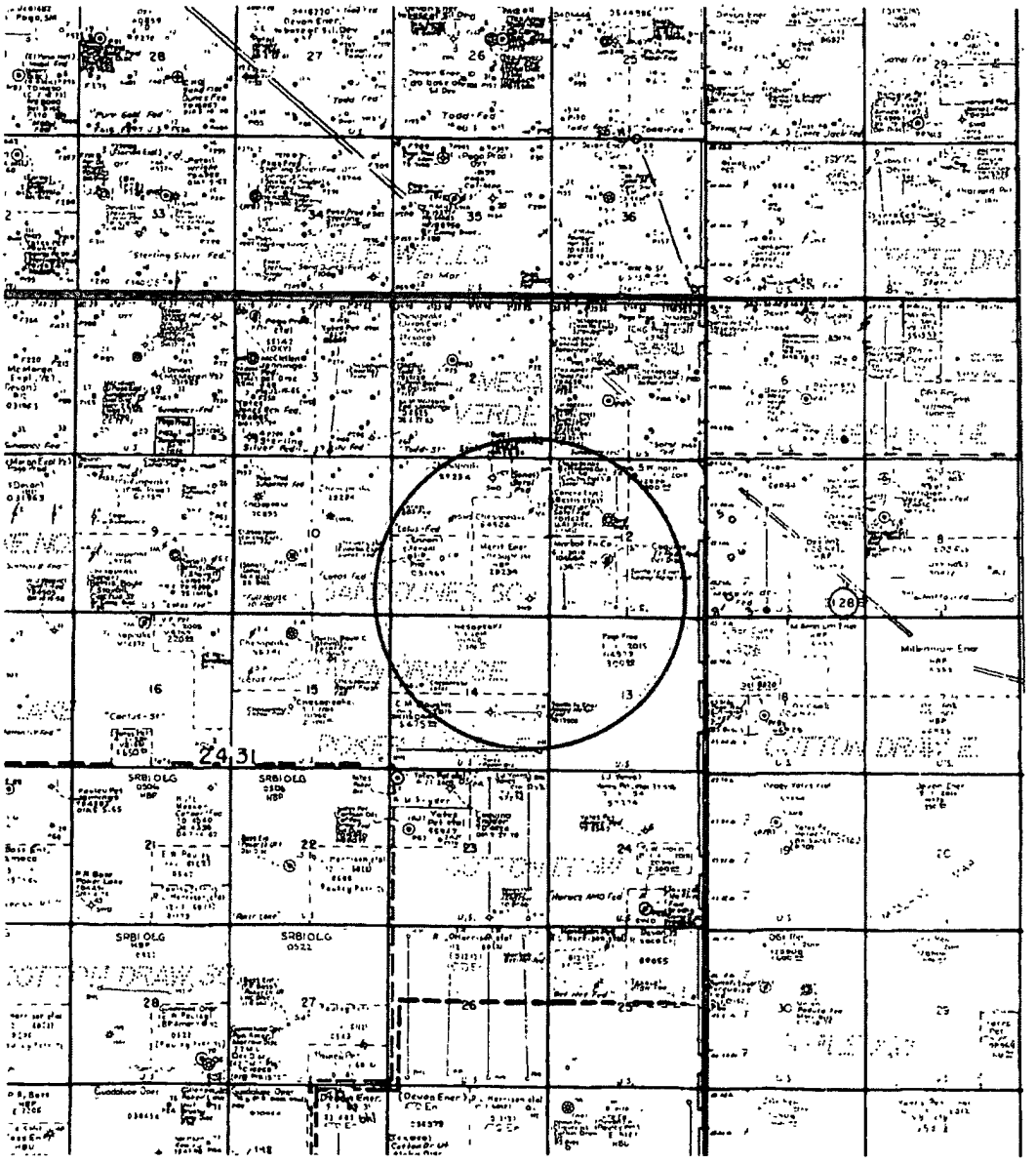
Mesquite SWD, Inc.
Bran SWD #1
API: 3001525697
Sec. 11, T24S-R31E Eddy Co., NM

Wells in one-mile radius

Mesquite SWD, Inc.

One-mile AOR

Bran SWD #1 Sec. 11-T24S-R31W, Eddy Co. NM



# Mesquite SWD, Inc.
## Re-Entry and Operations Program

Bran SWD #1
Sec. 11, T24S-R31E
Eddy Co., New Mexico

Incorporated with BLM Form 3160-3, Application to Re-Enter the subject well, Mesquite SWD submits the following twelve items pursuant to BLM requirements.

1. **Geological Name of Surface formation:**

   Permian

2. **The measured tops of geologic markers:**

   From borehole log:

| | |
|---|---|
| Rustler | 772' |
| Top Salt | 920' |
| Base Salt | 4268' |
| Lamar Lime | 4494' |
| Bell Canyon | 4550' |
| Cherry Canyon | 5996' |

3. **Estimated Depths of Anticipated Fresh Water, Oil or Gas**: None in this well.

4. The formations exposed below7" casing to TD are not expected to yield oil, gas, or fresh water in measurable quantities. Potential surface fresh water sands will be protected by existing 8-5/8" surface casing and circulating cement to the surface on the 7" casing to be set at 4300'.

5. **Casing Program:** Currently in hole, no casing pulled.

| Hole Size | Casing | Depth Set | Cement | Top Cement |
|---|---|---|---|---|
| 12-1/4" | 8-5/8" 24# | 410' | 250 sx | Circulated |

Proposed Casing:

| Hole Size | Interval | OD Casing | New* | Wt | Connection | Grade | Collapse Design Factor | Burst Design Factor | Tension Design Factor |
|---|---|---|---|---|---|---|---|---|---|
| 7 7/8" | 0-4300' | 7" Flush Joint | New* | 23# | FL-4S | J-55 | 1.125 | 1.125 | 1.5 |
| 7 7/8" | 0-4850' | 5½ Flush Joint | New* | 17# | FL-4S | J-55 | 1.125 | 1.125 | 1.5 |

Below BLM minimum

SEE COA

*New or White Band (used certified to API standards). See design specifications attached below.

Clean-out to TD 6794' w/7-7/8" bit. Spot 100 sx cement plug in OH 4500' to 4900', tag. Flush Joint 7" 23# J-55 at 4300' and cement to surface. Drill cement plug to 4850' set Flush Joint 5-1/2" 17# at 4850' and cement to surface.

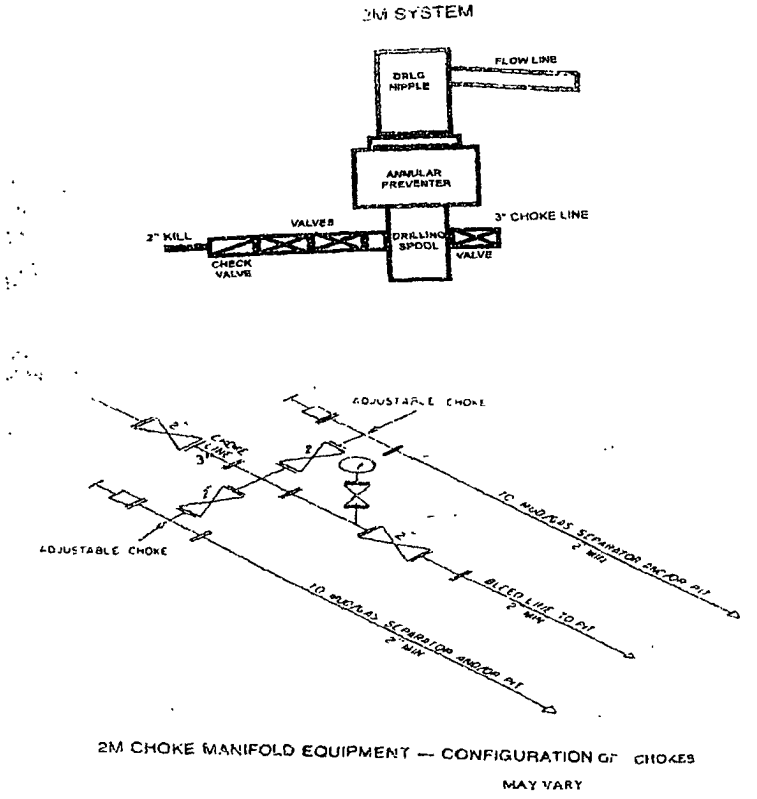
**6. Cement and Setting Depth:**

See COA

Float and set 7" at 4300'. Cement with 285 sxs Class C+1% $CaCl_2$ +0.25% R-3, density 14.80#/gal, yield 1.34 cu.ft/sx, 115.94 bbls, circulate to surface. Calculates 25% excess.

Cement 5-1/2" lead with 350 sxs Class C 35/65 + 6% Bentonite + 0.25% R-39 +3% salt (BWOW), density 14.80#/gal, 1.86 cu.ft/sx yield, 115.94 bbls; tail 200 sxs Class C + 0.25% R-38, density 14.80#/gal, 1.33cu.ft/sx yield, 47.26 bbls., circulate to surface. Calculates 25% excess.

**7. Pressure Control Equipment:**




2M CHOKE MANIFOLD EQUIPMENT — CONFIGURATION OF CHOKES MAY VARY

Nipple-up on 8/5/8" casing with 2M system and test to 2000# with independent tester.

**8. Proposed Mud Circulation System:**

Fresh water 8.4 lbs/gal, viscosity 29 will be used for the re-entry mud system to base of 8-5/8" plug, 0' - 405'. Brine 9.9 to 10.0 will be used from 405' to clean-out to TD 6974' After cementing 7" csg @4300' mud system will be cut brine 9.0 through cementing 5-1/2" csg @4850' and circulating to TD. Drilling and returned circulation will be from and to surface closed loop system. No earthen mud or reserves pits will be constructed or used for this re-entry. Drilling fluids will be trucked to a certified disposal facility upon completion of re-entry operations. Cement cuttings and formation fragments will be removed to a certified disposal facility.

**9. Auxiliary Well Control and Monitoring Equipment:**

a. A Kelly cock will be installed in the drill string at all times.
b. Operational $H_2S$ detection equipment will be on the rig. Note: No $H_2S$ was encountered when hole originally drilled.

**10. Logging, Coring and Testing Program:**

No logging, coring or testing is anticipated.

**11. Potential Hazards:**

No abnormal pressures or temperatures were encountered in the original drilling of the well.
No $H_2S$ was reported in the original drilling of the well.
No lost circulation was encountered in the original drilling of the well.
Calculated BHP = 2826 psi
Measured BHT = 115°F

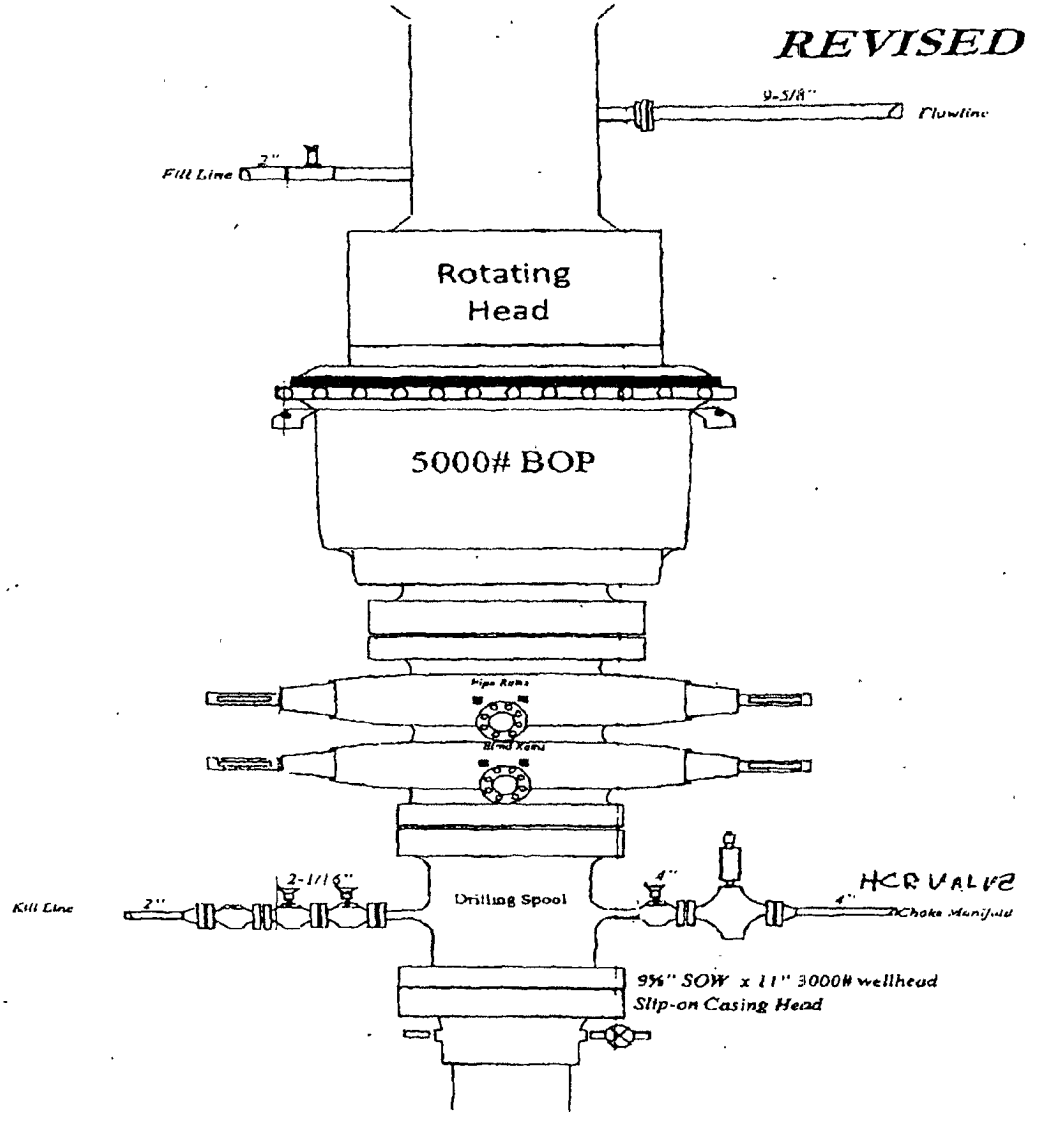
**12. Anticipated Starting Date and Duration of Operations:**

Road and location remediation will begin after the BLM has approved the APD. Anticipated spud date will be as soon after BLM approval as a rig and equipment is available. Move-in and re-entry is expected to require approximately 15 days.

Statement as to potential productivity of Bran SWD #1:

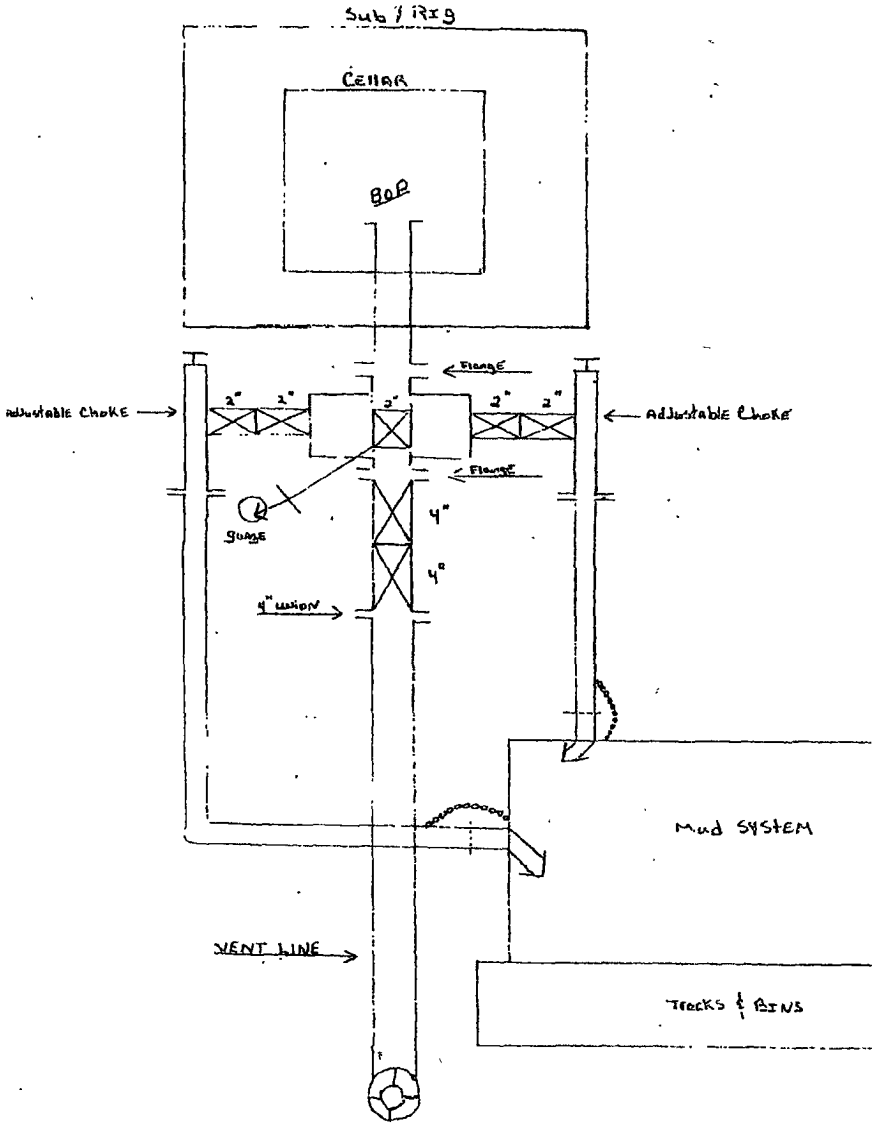
The Bran well was drilled for Bell Canyon and Cherry Canyon oil/gas and was found to not have potential productivity. This is supported by other nearby wells not finding or developing oil/gas production in the correlative zones. The current lease operator, Chesapeake, has not considered these zones to have potential productivity and has encouraged conversion to SWD. This well was originally plugged and abandoned as a dry hole.

BOP - Manifold



BOP will be operationally checked each 24 hour period. BOP will be operationally checked on each trip out of the hole. These checks will be noted on the daily tour sheets. A 2" kill line and a 3" choke line will be included in the drilling spool located below the BOP. Other accessories to the BOP equipment will include a Kelly cock and floor safety valve (inside BOP) and choke lines and choke manifold with 2000 psi working pressure rating.

Choke Manifold Equipment




Vent line will extend to pad margin to provide sufficient distance, approximately ~~90'~~ 100' to flare boom, from any ignition source in the event natural gas should be encountered. No gas was encountered to TD in the original drilling of the hole.

FL-4S CASING CONNECTION SPECIFICATIONS

| | | Plain | | Nominal | | Pin | | Critical | |
|---|---|---|---|---|---|---|---|---|---|
| | Nom' | End | Wall | Inside | Drift | I.D. | Make-Up | Area of | Tensile |
| Size OD | Weight | Weight | Thickness | Diameter | Diameter | Bored | Loss | Connection | Efficiency |
| Inches | Lbs/Ft | Lbs/Ft | Inches | Inches | Inches | Inches | Inches | Sq. Inch | % |
| | | | | | | | | | |
| 7 | 23 | 22.63 | 0.317 | 6.366 | 6.241 | 6.261 | 2.178 | 3.493 | 52.5 |
| 5-1/2 | 17 | 16.87 | 0.304 | 4.892 | 4.767 | 4.817 | 2.148 | 2.607 | 52.5 |

Flush Joint casing pressure/strength ratings

| Size OD | Nom Weight | Grade | Drift ID | Collapse | Internal Yield | Joint Strength |
|---|---|---|---|---|---|---|
| Inches | Lbs/Ft | API | Inches | PSI | PSI | 1000 lbs |
| 7 | 23 | J-55 | 6.250 | 3270 | 4360 | 499 |
| 5-½ | 17 | J-55 | 4.653 | 4910 | 5320 | 372 |

Flush Joint connectors are all FL-4S. All test and certification data will be present when delivered.

Safety factors for this 7" pipe at 4300', 5-½ at 4850' and comparison to API safety factors:

| Size OD Inches | Weight Lbs/Ft | Collapse Safety | Collapse API | Burst Safety | Burst API | Tension Safety | Tension API |
|---|---|---|---|---|---|---|---|
| 7 | 23 | 1.521 | 1.25 | 1.80 | 1.0 | 3.36 | 1.5 |
| 5-½ | 17 | 2.025 | 1.125 | 2.19 | 1.0 | 3.01 | 1.5 |

Safety factors for the Flush Joint pipe to be utilized significantly exceeds API minimum standards.

See pipe supplier's data and safety factors for this specific pipe below.

Smith Bros Pipe, Midland, TX pipe specifications for this job :

7" to be set at 4,300'. Note: This pipe is API. All parameters utilized are the same for both J-55 and K-55.

**Design Parameters:**

| | | |
|---|---|---|
| Mud weight ( 9.63 ppg) | : 0.500 | psi/ft |
| Shut in surface pressure | : 2425 | psi |
| Internal gradient (burst) | : 0.000 | psi/ft |
| Annular gradient (burst) | : 0.000 | psi/ft |

Tensile load is determined using air weight

Service rating is "Sweet"

**Design Factors:**

| | | |
|---|---|---|
| Collapse | : 1.125 | |
| Burst | : 1.00 | |
| 8 Round | : 1.80 | (J) |
| Buttress | : 1.60 | (J) |
| Other | : 1.50 | (J) |
| Body Yield | : 1.50 | (B) |

| | Length (feet) | Size (in.) | Weight (lb/ft) | Grade | Joint | Depth (feet) | Drift (in.) | Cost |
|---|---|---|---|---|---|---|---|---|
| 1 | 4,300 | 7.000 | 23.00 | K-55 | AB FL-4S | 4,300 | 6.250 | |

| | Collapse Load (psi) | Collapse Strgth (psi) | S.F. | Burst Load (psi) | Min Int Yield Strgth (psi) | S.F. | Tension Load (kips) | Tension Strgth (kips) | S.F. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 2150 | 3270 | 1.521 | 2425 | 4360 | 1.80 | 98.90 | 332 | 3.36 J |

Prepared by : , Artesia, New Mexico
Date : 05-14-2011
Remarks :

Minimum segment length for the 4,300 foot well is 1,000 feet.

Surface/Intermediate string:

Next string will set at 4,650 ft. with 9.63 ppg mud (pore pressure of 2,425 psi.) The frac gradient of 0.750 psi/ft at 4,300 feet results in an injection pressure of 3,225 psi Effective BHP (for burst) is 2,425 psi.

NOTE: The design factors used in this casing string design are as shown above. As a general guideline, Lone Star Steel recommends using minimum design factors of 1.125 - Collapse (with evacuated casing), 1.0 - Burst, 1.8 - 8 Round Tension, 1.6 - Buttress Tension, and 1.5 - Body Yield. Collapse strength under axial tension was calculated based on the Westcott, Dunlop and Kemler curve. Engineering responsibility for use of this design will be that of the purchaser.

Smith Bros Pipe, Midland, TX pipe specifications for this job :

5-½" to be set at 4,850'. Note: This pipe is API. All parameters utilized are the same for both J-55 and K-55.

**Design Parameters:**

| | | |
|---|---|---|
| Mud weight ( 9.63 ppg) | : 0.500 | psi/ft |
| Shut in surface pressure | : 2425 | psi |
| Internal gradient (burst) | : 0.000 | psi/ft |
| Annular gradient (burst) | : 0.000 | psi/ft |
| Tensile load is determined using air weight | | |
| Service rating is "Sweet" | | |

**Design Factors:**

| | | |
|---|---|---|
| Collapse | : 1.125 | |
| Burst | : 1.00 | |
| 8 Round | : 1.80 | (J) |
| Buttress | : 1.60 | (J) |
| Other | : 1.50 | (J) |
| Body Yield | : 1.50 | (B) |

| | Length (feet) | Size (in.) | Weight (lb/ft) | Grade | Joint | Depth (feet) | Drift (in.) | Cost |
|---|---|---|---|---|---|---|---|---|
| 1 | 4,850 | 5.500 | 17.00 | K-55 | AB FL-4S | 4,850 | 4.767 | |

| | Collapse Load (psi) | Collapse Strgth (psi) | Collapse S.F. | Burst Load (psi) | Min Int Yield Strgth (psi) | Burst S.F. | Tension Load (kips) | Tension Strgth (kips) | Tension S.F. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 2425 | 4910 | 2.025 | 2425 | 5320 | 2.19 | 82.45 | 248 | 3.01 J |

Prepared by : , Artesia, New Mexico
Date : 05-14-2011
Remarks :

Minimum segment length for the 4,850 foot well is 1,000 feet.
The mud gradient and bottom hole pressures (for burst) are 0.500 psi/ft and 2,425 psi, respectively.

NOTE: The design factors used in this casing string design are as shown above. As a general guideline, Lone Star Steel recommends using minimum design factors of 1.125 - Collapse (with evacuated casing), 1.0 - Burst, 1.8 - 8 Round Tension, 1.6 - Buttress Tension, and 1.5 - Body Yield. Collapse strength under axial tension was calculated based on the Westcott, Dunlop and Kemler curve. Engineering responsibility for use of this design will be that of the purchaser.

Proposed completion Bran SWD #1

## Re-entry - Completion Diagram

API: 3001525697
Operator: Mesquite SWD, Inc.
Lease: Bran SWD
Location: Sec 11, T24S-R31E Eddy Co., NM
Footage: 660 FSL, 660 FEL

Well No: 1

KB: 3626
GL: 3606

***Surface Csg***

| | |
|---|---|
| Size: | 8-5/8" 24# |
| Set @: | 410 |
| Sxs cmt. | 250 |
| Circ: | 12 sx |
| TOC: | Surface |
| Hole Size: | 12-1/4" |

***Intermediate Csg Proposed***

| | |
|---|---|
| Size: | 7" 23# J-55 Extreme line |
| Set @: | 4300 |
| Sxs cmt: | 285 |
| Circ: | Circ to Surface |
| TOC: | Surface |
| Hole Size: | 7-7/8" |

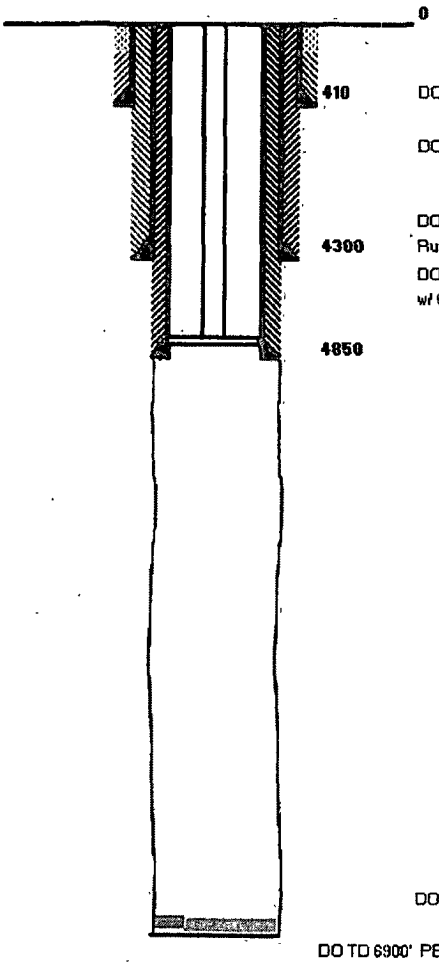
***Production Csg Proposed***

| | |
|---|---|
| Size: | 5-1/2" 15.5# J-55 Flush jt. |
| Set @: | 4850' |
| Sxs cmt: | 550 |
| Circ: | Circ to Surface |
| TOC: | Surface |
| Hole Size: | 7-7/8" |

Note: Original OH drilled w/ 7-7/8" bit

Tubular requirements (made-up).
4800' 3-1/2" N80 9.3# upset Fiberglass coated
Lok-Set Packer set approx 4800'

Acidized selectively
Load tubing annulus w/corrosion inhibitor
Complete surface head for disposal




DO cmt plug surf - 472'

DO OH cmt plug 800-1100'

DO 3970-4570 OH plug to 4300'
Run 7", cmt to surf, test csg
DO remaining plug 4300-4570'
w/ 6-1/8" bit CO/DO to 6900'

DO orig cmt plug 6600-6794'

DO TD 6900' PB w/35 sx to 6794'

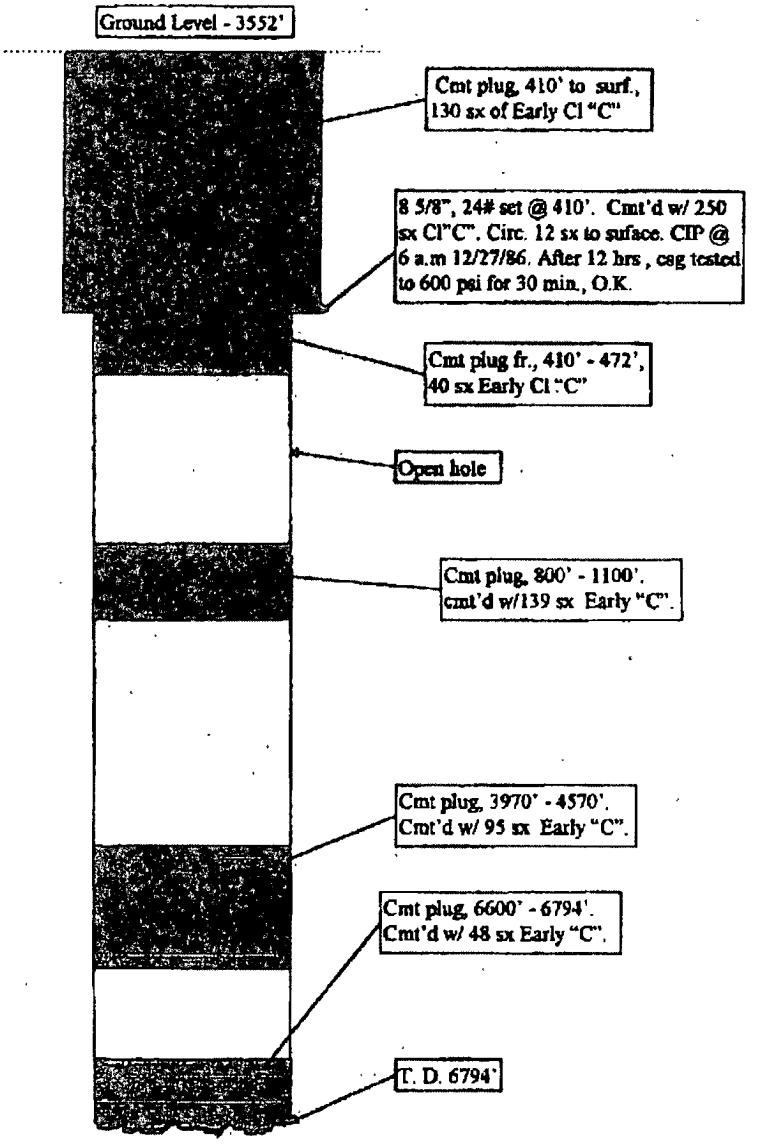
Not to Scale

Original Bran P&A diagram

Present

BRAN-BETTIS FEDERAL #1
OPERATOR - BRAN OIL CORPORTATION
660' FSL & 660' FEL, Section 11
T24S - R31E, NMPH
Eddy County, New Mexico

Spud - 12/26/86
P&A'D 1/9/87



## HYDROGEN SULFIDE DRILLING OPERATIONS PLAN

### I. HYDROGEN SULFIDE TRAINING

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

A. The hazards and characteristics of hydrogen sulfide ($H_2S$).

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

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

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

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

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

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

C. The contents and requirements of the $H_2S$ Drilling Operations Plan and the Public Protection Plan.

There will be an initial training session just prior to encountering a known or probable $H_2S$ 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 and the Public Protection Plan. This plan shall be available at the well site. All personnel will be required to carry documentation that they have received the proper training.

## 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:

Flare line.

Choke manifold.

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

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

B. Protective equipment for essential personnel:

Mark II Surviveair 30-minute units located in the dog house and at briefing areas.

C. $H_2S$ detection and monitoring equipment:

2 - portable $H_2S$ monitor 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.

D. Visual warning systems:

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

E. Mud Program:

**EMERGENCY CALL LIST**

| | |
|---|---|
| Mesquite SWD, Inc. | 575-885-3996 |
| Clay Wilson | 575-706-1840 |
| Kay Havenor | 575-626-4518 |

**EMERGENCY RESPONSE NUMBERS**

| | |
|---|---|
| State Police | 575-748-9718 |
| Eddy County Sheriff | 575-746-2701 |
| Emergency Medical Services | 911 or 575-746-2701 |
| Artesia Fire and Ambulance | 575-746-5050 |
| Maljamar Fire and Ambulance | 575-674-4100 |
| Artesia General Hospital | |
| 702 N. 13th St. Artesia | 575-748-3333 |
| Carlsbad Medical Center | |
| 2430 West Pierce Street | 575-887-4100 |
| Carlsbad Police Department | 575-885-2111 |
| Eddy County Emergency Management | 575-887-9511 |
| Carlsbad Fire Department | 575-885-3125 |