

NEARBURG PRODUCING COMPANY

HYDROGEN SULFIDE (H₂S) CONTINGENCY PLAN
FOR DRILLING / COMPLETING / WORKOVER / FACILITY
WITH THE EXPECTATION OF H₂S IN EXCESS OF 100 PPM

NEARBURG PRODUCING COMPANY
NEW DRILL WELL:

Lea South 25 Federal #1
SL: 1650' FSL & 330' FEL, Unit I
Sec 25, T20S, R34E
Lea County, New Mexico

HOBBS OCD
JUL 12 2017
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This well/facility is not expected to have H₂S, but the following is submitted as requested.

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GENERAL H2S EMERGENCY ACTIONS

In the event of any evidence of H2S emergency, the following plan will be initiated:

1. All personnel will immediately evacuate to an upwind and if possible uphill "safe area."
2. If for any reason a person must enter the hazardous area, they must wear a SCBA (self-contained breathing apparatus).
3. Always use the "buddy system."
4. Isolate the well/problem if possible.
5. Account for all personnel.
6. Display the proper colors warning all unsuspecting personnel of the danger at hand.
7. Contact the company representative as soon as possible if not at the location (use the enclosed call list as instructed).

At this point the company representative will evaluate the situation and coordinate the necessary duties to bring the situation under control, and if necessary, the notification of emergency response agencies and residents.

EMERGENCY PROCEDURES FOR AN UNCONTROLLABLE RELEASE OF H2S

1. All personnel will don the self-contained breathing apparatus.
2. Remove all personnel to the "safe area" (always use the "buddy system").
3. Contact company representative if not on location.
4. Set in motion the steps to protect and/or remove the general public to any upwind "safe area." Maintain strict security and safety procedures while dealing with the source.
5. No entry to any unauthorized personnel.
6. Notify the appropriate agencies:
 - City Police - City streets
 - State Police - State Roads
 - County Sheriff - County Roads
7. Call the NMOCD.

If at this time the supervising person determines the release of H2S cannot be contained to the site location and the general public is in harm's way, he will immediately notify public safety personnel.

EMERGENCY CALL LIST

| | <u>Office</u> | <u>Cell</u> |
|-----------------|-------------------|--------------|
| Wes Stinson | 432-686-8235 | 575-365-6500 |
| Matt Lee | 432-686-8235 | 575-365-6662 |
| Roger King | 432-686-8235 | 575-361-3605 |
| NPC Office | | |
| Emergency Phone | 432-686-8235 x500 | |

EMERGENCY RESPONSE NUMBERS

Lea County, New Mexico

| | |
|---|------------------------------|
| State & City Police - Artesia | 575-746-2703 |
| State Police – Carlsbad | 575-885-3137 |
| City Police – Carlsbad | 575-885-2111 |
| Lea County Sheriff – Artesia | 575-746-9888 |
| Lea County Sheriff - Carlsbad | 575-887-7551 |
| Fire Department – Artesia | 575-746-2701 |
| Fire Department – Carlsbad | 575-887-3798 |
| Local Emergency Planning – Artesia | 575-746-2122 |
| Local Emergency Planning – Carlsbad | 575-887-6544 |
| New Mexico Oil Conservation Division - Artesia | 575-370-3186 |
| Bureau of Land Management - Carlsbad | 575-234-5972 |
| State Emergency Response Center (SERC) – Santa Fe | 505-476-9600 |
| 24 hour | 505-827-9126 |
| NM State Emergency Operations Center | 505-476-9635 |
| National Emergency Response Center (Washington DC) | 800-424-8802 |
| Other: | |
| Boots & Coots IWD | 800-256-9688 or 281-934-8884 |
| Cudd Pressure Control | 432-699-0139 or 432-563-3356 |
| Halliburton | 575-746-2757 |
| BJ Services | 575-746-3569 |
| Flight for Life – 4000 24 th St, Lubbock, Texas | 806-746-9911 |
| Aerocare – R3, Box 49F, Lubbock, Texas | 806-747-8923 |
| Med Flight Air Ambulance – 2301 Yale Blvd., Albuquerque, NM | 505-842-4433 |
| SB Aid Med Serv – 2505 Clark Carr Loop SE, Albuquerque, NM | 505-842-4949 |

PROTECTION OF THE GENERAL (ROE) RADIUS OF EXPOSURE

In the event greater than 100 ppm H₂S is present, the ROE calculations will be done to determine if the following conditions exist and whether the Plan must be activated:

- * 100 ppm at any public area (any place not associated with this site)
- * 500 ppm at any public road (any road which the general public may travel).
- * 100 ppm radius of 3000' will be assumed if there is insufficient data to do the calculations, and there is a reasonable expectation that H₂S could be present in concentrations greater than 100 ppm in the gas mixture.

Calculation for the 100 ppm ROE: (H₂S concentrations in decimal form)

$$\text{ROE} = [(1.589)(\text{H}_2\text{S concentration})(Q)]^{(.6258)} \quad 10,000 \text{ ppm} + = .01$$

$$1,000 \text{ ppm} + = .001$$

Calculation for the 500 ppm ROE:

$$100 \text{ ppm} + = .0001$$

$$10 \text{ ppm} + = .00001$$

$$\text{ROE} = [(0.4546)(\text{H}_2\text{S concentration})(Q)]^{(.6258)}$$

EXAMPLE: If a well/facility has been determined to have 650 ppm H₂S in the gas mixture and the well/facility is producing at a gas rate of 200 MCFD then:

$$\text{ROE for 100 ppm} \quad \text{ROE} = [(1.589)(.00065)(200,000)]^{.6258}$$

$$\text{ROE} = 28.1'$$

$$\text{ROE for 500 ppm} \quad \text{ROE} = [(.4546)(.00065)(200,000)]^{.6258}$$

$$\text{ROE} = 12.8'$$

These calculations will be forwarded to the appropriate NMOCD district office when applicable.

PUBLIC EVACUATION PLAN

When the supervisor has determined that the general public will be involved, the following plan will be implemented.

1. Notification of the emergency response agencies of the hazardous condition and implement evacuation procedures.
2. A trained person in H₂S safety shall monitor with detection equipment the H₂S concentration, wind and area of exposure. This person will determine the outer perimeter of the hazardous area. The extent of the evacuation area will be determined from the data being collected. Monitoring shall continue until the situation has been resolved. All monitoring equipment shall be UL approved for use in Class I Groups A, B, C & D, Division I hazardous locations. All monitors will have a minimum capability of measuring H₂S, oxygen, and flammable values.
3. Law enforcement shall be notified to set up necessary barriers and maintain such for the duration of the situation as well as aid in the evacuation procedure.
4. The company representative shall stay in communication with all agencies throughout the duration of the situation and inform such agencies when the situation has been contained and the affected area is safe to enter.

PROCEDURE FOR IGNITING AN UNCONTROLLABLE CONDITION

The decision to ignite a well should be a last resort with one, if not both, of the following conditions:

1. Human life and/or property are endangered.
2. There is no hope of bringing the situation under control with the prevailing conditions at the site.

Instructions for Igniting the Well:

1. Two people are required. They must be equipped with positive pressure, self-contained breathing apparatus and "D"-ring style, full body, OSHA approved safety harness. Non-flammable rope will be attached.
2. One of the people will be a qualified safety person who will test the atmosphere for H₂S, oxygen and LFL. The other person will be the designated company representative.
3. Ignite upwind from a distance no closer than necessary. Make sure that the ignition site has the maximum escape avenue available. A 25mm flare gun with a range of approximately +/- 500 feet shall be used to ignite the gas.
4. Before igniting, check for the presence of combustible gases.
5. After igniting, continue emergency actions and procedures as before.

REQUIRED EMERGENCY EQUIPMENT

1. Breathing Apparatus

- Rescue Packs (SCBA) – 1 unit shall be placed at each breathing area, 2 shall be stored in the safety trailer.
- Work / Escape Packs – 4 packs shall be stored on the rig floor with sufficient air hose not to restrict work activity.
- Emergency Escape Packs – 4 packs shall be stored in the doghouse for emergency evacuation.

2. Signage and Flagging

- One Color Code Condition Sign will be placed at the entrance to the site reflecting the possible conditions at the site.
- A Colored Condition flag will be on display reflecting the condition at the site at that time.

3. Briefing Area

- Two perpendicular areas will be designated by signs and readily accessible.

4. Windsocks

- Two windsocks will be placed in strategic locations, visible from all angles.

5. H₂S Detectors and Alarms

- The stationary detector with three (3) sensors will be placed in the upper dog house if equipped, set to visually alarm @ 10 ppm and audible alarm @ 15 ppm. Calibrate a

minimum of every 30 days or as needed. The three sensors will be placed in the following places: (Gas sample tubes will be stored in the safety trailer):

- Rig Floor
- Bell Nipple
- End of flow line or where well bore fluid is being discharged

6. Auxiliary Rescue Equipment

- Stretcher
- Two OSHA full body harnesses
- 100' of 5/8" OSHA approved rope
- One 20 lb. Class ABC fire extinguisher
- Communication via cell phones on location and vehicles on location

USING SELF-CONTAINED BREATHING AIR EQUIPMENT (SCBA)

1. SCBA should be worn when any of the following are performed:
 - Working near the top or on top of a tank
 - Disconnecting any line where H₂S can reasonably be expected.
 - Sampling air in the area to determine if toxic concentrations of H₂S exist.
 - Working in areas where over 10 ppm of H₂S has been detected.
 - At any time there is a doubt of the level of H₂S in the area.
2. All personnel shall be trained in the use of SCBA prior to working in a potentially hazardous location.
3. Facial hair and standard eyeglasses are not allowed with SCBA.
4. Contact lenses are never allowed with SCBA.
5. When breaking out any line where H₂S can reasonably be expected.
6. After each use, the SCBA unit shall be cleaned, disinfected, serviced and inspected.
7. All SCBA shall be inspected monthly.

RESCUE & FIRST AID FOR VICTIMS OF H₂S POISONING

- Do not panic.
- Remain calm and think.
- Put on the breathing apparatus.
- Remove the victim to the safe breathing area as quickly as possible, upwind and uphill from source or crosswind to achieve upwind.
- Notify emergency response personnel.
- Provide artificial respiration and/or CPR as necessary.
- Remove all contaminated clothing to avoid further exposure.
- A minimum of two (2) personnel on location shall be trained in CPR and First Aid.

TOXIC EFFECTS OF H2S POISONING

Hydrogen Sulfide is extremely toxic. The acceptable ceiling concentration for eight-hour exposure is 10 PPM, which is .001% by volume. Hydrogen Sulfide is heavier than air (specific gravity-1.192) and is colorless and transparent. Hydrogen Sulfide is almost as toxic as Hydrogen Cyanide and is 5-6 times more toxic than Carbon Monoxide. Occupational exposure limits for Hydrogen sulfide and other gasses are compared below in Table 1. Toxicity table for H2S and physical effects are shown in Table II.

Table 1
Permissible Exposure Limits of Various Gasses

| Common Name | Symbol | Sp. Gravity | TLV | STEL | IDLH |
|------------------|--------|-------------|----------|------------|---------|
| Hydrogen Cyanide | HCN | .94 | 4.7 ppm | C | |
| Hydrogen Sulfide | H2S | 1.192 | 10 ppm | 15 ppm | 100 ppm |
| Sulfide Dioxide | SO2 | 2.21 | 2 ppm | 5 ppm | |
| Chlorine | CL | 2.45 | .5 ppm | 1 ppm | |
| Carbon Monoxide | CO | .97 | 25 ppm | 200 ppm | |
| Carbon Dioxide | CO2 | 1.52 | 5000 ppm | 30,000 ppm | |
| Methane | CH4 | .55 | 4.7% LEL | 14% UEL | |

Definitions

- A. TLV – Threshold Limit Value is the concentration employees may be exposed to based on a TWA (time weighted average) for eight (8) hours in one day for 40 hours in one (1) week. This is set by ACGIH (American Conference of Governmental Hygienists and regulated by OSHA.
- B. STEL – Short Term Exposure Limit is the 15 minute average concentration an employee may be exposed to providing that the highest exposure never exceeds the OEL (Occupational Exposure Limit). The OEL for H2S is 19 PPM.
- C. IDLH – Immediately Dangerous to Life and Health is the concentration that has been determined by the ACGIH to cause serious health problems or death if exposed to this level. The IDLH for H2S is 100 PPM.
- D. TWA – Time Weighted Average is the average concentration of any chemical or gas for an eight (8) hour period. This is the concentration that any employee may be exposed to based on an TWA.

TABLE II
Toxicity Table of H2S

| Percent % | PPM | Physical Effects |
|-----------|------|---|
| .0001 | 1 | Can smell less than 1 ppm. |
| .001 | 10 | TLV for 8 hours of exposure |
| .0015 | 15 | STEL for 15 minutes of exposure |
| .01 | 100 | Immediately Dangerous to Life & Health. Kills sense of smell in 3 to 5 minutes. |
| .02 | 200 | Kills sense of smell quickly, may burn eyes and throat. |
| .05 | 500 | Dizziness, cessation of breathing begins in a few minutes. |
| .07 | 700 | Unconscious quickly, death will result if not rescued promptly. |
| .10 | 1000 | Death will result unless rescued promptly. Artificial resuscitation may be necessary. |

PHYSICAL PROPERTIES OF H₂S

The properties of all gases are usually described in the context of seven major categories:

COLOR
ODOR
VAPOR DENSITY
EXPLOSIVE LIMITS
FLAMMABILITY
SOLUBILITY (IN WATER)
BOILING POINT

Hydrogen Sulfide is no exception. Information from these categories should be considered in order to provide a fairly complete picture of the properties of the gas.

COLOR – TRANSPARENT

Hydrogen Sulfide is colorless so it is invisible. This fact simply means that you can't rely on your eyes to detect its presence, a fact that makes the gas extremely dangerous to be around.

ODOR – ROTTEN EGGS

Hydrogen Sulfide has a distinctive offensive smell, similar to "rotten eggs." For this reason it earned its common name "sour gas." However, H₂S, even in low concentrations, is so toxic that it attacks and quickly impairs a victim's sense of smell, so it could be fatal to rely on your nose as a detection device.

VAPOR DENSITY – SPECIFIC GRAVITY OF 1.192

Hydrogen Sulfide is heavier than air so it tends to settle in low-lying areas like pits, cellars or tanks. If you find yourself in a location where H₂S is known to exist, protect yourself. Whenever possible, work in an area upwind and keep to higher ground.

EXPLOSIVE LIMITS – 4.3% TO 46%

Mixed with the right proportion of air or oxygen, H₂S will ignite and burn or explode, producing another alarming element of danger besides poisoning.

FLAMMABILITY

Hydrogen Sulfide will burn readily with a distinctive clear blue flame, producing Sulfur Dioxide (SO₂), another hazardous gas that irritates the eyes and lungs.

SOLUBILITY – 4 TO 1 RATIO WITH WATER

Hydrogen Sulfide can be dissolved in liquids, which means that it can be present in any container or vessel used to carry or hold well fluids including oil, water, emulsion and sludge. The solubility of H₂S is dependent on temperature and pressure, but if conditions are right, simply agitating a fluid containing H₂S may release the gas into the air.

BOILING POINT – (-76 degrees Fahrenheit)

Liquefied Hydrogen Sulfide boils at a very low temperature, so it is usually found as a gas.

LOCATION MAP - Lea South 25 Federal #3

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DISTRICT I
 1625 N. French Dr., Hobbs, NM 88240
 Phone (575) 393-8161 Fax: (575) 393-0720

DISTRICT II
 811 S. First St., Artesia, NM 88210
 Phone (575) 748-1263 Fax: (575) 748-9720

DISTRICT III
 1000 Rio Brazos Rd., Aztec, NM 87410
 Phone (505) 334-8178 Fax: (505) 334-8170

DISTRICT IV
 1220 S. St. Francis Dr., Santa Fe, NM 87505
 Phone (505) 478-3460 Fax: (505) 478-3462

State of New Mexico
 Energy, Minerals and Natural Resources Department

Form C-102
 Revised August 1, 2011

OIL CONSERVATION DIVISION
 1220 South St. Francis Dr.
 Santa Fe, New Mexico 87505

Submit one copy to appropriate District Office

WELL LOCATION AND ACREAGE DEDICATION PLAT

AMENDED REPORT

| | | |
|------------------------|---|------------------------------------|
| API Number | Pool Code 37580 | Pool Name LEA BONE SPRING SOUTH |
| Property Code 40102 | Property Name LEA SOUTH "25" FEDERAL | Well Number 1 |
| OGRID No. 15742 | Operator Name NEARBURG PRODUCING CO. | Elevation 3725' |

Surface Location

| UL or lot No. | Section | Township | Range | Lot Idn | Feet from the | North/South line | Feet from the | East/West line | County |
|---------------|---------|----------|-------|---------|---------------|------------------|---------------|----------------|--------|
| 1 | 25 | 20 S | 34 E | | 1650 | SOUTH | 330 | EAST | LEA |

Bottom Hole Location If Different From Surface

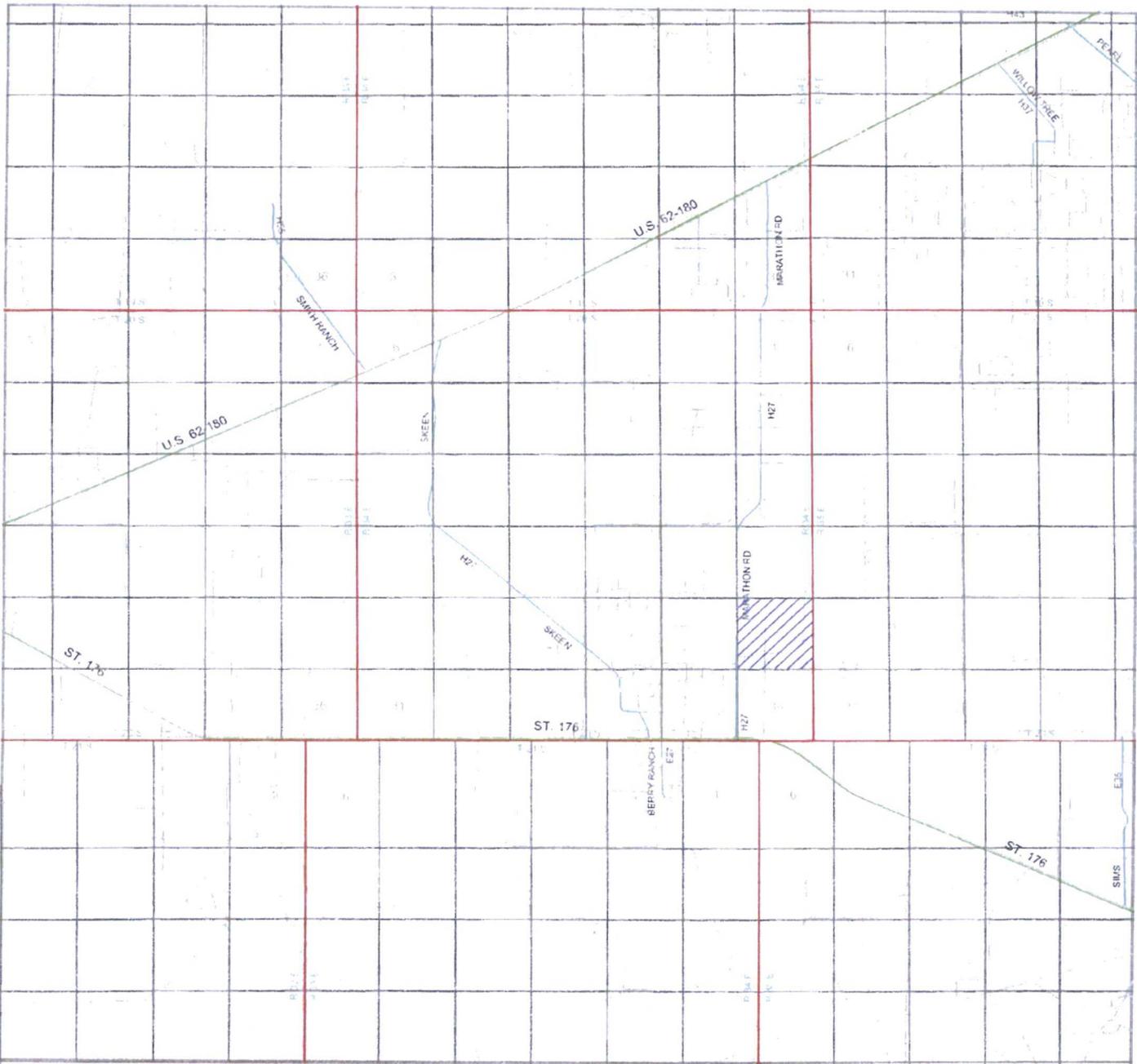
| UL or lot No. | Section | Township | Range | Lot Idn | Feet from the | North/South line | Feet from the | East/West line | County |
|---------------|---------|----------|-------|---------|---------------|------------------|---------------|----------------|--------|
| | | | | | | | | | |

| 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

| | | | | | |
|----------------------------|--|--|--|----------------------------|---|
| N: 565265.0 E: 791227.4 | | | | N: 565310.9 E: 796509.3 | <p>OPERATOR CERTIFICATION</p> <p><i>I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.</i></p> <p>Signature _____ Date _____</p> <p>Tim Green Printed Name tgreen@nearburg.com Email Address</p> |
| | | | | | |
| | | | | | <p>SURVEYOR CERTIFICATION</p> <p><i>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.</i></p> <p>Date Surveyed _____</p> <p>Signature & Seal of Professional Surveyor _____</p> <p>W. O. Jones 26240</p> |
| | | | | | |
| | | | | | Certificate No. Gary L. Jones 7977 BASIN SURVEYS 26240 |

VICINITY MAP – Lea South 25 Federal #1



LEA SOUTH "25" FEDERAL #1

Located 1650' FSL and 330' FEL
 Section 25, Township 20 South, Range 34 East,
 N.M.P.M., Lea County, New Mexico.



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

WO Number: JMS 26240
 Survey Date: 02-17-2012
 Scale: 1" = 2 Miles
 Date: 02-24-2012



**NEARBURG
 PRODUCING CO.**

**NEARBURG PRODUCING COMPANY
LEA SOUTH 25 FEDERAL #1**

**Hydrogen Sulfide Drilling Plan Summary
(attach to detailed H2S Plan)**

- A. All personnel shall receive proper H2S training according to Onshore Order III.C.3.a.
- B. Briefing Area: two perpendicular areas will be designated by signs and readily accessible.
- C. Required Emergency Equipment:
 - Well control equipment
 - a. Flare line 150' from wellhead to be ignited by flare gun
 - b. Choke manifold with a remotely-operated choke
 - c. Mud/gas separator
 - Protective equipment for essential personnel
 - Breathing Apparatus:
 - a. Rescue Packs (SCBA): One unit placed at each breathing area; two units stored in the safety trailer.
 - b. Work/Escapes packs: Four packs stored on the rig floor with sufficient air hose not to restrict work activity.
 - c. Emergency Escape Packs: Four packs stored in the doghouse for emergency evacuation.
 - Auxiliary Rescue Equipment:
 - a. Stretcher
 - b. Two OSHA full body harnesses
 - c. 100' of 5/8" OSHA-approved rope
 - d. 1-20# Class ABC fire extinguisher
 - H2S Detection and Monitoring Equipment:

The stationary detector with three sensors will be placed in the upper dog house if equipped, set to visually alarm at 10 ppm and audible at 15 ppm. Calibrate a minimum of every 30 days or as needed. Sensors will be placed in the following places: Rig floor; Bell nipple; End of flow line or where well bore fluid is being discharged. (Gas sample tubes will be stored in the safety trailer)
 - Visual warning systems.
 - a. One color-code condition sign placed at site entrance reflecting possible conditions at the site.
 - b. A colored condition flag on display, reflecting the current condition at the site.
 - c. Two wind socks placed in strategic locations, visible from all angles.
 - Mud program:

The mud program has been designed to minimize the volume of H2S circulated to surface. The operator will have the necessary mud products to minimize hazards while drilling in H2S bearing zones.
 - Metallurgy:
 - a. All drill strings, casings, tubing, wellhead, blowout preventer, drilling spool, kill lines, choke manifold and lines, and valves shall be suitable for H2S service.
 - b. All elastomers used for packing and seals shall be H2S trim.
 - Communication:

Communication will be via cell phones and land lines.