CARLSBAD CONTROLLED WATER BASIN ROPOSED CASING AND CEMENTING PROGRAM BOUT BOCO 388

| SIZE OF HOLE | GRADE SIZE OF CASING | WEIGHT PER FOOT | SETTING DEPTH | QUANTITY OF CEMENT | |
|--------------|--------------------------|-----------------|---------------|-------------------------------|--|
| 2511 | Conductor | NA | 40'' | Cement to surface W/Redi-mix. | |
| 17½" | н-40 13 3/8" | 48# | 550 ' | 350 Sx. Circulate cement | |
| 121" | J-55 9 5/8" | 40# | 2860' | 1000 Sx. " " | |
| 8½" & 7 7/ | $8'N-80 	 5\frac{1}{2}"$ | 17# | 10,800' | 900 Sx. TOC Est 2900' FS | |

- 1. Drill 26" hole to 40'. Set 40' of 20" conductor pipe and cement to surface with Redi-mix.

 SUBJECT TO LIKE APPROVAL BY STATE
- 2. Drill $17\frac{1}{2}$ " hole to 550' with fresh water. Run and set 550' of 13 3/8" 48# H-40 ST&C casing. Cement with 150 Sx. of 65/35/6 Class "C" POZ/GEL, tail in with 200 Sx. of Class "C" cement + 2% CaCl, + $\frac{1}{4}$ # Flocele/Sx. Circulate cement to surface.
- 3. Drill 12½" hole to 2900' with brine water. Run and set 2860' of 9 5/8" 40# J-55 LT&C casing. Cement with 800 Sx. of 65/35/6 Class "C" POZ/GEL + 5% Salt, tail in with 200 Sx. of Class "C" cement + 2% CaCl, + ½# Flocele/Sx. circulate cement to surface, volumes of cement may be changed after fluid caliper is run.
- 4. Drill 8½" hole to 8200', log well plug back to 7225' for kick-off point, drill 8½" hole to 7730'± through curve. Change to a 7 7/8" bit and drill to TD of 10,800' MD. Run and set 10,800' of 5½" 17# N-80 LT&C & BTC. Cement with 900 Sx. of Class "C" Premium cement + additives, mixed at 15.7 PPG. Estimate top of cement 2900' from surface.

IN ABOVE SPACE DESCRIBE PROPOSED PROGRAM: If proposal is to deepen, give data on present productive zone and proposed new productive zone. If proposal is to drill or deepen directionally, give pertinent data on subsurface locations and measured and true vertical depths. Give blowout preventer program, if any.

| 24. | |
|--|--------------------------------------|
| SIGNED TO THE STATE OF THE STAT | Ngent 09/01/06 |
| APPROVAL MISTECT TO | |
| THE CURRENTS | SEE ATTACHED FOR |
| FRUAND SPECIAL STIPULATIONS | APPROVAL DATE CONDITIONS OF APPROVAT |
| YERMAND SPECIAL STIPULATIONS | APPROVAL DATE CONDITIONS OF APPROVAL |

Applicant productions of applicant or certify that the applicant holds legal or equitable title to those rights in the subject lesse which would entitle the applicant to conduct operations thereon.

CONDITIONS OF APPROVAL IF ANY:

| | /s/ Don Peterson | ACTING FIELD MANAGER | MAR 2 2 2007 |
|-------------|------------------|----------------------|--------------|
| APPROVED BY | | THE ACING | ATE |

State of New Mexico

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

Energy, Minerals and Natural Resources Department

▼ DISTRICT II

1301 W. GRAND AVENUE, ARTESIA, NW 88210

DISTRICT III 1000 Rio Brazos Rd., Aztec, NM 87410 OIL CONSERVATION DIVISION 1220 SOUTH ST. FRANCIS DR. Santa Fe, New Mexico 87505

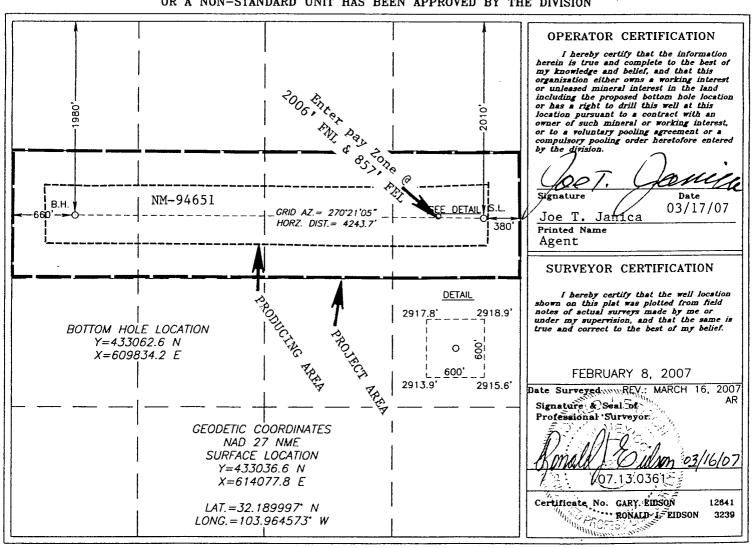
Form C-102 Revised October 12, 2005 Submit to Appropriate District Office State Lease - 4 Copies Fee Lease - 3 Copies

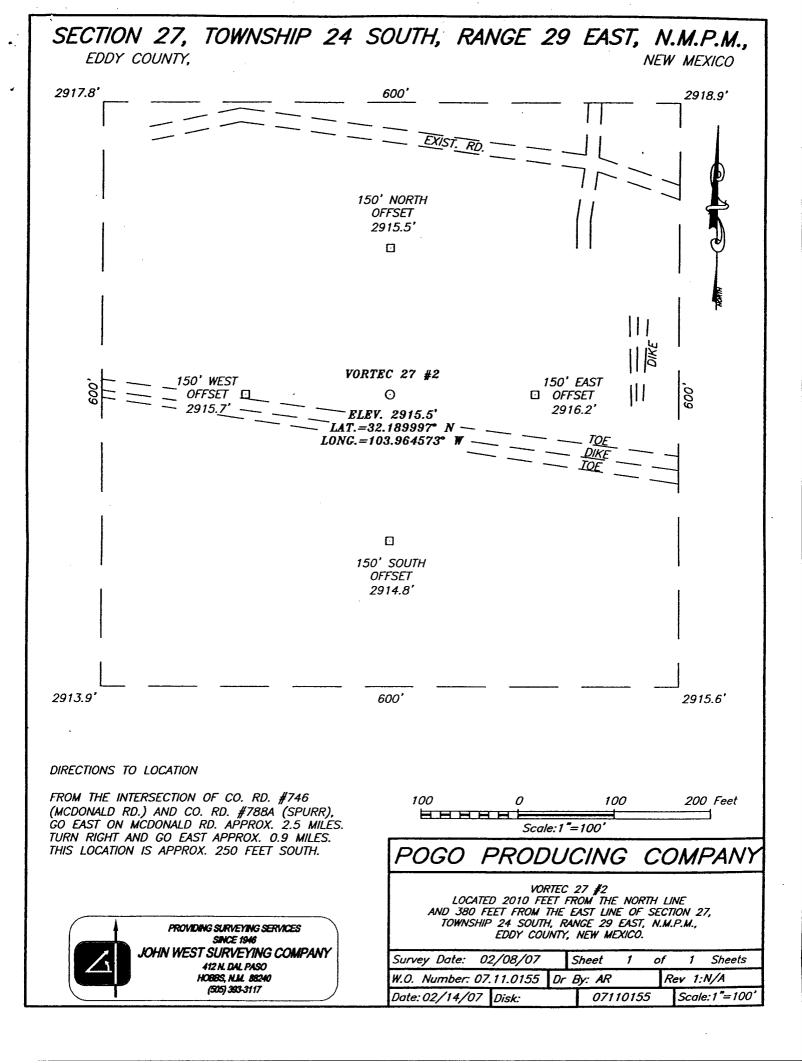
DISTRICT IV WELL LOCATION AND ACREAGE DEDICATION PLAT ☐ AMENDED REPORT 1220 S. ST. FRANCIS DR., SANTA FE, NM 87505 API Number Pool Code Pool Name PIERCE CROSSING-BONE SPRING EasT Property Code Property Name Well Number VORTEC 27 2 OGRID No. Operator Name Elevation POGO PRODUCING COMPANY 017891 2915

Surface Location UL or lot No. Section Lot Idn Feet from the Bast/West line Township Range North/South line Feet from the County Η 27 24-S 29-E 2010 NORTH 380 **EAST EDDY**

Bottom Hole Location If Different From Surface UL or lot No. Section Lot Idn Feet from the Township Range North/South line East/West line Feet from the County Ε 27 24 - S29-E 1980 NORTH 660 WEST **EDDY** Dedicated Acres Joint or Infill Consolidation Code Order No. 160

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





37

38

100

100

92

92

270.4054

270.4054

10775.00

10875.00

7606.49

7603.00

23.18

23.88

-3275.72

-3375.65

0.00

0.00

COPYRIGHT 1990 MITCHELL ENGINEERING, PO BOX 1492. GOLDEN, CO, 80402, USA (303) 273 3744

LONG'S METHOD OF SURVEY COMPUTATION

OBLIQUE CIRCULAR ARC INTERPOLATION DISTANCE TABLE MD OF INTERPOLATION DEPTH, (feet) STATION A STATION B 0 #N/A TVD COORDINATE OF THE DEPTH (feet) #N/A N/S COORDINATE OF DEPTH (feet) #N/A E/W COORDINATE OF DEPTH (feet) 3 D DISTANCE BETWEEN STATION A AND STATION B 0.00 **TABLE OF SURVEY STATIONS** Calculator = STA ΔMD INCL AZIM MD TVD N+/S-E+/W-DLS deg/100FT TIE POINT = 7225.00 7225.00 0.00 0.00 1 O O 2 100 12 270.4054 7325.00 7324.27 0.07 -10.43 12.00 3 100 24 270.4054 7425.00 7419.20 0.29 -41.28 12.00 100 36 4 270,4054 7525.00 0.65 -91.19 12.00 7505.65 5 100 48 270.4054 7625.00 7579.83 1.12 -157.97 12.00 6 100 60 270.4054 7725.00 7638.50 1.69 -238.73 12.00 7 100 72 270.4054 7825.00 7679.10 2.33 -329.9112.00 8 100 7925.00 12.00 84 270,4054 7699.85 3.03 -427.55 9 50 90 270.4054 7975.00 7702.46 3.38 -477.45 12.00 10 100 92 270.4054 8075.00 7700.72 4.09 -577.43 2.00 11 100 92 270.4054 8175.00 7697.23 4.79 -677.37 0.00 12 100 92 270,4054 8275.00 7693.74 5.50 -777.30 0.00 13 100 92 270,4054 8375.00 6.21 0.00 7690.25 -877.24 14 100 92 270.4054 8475.00 7686.76 6.91 -977.18 0.00 15 100 92 270.4054 8575.00 7683.27 7.62 -1077.11 0.00 16 100 8675.00 7679.78 8.33 -1177.05 92 270.4054 0.00 17 100 92 270.4054 9.04 8775.00 7676.29 -1276.99 0.00 18 100 92 270.4054 8875.00 7672.80 9.74 -1376.92 0.00 19 100 92 270.4054 8975.00 7669.31 10.45 -1476.86 0.00 20 100 92 270.4054 9075.00 7665.82 11.16 -1576.80 0.00 21 100 92 270.4054 9175.00 7662.33 11.86 -1676.73 0.00 22 100 92 270.4054 9275.00 7658.84 12.57 -1776.67 0.00 23 100 92 270.4054 9375.00 7655.35 13.28 -1876.61 0.00 24 100 92 270.4054 9475.00 7651.86 13.98 -1976.54 0.00 25 270.4054 7648.37 -2076.48 100 92 9575.00 14.69 0.00 26 100 92 270.4054 9675.00 7644.88 15.40 -2176.42 0.00 27 100 92 270.4054 9775.00 7641.39 16.11 -2276.35 0.00 28 100 92 270.4054 9875.00 7637.90 16.81 -2376.29 0.00 29 100 92 270.4054 9975.00 7634.41 17.52 -2476.23 0.00 30 100 92 270,4054 10075.00 7630.92 18.23 -2576.16 0.00 31 100 92 270.4054 10175.00 7627.43 18.93 -2676.10 0.00 32 100 92 270.4054 10275.00 7623.94 19.64 -2776.03 0.00 33 100 92 270.4054 10375.00 20.35 7620.45 -2875.97 0.00 34 100 92 270.4054 10475.00 7616.96 21.06 -2975.91 0.00 35 100 92 270.4054 10575.00 7613.47 21.76 -3075.84 0.00 36 100 92 270,4054 10675-00 7609.98 22.47 -3175.78 0.00

VORTEC 27 WELL GROUPINGS

Sec 27, T-24-S, R-29-E, Eddy County, New Mexico

| | BH ◆ | #1 |
|-----------|------|-------|
| # 2 BH | #3 | #2 #3 |
| | | |
| | | BH |

| Well Name | Legal Location in 22 | Depth and Strata | Current Prod Zone |
|------------------------|----------------------|----------------------------------|--------------------------|
| VORTEC 27 # 2 | 2010 FNL & 380 FEL | TD = 10,800 Horiz 1st Bone | PROPOSED |
| VORTEC 27 # 1 | 660 FNL & 330 FEL | TD = 10,848' Horiz 1st Bone Sprg | Drilled & Completed |
| VORTEC 27 # 3 | 2010 FNL & 330 FEL | TD= 10,140 Horiz 1st Bone | PROPOSED |
| Mobile 11 Teo 21 | G60;1=31; 8;660;1=WF | 100=3081/celavareas | Drill & Abandoned |
| Cedar Canyon 27 Fd # 3 | 2310 FNL & 1980 FWL | NOT DRILLED | NOT DRILLED |

APPLICATION TO DRILL

POGO PRODUCING COMPANY VORTEC "27" #2 UNIT "H" SECTION 27

T24S-R29E EDDY CO. NM

In response to questions asked under Section II of Bulletin $\,$ NTL-6 the following information on the above well is provided for your consideration.

- 1. Location of well: 330' FEL & 1650' FNL SECTION 27 T24S-R29E EDDY CO. NM
- 2. Ground Elevation above Sea Level: 2918' GR.
- 3. Geological age of surface formation: Quaternary Deposits:
- 4. <u>Drilling tools and associated equipment:</u> Conventional rotary drilling rig using drilling mud as a circulating medium to remove solids from hole.
- 5. Proposed drilling depth: MD-10,800' TVD-7700'
- 6. Estimated tops of geological markers:

| Basal Anhydrite | 2720 ' | Manzanita | 3980' |
|-----------------|---------------|-----------------|---------------|
| Delaware Lime | 2930' | Brushy Canyon | 5050' |
| Bell Canyon | 2960 ' | Bone Spring | 6700 ' |
| Cherry Canyon | 3830' | 1st Bone Spring | 7700 ' |

7. Possible mineral bearing formations:

Bone Spring

Oil

1st Bone Spring Sd

0i1

8. Casing Program:

| Hole Size | Interval | OD of Casing | Weight | Thread | Collar | Grade |
|--------------------|-----------|--------------|--------|----------------|-------------|-----------|
| 26" | 0-40' | 20" | NA | NA | ΝĀ | Conductor |
| $17\frac{1}{2}$ ** | 0-550' | 13 3/8" | 48# | 8-R | ST&C | H-40 |
| 121" | 0-2900' | 9 5/8" | 40# | 8-R | ST&C | J-55 |
| 8 ½'' &7 7/8'' | 0-10,800' | 5½" | 17# | 8-R & Butt. | LT&C BTC | N-80· |

APPLICATION TO DRILL

POGO PRODUCING COMPANY
VORTEC "27" #2
UNIT "H" SECTION 27
T24S-R29E EDDY CO. NM

9. CASING CEMENTING & SETTING DEPTHS:

| 20" | Consuctor | Set 40 ' of 20 " conductor pipe and cement to surface with Redi-mix. |
|---------|--------------|--|
| 13 3/8" | Surface | Set 550' of 13 $3/8$ " $48\#$ H-40 ST&C casing. Cement with 150 Sx. of $65/35/6$ Class "C" POZ/GEL, tail in with 200 Sx. of Class "C" cement + 2% CaCl, circulate cement. |
| 9 5/8" | Intermediate | Set 2900' of 9 $5/8$ " $40\#$ J-55 ST&C casing. Cement with 800 Sx. of $65/35/6$ Class "C" POZ/GEL + 5% Salt, tail in with 200 Sx. of Class "C" cement + 2% CaCl, circulate cement to surface. |
| ; 5½" | Production | Set 10,800' of $5\frac{1}{2}$ " 17# N-80 LT&C & BTC cement with 900 Sx. of Class "C" Premium cement + additives, estimate top of cement 2900'. |

10. PRESSURE CONTROL EQUIPMENT: Exhibit "E" shows a 900 Series 3000 PSI working pressure B.O.P. consisting of an annular bag type preventor, middle blind rams and bottom pipe rams. The B.O.P. will be nippled up on the 13 3/8" casing and tested to API specifications. The B.O.P. will be operated at least once in each 24 hour period and the blind rams will be operated each time the drill pipe is out of the hole on trips. Full opening stabbing valve and upper kelly cock will utilized. Exhibit "E-1" shows a hydraulically operated closing unit and a 3" 3000 PSI choke manifold with dual adjustable chokes. No abnormal pressures or temperatures are expected while drilling this well.

11. PROPOSED MUD CIRCULATING SYSTEM:

| 11. | TROTOGLE HOD CIRCULATING STRIET. | | | | |
|-----|----------------------------------|---------------------------|-------|------------|---|
| | DEPTH | MUD WT. | VISC. | FLUID LOSS | TYPE MUD SYSTEM |
| | 40- _, 550 ' | 8.4-8.7 | 29-32 | NC | Fresh water Spud Mud add paper to control seepage. |
| 5 | 50-2900' | 10.0-10.2 | 29-38 | NC | Brine water use paper to control seepage and high viscosity sweeps to clean hole. |
| 2 | 900-10,800' | 9.0-9.8 | 29-38 | NC* | Cut brine use high viscosity sweeps to clean hole. If water loss control is necessary go to |
| | | control may ng and/or DS: | | y to run | Dris-Pac system. |

Sufficient mud materials will be kept on location at all times in order to combat lost circulation, or unexpected kicks. In order to run DST's, cut cores, run open hole logs and casing, the water loss may have to be reduced in order to get these things done.

APPLICATION TO DRILL

POGO PRODUCING COMPANY
VORTEC "27" #2
UNIT "H" SECTION 27
T24S-R29E EDDY CO. NM

12. LOGGING, CORING, & TESTING PROGRAM:

- A. Open hole logs: Dual Laterolog, SNP, LDT, MSFL, Gamma Ray, Caliper from 8200' back to 9 5/8" casing shoe.
- B. Cased hole logs: Gamma Ray, Neutron from 9 5/8" casing shoe to surface.
- C. Mud logger may be rigged up on the hole at 2900' and ramain on the hole to 8200'.
- D. No cores or DST's are planned at this time.

13. POTENTIAL HAZARDS:

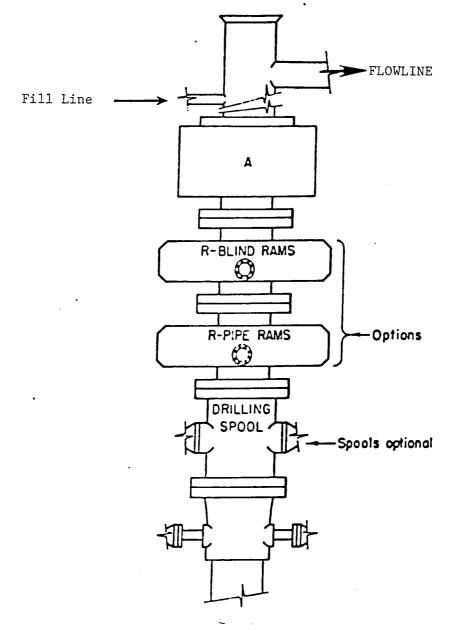
No abnormal pressures or temperatures are expected. There is no known presence of ${\rm H}^2{\rm S}$ in this area. If ${\rm H}^2{\rm S}$ is encountered the operator will comply with the provisions of Onshore Oil and Gas Order No. 6. No lost circulation is expected to occur. All personnel will be familiar with all aspects of safe operation of equipment being used to drill this well. Estimated BHP $\frac{4000\pm}{1000}$ PSI, and Estimated BHT $\frac{180^\circ}{10000}$.

14. ANTICIPATED STARTING DATE AND DURATION OF OPERATION:

Road and location construction will begin after the BLM has approved the APD. Anticipated spud date will be as soon after BLM approval and as soon as a rig will be available. Move in operation and drilling is expected to take 30 days. If production casing is run then an additional 30 days will be needed to complete well and construct surface facilities and/or lay flowlines in order to place well on production.

15. OTHER FACETS OF OPERATIONS:

After running casing, cased hole Gamma Ray, Neutron Collar logs will be run from TD back to all possible productive zones. The <u>Bone Spring</u> formation will be perforated and stimulated in order to establish production. The well will be swab tested and potentialed as an oil well.

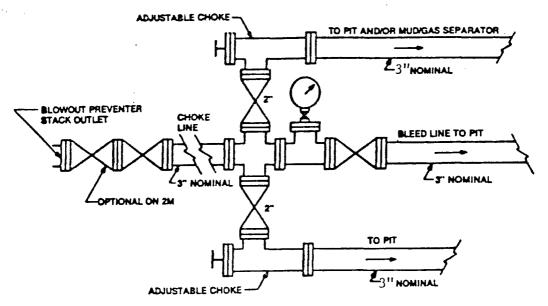


ARRANGEMENT SRRA

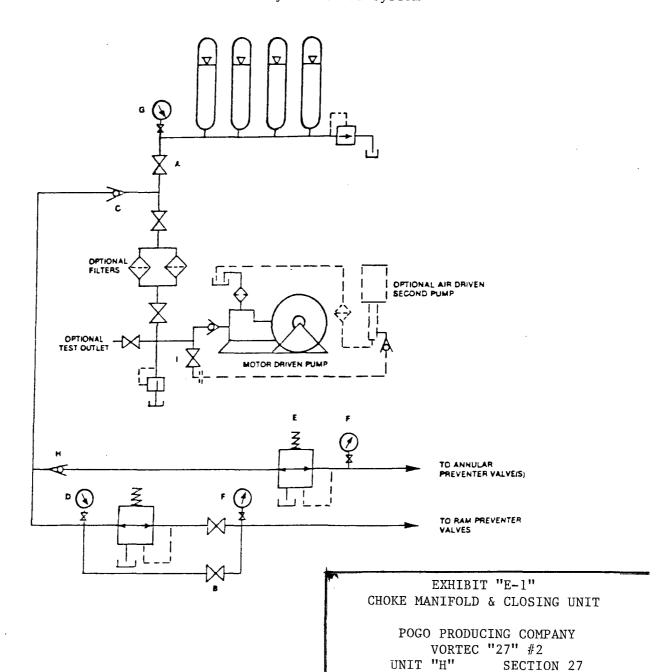
SERIES 900 3000 PSI WP

EXHIBIT "E"
SKETCH OF B.O.P. TO BE USED ON

POGO PRODUCING COMPANY
VORTEC "27"#2
UNIT "H" SECTION 27
T24S-R29E EDDY CO. NM



Typical choke manifold assembly for $3M\ WP\ system$



T24S-R29E

EDDY CO. NM

HYDROGEN SULFIDE DRILLING OPERATIONS PLAN

- 1. All Company and Contract personnel admitted on location must be trained by a qualified H₂S safety instructor to the following:
 - A. Characteristics of H₂S
 - B. Physical effects and hazzards
 - C. Proper use of safety equipment and life support systems.
 - D. Principle and operation of H2S detectors, warning system and briefing areas.
 - E. Evacuation procedure, routes and first aid.
 - F. Proper use of 30 minute pressure demand air pack.
- 2. H₂S Detection and Alarm Systems
 - A. H₂S detectors and audio alarm system to be located at bell nipple, end of blooie line (mud pit) and on derrick floor or doghouse.
- 3. Windsock and/or wind streamers
 - A. Windsock at mudpit area should be high enough to be visible.
 - B. Windsock at briefing area should be high enough to be visible.
 - C. There should be a windsock at entrance to location.
- 4. Condition Flags and Signs
 - A. Warning sign on access road to location.
 - B. Flags to be displayed on sign at entrance to location. Green flag, normal safe condition. Yellow flag indicates potential pressure and danger. Red flag, danger, H₂S present in dangerous concentration. Only emergency personnel admitted to location.
- 5. Well control equipment
 - A. See exhibit "E"
- 6. Communication
 - A. While working under masks chalkboards will be used for communication.
 - B. Hand signals will be used where chalk board is inappropriate.
 - C. Two way radio will be used to communicate off location in case of emergency help is required. In most cases cellular telephoned will be available at most drilling foreman's trailer or living quarters.
- 7. Drillstem Testing
 - A. Exhausts will be watered.
 - B. Flare line will be equipped with an electric ignitor or a propane pilot light in case gas reaches the surface.
 - C. If location is near any dwelling a closed D.S.T. will be performed.

HYDROGEN SULFIDE DRILLING OPERATIONS PLAN

- 8. Drilling contractor supervisor will be required to be familiar with the effects $\rm H_2S$ has on tubular goods and other mechanical equipment.
- 9. If H_2S is encountered, mud system will be altered if necessary to maintain control of formation. A mud gas seperator will be brought into service along with H_2S scavengers if necessary.

CONDITIONS OF APPROVAL-DRILLING

Operator's Name: POGO Producing Company

Well Name & No: Vortec 27 No 02

%-SHL: Dowy FNL & 330 FEL, BHL: 1980' FNL & 640' FWL, Sec.27, T. 24 S., R. 29 E.

Lease: NM 94651

Eddy County, New Mexico

I. DRILLING OPERATIONS REQUIREMENTS:

- 1. The Bureau of Land Management (BLM) is to be notified at the Roswell Field Office, 2909 West Second St., Roswell, NM 88201, (505) 627-0272 for wells in Chaves and Roosevelt Counties; the Carlsbad Field Office, 620 East Greene St., Carlsbad, NM 88220, (505) 361-2822 for wells in Eddy County; and the Hobbs Field Station, 414 West Taylor, Hobbs NM 88240, (505) 393-3612 for wells in Lea County, in sufficient time for a representative to witness:
- A. Spudding
- B. Cementing casing: 13 % inch; 9 % inch; 5 ½ inch.
- C. BOP Tests
- 2. A Hydrogen Sulfide (H2S) Drilling Plan is not required for this well bore.
- 3. 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.
- 4. Submit a Sundry Notice (Form 3160-5, one original and five copies) for each casing string, describing the casing and cementing operations. Include pertinent information such as; spud date, hole size, casing (size, weight, grade and thread type), cement (type, quantity and top), water zones and problems or hazards encountered. The Sundry shall be submitted within 15 days of completion of each casing string. The reports may be combined into the same Sundry if they fall within the same 15 day time frame.
- 5. The API No. assigned to the well by NMOCD shall be included on the subsequent report of setting the first casing string.
- 6. A communitization agreement shall be submitted to this office for approval prior to any sales form this well.

II. CASING:

- 1. The 13 % inch shall be set at 350 Feet with cement circulated to the surface. If cement does not circulate to the surface the appropriate BLM office shall be notified and a temperature survey or cement bond log shall be run to verify the top of the cement. Remedial cementing shall be completed prior to drilling out that string.
- 2. The minimum required fill of cement behind the 9 ½ inch Intermediate casing is to circulate to surface.
- 3. The minimum required fill of cement behind the 5 ½ inch Production casing is to tie back by at least 200 ft.

III. PRESSURE CONTROL:

1. All BOP systems and related equipment shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2. The BOP and related equipment shall be installed and operational before drilling below the 13 % inch casing shoe and shall be tested as described in Onshore Order No. 2. Any equipment failing to test satisfactorily shall be repaired or replaced.

(III Cont):

- 2. Minimum working pressure of the blowout preventer and related equipment (BOPE) shall be 3 M psi.
- 3. The appropriate BLM office shall be notified in sufficient time for a representative to witness the test.
- -The test shall be done by an independent service company
- -The results of the test shall be reported to the appropriate BLM office.
- -Testing fluid must be water or an appropriate clear liquid suitable for sub-freezing temperatures.
- -Use of drilling mud for testing is not permitted since it can mask small leaks.
- -Testing must be done in safe workman-like manner. Hard line connections shall be required.
- -Both <u>low pressure</u> and <u>high pressure</u> testing of BOPE is required.

G. Gourley RFO 09/25/2006