Santa Fe Energy Operating Partners,L.P. <u>HYDROGEN SULFIDE DRILLING OPERATIONS PLAN</u> <u>Running Wolf No.1</u> <u>Section 15,T19S,R31E</u> <u>Eddy County, New Mexico</u>

While drilling to the Delaware formation, the Queen formation will be cut. The zone is hydrogen sulfide productive in the area. It is our understanding that hydrogen sulfide is only detected in the area whenever the reservoir fluids are produced up the wellbore and the zone has been hydraulically fracture stimulated. Our drilling fluid hydrostatic head will prevent fluid entry due to the reservoir being overbalanced. The following is our plan for drilling the Queen zone on our way to the Delaware.

I. Hydrogen Sulfide Training

All personnel, whether regularly assigned, contracted, or employed on an unsheduled basis, will receive training from a qualified instructor in the following areas prior to commencing drilling operations on the 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 H₂S detectors, alarms, warning systems, briefing areas, evacuation procedures, and prevailing winds.
- 4. The proper techniques for first aid and rescue procedures.

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 Hydrogen Sulfide Drilling Operations Plan.

There will be an initial training session just prior to encountering the Queen(within 3 days or 500 feet) and weekly H₂S and well control drills for all personnel in each crew. The initial training session shall include a review of the site specific Hydrogen Sulfide 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.

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II.H2S Safety Equipment and Systems

Note: All H₂S safety equipment and systems will be installed, tested, and operational prior to drilling out of the intermediate casing set at 3500', prior to drilling in the Queen formation.

- 1. Well Control Equipment:
 - A. Blind rams and pipe rams to accomodate all pipe sizes with properly sized closing unit.
 - B. Auxiliary equipment to include: annular preventer.
- 2. Protective Equipment for Personnel:
 - A. Scott Air-Pack Units located on the rig floor and at briefing areas, as indicated on well site diagram.
- 3. H₂S Detection and Monitoring Equipment:
 - A. 2-portable H₂S monitors positioned on location for best coverage and response. These units have warning lights and audible sirens when H₂S levels of 20 ppm are reached.
 - B. 1-portable SO₂ monitor positioned near flare line.
- 4. Visual Warning Systems:
 - A. Wind direction indicators as shown on well site diagram.
 - B. Caution/Danger signs shall be posted on roads providing direct access to location. Signs will be painted high visibility yellow with black lettering of sufficient size to be readable at a reasonable distance from the immediate location. See Example Attached.
- 5. Mud Program:
 - A. The mud program is designed to eliminate any H_2S circulated to the surface. Proper mud weight, safe drilling practices, and the use of H_2S scavengers will be used to minimize hazards when penetrating H_2S bearing zones (Queen).

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- 6. Metallurgy:
 - A. All of the drill string, casing, tubing, wellhead, blowout preventers, 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.
- 7. Communication:
 - A. Cellular phone communications in company vehicles.
 - B. Radio communications on the drilling rig.
- 8. Well Testing: No Tests planned in the Queen formation or in the Delaware.

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WARNING YOU ARE ENTERING AN H2S AREA

TIGHT HOLE LOCATION

DO NOT ENTER

UNLESS YOU WERE CALLED !!

SANTA FE ENERGY

OPERATING PARTNERS,L.P.