GW - __016__

H2S CONTINGENCY PLAN

September 20, 2011

DCP Midstream
1625 West Marland Street
Hobbs, NM 88240

Mr. Carl J. Chavez
New Mexico Energy, Minerals & Natural Resources Dept
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Drive
Santa Fe, NM 87505

Attached are electronic copies of H2S contingency plans for the DCP Eunice & Artesia gas processing facilities in Southeast NM.

If additional information is required, please advise.

Sincerely,

Kelly Jamerson
Director – SENM Asset

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Tuesday, September 27, 2011 8:09 AM
To: Chavez, Carl J, EMNRD; Jamerson, Kelly D
Subject: RE: Eunice Gas Plant (GW-016(H2S) Contingency Plan Receipt and Update

Mr. Jamerson:

The Oil Conservation Division (OCD) received the Eunice Gas Plant (GW-016) H2S Contingency Plan (CP) dated September 11, 2011.

The OCD is currently reviewing the CP and will respond soon. The OCD received analytical data from the Pecos Diamond GP (GW-237) pipeline on 9/16/2011 that demonstrated nil ppm for [H2S] or no H2S CP was required under the OCD Regulations at this time, unless conditions change.

Please contact me if you have questions. Thank you.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Dept.
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Dr., Santa Fe, New Mexico 87505
Office: (505) 476-3490
Fax: (505) 476-3462
E-mail: CarlJ.Chavez@state.nm.us
Website: http://www.emnrd.state.nm.us/ocd/
"Why not Prevent Pollution; Minimize Waste; Reduce the Cost of Operations; & Move Forward with the Rest of the Nation?" To see how, go to "Pollution Prevention & Waste Minimization" at:
http://www.emnrd.state.nm.us/ocd/environmental.htm#environmental)

From: Chavez, Carl J, EMNRD
Sent: Tuesday, September 20, 2011 8:58 AM
To: Chavez, Carl J, EMNRD; Jamerson, Kelly D
Subject: RE: H2S Contingency Plan Receipt and Update

Mr. Jamerson:

Mr. Daniel Sanchez just found the Pecos Diamond correspondence in his mail box and provided it to me.

I think we just need the Eunice GP H2S CP.

Thank you.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Dept.
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Dr., Santa Fe, New Mexico 87505
Office: (505) 476-3490
Fax: (505) 476-3462
E-mail: CarlJ.Chavez@state.nm.us
Website: http://www.emnrd.state.nm.us/ocd/
"Why not Prevent Pollution; Minimize Waste; Reduce the Cost of Operations; & Move Forward with the Rest of the Nation?" To see how, go to "Pollution Prevention & Waste Minimization" at:
http://www.emnrd.state.nm.us/ocd/environmental.htm#environmental)

From: Chavez, Carl J, EMNRD
Sent: Tuesday, September 20, 2011 8:14 AM
To: 'Jamerson, Kelly D'
Subject: RE: H2S Contingency Plan Receipt and Update

Mr. Jamerson:

I double-checked with OCD Staff to see if we received the analytical for Pecos Diamond and the H2S CP from the Eunice Gas Plant, and the OCD is lacking this information.

I also checked the OCD Online file for the Pecos Diamond (GW-237) at http://ocdimage.emnrd.state.nm.us/imaging/AEOrderFileView.aspx?appNo=pENV000GW00252; and Eunice GP (GW-016) at http://ocdimage.emnrd.state.nm.us/Imaging/FileStore/santafeadmin/ao/92708/penv000gw00017_7_ao.tif.

The OCD requests the information. Thank you.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Dept.
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Dr., Santa Fe, New Mexico 87505
Office: (505) 476-3490
Fax: (505) 476-3462
E-mail: CarlJ.Chavez@state.nm.us
Website: http://www.emnrd.state.nm.us/ocd/
"Why not Prevent Pollution; Minimize Waste; Reduce the Cost of Operations; & Move Forward with the Rest of the Nation?" To see how, go to "Pollution Prevention & Waste Minimization" at:
http://www.emnrd.state.nm.us/ocd/environmental.htm#environmental)

From: Jamerson, Kelly D [mailto:KDJamerson@dcpmidstream.com]
Sent: Sunday, September 18, 2011 11:17 AM
To: Chavez, Carl J, EMNRD
Subject: RE: H2S Contingency Plan Receipt and Update

Mr. Chavez,

Analytical data was submitted on the Pecos Diamond Plant this previous week. Please advise if you do not receive it.

The Eunice Plant is a sour plant and inlet gas contains hydrogen sulfide gas. This plant has a H2S contingency plan on file with the OCC. A copy was previously submitted to the Santa Fe office. Please advise if did not receive.

Kelly Jamerson
Director - SENM Asset
DCP Midstream
575-397-5539 (o)
325-226-3357 (c)

From: Chavez, Carl J, EMNRD [mailto:CarlJ.Chavez@state.nm.us]
Sent: Tuesday, September 13, 2011 7:34 AM
To: Jamerson, Kelly D
Subject: H2S Contingency Plan Receipt and Update

Mr. Jamerson:

Good morning. The OCD has received the [H2S] analytical data confirming DCP Midstream, L.P.'s initial determination that OCD H2S Contingency Plans do not apply to the following gas plant facilities:

Eddy County:

- East Carlsbad Gas Plant (GW-069)

Lea County:

- Lee Gas Plant (closed)
- Antelope Ridge Gas Plant (GW-162)
- Hobbs Gas Plant (GW-175)
- Zia Gas Plant (145)

Analytical data from DCP to date has not been received for the following gas plants:

Eddy County:

GW-237	DCP MIDSTREAM, LP	DUKE PECOS DIAMOND GP	Gas Plant	A	Eddy	DUKE PECOS DIAMOND GP	G-3-18 S-27 E

Lea County:

GW-016	DCP MIDSTREAM, LP	DUKE EUNICE GP	Gas Plant	A	04/25/2009	Keith Warren 303-605-2176	Lea	DUKE EUNICE GP	H-5-21 S-36 E

The OCD will be expecting the data soon for the above gas plants. Please contact me if you have questions. Thank you.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Dept.
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Dr., Santa Fe, New Mexico 87505
Office: (505) 476-3490
Fax: (505) 476-3462
E-mail: CarlJ.Chavez@state.nm.us
Website: http://www.emnrd.state.nm.us/ocd/
"Why not Prevent Pollution; Minimize Waste; Reduce the Cost of Operations; & Move Forward with the Rest of the Nation?" To see how, go to "Pollution Prevention & Waste Minimization" at:
http://www.emnrd.state.nm.us/ocd/environmental.htm#environmental)

H_2S Contingency Plan

Eunice Gas Plant

Eunice, New Mexico

September 21, 2011

H_2S Contingency Plan

TABLE OF CONTENTS

Duke Energy Field Services
Eunice Gas Plant
Hydrogen Sulfide Contingency Plan

I. INTRODUCTION

Duke Energy Field Services, L.P. conducts its business responsibly by providing employees and any other person working or visiting, a safe work place. The Eunice Gas Plant Hydrogen Sulfide Contingency Plan was developed to satisfy the Oil and Conservation District Rule 118; and paragraph 7.6 of the guidelines published by the API in its publication entitled "Recommended Practices for Oil and Gas Producing and Gas Processing Plant Operations Involving Hydrogen Sulfide," RP-55.

This plan provides guidelines to assist in responding to and managing an emergency in the event of an H_2S release from a pipeline or facility. The goals of this plan are to provide tools to enable an efficient, coordinated and effective response to emergencies. This plan contains written guidelines to evaluate and respond to an incident, and to prevent or minimize personal injury or loss, to avoid environmental hazards, and to reduce damage to personal property.

II. DEFINITIONS USED IN THIS PLAN

ANSI The acronym "ANSI" means the American National Standards Institute.

API The acronym "API" means the American Petroleum Institute.

Area of Exposure (AOE) The phrase "area of exposure" means the area within a circle constructed with a point of escape at its center and the radius of exposure as its radius.

ASTM The acronym "ASTM" means the American Society for Testing and Materials.

Dispersion Technique A "dispersion technique" is a mathematical representation of the physical and chemical transportation characteristics, dilution characteristics and transformation characteristics of hydrogen sulfide gas in the atmosphere.

Escape Rate The "escape rate" is the maximum volume (Q) that is used to designate the possible rate of escape of a gaseous mixture containing hydrogen sulfide, as set forth herein.

(a) For existing gas facilities or operations, the escape rate shall be calculated using the maximum daily rate of the gaseous mixture produced or handled or the best estimate thereof. For an existing gas well, the escape rate shall be calculated using the current daily absolute open flow rate against atmospheric pressure or the best estimate of that rate.

(b) For new gas operations or facilities, the escape rate shall be calculated as the maximum anticipated flow rate through the system. For a new gas well, the escape rate shall be calculated using the maximum open flow rate of offset wells in the pool or reservoir, or the pool or reservoir average of maximum open flow rates.

(c) For facilities or operations not mentioned, the escape rate shall be calculated using the actual flow of the gaseous mixture through the system or the best estimate thereof.

GPA The acronym "GPA" means the Gas Processors Association.

IDLH Immediately Dangerous to Life and Health.

LEPC The acronym "LEPC" means the Local Emergency Planning Committee established pursuant to the Emergency Planning and Community Right-to-Know Act, 42 U.S.C. Section 11001.

NACE The acronym "NACE" means the National Association of Corrosion Engineers.

PPM The acronym "ppm" means "parts per million" by volume.

PHV Potentially Hazardous Volume means the volume of hydrogen sulfide gas of such concentration that:

(a) the 100-ppm radius of exposure includes any public area;

(b) the 500-ppm radius of exposure includes any public road; or

(c) the 100-ppm radius of exposure exceeds 3,000 feet.

Public Area A "public area" is any building or structure that is not associated with the well, facility or operation for which the radius of exposure is being calculated and that is used as a dwelling, office, place of business, church, school, hospital, or government building, or any portion of a park, city, town, village or designated school bus stop or other similar area where members of the public may reasonably be expected to be present.

Public Road A "public road" is any federal, state, municipal or county road or highway.

Radius of Exposure The radius of exposure is that radius constructed with the point of escape as its starting point and its length calculated using the following Pasquill-Gifford derived equation, or by such other method as may be approved by the division:

(a) For determining the 100-ppm radius of exposure: $X = [(1.589)(\text{hydrogen sulfide concentration})(Q)]^{(0.6258)}$, where "X" is the radius of exposure in feet, the "hydrogen sulfide concentration" is the decimal equivalent of the mole or volume fraction of hydrogen sulfide in the gaseous mixture, and "Q" is the escape rate expressed in cubic feet per day (corrected for standard conditions of 14.73 psia and 60 degrees F).

(b) For determining the 500-ppm radius of exposure: $X=[(0.4546)(\text{hydrogen sulfide concentration})(Q)]^{(0.6258)}$, where "X" is the radius of exposure in feet, the "hydrogen sulfide concentration" is the decimal equivalent of the mole or volume fraction of hydrogen sulfide in the gaseous mixture, and "Q" is the escape rate expressed in cubic feet per day (corrected for standard conditions of 14.73 psia and 60 degrees F).

Regulatory Threshold

(1) Determination of Hydrogen Sulfide Concentration.

(a) Each person, operator or facility shall determine the hydrogen sulfide concentration in the gaseous mixture within each of its wells, facilities or operations either by testing (using a sample from each well, facility or operation), testing a representative sample, or using process knowledge in lieu of testing. If a representative sample or process knowledge is used, the concentration derived from the representative sample or process knowledge must be reasonably representative of the hydrogen sulfide concentration within the well, facility or operation.

(b) The tests used to make the determination referred to in the previous subparagraph shall be conducted in accordance with applicable ASTM or GPA standards or by another method approved by the division.

(c) If a test was conducted prior to the effective date of this section that otherwise meets the requirements of the previous subparagraphs, new testing shall not be required.

(d) If any change or alteration may materially increase the concentration of hydrogen sulfide in a well, facility or operation, a new determination shall be required in accordance with this section.

(2) Concentrations Determined to be Below 100 ppm. If the concentration of hydrogen sulfide in a given well, facility or operation is less than 100 ppm, no further actions shall be required pursuant to this section.

(3) Concentrations Determined to be Above 100 ppm.

(a) If the concentration of hydrogen sulfide in a given well, facility or operation is determined to be 100 ppm or greater, then the person, operator or facility must calculate the radius of exposure and comply with applicable requirements of this section.

(b) If calculation of the radius of exposure reveals that a potentially hazardous volume is present, the results of the determination of the hydrogen sulfide concentration and the calculation of the radius of exposure shall be provided to the division. For a well, facility or operation existing on the effective date of this section, the determination, calculation and submission required herein shall be accomplished within 180 days of the effective date of this section; for any well, facility or operation that commences operations after the effective date of this section, the determination, calculation and submission required herein shall be accomplished before operations begin.

(4) Recalculation. The person, operator or facility shall calculate the radius of exposure if the hydrogen sulfide concentration in a well, facility or operation increases to 100 ppm or greater. The person, operator or facility shall also recalculate the radius of exposure if the actual volume fraction of hydrogen sulfide increases by a factor of twenty-five percent in a well, facility or operation that previously had a hydrogen sulfide concentration of 100 ppm or greater. If calculation or recalculation of the radius of exposure reveals that a potentially hazardous volume is present, the results shall be provided to the division within sixty (60) days.

III. CHARACTERISTICS OF HYDROGEN SULFIDE (H_2S) AND SULFUR DIOXIDE (SO_2)

Hazards of Hydrogen Sulfide

At normal atmospheric conditions, hydrogen sulfide (H_2S) is a colorless gas. It is commonly referred to by other names such as Rotten Egg Gas, Acid Gas, Sour Gas, Sewer Gas, Poison Gas and Sulfur Gas. It has a characteristic "rotten egg" smell at low concentrations. At higher concentrations, it has a sweet odor. At still higher concentrations, an odor cannot be detected at all due to olfactory nerve anesthesia. Odor must *not* be used as means of determining the concentration of H_2S gas! Hydrogen sulfide can form explosive mixtures at concentrations between 4.3% and 46%, by volume. Its auto-ignition temperature is 500 degrees F (260 degrees C). When burning, its flame is practically invisible. It is denser than air (1.19 times heavier than air) and may accumulate in low places. Hydrogen sulfide gas tends to interact with high carbon steel, causing embitterment and fine fractures in metal components and piping.

H_2S acts as a chemical asphyxiate, preventing the body from utilizing oxygen in the tissue. Breathing may stop after a few seconds of exposure to H_2S gas in concentrations of 600-700 ppm. This produces symptoms such as panting, pallor, cramps, dilation of eye pupils and loss of speech. This is generally followed by immediate loss of consciousness. Death may occur quickly from respiratory paralysis and cardiac arrest. The table below illustrates the physical effects of hydrogen sulfide on a healthy adult.

Table 1 Effect of exposure to Hydrogen Sulfide Gas on a Healthy Adult

Concentration			Physical Effects
percent (%)	ppm	grains per ft³	
0.001	10	0.65	Obvious and unpleasant odor. Safe for 8 hours exposure.
0.01	100	6.48	Kills smell in 3 to 15 minutes; may sting eyes and throat. **IDLH**.
0.02	200	12.96	Kills smell shortly; stings eyes and throat.
0.05	500	32.96	Dizziness; breathing ceases in a few minutes; artificial respiration / oxygen must be given promptly.
0.07	**700**	45.36	**Unconscious quickly; death will result if not rescued promptly.**
0.10	**1000**	64.80	**Unconscious at once; followed by death within minutes.**

Properties of H_2S

COLOR	Colorless.
ODOR	Very offensive, commonly referred to as the odor of rotten eggs.
VAPOR DENSITY	1.189 (Air=1.0) H_2S is heavier than air.
BOILING POINT	-76 degrees F (-24 degrees C).
EXPLOSIVE LIMITS	4.3 to 46% by volume in air.
IGNITION TEMPERATURE	500 degrees F (260 degrees C).
WATER SOLUBLE	Yes (4 volumes gas in 1 volume water at 32 degrees F (0 degrees C).
FLAMMABILITY CORROSIVE	Forms explosive mixtures with air or oxygen.

Toxicity Table – H_2S

1 ppm = .0001% (1/10,000 of 1%)	Can smell (rotten egg odor).
10 ppm = .001% (1/1000 OF 1%)	Allowable for 8 hours exposure. (PEL & TLV)
100 ppm = .01% (1/100 of 1%)	Kills smell in 3-15 minutes. May burn eyes and throat. Considered to be IDLH atmosphere (Immediately Dangerous to Life and Health).
200 ppm = .03% (2/100 of 1%)	Kills smell rapidly. Burns eyes and throat.
500 ppm = .05% (5/100 of 1%)	Loses sense of reasoning and balance. Respiratory disturbances in 2-15 minutes. Needs prompt artificial resuscitation.
700 ppm = .07% (7/100 of 1%)	Will become unconscious quickly. Breathing will stop and death will result if not rescued promptly. Immediate artificial resuscitation is required.
1000 ppm = .1% (1/10 OF 1%)	Unconscious at once. PERMANENT BRAIN DAMAGE MAY RESULT UNLESS RESCUED PROMPTLY.
	ppm=parts of gas per million parts of air by volume. 1% = 10,000 ppm.

Properties of Sulfur Dioxide SO_2

Sulfur Dioxide - SO_2	Physical and Chemical Properties
Chemical Formula	SO_2
Molecular Weight	64
Boiling Point	14 degrees Fahrenheit
Non-Combustible	Produced by burning of H_2S Gas
Vapor Pressure	>1 atm @ 68 degrees Fahrenheit
Melting Point	-104 degrees Fahrenheit
Specific Gravity	Heavier than air, 2.26 degrees gravity
Colorless gas	SO_2 is colorless gas, very irritating to the eyes and lungs
Odor	Pungent odor and can cause injury or death to persons exposed
Reactions	Reacts with water or steam to produce toxic and corrosive gases

Hazards of Sulfur Dioxide	
Toxicity	The physiological effects on humans when inhalation of SO_2 occurs, varies at different levels of concentration and may be as follows
Concentrations SO_2	Physiological Effects SO_2
0.3-1 ppm	Detection level – pungent odor
2 ppm	Threshold Limit Value (TLV) Time Weighted Average (TWA)
5 ppm	15 minute Short Term Exposure Limit (STEL) permitted by OSHA
6 – 12 ppm	Irritation of the throat and nose
20 ppm	Eye irritation
100 ppm	Immediately Dangerous to Life or Health (**IDLH**) set by NIOSH

IV. EMERGENCY RESPONSE POLICY AND AUTHORITY

It is the policy of DEFS to take the necessary actions required to safeguard DEFS personnel and the public from emergency incidents. Such emergency incidents may include fires, hazardous materials releases, and incidents resulting from natural hazards such as tornadoes.

In the event of an emergency incident, DEFS personnel will take prompt action within their immediate work area to ensure that all appropriate DEFS personnel, corporate personnel, and the public are alerted or notified that an emergency incident exists.

Whenever possible, DEFS personnel will take immediate action to limit the effects of the emergency. Four objectives will be considered when developing an appropriate emergency response. These objectives are:

- Life safety.
- Environmental protection.
- Protection of company and public property.
- Preventing interruption of business and public services such as highway access, water, and utilities.

While all four of the above objectives are important, life safety will always remain the first and highest priority.

All DEFS personnel have the responsibility, if necessary, to immediately alert other DEFS personnel that an emergency condition exists and to take appropriate action to protect life, property, and the environment. All emergency response actions by DEFS personnel are voluntary. Emergency response actions taken by individuals should be within the limitations of their training, experience, and physical abilities. At no time will Artesia Plant personnel assume an unreasonable risk during an emergency response. An unreasonable risk exists when:

- The task exceeds the physical abilities of the individual.
- The individual is not properly trained to complete the task.
- The individual does not have adequate experience to complete the task.

V. RESPONSE PROCEDURES FOR UNINTENTIONAL (ACCIDENTAL) RELEASES

If an H_2S leak is detected as a result of an accidental release, the following emergency plan of action should be put into effect to adequately ensure the safety of DEFS employees, contractors and the public. These response sequences should be altered to fit the prevailing situation and event/site-specific requirements.

1. Upon detecting a leak, immediately move away from the source and attempt to get out of the affected area by moving upwind, or cross wind if travel upwind is not possible.

2. Alert other personnel in the area. Assist personnel in distress if this can be done without endangering yourself. Proceed to the designated emergency assembly area.

3. If injury or death has occurred, immediately call emergency services (911).

4. If possible, take immediate measures to control present or potential discharge and to eliminate possible ignition sources.

5. Notify the supervisory foreman. Upon arriving at the scene, the supervisor should formally assume the role of the Incident Commander (IC). Until relieved by the supervisor, the senior employee having initially discovered the leak should fill the role of IC.

6. The IC will assess the situation and direct further actions to be taken. If assistance is required from law enforcement, safety or medical agencies, consult the emergency services telephone listing under Section XIII. The Division Operations Vice-President or his designee should also be notified.

7. If the IC deems it necessary, ensure that steps are taken to stop traffic through the area, most importantly, highway traffic. Roadblocks must be set up at the 10-ppm H_2S boundary. The H_2S boundary shall be delineated by using a calibrated H_2S monitor. Call emergency services (911) for assistance in quarantining the area, if needed. Refer to maps in Section XVII for highway and pipeline locations.

8. Initiate evacuation of nearby residents, if deemed necessary. Coordinate with emergency services.

9. Personnel equipped with self-contained breathing apparatus (SCBA) and portable H_2S monitoring equipment will determine the cause and extent of the leak. Personnel should enter the area from upwind of the site. If a reading of 10 ppm or higher of H_2S is obtained, then backup personnel equipped with SCBA will also be required.

10. No one will be intentionally exposed to H_2S concentrations in excess of 10 ppm without proper Personal Protection Equipment (PPE), IC authorization and backup personnel.

11. If possible, de-energize all sources of ignition, using lockout/tagout procedures.

12. If possible, perform shutdown on appropriate equipment and systems.

13. Trained personnel will continuously monitor H_2S concentrations, wind direction and area of exposure and will advise public safety and emergency personnel on current conditions.

14. Protective measures shall be maintained until the threat of injury from H_2S poisoning has been eliminated. The area must be checked with monitoring equipment and cleared below 10 ppm before allowing entry without proper PPE.

15. Notify the Western Division Health & Safety Manager. Assistance will be provided to ensure all proper notifications and reporting is made to local, state and federal agencies.

16. As soon as possible, **but no more than four hours after plan activation,** notify the New Mexico Oil Conservation Division District 2 – Lea County (See Section XIII). At a minimum, the following information will be needed:

- The company name.
- Facility name.
- Your name and telephone number for them to contact you.
- The location and source of the discharge.
- A description of the area affected by the discharge, the probable concentration of H_2S in the region and the wind direction/velocity.
- If necessary, request additional assistance from the agency.

VI. EMERGENCY INCIDENT MANAGEMENT

Emergency incident management will follow the Incident Command System (ICS) as described by the Federal Emergency Management Act (FEMA). The intent of using ICS for all emergency incidents provides automatic continuity with outside agencies and assists in establishing a "unified command" of the incident. Duke Energy provides instruction and training on the ICS, which is beyond the scope of this contingency plan. However a brief overview of the system is provided below.

The Incident Command System (ICS) utilizes a flexible, modular approach to organizing resources to effectively respond to emergency events. FEMA suggests that the basic Incident Command System has five functional areas:

- Command;
- Operations;
- Planning;
- Logistics; and,
- Finance.

However, for incidents such as those described in this plan, it seems more likely that the basic Incident Command System would be comprised of: 1) Command; 2) Operations Chief; and, 3) Safety Officer. Larger incidents may require additional positions such as Public Information Officer, Logistics Chief, Planning Chief, Finance Chief, Staging Manager, Medical Group Supervisor and Environmental Group Supervisor. The exact number and combination of positions will vary depending upon the type, size and duration of the incident.

In every incident, command must first be established. The first person to discover the problem is, by default, the Incident Commander (IC) until this responsibility is transferred to someone else. This responsibility should be formally transferred to the Facility/Field Supervisor as soon as practical. Who is acting as the IC should be clear and apparent at all times.

The Incident Commander (IC) is responsible for the overall management of the incident. Where the IC does not delegate or assign a position, the IC retains that responsibility. The IC should be careful to have no more than 5 to 8 people reporting directly to him. The IC establishes the strategy and goals for the incident and is ultimately responsible for the safety and success of the response activities.

An Operations Chief (OPS) is responsible for implementing the strategy to accomplish the goals defined by the IC. OPS directs all tactical operations, oversees response personnel and may assist the IC in the development of the action plan.

The Safety Officer is assigned by and reports directly to the IC. This position is responsible for identifying hazardous or unsafe situations, and developing measures necessary to assure the safety of response personnel and any victims of the incident. He/she should ensure that any personnel responding to the incident are using the proper PPE and have adequate training. The Safety Officer has the authority and responsibility to terminate or suspend operations that he believes are unsafe or will place people in imminent danger.

VII. PERSONNEL VEHICLES AND EQUIPMENT

All DEFS field personnel are equipped with H_2S monitors and portable gas detection devices. Communications to DEFS field personnel is via mobile cellular telephones or two-way radios and each DEFS field truck is also equipped with a fire extinguisher.

Plant personnel are equipped with personal H_2S monitors and portable gas detection devices. The plant has a fully equipped mobile breathing air system with work units. There are self-contained breathing apparatus (SCBA's) located strategically throughout the facility. An Emergency Response Kit and Road Block Kits are located at the egress stations for easy access if the facility is evacuated. Personnel have both cellular phones for communication, as well as two-way radios for inter-company communication.

Company vehicles are equipped with two-way radios, roadblock kits and mobile phones.

VIII. EVACUATION PROCEDURE

Evacuation may become necessary to protect personnel and the public from hazards associated with an incident. Orderly evacuation is essential to protect the general public as well as DEFS personnel and property.

DEFS personnel have reviewed the affected area for this plan and have determined the safe evacuation routes and assembly areas to reduce confusion if evacuation becomes necessary. The DEFS Facility/Field Operator may assign runners to direct evacuation and account for personnel during emergencies. (See Section XIV for evacuation routes).

Designated Assembly Areas shall be at a safe distance from the incident in an appropriate direction (upwind, upstream, and upgrade). If the Assembly Areas do not provide adequate shelter, transportation to a central shelter should be arranged after all personnel are accounted for. As the incident progresses, the IC must continuously evaluate the adequacy of the assembly area and necessity of the shelter.

DEFS personnel evacuating their work areas should evacuate the facility and initiate the plant ESD system, and proceed to the Designated Assembly Area. Facility personnel will account for all personnel, ensure the evacuated area is secured and report the status of the evacuation to the IC. Evacuated personnel shall remain at the assembly area or shelter until directed otherwise by the IC.

- Local law enforcement and/or emergency management authority must be notified in conjunction with any community evacuation or public protective measures initiated.
- Emergency Response Plan initiated.
- Assess the scene; protect yourself.
- Summon EMS to the scene; provide information on the nature and number of injuries.
- If trained, provide First Aid/CPR as necessary, until EMS arrives at the scene; injured personnel should not be moved unless the situation is life threatening.
- Evacuate unnecessary personnel from the area.
- Establish a secure perimeter around the area to prevent unauthorized entry.
- Initiate the site security plan.
- Notify Facility/Field Supervisor and make appropriate notifications to local Fire and EMS.
- Make other internal management contact as appropriate.

In case of a fatality:

- Do not move the victim.
- Do not release name of victim(s).
- Contact local law enforcement.
- Contact local medical examiner.
- Preserve the accident site.
- Restrict all radio communications concerning the incident.

Make appropriate government agency notification and conduct post-incident activities.

IX. COORDINATION WITH STATE EMERGENCY PLANS

The Hydrogen Sulfide Contingency Plan as described will be coordinated with the New Mexico Oil Conservation Division (NMOCD) and with the New Mexico State Police consistent with the New Mexico Hazardous Materials Emergency Response Plan (HMER). A copy of this plan will be submitted to the New Mexico State Police and Local Emergency Planning Committee for Eddy County.

LEPC
(575) 397-9231

NEW MEXICO STATE POLICE
(575) 392-5588

STATE EMERGENCY RESPONSE COMMISSION
(SERC)
(575) 392-5580

NEW MEXICO OFFICE OF EMERGENCY MANAGEMENT
(575) 476-9600 – State
(575) 393-3612 – Local

X. NOTIFICATION OF THE OIL CONSERVATION DIVISION

The person, operator or facility shall notify the New Mexico Oil Conservation Division (NMOCD) upon a release of hydrogen sulfide requiring activation of the Hydrogen Sulfide Contingency Plan as soon as possible, but no more than four hours after plan activation, recognizing that a prompt response should supercede notification. The person, operator or facility shall submit a full report of the incident to the NMOCD on Form C-141 no later than fifteen (15) days following the release.

OIL CONSERVATION DIVISION

LEA COUNTY

(575) 393-6161

XI. PLAN ACTIVATION

The Hydrogen Sulfide Contingency Plan shall be activated when the Incident Commander (IC) believes that a release creates a concentration of hydrogen sulfide that exceeds or is likely to exceed the following activation levels:

- 100 ppm in any defined public area;
- 500 ppm at any public road; or
- 100 ppm at a distance greater than 3000 feet from the site of the release.

XII. TRAINING AND DRILLS

Training for all affected DEFS personnel will be conducted prior to completion of the project and introduction of product. Training will then be given as needed for any personnel who may later be affected by this project.

This training will include:

- Training on the responsibilities and duties of essential DEFS personnel.
- On-site or classroom tabletop drills which simulate a release or other situation affecting the facility.
- Annual H_2S Hazard Training.

Initial training is to take place upon employment with the company and refresher training is to be conducted annually – or sooner if there is a change in the plan or the need for training is determined.

All training will be documented and training records will be maintained on file at the Carlsbad Asset Office.

All drills will be evaluated and documented including any recommendations resulting from findings. Recommendations will be assigned to DEFS personnel for completion by an established date. Upon completion, the action plan will be documented and records will be filed at the Carlsbad Asset Office.

Only trained and certified personnel from responding agencies will participate in any rescue exercise.

The Hydrogen Sulfide Contingency Plan will also provide for training of noted residents in this plan as appropriate on the proper protective measures to be taken in the event of a release, and shall provide for briefing of public officials on issues such as evacuation or shelter-in-place plans. Literature will be passed out to the noted residents with emergency numbers to be utilized in the event of an incident associated with this or any DEFS equipment and/or piping.

XIII. EMERGENCY DEFS CONTACT PHONE NUMBERS

Use the following phone number in the event of a catastrophic release and/or emergency situation on the pipeline.

Telephone Numbers of DEFS Personnel

24 HOUR TELEPHONE NUMBER 888-204-1781
Houston – 713-627-6690

Then Call:

Work Group Supervisor	Home #	Cell #
Eunice Gas Plant Steve Boatenhamer	(575) 318-4840	(575) 802-5215
Linam Gas Plant Matt Hendricks		(575) 973-8691
Construction & Maintenance Department Mark Owens	(575) 396-3937	(575) 973-8704

Then Call:

Asset Manager Kelly Jamerson	(575) 942-3285	(325) 226-3357
Asset Safety Coordinator Armancio Cruz		(575) 802-5222
Asset Engineer Greg Schmidt	(575) 887-8388	(575) 973-8619

Remember – Our 4 Objectives in an Emergency Are:

1. **Life Safety.**
2. **Environmental Protection.**
3. **Protection of Public and Company Property.**
4. **Preventing interruption of business and public services such as Highway Access, Water & Utilities.**

Life Safety Will Always Remain the First and Highest Priority!

In case of an emergency in the Southeastern New Mexico Asset requiring assistance for fire, ambulance, medical authorities or HazMat issues – immediately call:

911

Responder Emergency Numbers:

Facility	Eunice, New Mexico	Hobbs, New Mexico
Fire Department	575-394-2112	575-397-9308
Medical Facility	575-492-5000 – Lea Reg. 575-492-2000 – St. Mary's	
State Police	575-392-5588	
Sheriff Department	575-394-2020	575-393-2515
LEPC	575-397-9231	

Telephone Numbers of Public Agencies	
Oil Conservation Division – Lea County	575-393-6161
State Emergency Response Commission (SERC)	575-392-5580
New Mexico Office of Emergency Management	575-393-3612
Bureau of Land Management	575-234-5972

Telephone Numbers of Emergency Resources

Organization	Phone Number
Spill – Cleanup Contractors	
Rusty Forest – Hobbs (Roustabout)	575-397-7186 - Office 575-369-9114 - Mobile 575-370-7631 - Pager
Heavy Equipment Contractors	
B&H Construction – Carlsbad	575-887-9755
Rusty Forest – Hobbs (Roustabout)	575-397-7186 - Office 575-369-9114 - Mobile 575-370-7631 - Pager
Smith & Sons - Hobbs	575-397-1852
Sullivan Crane - Hobbs	575-393-7141
Sweatt Construction - Hobbs	575-397-4541
Transportation Services	
Gandy's Oilfield Service - Lovington	575-396-4948
McClaskey Oil Field Service	575-393-1016
Pool Company of Texas	575-392-2577
Scurlock Permian	575-392-8212
Other	
Indian Fire and Safety	575-393-3093
Artesia Fire & Safety	575-420-7876
Southwestern Public Service	800-750-2520

XIV. DETAIL INFORMATION - POTENTIALLY HAZARDOUS AREAS

Legal Description: Section 5, Township 21S, Range 36E, Lea County, NM
Latitude 32:30:50 Longitude: 103:16:56

DRIVING DIRECTIONS:
From Eunice: This facility is located approximately seven miles west of Eunice, New Mexico on State Highway 176.
Driving Directions: Turn North on State Highway 8 and continue two and one-half miles (past Oil Center) to the Eunice Plant sign. Turn West on State Highway 175 and travel approximately one mile to the plant.

EVACUATION ROUTE:

At all times note the wind direction before evacuating procedures begin.

The evacuation route for anyone traveling on State Highway 175 would be to reverse direction and go back to State Highway 8.

ROAD BLOCKS:

SR-175 will be blocked at approximately one mile east of the plant. CR-26 will be blocked at approximately one mile northwest and one mile south of the plant.

COMMAND POST:

The Command Post will be established at one of the roadblock locations. The site will be dependent of the wind direction.

The Incident Commander, after arriving at the scene, has the authority to assess the situation and determine the severity level of the incident. The Incident Commander may determine that the Contingency Plan as written cannot be activated effectively. The Emergency Response Plan may then be activated depending on the Incident Commander's evaluation of the situation.

RESIDENTS LOCATED INSIDE RADIUS OF EXPOSURE (ROE):

The following are residential/commercial/public receptors located in the ROE for the DEFS Eunice Gas Plant and associated Amada Booster and Sulfur Plant sites.

RESIDENT'S NAME	EMERGENCY TELEPHONE NUMBER	RESIDENT'S ADDRESS

XV. DEFS PUBLIC AWARENESS PROGRAM

Duke Energy Field Services (DEFS) participates in an extensive annual Public Awareness Program and Damage Prevention Program.

DEFS participates with the Local Emergency Planning Committee to educate persons residing in Lea County about the hazards associated with gas gathering pipelines.

DEFS participates with the Pipeline Group to educate Excavators and Contractors about Damage Prevention to underground facilities and is a member company of the New Mexico One-Call System.

DEFS installs pipeline markers and signs at all facilities and road crossings to identify our underground pipelines and maintains these markers on an annual schedule.

Residents living within a ¼ mile radius of all DEFS pipelines receive a Public Awareness brochure that explains Duke's Public Awareness and Damage Prevention program. This brochure is printed in both English and Spanish. It contains visual documentation of pipeline markers, aerial markers and casing vent markers Residents are encouraged to report any damage or vandalism to these markers in their neighborhood. This brochure also educates the public on how to respond to a pipeline emergency and includes a 24 hour/7 day week emergency telephone number.

DEFS PUBLIC AWARENESS BROCHURES WILL BE PRESENTED TO EACH RESIDENT LIVING WITHIN THE RADIUS OF EXPOSURE.

XVI. EMERGENCY SHUTDOWN EQUIPMENT

Duke Energy Field Services (DEFS) has an installed automatic and manually activated emergency shutdown system (ESD) at the Eunice Gas Plant. The plant operator and/or Incident Commander (IC) may use these systems to shutdown and isolate the equipment in the plant. This is a fail safe system that will shut valves and equipment if any portion of the system fails.

When activated the ESD shuts automatic valves on all inlet gas feed streams, shuts automatic valves on all outlet gas and Natural Gas Liquid (NGL) product streams, and closes several key automatic valves within the plant to isolate individual sections of the plant. In addition the main fuel gas supply and boiler fuel supply is shut off and major equipment is shutdown.

In addition to these systems, the Eunice Gas Plant contains a fixed monitor firewater system along with portable fire extinguishers that may be used in an emergency. Two gas-fired turbines are equipped with fire and gas detection monitors that tie into localized, automatic, CO_2 fire suppression systems, The plant has Self Contained Breathing Apparatus (SCBA) located strategically through the facility, which may be used for escape or rescue purposes. Refer to the "Emergency Equipment Location Plan" for the location of this equipment.

DEFS has also installed hydrogen sulfide detectors throughout the Plant in key locations to detect possible leaks. Upon detection of hydrogen sulfide at 10 ppm levels at any detector a visible beacon is activated at that detector and an alarm is sounded in the Distributed Control system (DCS). If hydrogen sulfide levels are detected at 90 ppm or above, an evacuation alarm is sounded throughout the plant. All personnel proceed immediately to the primary assembly area at the font office. If wind directions dictate, evacuation may be directed to the secondary assembly area at the intersection of NM 8 and SR 175. Refer to the "Plant H2S Alarm System Location Plan" for the locations of the H_2S detectors.

XVII. ATTACHMENTS, MAPS AND DRAWINGS

LISTING OF ATTACHMENTS, MAP AND DRAWINGS

1. Worst Case Scenario
2. Calculated Radius of Exposure (ROE)
3. Site Plot Plan
4. Map – Calculated Radius of Exposure
5. Emergency Equipment Location Plan
6. Plant H_2S Alarm System Location Plan
7. Electrical Classification Drawing
8. Hazardous Material Incident Notification Information Checklist

Attachment 1. – Worst Case Scenario and Alternate Release Scenario

Worst Case Scenario for the Eunice Gas Plant, Sulfur Plant and Amanda Booster:

The Worst Cast Scenario (WCS) associated with a release of 0.65 mole % hydrogen sulfide in the natural gas entering the Eunice Gas Plant. The permitted capacity of the plant is 105 MMSCFD. The worst case scenario is a rupture that results in the release of all of the hydrogen sulfide from the gas stream.

Calculations of Radius of Exposure (ROE):

The radius of exposure for both the 100 ppm and 500 ppm hydrogen sulfide concentrations is shown.

PPM Level	Radius of Exposure
100 ppm ROE	**5,982 feet**
500 ppm ROE	**2,734 feet**

Please the maps in the appendices for the identity of the areas exposed by a release of the gases as stated in the Worst Case Scenario.

Reminder of Activation Amounts:

- 100 ppm in any defined public area;
- 500 ppm at any public road; or
- 100 ppm at a distance greater than 3000 feet from the site of the release.

Facility Plot Plan

Maps - Calculated Radius of Exposure

Emergency Equipment Location Plan

Plant H_2S Alarm System
Location Plan

Electrical Classification Drawing

Hazardous Materials Incident Notification Information Checklist

The following information should be given to dispatch. Dispatch should be instructed to give all information received to response agencies.

Notification	Time Dispatch Notified:
Caller	Caller Name: _____ Caller Location: _____ Caller Phone Number: _____
Hazardous Materials Information	Incident location _____ (Address or Nearest Milepost or Exit) Time Incident Occurred _____ Container Type _____ (Truck, train car, drum storage Tank, pipeline, etc.) Substance _____ UN Identification Number _____ Other Identification _____ (Placards, shipping papers, etc.) Amount of material spilled/released _____ Current condition of material _____ (Flowing, on fire, vapors present, etc.)
Scene Description	Weather conditions _____ (i.e., sunny, overcast, wet, dry, etc.) Wind direction _____ Wind speed _____ Terrain _____ (i.e., valley, stream bed, depression, asphalt, etc.) Environmental Concerns _____ (Streams, sewers, etc.)
Affected Population	Number of people affected _____ Condition of people affected _____
Resources	Resources required _____ (EMS, HazMat Team, Fire Department, etc.)
Response	Response actions anticipated And/or in progress (i.e., rescue, fire suppression, containment, etc.)
Comments	_____ _____ _____ _____ _____ _____

DISTRIBUTION LIST

NEW MEXICO OIL & GAS CONSERVATION DIVISION (DISTRICT 2)	1 COPY
NEW MEXICO DEPARTMENT OF PUBLIC SAFETY (HOBBS OFFICE) STATE POLICE	1 COPY
EUNICE FIRE DEPARTMENT	1 COPY
HOBBS FIRE DEPARTMENT	1 COPY
MEDICAL FACILITY (Eunice)	1 COPY
MEDICAL FACILITY (Hobbs)	1 COPY
LEA COUNTY SHERIFF DEPARTMENT (Hobbs)	1 COPY
LOCAL EMERGENCY MANAGEMENT COMMISSIONER	1 COPY
DCP FIELD SERVICES, L.P. EUNICE PLANT OFFICE	1 COPY
DCP FIELD SERVICES, L.P. HOBBS OFFICE	1 COPY
DCP FIELD SERVICES, L.P. - KENNETH WINN	1 COPY
DCP FIELD SERVICES, L.P. MIDLAND OFFICE	1 COPY

H_2S Contingency Plan

Artesia/Carlsbad Field Locations

Artesia & Carlsbad, New Mexico

Reviewed – February 2011

H_2S Contingency Plan

TABLE OF CONTENTS

DCP Midstream
Artesia/Carlsbad Field Locations
Hydrogen Sulfide Contingency Plan

I. INTRODUCTION

DCP Midstream conducts its business responsibly by providing employees and any other person working or visiting, a safe work place. The Artesia/Carlsbad Field Locations Hydrogen Sulfide Contingency Plan was developed to satisfy the Oil and Conservation Ruling – Title 19, Chapter 15, Part 11; and paragraph 7.6 of the guidelines published by the API in its publication entitled "Recommended Practices for Oil and Gas Producing and Gas Processing Plant Operations Involving Hydrogen Sulfide," RP-55.

This plan provides guidelines to assist in responding to and managing an emergency in the event of an H_2S release from a pipeline or facility. The goals of this plan are to provide tools to enable an efficient, coordinated and effective response to emergencies. This plan contains written guidelines to evaluate and respond to an incident, and to prevent or minimize personal injury or loss, to avoid environmental hazards, and to reduce damage to personal property.

II. DEFINITIONS USED IN THIS PLAN

ANSI The acronym "ANSI" means the American National Standards Institute.

API The acronym "API" means the American Petroleum Institute.

Area of Exposure (AOE) The phrase "area of exposure" means the area within a circle constructed with a point of escape at its center and the radius of exposure as its radius.

ASTM The acronym "ASTM" means the American Society for Testing and Materials.

Dispersion Technique A "dispersion technique" is a mathematical representation of the physical and chemical transportation characteristics, dilution characteristics and transformation characteristics of hydrogen sulfide gas in the atmosphere.

Escape Rate The "escape rate" is the maximum volume (Q) that is used to designate the possible rate of escape of a gaseous mixture containing hydrogen sulfide, as set forth herein.

(a) For existing gas facilities or operations, the escape rate shall be calculated using the maximum daily rate of the gaseous mixture produced or handled or the best estimate thereof. For an existing gas well, the escape rate shall be calculated using the current daily absolute open flow rate against atmospheric pressure or the best estimate of that rate.

(b) For new gas operations or facilities, the escape rate shall be calculated as the maximum anticipated flow rate through the system. For a new gas well, the escape rate shall be calculated using the maximum open flow rate of offset wells in the pool or reservoir, or the pool or reservoir average of maximum open flow rates.

(c) For facilities or operations not mentioned, the escape rate shall be calculated using the actual flow of the gaseous mixture through the system or the best estimate thereof.

GPA The acronym "GPA" means the Gas Processors Association.

LEPC The acronym "LEPC" means the Local Emergency Planning Committee established pursuant to the Emergency Planning and Community Right-to-Know Act, 42 U.S.C. Section 11001.

NACE The acronym "NACE" means the National Association of Corrosion Engineers.

PPM The acronym "ppm" means "parts per million" by volume.

PHV Potentially Hazardous Volume means the volume of hydrogen sulfide gas of such concentration that:

(a) the 100-ppm radius of exposure includes any public area;

(b) the 500-ppm radius of exposure includes any public road; or

(c) the 100-ppm radius of exposure exceeds 3,000 feet.

Public Area A "public area" is any building or structure that is not associated with the well, facility or operation for which the radius of exposure is being calculated and that is used as a dwelling, office, place of business, church, school, hospital, or government building, or any portion of a park, city, town, village or designated school bus stop or other similar area where members of the public may reasonably be expected to be present.

Public Road A "public road" is any federal, state, municipal or county road or highway.

Radius of Exposure The radius of exposure is that radius constructed with the point of escape as its starting point and its length calculated using the following Pasquill-Gifford derived equation, or by such other method as may be approved by the division:

(a) For determining the 100-ppm radius of exposure: $X = [(1.589)(\text{hydrogen sulfide concentration})(Q)]^{(0.6258)}$, where "X" is the radius of exposure in feet, the "hydrogen sulfide concentration" is the decimal equivalent of the mole or volume fraction of hydrogen sulfide in the gaseous mixture, and "Q" is the escape rate expressed in cubic feet per day (corrected for standard conditions of 14.73 psia and 60 degrees F).

(b) For determining the 500-ppm radius of exposure: $X=[(0.4546)(\text{hydrogen sulfide concentration})(Q)]^{(0.6258)}$, where "X" is the radius of exposure in feet, the "hydrogen sulfide concentration" is the decimal equivalent of the mole or volume fraction of hydrogen sulfide in the gaseous mixture, and "Q" is the escape rate expressed in cubic feet per day (corrected for standard conditions of 14.73 psia and 60 degrees F).

Regulatory Threshold

(1) Determination of Hydrogen Sulfide Concentration.

(a) Each person, operator or facility shall determine the hydrogen sulfide concentration in the gaseous mixture within each of its wells, facilities or operations either by testing (using a sample from each well, facility or operation), testing a representative sample, or using process knowledge in lieu of testing. If a representative sample or process knowledge is used, the concentration derived from the representative sample or process knowledge must be reasonably representative of the hydrogen sulfide concentration within the well, facility or operation.

(b) The tests used to make the determination referred to in the previous subparagraph shall be conducted in accordance with applicable ASTM or GPA standards or by another method approved by the division.

(c) If a test was conducted prior to the effective date of this section that otherwise meets the requirements of the previous subparagraphs, new testing shall not be required.

(d) If any change or alteration may materially increase the concentration of hydrogen sulfide in a well, facility or operation, a new determination shall be required in accordance with this section.

(2) Concentrations Determined to be Below 100 ppm. If the concentration of hydrogen sulfide in a given well, facility or operation is less than 100 ppm, no further actions shall be required pursuant to this section.

(3) Concentrations Determined to be Above 100 ppm.

(a) If the concentration of hydrogen sulfide in a given well, facility or operation is determined to be 100 ppm or greater, then the person, operator or facility must calculate the radius of exposure and comply with applicable requirements of this section.

(b) If calculation of the radius of exposure reveals that a potentially hazardous volume is present, the results of the determination of the hydrogen sulfide concentration and the calculation of the radius of exposure shall be provided to the division. For a well, facility or operation existing on the effective date of this section, the determination, calculation and submission required herein shall be accomplished within 180 days of the effective date of this section; for any well, facility or operation that commences operations after the effective date of this section, the determination, calculation and submission required herein shall be accomplished before operations begin.

(4) Recalculation. The person, operator or facility shall calculate the radius of exposure if the hydrogen sulfide concentration in a well, facility or operation increases to 100 ppm or greater. The person, operator or facility shall also recalculate the radius of exposure if the actual volume fraction of hydrogen sulfide increases by a factor of twenty-five percent in a well, facility or operation that previously had a hydrogen sulfide concentration of 100 ppm or greater. If calculation or recalculation of the radius of exposure reveals that a potentially hazardous volume is present, the results shall be provided to the division within sixty (60) days.

III. CHARACTERISTICS OF HYDROGEN SULFIDE (H_2S) AND SULFUR DIOXIDE (SO_2)

Hazards of Hydrogen Sulfide

At normal atmospheric conditions, hydrogen sulfide (H_2S) is a colorless gas. It is commonly referred to by other names such as Rotten Egg Gas, Acid Gas, Sour Gas, Sewer Gas, Poison Gas and Sulfur Gas. It has a characteristic "rotten egg" smell at low concentrations. At higher concentrations, it has a sweet odor. At still higher concentrations, an odor cannot be detected at all due to olfactory nerve anesthesia. Odor must *not* be used as means of determining the concentration of H_2S gas! Hydrogen sulfide can form explosive mixtures at concentrations between 4.3% and 46%, by volume. Its auto-ignition temperature is 500 degrees F (260 degrees C). When burning, its flame is practically invisible. It is denser than air (1.19 times heavier than air) and may accumulate in low places. Hydrogen sulfide gas tends to interact with high carbon steel, causing embitterment and fine fractures in metal components and piping.

H_2S acts as a chemical asphyxiate, preventing the body from utilizing oxygen in the tissue. Breathing may stop after a few seconds of exposure to H_2S gas in concentrations of 600-700 ppm. This produces symptoms such as panting, pallor, cramps, dilation of eye pupils and loss of speech. This is generally followed by immediate loss of consciousness. Death may occur quickly from respiratory paralysis and cardiac arrest. The table below illustrates the physical effects of hydrogen sulfide on a healthy adult.

Table 1 Effect of exposure to Hydrogen Sulfide Gas on a Healthy Adult

Concentration			Physical Effects
percent (%)	ppm	grains per ft³	
0.001	10	0.65	Obvious and unpleasant odor. Safe for 8 hours exposure.
0.01	100	6.48	Kills smell in 3 to 15 minutes; may sting eyes and throat.
0.02	200	12.96	Kills smell shortly; stings eyes and throat.
0.05	500	32.96	Dizziness; breathing ceases in a few minutes; artificial respiration / oxygen must be given promptly.
0.07	**700**	45.36	**Unconscious quickly; death will result if not rescued promptly.**
0.10	**1000**	64.80	**Unconscious at once; followed by death within minutes.**

Properties of H_2S

COLOR	Colorless.
ODOR	Very offensive, commonly referred to as the odor of rotten eggs.
VAPOR DENSITY	1.189 (Air=1.0) H_2S is heavier than air.
BOILING POINT	-76 degrees F (-24 degrees C).
EXPLOSIVE LIMITS	4.3 to 46% by volume in air.
IGNITION TEMPERATURE	500 degrees F (260 degrees C).
WATER SOLUBLE	Yes (4 volumes gas in 1 volume water at 32 degrees F (0 degrees C).
FLAMMABILITY CORROSIVE	Forms explosive mixtures with air or oxygen.

Toxicity Table – H_2S

1 ppm = .0001% (1/10,000 of 1%)	Can smell (rotten egg odor).
10 ppm = .001% (1/1000 OF 1%)	Allowable for 8 hours exposure. (PEL & TLV)
100 ppm = .01% (1/100 of 1%)	Kills smell in 3-15 minutes. May burn eyes and throat. Considered to be IDLH atmosphere (Immediately Dangerous to Life and Health).
200 ppm = .03% (2/100 of 1%)	Kills smell rapidly. Burns eyes and throat.
500 ppm = .05% (5/100 of 1%)	Loses sense of reasoning and balance. Respiratory disturbances in 2-15 minutes. Needs prompt artificial resuscitation.
700 ppm = .07% (7/100 of 1%)	Will become unconscious quickly. Breathing will stop and death will result if not rescued promptly. Immediate artificial resuscitation is required.
1000 ppm = .1% (1/10 OF 1%)	Unconscious at once. PERMANENT BRAIN DAMAGE MAY RESULT UNLESS RESCUED PROMPTLY.
	ppm=parts of gas per million parts of air by volume. 1% = 10,000 ppm.

Properties of Sulfur Dioxide SO_2

Sulfur Dioxide - SO_2	Physical and Chemical Properties
Chemical Formula	SO_2
Molecular Weight	64
Boiling Point	14 degrees Fahrenheit
Non-Combustible	Produced by burning of H_2S Gas
Vapor Pressure	>1 atm @ 68 degrees Fahrenheit
Melting Point	-104 degrees Fahrenheit
Specific Gravity	Heavier than air, 2.26 degrees gravity
Colorless gas	SO_2 is colorless gas, very irritating to the eyes and lungs
Odor	Pungent odor and can cause injury or death to persons exposed to it
Reactions	Reacts with water or steam to produce toxic and corrosive gases
Hazards of Sulfur Dioxide	
Toxicity	The physiological effects on humans when inhalation of SO_2 occurs, varies at different levels of concentration and may be as follows
Concentrations SO_2	Physiological Effects SO_2
0.3-1 ppm	Detection level – pungent odor
2 ppm	Threshold Limit Value (TLV) Time Weighted Average (TWA)
5 ppm	15 minute Short Term Exposure Limit (STEL) permitted by OSHA
6 – 12 ppm	Irritation of the throat and nose
20 ppm	Eye irritation
100 ppm	Immediately Dangerous to Life or Health (IDLH) set by NIOSH

IV. EMERGENCY RESPONSE POLICY AND AUTHORITY

It is the policy of DCP Midstream to take the necessary actions required to safeguard DCP Midstream personnel and the public from emergency incidents. Such emergency incidents may include fires, hazardous materials releases, and incidents resulting from natural hazards such as tornadoes.

In the event of an emergency incident, DCP Midstream personnel will take prompt action within their immediate work area to ensure that all appropriate DCP Midstream personnel, corporate personnel, and the public are alerted or notified that an emergency incident exists.

Whenever possible, DCP Midstream personnel will take immediate action to limit the effects of the emergency. Four objectives will be considered when developing an appropriate emergency response. These objectives are:

- Life safety.
- Environmental protection.
- Protection of company and public property.
- Preventing interruption of business and public services such as highway access, water, and utilities.

While all four of the above objectives are important, life safety will always remain the first and highest priority.

All DCP Midstream personnel have the responsibility, if necessary, to immediately alert other DCP Midstream personnel that an emergency condition exists and to take appropriate action to protect life, property, and the environment. All emergency response actions by DCP Midstream personnel are voluntary. Emergency response actions taken by individuals should be within the limitations of their training, experience, and physical abilities. At no time will Artesia Plant personnel assume an unreasonable risk during an emergency response. An unreasonable risk exists when:

- The task exceeds the physical abilities of the individual.
- The individual is not properly trained to complete the task.
- The individual does not have adequate experience to complete the task.

V. RESPONSE PROCEDURES FOR UNINTENTIONAL (ACCIDENTAL) RELEASES

If an H_2S leak is detected as a result of an accidental release, the following emergency plan of action should be put into effect to adequately ensure the safety of DCP Midstream employees, contractors and the public. These response sequences should be altered to fit the prevailing situation and event/site-specific requirements.

1. Upon detecting a leak, immediately move away from the source and attempt to get out of the affected area by moving upwind, or cross wind if travel upwind is not possible.

2. Alert other personnel in the area. Assist personnel in distress if this can be done without endangering yourself. Proceed to the designated emergency assembly area.

3. If injury or death has occurred, immediately call emergency services (911).

4. If possible, take immediate measures to control present or potential discharge and to eliminate possible ignition sources.

5. Notify the supervisory foreman. Upon arriving at the scene, the supervisor should formally assume the role of the Incident Commander (IC). Until relieved by the supervisor, the senior employee having initially discovered the leak should fill the role of IC.

6. The IC will assess the situation and direct further actions to be taken. If assistance is required from law enforcement, safety or medical agencies, consult the emergency services telephone listing under Section XIII. The Division Operations Vice-President or his designee should also be notified.

7. If the IC deems it necessary, ensure that steps are taken to stop traffic through the area, most importantly, highway traffic. Roadblocks must be set up at the 10-ppm H_2S boundary. The H_2S boundary shall be delineated by using a calibrated H_2S monitor. Call emergency services (911) for assistance in quarantining the area, if needed

8. Initiate evacuation of nearby residents, if deemed necessary. Coordinate with emergency services.

9. Personnel equipped with self-contained breathing apparatus (SCBA) and portable H_2S monitoring equipment will determine the cause and extent of the leak. Personnel should enter the area from upwind of the site. If a reading of 10 ppm or higher of H_2S is obtained, then backup personnel equipped with SCBA will also be required.

10. No one will be intentionally exposed to H_2S concentrations in excess of 10 ppm without proper Personal Protection Equipment (PPE), IC authorization and backup personnel.

11. If possible, de-energize all sources of ignition, using lockout/tagout procedures.

12. If possible, perform shutdown on appropriate equipment and systems.

13. Trained personnel will continuously monitor H_2S concentrations, wind direction and area of exposure and will advise public safety and emergency personnel on current conditions.

14. Protective measures shall be maintained until the threat of injury from H_2S poisoning has been eliminated. The area must be checked with monitoring equipment and cleared below 10 ppm before allowing entry without proper PPE.

15. Notify the Western Division Health & Safety Manager (432-620-4101). Assistance will be provided to ensure all proper notifications and reporting are made to local, state and federal agencies.

16. As soon as possible, **but no more than four hours after plan activation,** notify the New Mexico Oil Conservation Division District 2 – Eddy County (See Section XIII). At a minimum, the following information will be needed:

    - The company name.
    - Facility name.
    - Your name and telephone number for them to contact you.
    - The location and source of the discharge.
    - A description of the area affected by the discharge, the probable concentration of H_2S in the region and the wind direction/velocity.
    - If necessary, request additional assistance from the agency.

VI. EMERGENCY INCIDENT MANAGEMENT

Emergency incident management will follow the Incident Command System (ICS) as described by the Federal Emergency Management Act (FEMA). The intent of using ICS for all emergency incidents provides automatic continuity with outside agencies and assists in establishing a "unified command" of the incident. DCP Midstream provides instruction and training on the ICS, which is beyond the scope of this contingency plan. However a brief overview of the system is provided below.

The Incident Command System (ICS) utilizes a flexible, modular approach to organizing resources to effectively respond to emergency events. FEMA suggests that the basic Incident Command System has five functional areas:

- Command;
- Operations;
- Planning;
- Logistics; and,
- Finance.

However, for incidents such as those described in this plan, it seems more likely that the basic Incident Command System would be comprised of: 1) Command; 2) Operations Chief; and, 3) Safety Officer. Larger incidents may require additional positions such as Public Information Officer, Logistics Chief, Planning Chief, Finance Chief, Staging Manager, Medical Group Supervisor and Environmental Group Supervisor. The exact number and combination of positions will vary depending upon the type, size and duration of the incident.

In every incident, command must first be established. The first person to discover the problem is, by default, the Incident Commander (IC) until this responsibility is transferred to someone else. This responsibility should be formally transferred to the Facility/Field Supervisor as soon as practical. Who is acting as the IC should be clear and apparent at all times.

The Incident Commander (IC) is responsible for the overall management of the incident. Where the IC does not delegate or assign a position, the IC retains that responsibility. The IC should be careful to have no more than 5 to 8 people reporting directly to him. The IC establishes the strategy and goals for the incident and is ultimately responsible for the safety and success of the response activities.

An Operations Chief (OPS) is responsible for implementing the strategy to accomplish the goals defined by the IC. OPS directs all tactical operations, oversees response personnel and may assist the IC in the development of the action plan.

The Safety Officer is assigned by and reports directly to the IC. This position is responsible for identifying hazardous or unsafe situations, and developing measures necessary to assure the safety of response personnel and any victims of the incident. He/she should ensure that any personnel responding to the incident are using the proper PPE and have adequate training. The Safety Officer has the authority and responsibility to terminate or suspend operations that he believes are unsafe or will place people in imminent danger.

VII. PERSONNEL VEHICLES AND EQUIPMENT

Each Field Operator's and Field Mechanic's vehicle is equipped with a Self Contained Breathing Apparatus (SCBA) or a Supplied Air Respirator (SAR).

DCP Midstream field personnel are equipped with personal H_2S monitors and portable gas detection devices.

Communications to DCP Midstream field personnel is via mobile cellular telephones and/or two-way radio.

DCP Midstream field trucks are also equipped with a fire extinguisher.

Company vehicles are equipped with roadblock kits and mobile phones.

Company vehicles carry first aid and blood borne pathogen kits for use as needed.

VIII. EVACUATION PROCEDURE

Evacuation may become necessary to protect personnel and the public from hazards associated with an incident. Orderly evacuation is essential to protect the general public as well as DCP Midstream personnel and property.

DCP Midstream personnel have reviewed the affected area for this plan and have determined the safe evacuation routes and assembly areas to reduce confusion if evacuation becomes necessary. The DCP Midstream Facility/Field Operator may assign runners to direct evacuation and account for personnel during emergencies

Designated Assembly Areas shall be at a safe distance from the incident in an appropriate direction (upwind, upstream, and upgrade). If the Assembly Areas do not provide adequate shelter, transportation to a central shelter should be arranged after all personnel are accounted for. As the incident progresses, the IC must continuously evaluate the adequacy of the assembly area and necessity of the shelter.

DCP Midstream personnel evacuating their work areas should evacuate the facility and initiate the plant ESD system, and proceed to the Designated Assembly Area. Facility personnel will account for all personnel, ensure the evacuated area is secured and report the status of the evacuation to the IC. Evacuated personnel shall remain at the assembly area or shelter until directed otherwise by the Incident Commander.

- Local law enforcement and/or emergency management authority must be notified in conjunction with any community evacuation or public protective measures initiated.
- Emergency Response Plan initiated.
- Assess the scene; protect yourself.
- Summon EMS to the scene; provide information on the nature and number of injuries.
- If trained, provide First Aid/CPR as necessary, until EMS arrives at the scene; injured personnel should not be moved unless the situation is life threatening.
- Evacuate unnecessary personnel from the area.
- Establish a secure perimeter around the area to prevent unauthorized entry.
- Initiate the site security plan.
- Notify Facility/Field Supervisor and make appropriate notifications to local Fire and EMS.
- Make other internal management contact as appropriate.

In case of a fatality:

- Do not move the victim.
- Do not release name of victim(s).
- Contact local law enforcement.
- Contact local medical examiner.
- Preserve the accident site.
- Restrict all radio communications concerning the incident.

Make appropriate government agency notification and conduct post-incident activities.

IX. COORDINATION WITH STATE EMERGENCY PLANS

The Hydrogen Sulfide Contingency Plan as described will be coordinated with the New Mexico Oil Conservation Division (NMOCD) and with the New Mexico State Police consistent with the New Mexico Hazardous Materials Emergency Response Plan (HMER).

A copy of this plan will be submitted to the New Mexico State Police and Local Emergency Planning Committee for Eddy County.

Telephone numbers are:

LEPC
(575)887-9511

NEW MEXICO STATE POLICE
ARTESIA **CARLSBAD**
(575) 746-9888 - OR - **(575) 885-3137**

ROSWELL
(575) 622-6200

STATE EMERGENCY RESPONSE COMMISSION (SERC)
HOBBS **CARLSBAD**
(575) 392-5580 **(575) 827-9329**

NEW MEXICO OFFICE OF EMERGENCY MANAGEMENT
(505) 476-9600

X. NOTIFICATION OF THE OIL CONSERVATION DIVISION

The person, operator or facility shall notify the New Mexico Oil Conservation Division (NMOCD) upon a release of hydrogen sulfide requiring activation of the Hydrogen Sulfide Contingency Plan as soon as possible, but no more than four hours after plan activation, recognizing that a prompt response should supercede notification.

The person, operator or facility shall submit a full report of the incident to the NMOCD on Form C-141 no later than fifteen (15) days following the release.

REPORTING NUMBER IS:

OIL CONSERVATION DIVISION – DISTRICT 2
CHAVES AND EDDY COUNTIES

(575) 748-1283

XI. PLAN ACTIVATION

The Hydrogen Sulfide Contingency Plan shall be activated when the Incident Commander (IC) believes that a release creates a concentration of hydrogen sulfide that exceeds or is likely to exceed the following activation levels:

- 100 ppm in any defined public area;
- 500 ppm at any public road; or
- 100 ppm at a distance greater than 3000 feet from the site of the release.

XII. TRAINING AND DRILLS

Training for all affected DCP Midstream personnel will be conducted prior to completion of the project and introduction of product. Training will then be given as needed for any personnel who may later be affected by this project.

This training will include:

- Training on the Artesia/Carlsbad Field H_2S Contingency Plan.
- Training on the responsibilities and duties of essential DCP Midstream personnel.
- On-site or classroom tabletop drills which simulate a release or other situation affecting field operations.
- Annual H_2S Hazard Training.

Initial training is to take place upon employment with the company and refresher training is to be conducted annually – or sooner if there is a change in the plan or the need for training is determined.

All training will be documented and training records will be maintained on file at the Carlsbad Asset Office.

All drills will be evaluated and documented including any recommendations resulting from findings. Recommendations will be assigned to DCP Midstream personnel for completion by an established date. Upon completion, the action plan will be documented and records will be filed at the Carlsbad Asset Office.

Only trained and certified personnel from responding agencies will participate in any rescue exercise.

The Artesia/Carlsbad Field Hydrogen Sulfide Contingency Plan will also provide for training of noted residents in this plan as appropriate on the proper protective measures to be taken in the event of a release, and shall provide for briefing of public officials on issues such as evacuation or shelter-in-place plans. Literature will be passed out to the noted residents with emergency numbers to be utilized in the event of an incident associated with this or any DCP Midstream equipment and/or piping.

XIII. EMERGENCY DCP MIDSTREAM CONTACT PHONE NUMBERS

Use the following phone number in the event of a catastrophic release and/or emergency situation on the pipeline.

Telephone Number of DCP MIDSTREAM Personnel

24 HOUR TELEPHONE NUMBER 800-435-1679

Then Call:

Work Group Supervisor	Home #	Cell #
Artesia Gas Plant Danny Vasquez	(575) 236-6165	(575) 802-5114
East Carlsbad Gas Plant Randy Counts	(575) 887-0411	(575) 802-5200
Pecos Diamond Gas Plant Danny Vasquez	(575) 236-6165	(575) 802-5114
Artesia Field Danny Forlines	(575) 746-6738	(575) 802-5148
Carlsbad Field Johnny Lamb	(575) 887-5077	(575) 802-5150
Construction & Maintenance - Plants Mark Owens	(575) 396-3937	(575) 973-8704
Construction & Maintenance - Pipeline Jim Allred	(575) 396-7205	(575) 802-5131

Then Call:

Asset Manager Kelly Jamerson	(575) 942-2385	(325) 226-3357
Safety Coordinator		
Asset Engineer Greg Schmidt	(575) 887-8388	(575) 973-8619

Remember – Our 4 Objectives in an Emergency Are:

1. Life Safety.
2. Environmental Protection.
3. Protection of Company and Public Property.
4. Preventing interruption of business and public services such as Highway Access, Water & Utilities.

Life Safety Will Always Remain the First and Highest Priority!

In case of an emergency in the Artesia/Carlsbad Asset requiring assistance for fire, ambulance, medical authorities or HazMat issues – immediately call:

911

Responder Emergency Numbers:

Facility	Artesia, New Mexico	Carlsbad, New Mexico
Fire Department	575-746-5751	575-885-2111
Medical Facility	575-748-3333	575-887-4100
State Police	575-748-9718	575-885-3137
Sheriff Department	575-746-9888	575-887-7551
LEPC	575-887-9511 (Located in Carlsbad)	

Telephone Numbers of Public Agencies

Oil Conservation Division – District 2 – Chaves and Eddy County	575-748-1283
State Emergency Response Commission (SERC)	575-393-6161
New Mexico Office of Emergency Management	575-476-9600
Bureau of Land Management - Carlsbad	575-234-5972

Telephone Numbers of Emergency Resources

Organization	Phone Number
Spill – Cleanup Contractors	
Heavy Equipment Contractors	
B&H Construction – Carlsbad	575-887-9755
CMA Welding	432-586-9200
Smith & Sons - Hobbs	575-397-1852
Sullivan Crane - Hobbs	575-393-7141
Sweatt Construction - Hobbs	575-397-4541
Transportation Services	
Gandy's Oilfield Service - Lovington	575-396-4948
McClaskey Oil Field Service	575-393-1016
Pool Company of Texas	575-392-2577
Scurlock Permian	575-392-8212
Other	
Total Safety	575-392-2973
Artesia Fire & Safety	575-420-7876
Southwestern Public Service	800-750-2520

XIV. DETAIL INFORMATION - POTENTIALLY HAZARDOUS AREAS

The following site specific information is provided for each booster/compressor station in Section XVII of this plan:

DRIVING DIRECTIONS:

From Appropriate Town:
Location: Township, Range and County
Latitude:
Longitude:

The following pertains to any affected area:

EVACUATION ROUTE:

At all times note the wind direction before evacuating procedures begin.

Evacuation for all persons inside of the facility fences would be up or cross wind as conditions permit. All affected personnel are to remain as a group to account for all persons.

ROAD BLOCKS:

Roads into the affected area will be blocked as needed to prevent any additional exposure and unnecessary entry into the incident zone.

COMMAND POST:

The Command Post will be established at one of the roadblock locations. The site will be dependent of the wind direction.

As stated previously, the gathering system supervisor (or his official designee) will assume the roll of Incident Commander after arriving at the scene. The Incident Commander has the authority to assess the situation and determine the severity level of the incident. The Incident Commander may determine that the Contingency Plan as written cannot be activated effectively. The Emergency Response Plan may then be activated depending on the Incident Commander's evaluation of the situation.

XV. DCP MIDSTREAM PUBLIC AWARENESS PROGRAM

DCP Midstream participates in an extensive annual Public Awareness Program and Damage Prevention Program.

DCP Midstream participates with the Local Emergency Planning Committee to educate persons residing in Eddy County about the hazards associated with gas gathering pipelines.

DCP Midstream participates with the Pipeline Group to educate Excavators and Contractors about Damage Prevention to underground facilities and is a member company of the New Mexico One-Call System.

DCP Midstream installs pipeline markers and signs at all facilities and road crossings to identify our underground pipelines and maintains these markers on an annual schedule.

Residents living within a ¼ mile radius of all DCP Midstream pipelines receive a Public Awareness brochure that explains DCP Midstream Public Awareness and Damage Prevention program. This brochure is printed in both English and Spanish. It contains visual documentation of pipeline markers, aerial markers and casing vent markers Residents are encouraged to report any damage or vandalism to these markers in their neighborhood. This brochure also educates the public on how to respond to a pipeline emergency and includes a 24 hour/7 day week emergency telephone number.

DCP MIDSTREAM PUBLIC AWARENESS BROCHURES WILL BE PRESENTED TO EACH RESIDENT LIVING WITHIN THE RADIUS OF EXPOSURE.

XVI. EMERGENCY SHUTDOWN EQUIPMENT

DCP Midstream has an installed automatic and manually activated emergency shutdown system (ESD) at the Artesia/Carlsbad Field. The Field Operator and/or Incident Commander (IC) may use these systems to shutdown and isolate the equipment in the booster.

The booster contains portable fire extinguishers that may be used in an emergency. Refer to the "Emergency Equipment Listing" for this equipment.

DCP Midstream has also installed hydrogen sulfide detectors throughout the booster in key locations to detect possible leaks. Upon detection of hydrogen sulfide at 10 ppm levels at any detector a visible beacon is activated and an alarm is sounded. The beacon is located at the entrance gate and is visible to oncoming traffic. If the alarm is activated by one of the detectors around one of the compressors, that particular compressor is automatically shut down.

XVII. ATTACHMENTS, MAPS AND DRAWINGS

LISTING OF ATTACHMENTS, MAP AND DRAWINGS

The following site specific information is included for each of the booster/compressor stations in the system covered by this plan:

1. Facility Information Sheet

2. Calculated Radius of Exposure (ROE)

   The Radius of Exposure for each affected facility has been calculated for 100 PPM and 500 PPM as required. The formula for the calculations is as shown here.

   100 PPM ROE = [(1.589)(H2S Mole Fraction)(Q)] ^ 0.6258
   500 PPM ROE = [(0.4546)(H2S Mole Fraction)(Q)] ^ 0.6258

   Where Q = scfpd

3. Site Plot Plan

In addition, information is included for the gathering system which feeds these facilities.

Facilities which fall under the provisions of the H_2S Contingency Plan include:

1. Dagger Draw Booster
2. Grayburg Booster
3. Illinois Camp Booster
4. Jackson Booster
5. Kathleen Booster
6. Loco Hills Booster
7. Penroc Booster
8. R.J. Booster
9. Rambo Booster
10. Square Lake Booster
11. W. Burton Flats Booster
12. Winchester Booster
    Artesia/Carlsbad Gathering System

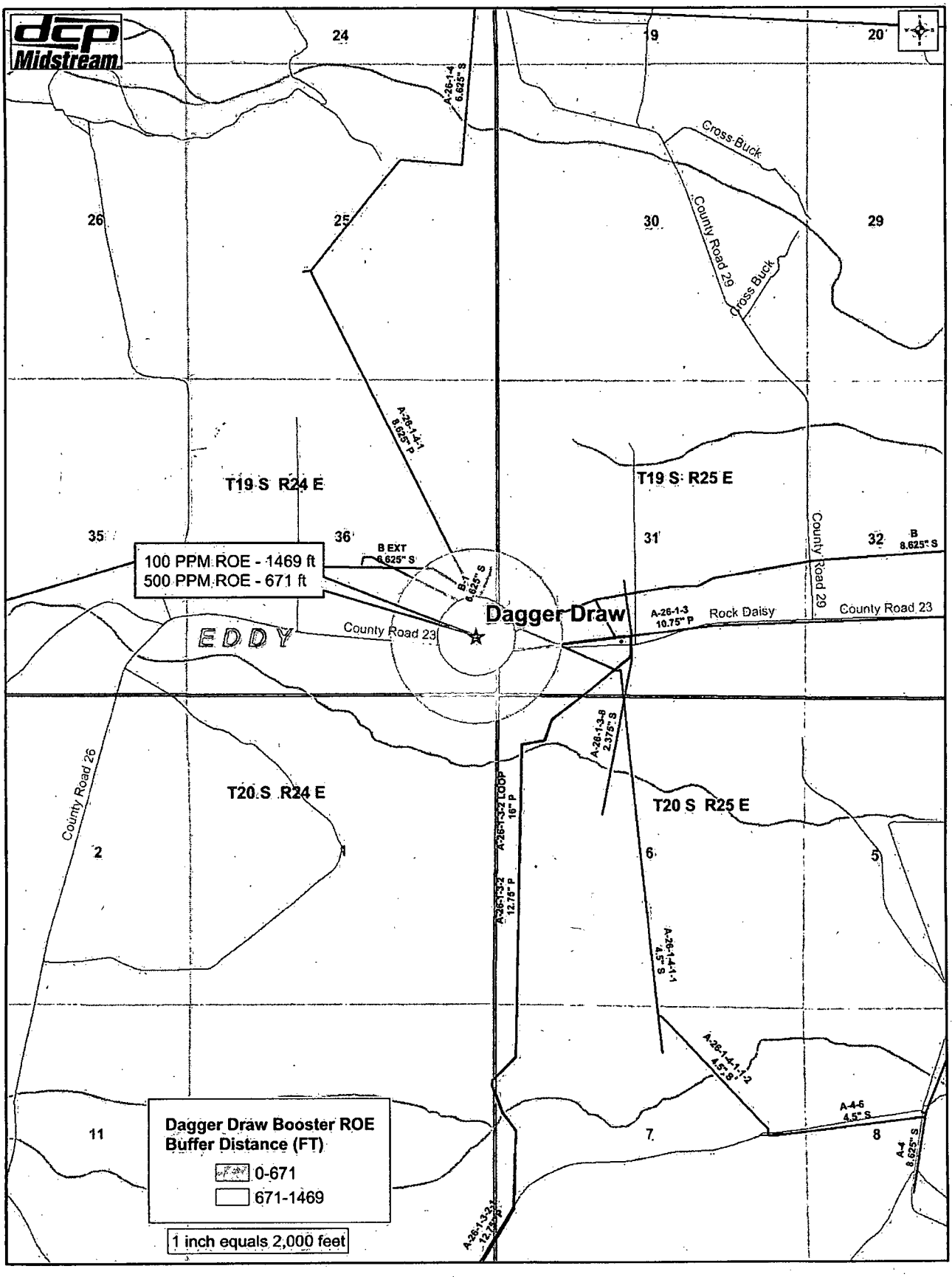
Site specific information for these facilities is located behind the associated numeric tab.

Attachment 1 – Dagger Draw Booster

Site Specific Information

Facility:	**Dagger Draw Booster**		
Driving Directions:	From Artesia: Go south on US 285 approximately fourteen and 1/2 miles to County Road 23. Turn west and travel 7.7 miles to the booster site, which is on the right (north) side of the road.		
GPS:	32 36'46.263"N 104 32'00.249"W, 3610'		
Gas stream is:	**SOUR**		
	If sour – ppm:		
Volume/day:	2.3 mmcf/d		
Inlet Pressure:	17 psi	**Size of Piping:**	10"
Outlet Pressure:	840 psi	**Size of Piping:**	8"
Piggible?	YES		
Gas comes in from:	Dagger Draw/Hope Gathering		
Gas goes to:	Artesia Gas Plant		
Treating at facility?	NO		
	If so – what kind?	N/A	
Is there storage?	YES ~~NO~~		
	If so – what type & how much?	Lube Oil (1000 gal.) – Anti-Freeze (1000 gal.) – Slop Oil (400 bbl.) – Methanol (110 bbl.)	
What safety systems are on site?	SCADA Alarms, Windsocks, Fire Extinguishers Station H_2S Monitors		
What safety equipment is on site?	SCADA Alarms, Windsocks, 6 - 30# Ansul Fire Extinguisher, 1 – 10# Ansul Fire Extinguisher, Station H_2S Monitors		
What safety equipment does operator have in vehicle?	H_2S Monitor, Multi-gas Detector, Fire Extinguisher , First Aid Kit, Bloodborne Pathogen Kit, Cellular Phone		

ROE – DAGGER DRAW BOOSTER

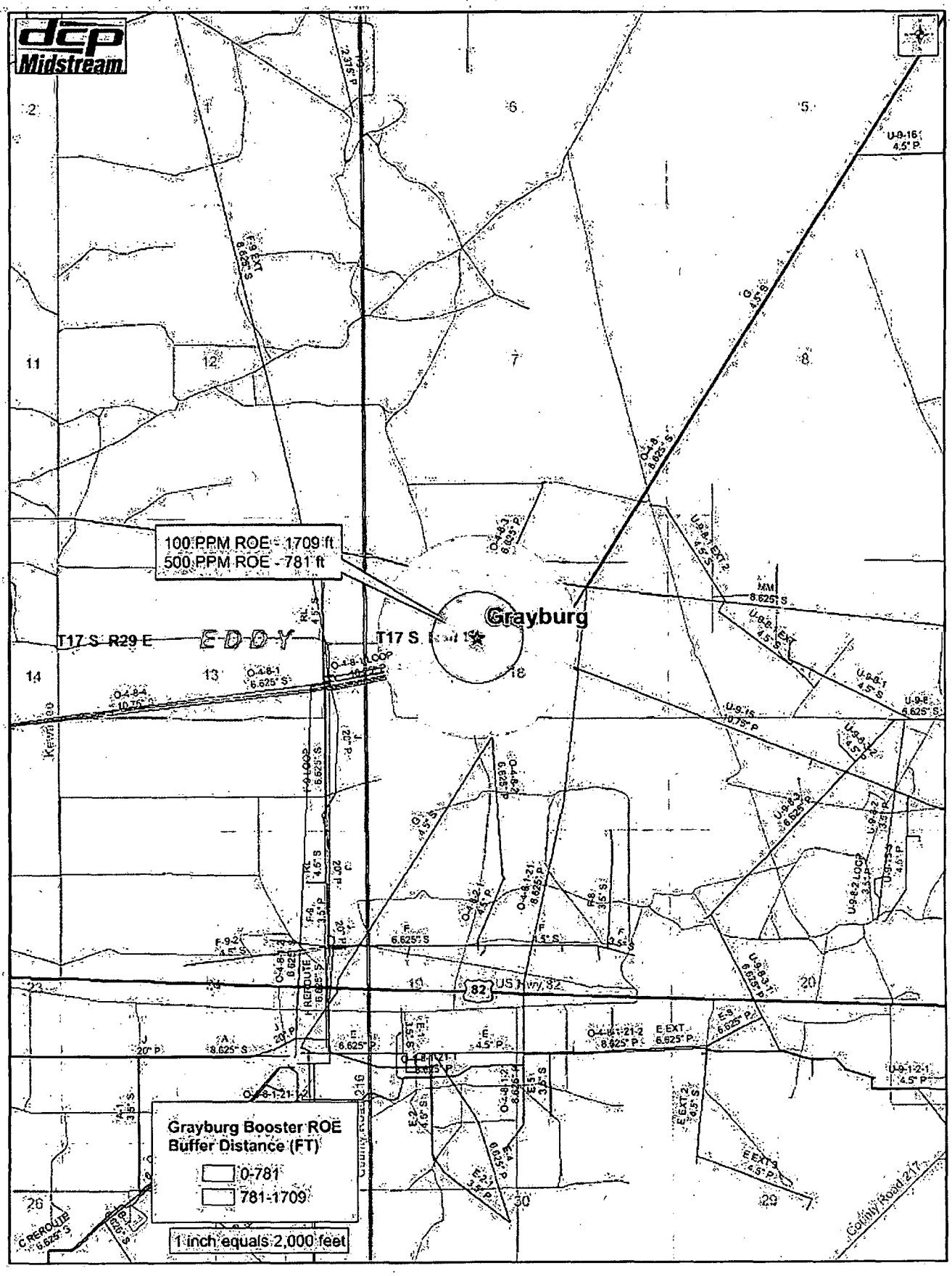


Attachment 2 – Grayburg Booster

Site Specific Information

Facility:	**Grayburg Booster**		
Driving Directions:	From Loco Hills: Take US Highway 82 west 1.5 miles. Turn right (north) on caliche road for 1.2 miles to "T" in road. Turn right (east) for 1/10 mile to booster site.		
GPS:	32:50:11.2N 104:00:46.2W		
Gas stream is:	**SOUR**		
Volume/day:	10.3 mmcf/day		
Inlet Pressure:	14 psig	**Size of Piping:**	20"
Outlet Pressure:	730 psig	**Size of Piping:**	6"
Piggible?	No		
Gas comes in from:	Gathering System		
Gas goes to:	Artesia Plant		
Treating at facility?	No		
	If so – what kind?	N/A	
Is there storage?	Yes		
	If so – what type & how much?	Oil (1000 gal.) – Anti-freeze (1000 gal.) – Methanol (1000 gal.) – Used Oil (500 gal.) – Slop Oil (210 bbl.) – Chemical (55 gal. drum)	
What safety systems are on site?	SCADA Alarms, Windsocks, Fire Extinguishers Station H_2S Monitors		
What safety equipment is on site?	SCADA Alarms, Windsocks, 4 - 30# Ansul Fire Extinguisher, Station H_2S Monitors		
What safety equipment does operator have in vehicle?	H_2S Monitor, Multi-gas Detector, Fire Extinguisher , First Aid Kit, Bloodborne Pathogen Kit, Cellular Phone		

ROE – GRAYBURG BOOSTER

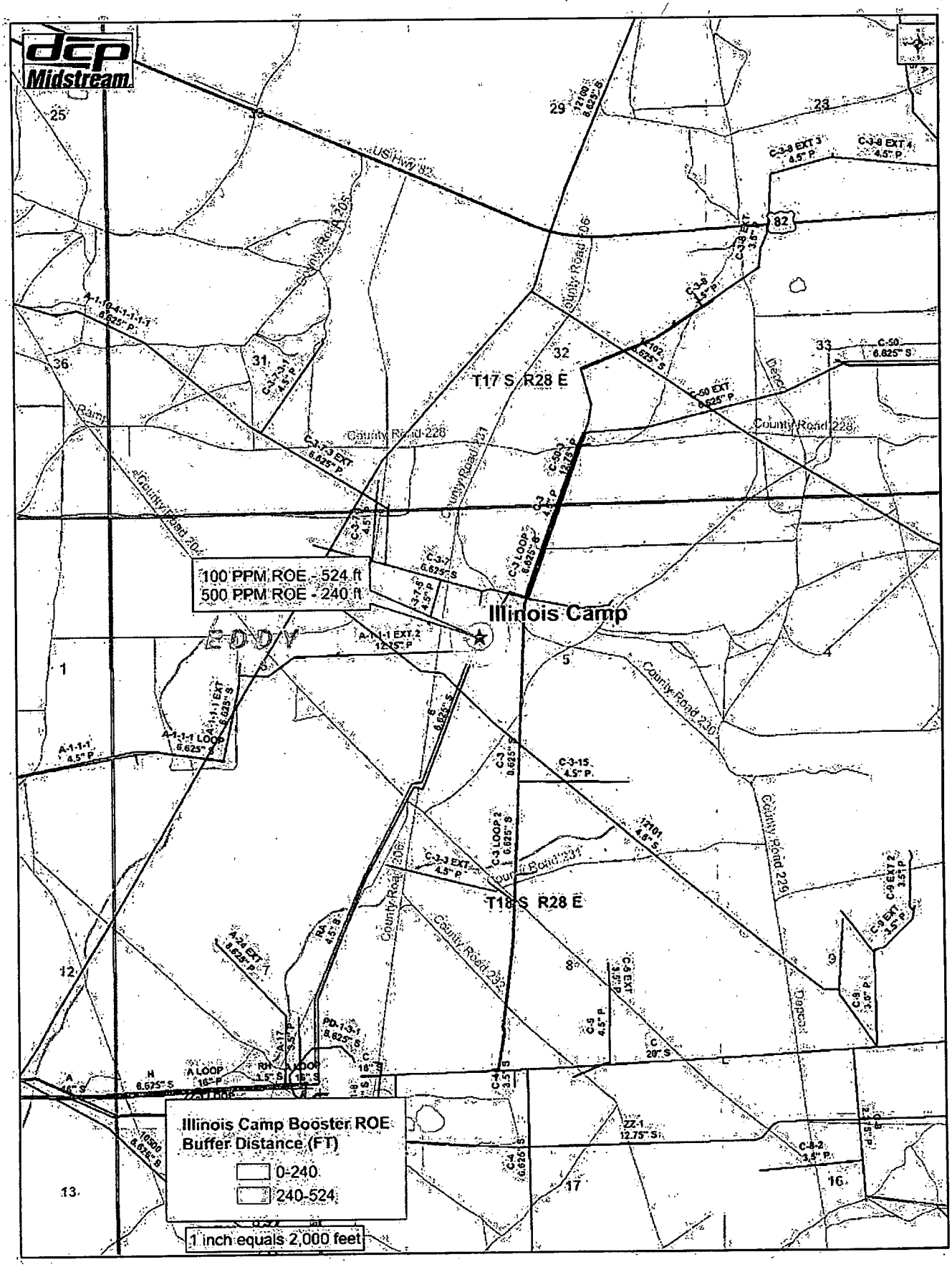


Attachment 3 – Illinois Camp Booster

Site Specific Information

Facility:	**Illinois Camp Booster**		
Driving Directions:	From Artesia: Take US Highway 82 east for 12 miles. Turn right (north) on County Road 206 (Illinois Camp Road) and travel approximately 1-1/2 miles. Turn left (east) on the caliche road and travel 100 yards to the booster site.		
GPS:	32 46'37.645"N 104"12'09.807"W, 3605'		
Gas stream is:	**SOUR**		
Volume/day:	6.8 mmcf/d		
Inlet Pressure:	6 psi	**Size of Piping:**	12"
Outlet Pressure:	800 psi	**Size of Piping:**	6"
Piggible?	NO		
Gas comes in from:	Artesia Gathering		
Gas goes to:	Artesia Gas Plant		
Treating at facility?	NO		
	If so – what kind?	N/A	
Is there storage?	YES ~~NO~~		
	If so – what type & how much?	Lube Oil (1000 gal.) – Anti-Freeze (1000 gal.) – Slop Oil (210 bbl.) – Methanol (1000 gal.)	
What safety systems are on site?	SCADA Alarms, Windsocks, Fire Extinguishers Station Perimeter H_2S Monitors		
What safety equipment is on site?	SCADA Alarms, Windsocks, 2 - 30# Ansul Fire Extinguisher, 1 – 10# Ansul Fire Extinguisher, 2 - Station H_2S Monitors		
What safety equipment does operator have in vehicle?	H_2S Monitor, Multi-gas Detector, Fire Extinguisher , First Aid Kit, Bloodborne Pathogen Kit, Cellular Phone		

ROE – ILLINOIS CAMP BOOSTER

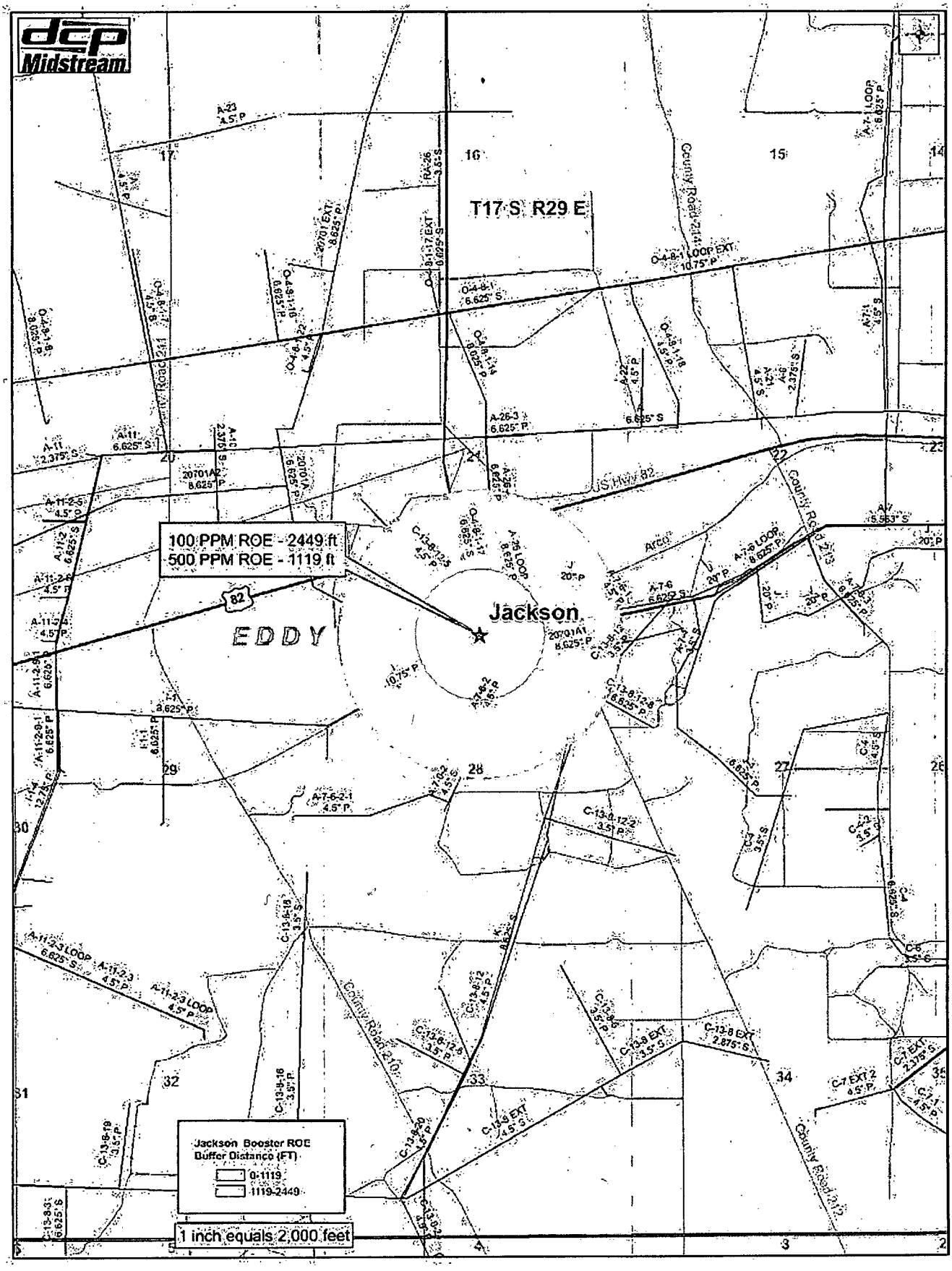


Attachment 4 – Jackson Booster

Site Specific Information

Facility:	**Jackson Booster**		
Driving Directions:	From Loco Hills: From the junction of US Highway 82 and State 217, go west 5.2 miles. Turn left (south) for 2/10 mile, then turn right (west) 2/10 mile to booster.		
GPS:	32:47:33 -103:29:56		
Gas stream is:	**SOUR**		
Volume/day:	13 mmcf/d		
Inlet Pressure:	18 psi	**Size of Piping:**	20"
Outlet Pressure:	550 psi	**Size of Piping:**	8"
Piggible?	Yes		
Gas comes in from:	Well head – Gathering System		
Gas goes to:	Linam Ranch		
Treating at facility?	No		
	If so – what kind?	N/A	
Is there storage?	Yes		
	If so – what type & how much?	Lube Oil (1000 gal.) – Anti-Freeze (500 gal.) – Slop Oil (210 bbl.) – Methanol (1000 gal.) – Chemical (55 gal. drum)	
What safety systems are on site?	SCADA Alarms, Windsocks, Fire Extinguishers Station Perimeter H_2S Monitors		
What safety equipment is on site?	SCADA Alarms, Windsocks, 2 - 30# Ansul Fire Extinguisher, Station H_2S Monitors		
What safety equipment does operator have in vehicle?	H_2S Monitor, Multi-gas Detector, Fire Extinguisher , First Aid Kit, Bloodborne Pathogen Kit, Cellular Phone		

ROE - JACKSON BOOSTER

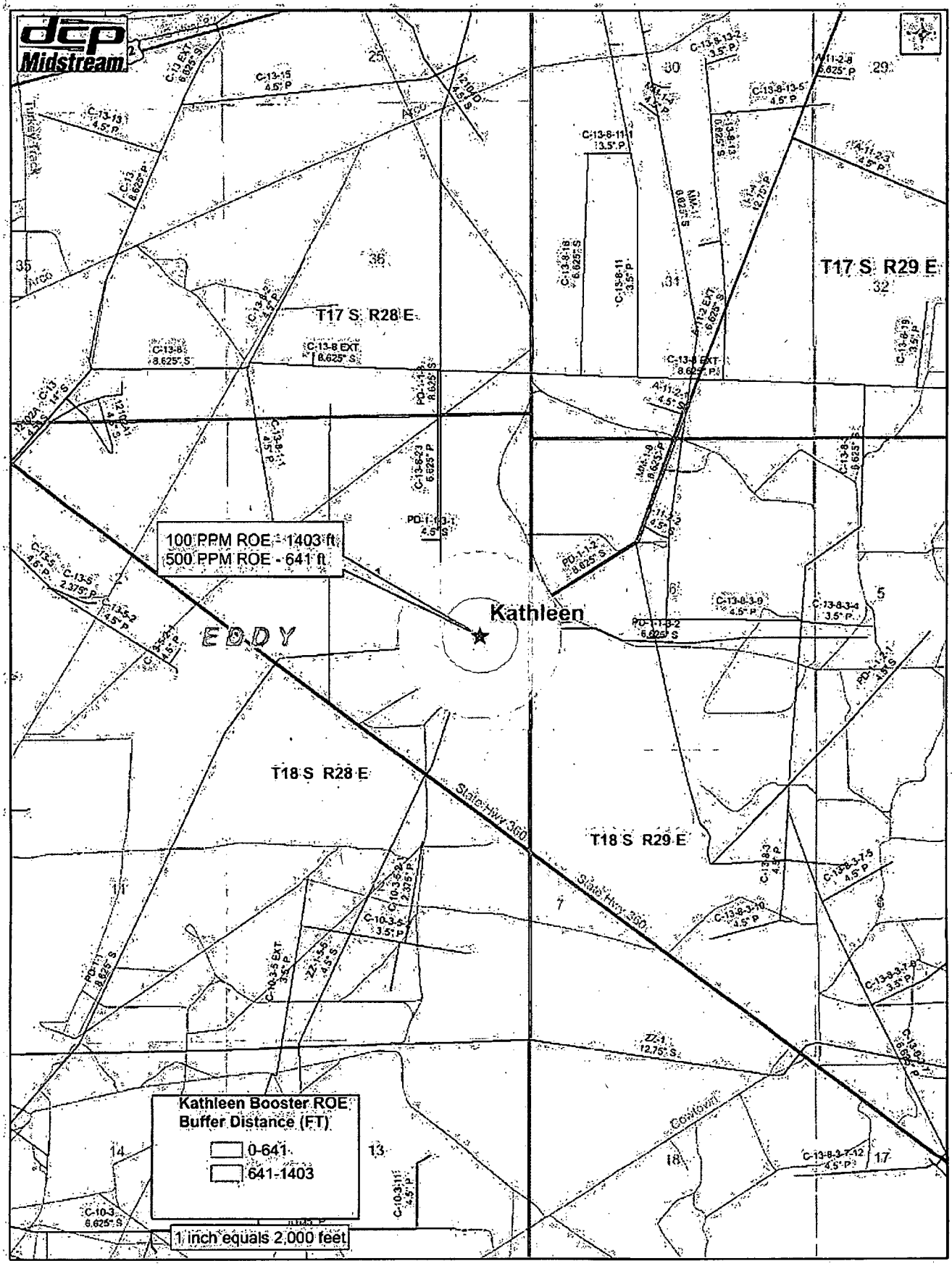


Attachment 5 – Kathleen Booster

Site Specific Information

Facility:	**Kathleen Booster**		
Driving Directions:	From Artesia: Go east on highway 82 approximately 12 miles to Highway 360. Go about three miles to turn-off on left. Follow dirt road to booster.		
GPS:	32 46'25.875"N 104 07'25.827"W, 3656'		
Gas stream is:	**SOUR**		
Volume/day:	3.7 mmcf/d		
Inlet Pressure:	10 psi	**Size of Piping:**	8"
Outlet Pressure:	700 psi	**Size of Piping:**	4"
Piggible?	YES		
Gas comes in from:	Jackson & Kathleen Gathering		
Gas goes to:	Linam Ranch Gas Plant		
Treating at facility?	NO		
	If so – what kind?	N/A	
Is there storage?	YES ~~NO~~		
	If so – what type?	Lube Oil (500 gal.) – Anti-Freeze (500 gal.) – Slop Oil (210 bbl.)	
What safety systems are on site?	SCADA Alarms, Windsocks, Fire Extinguishers Station H_2S Monitors		
What safety equipment is on site?	SCADA Alarms, Windsocks, 4 - 30# Ansul Fire Extinguisher, Station H_2S Monitors		
What safety equipment does operator have in vehicle?	H_2S Monitor, Multi-gas Detector, Fire Extinguisher , First Aid Kit, Bloodborne Pathogen Kit, Cellular Phone		

ROE – KATHLEEN BOOSTER

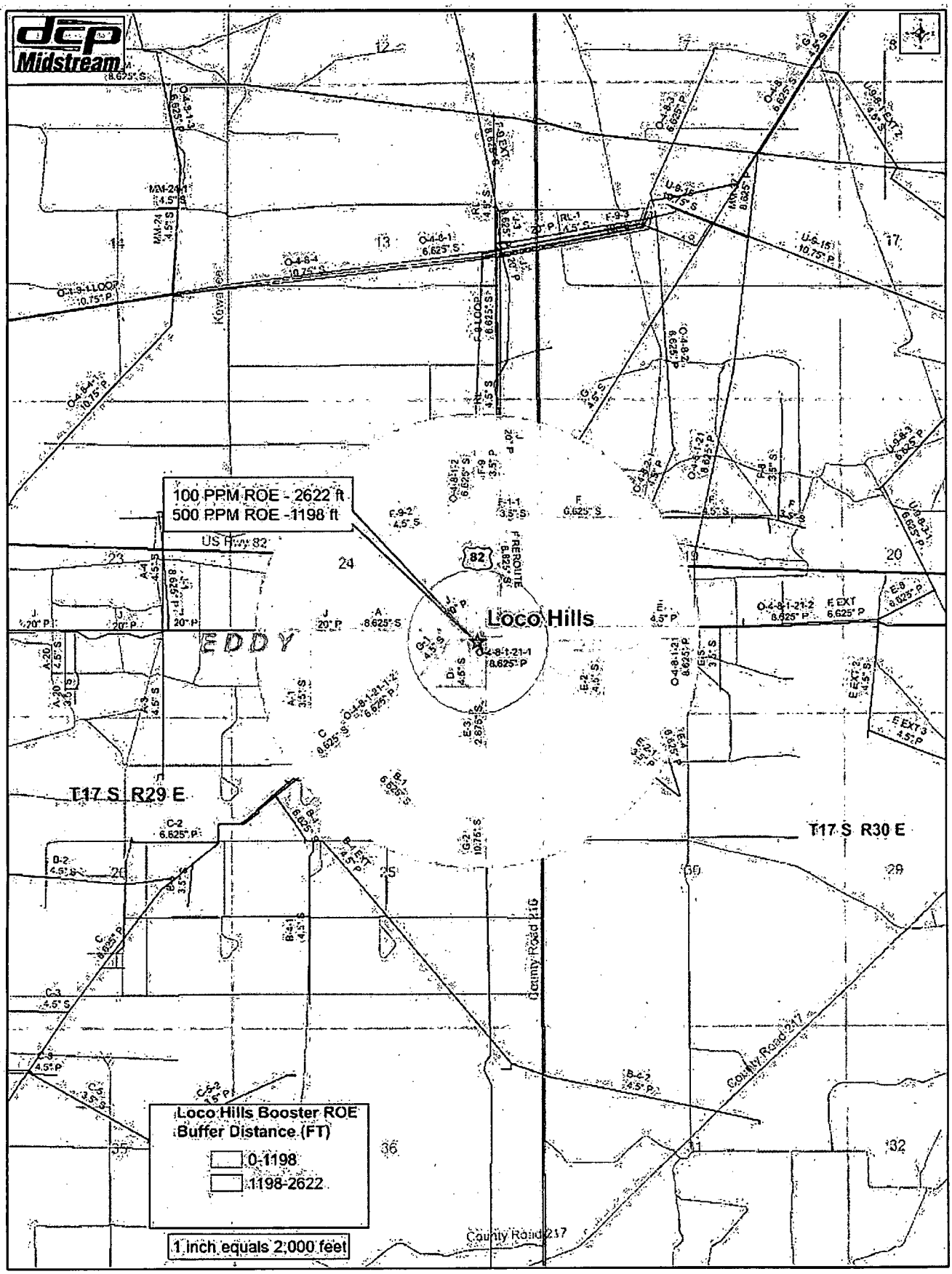


Attachment 6 – Loco Hills Booster

Site Specific Information

Facility:	**Loco Hills Booster**		
Driving Directions:	From Loco Hills : From the Junction of US Highway 82 and State Highway 217, travel west for 2.3 miles, turn left (south), travel for 2/10 mile to booster site.		
GPS:	32:54:21 -103:38:09		
Gas stream is:	**SOUR**		
Volume/day:	13 mmcf/d		
Inlet Pressure:	14 psi	**Size of Piping:**	20"
Outlet Pressure:	740 psi	**Size of Piping:**	6"
Piggible?	No		
Gas comes in from:	Jackson & Kathleen Gathering		
Gas goes to:	Linam Ranch Gas Plant		
Treating at facility?	No		
	If so – what kind?	N/A	
Is there storage?	Yes		
	If so – what type & how much?	Oil (500 gal.) – Used Oil (500 gal.) – Anti-freeze (210 bbl.) – Methanol (55 gal. drum) – Slop Oil (210 bbl.) – Chemical – (55 gal. drum)	
What safety systems are on site?	SCADA Alarms, Windsocks, Fire Extinguishers Station H_2S Monitors		
What safety equipment is on site?	SCADA Alarms, Windsocks, 4 - 30# Ansul Fire Extinguisher, Station H_2S Monitors		
What safety equipment does operator have in vehicle?	H_2S Monitor, Multi-gas Detector, Fire Extinguisher , First Aid Kit, Bloodborne Pathogen Kit, Cellular Phone		

ROE – LOCO HILLS BOOSTER

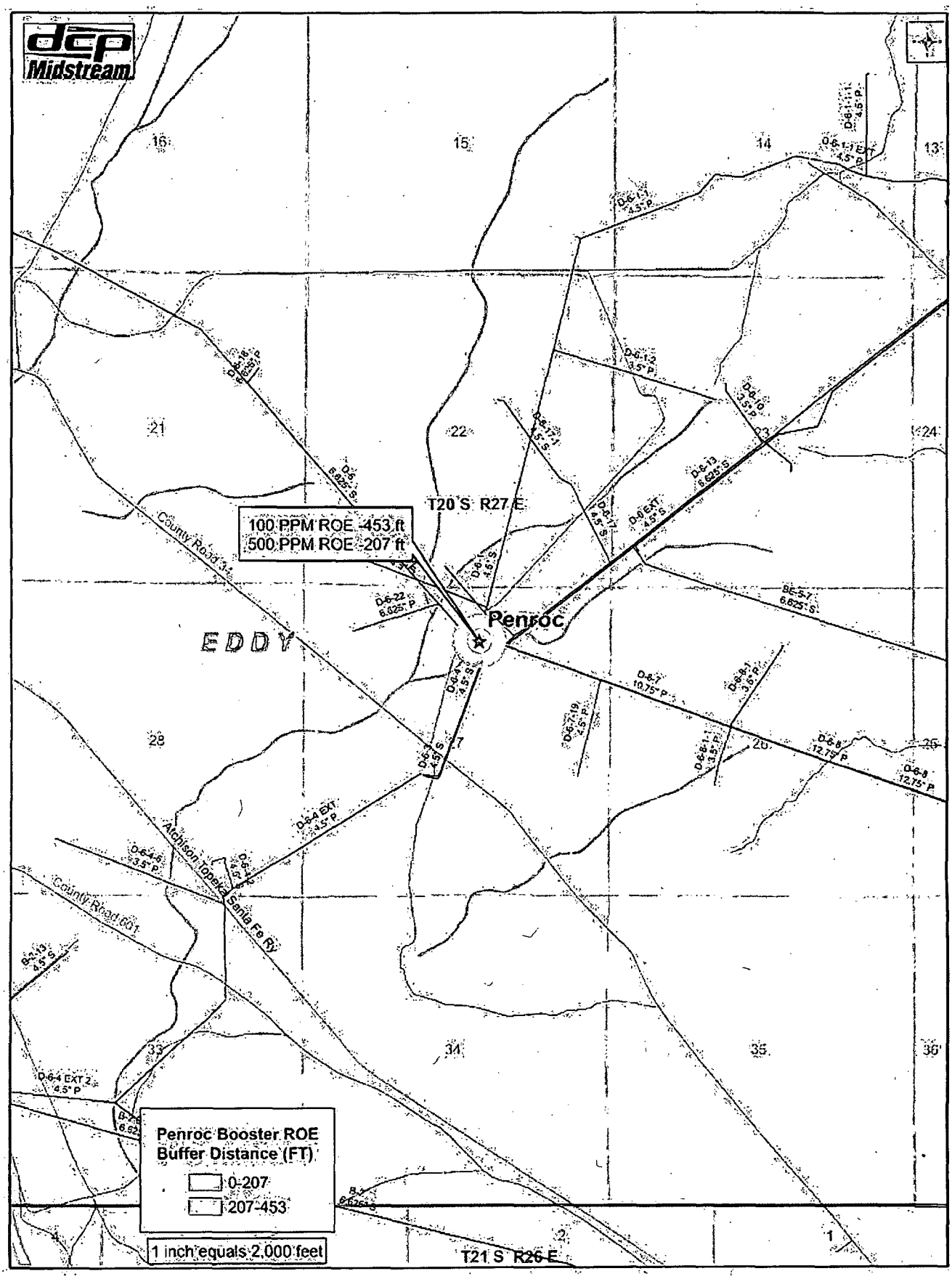


Attachment 7 – Penroc Booster

Site Specific Information

Facility:	**Penroc Booster**		
Driving Directions:	From Artesia: Take US Highway 82 east of Artesia approximately 12 miles to County Road 206 (Illinois Camp Road). Turn right and travel approximately 25 miles to County Road 34. Turn west and travel 3.9 miles to the cattle guard and take the first right. Travel 4/10 mile to the booster site.		
GPS:	32 32'55.933'N 104 16'02.360"W, 3261'		
Gas stream is:	**SOUR**		
Volume/day:	5.5 mmcf		
Inlet Pressure:	6 psi	**Size of Piping:**	12"
Outlet Pressure:	830 psi	**Size of Piping:**	6"
Piggible?	Yes		
Gas comes in from:	Artesia 750 Gathering		
Gas goes to:	Artesia Gas Plant		
Treating at facility?	NO		
	If so – what kind?	n/a	
Is there storage?	YES		
	If so – what type & how much?	Lube Oil (1000 gal.) – Anti-Freeze (500 gal.) – Slop Oil (110 bbl.) - Methanol (1000 gal.)	
What safety systems are on site?	SCADA Alarms, Windsocks, ESD System		
What safety equipment is on site?	SCADA Alarms, Windsocks, 2 - 30# Ansul Fire Extinguishers		
What safety equipment does operator have in vehicle?	H_2S Monitor, Multi-gas Detector, Fire Extinguisher, First Aid Kit, Bloodborne Pathogen Kit, Cellular Phone		

ROE- PENROC BOOSTER



Attachment 8 – RJ Booster

Site Specific Information

Facility:	**Rambo Booster**		
Driving Directions:	From Loco Hills, NM – travel east on Highway 82 for 2 miles, turn north on Square Lake Road. Travel ¼ mile to Booster which will be located on the right hand side.		
GPS:	N 32.820603° W 103.937111°		
Gas stream is:	**SOUR**		
Volume/day:	14 mmcf		
Inlet Pressure:	14 psi	**Size of Piping:**	20"
Outlet Pressure:	630 psi	**Size of Piping:**	8"
Piggible?			
Gas comes in from:	Loco Hills Gathering System		
Gas goes to:	Eddy County 12" – Main Line to Linam Ranch Gas Plant		
Treating at facility?	No		
	If so – what kind?	n/a	
Is there storage?	Yes		
	If so – what type & how much?	Methanol (gal.) - Lube Oil (gal.) - Anti-freeze (gal.) - Corrosion Chemical (gal.) - Slop Oil (gal.) - Used Engine Oil (gal) – Condensate (gal.)	
What safety systems are on site?	SCADA Alarms, Windsocks, ESD System, H_2S stationary monitors		
What safety equipment is on site?	SCADA Alarms, Windsocks, ____ - 30# Ansul Fire Extinguishers ____ - H_2S stationary monitors		
What safety equipment does operator have in vehicle?	H_2S Monitor, Multi-gas Detector, Fire Extinguisher, First Aid Kit, Bloodborne Pathogen Kit, Cellular Phone		

ROE – RJ BOOSTER

0.5 mole % H2S - Worst Case (High Range H2S)

Source	Volume (MCFD)	H2S PPM	(FT) 100 PPM ROE	500 PPM ROE
RJ Booster Inlet	20000	5000	1798	822

The radius of exposure is that radius constructed with the point of escape as its starting point and its length calculated using the following Pasquill-Gifford derived equation, or by such other method as may be approved by the division:

For determining the 100-ppm radius of exposure: $X= [(1.589)(\text{hydrogen sulfide concentration})(Q)]^{(0.6258)}$, where "X" is the radius of exposure in feet, the "hydrogen sulfide concentration" is the decimal equivalent of the mole or volume fraction of hydrogen sulfide in the gaseous mixture, and "Q" is the escape rate expressed in cubic feet per day (corrected for standard conditions of 14.73 psia and 60 degrees F).

For determining the 500-ppm radius of exposure: $X=[(0.4546)(\text{hydrogen sulfide concentration})(Q)]^{(0.6258)}$, where "X" is the radius of exposure in feet, the "hydrogen sulfide concentration" is the decimal equivalent of the mole or volume fraction of hydrogen sulfide in the gaseous mixture, and "Q" is the escape rate expressed in cubic feet per day (corrected for standard conditions of 14.73 psia and 60 degrees F).

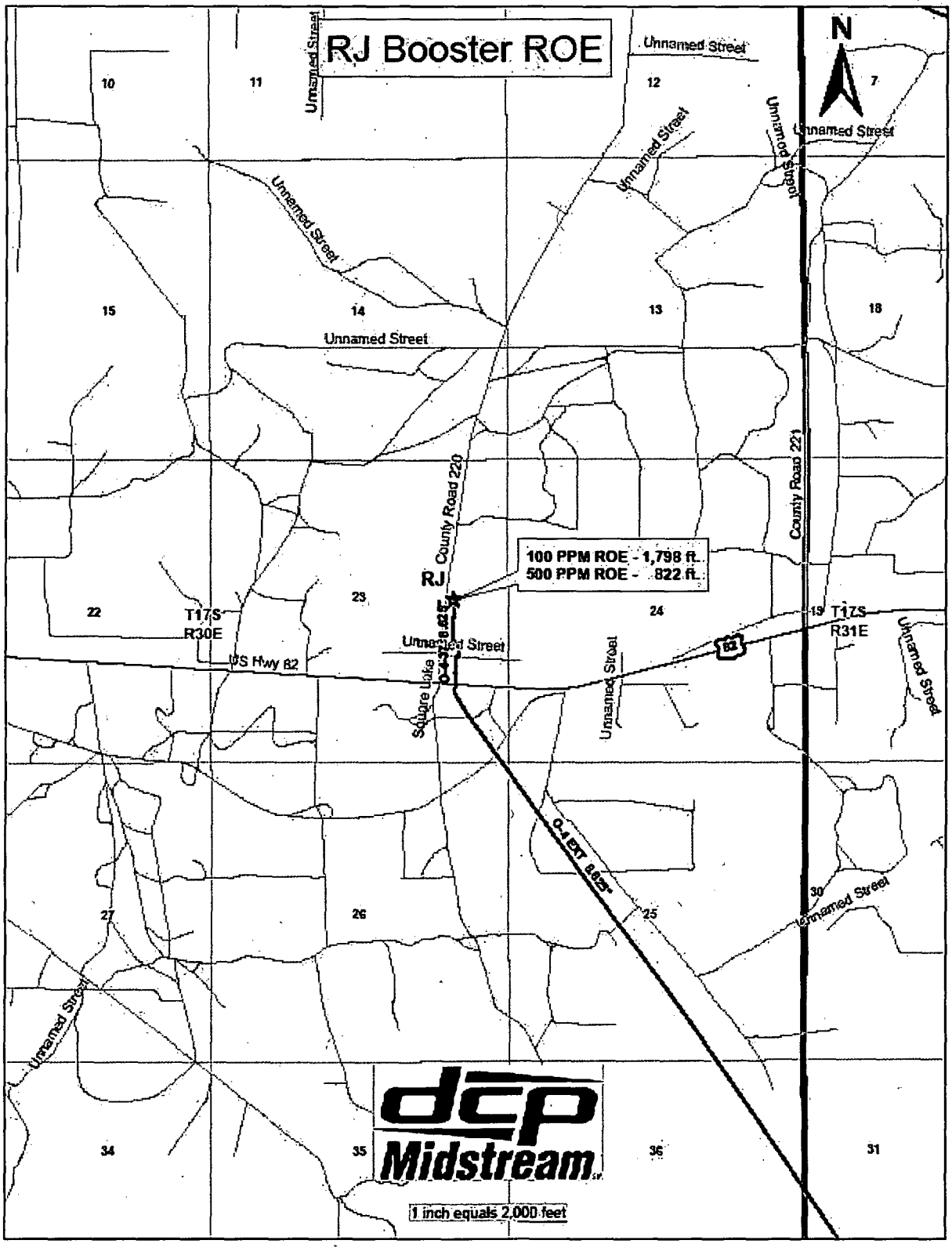
0.5 mole%H2S = the worst case.

20 MMcfd = the throughput of the booster.

See attached ROE spreadsheet.

Gas composition data on FlowCal shows we haven't exceeded 0.5% (report from 2008 to present see attachment).

ROE – RJ BOOSTER

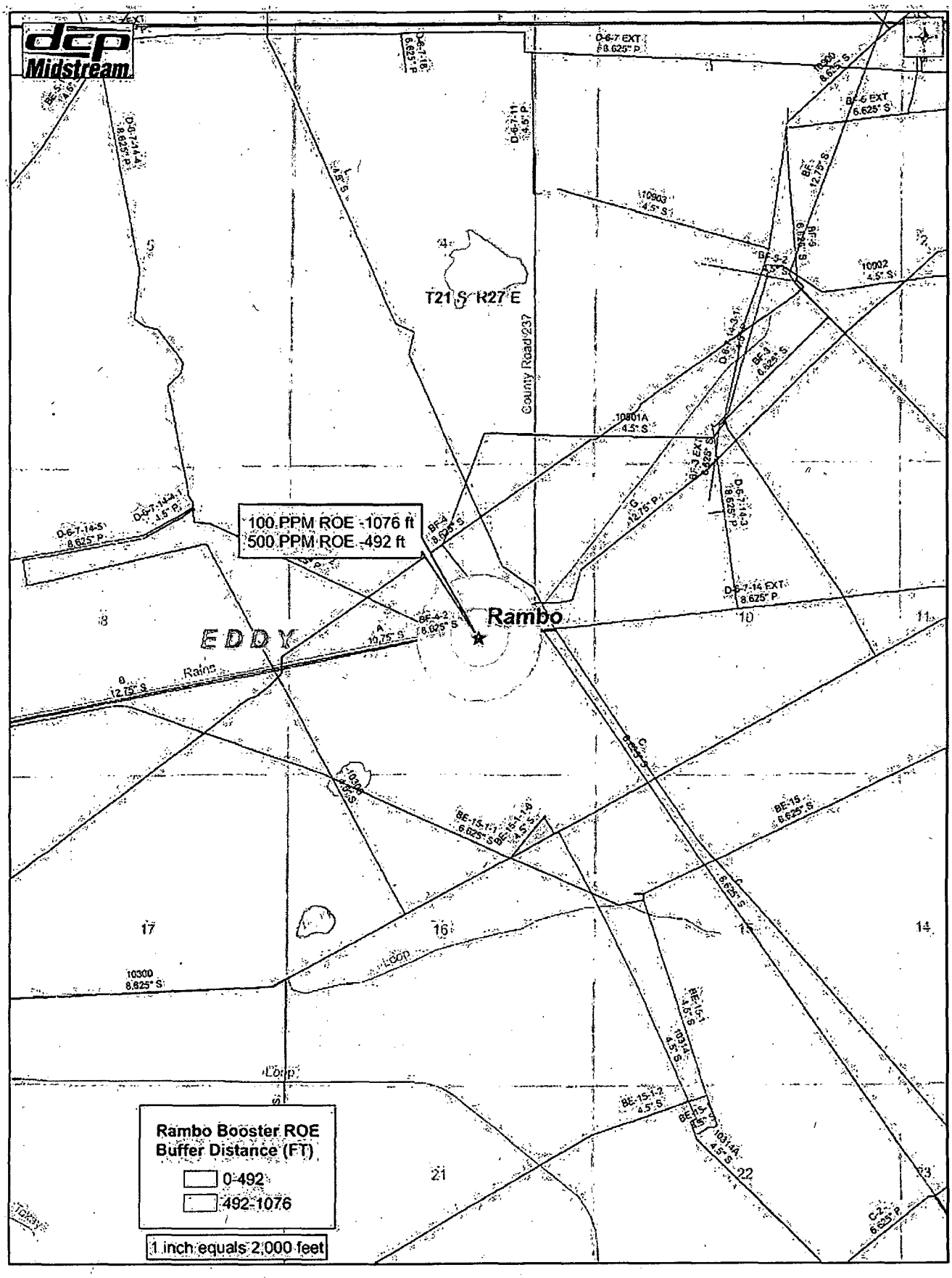


Attachment 9 – Rambo Booster

Site Specific Information

Facility:	**Rambo Booster**		
Driving Directions:	From Carlsbad: From the intersection of U.S. 62-180 and U. S. 285 go North (Canal St.) 3.7 miles to the Relief Rd. Stop sign and continue straight on County Road 206 1.9 miles turn Right on County Road 600 (Rains Road) at the Burton Flats Booster Sign. Drive 2.2 miles to a the Booster on the South side of the road.		
GPS:	32.2939° N 104.1131° W		
Gas stream is:	**SOUR**		
Volume/day:	12 - 14 mmcf/d		
Inlet Pressure:	50 psi	**Size of Piping:**	12"
Outlet Pressure:	860 psi	**Size of Piping:**	8"
Piggible?	Yes		
Gas comes in from:	Artesia Gathering		
Gas goes to:	Artesia Gas Plant – with spillover to Linam Ranch Gas Plant		
Treating at facility?	NO		
	If so – what kind?	n/a	
Is there storage?	YES		
	If so – what type & how much?	Lube Oil (500 gal.) – Anti-Freeze (500 gal.) – Slop Oil (420 bbl.) - Methanol (500 gal.)	
What safety systems are on site?	SCADA Alarms, Windsocks, ESD System, H_2S stationary monitors		
What safety equipment is on site?	SCADA Alarms, Windsocks, 5 - 30# Ansul Fire Extinguishers 13 - H_2S stationary monitors		
What safety equipment does operator have in vehicle?	H_2S Monitor, Multi-gas Detector, Fire Extinguisher, First Aid Kit, Bloodborne Pathogen Kit, Cellular Phone		

ROE – RAMBO BOOSTER

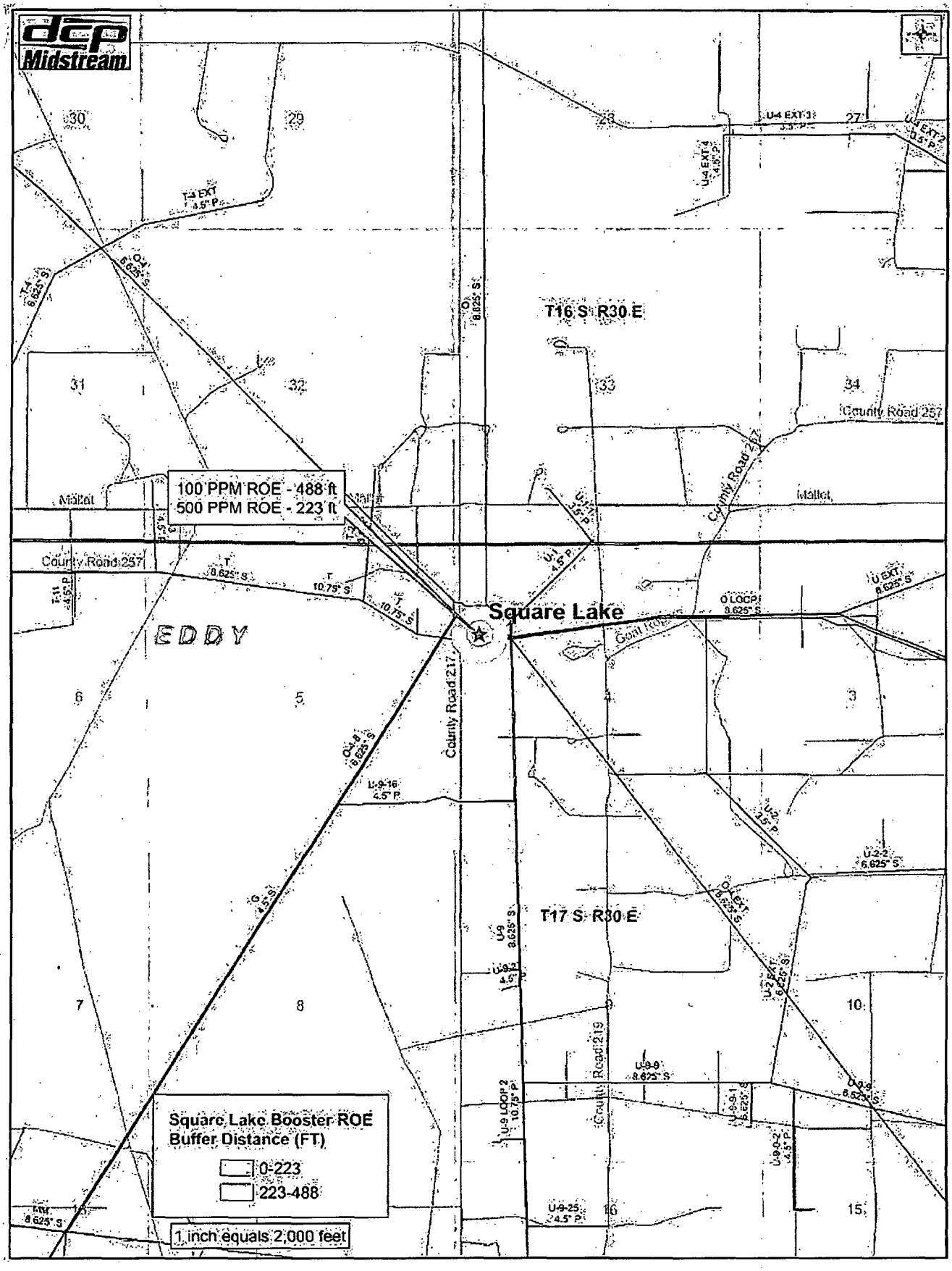


Attachment 10 – Square Lake Booster

Site Specific Information

Facility:	**Square Lake Booster**		
Driving Directions:	From Lovington: Take Highway 82 to Loco Hills then turn right (north) on Eddy County Road 217 (Hagerman cut-off) continue north on Eddy County Road 217 for 3.3 miles. Booster site is on the right (east) side of the road. From Loco Hills: Turn right (north) on Eddy County Road 217 (Hagerman cut-off) continue north on Eddy County 217 for 3.3 miles. Booster site is on right (east) side of the road.		
GPS:	32:52:20 -104:00:15		
Gas stream is:	SOUR		
Volume/day:	5.8 mmcf/day		
Inlet Pressure:	18 psi	**Size of Piping:**	8"
Outlet Pressure:	660 psi	**Size of Piping:**	8"
Piggible?	Yes		
Gas comes in from:	Well head – gathering system		
Gas goes to:	Linam Ranch		
Treating at facility?	Yes		
	If so – what kind?	Dehy	
Is there storage?	YES		
	If so – what type & how much?	Oil (1000 gal.) – Used Oil (1000 gal.) – Anti-freeze (1000 gal.) Methanol (500 gal.) – Slop Oil (210 bbl.) – Corrosion Chemical (55 gal. drum)	
What safety systems are on site?	SCADA Alarms, Windsocks, ESD System, H_2S Monitors		
What safety equipment is on site?	SCADA Alarms, Windsocks, 2 - 30# Ansul Fire Extinguishers H_2S Monitors		
What safety equipment does operator have in vehicle?	H_2S Monitor, Multi-gas Detector, Fire Extinguisher, First Aid Kit, Bloodborne Pathogen Kit, Cellular Phone		

ROE – SQUARE LAKE BOOSTER



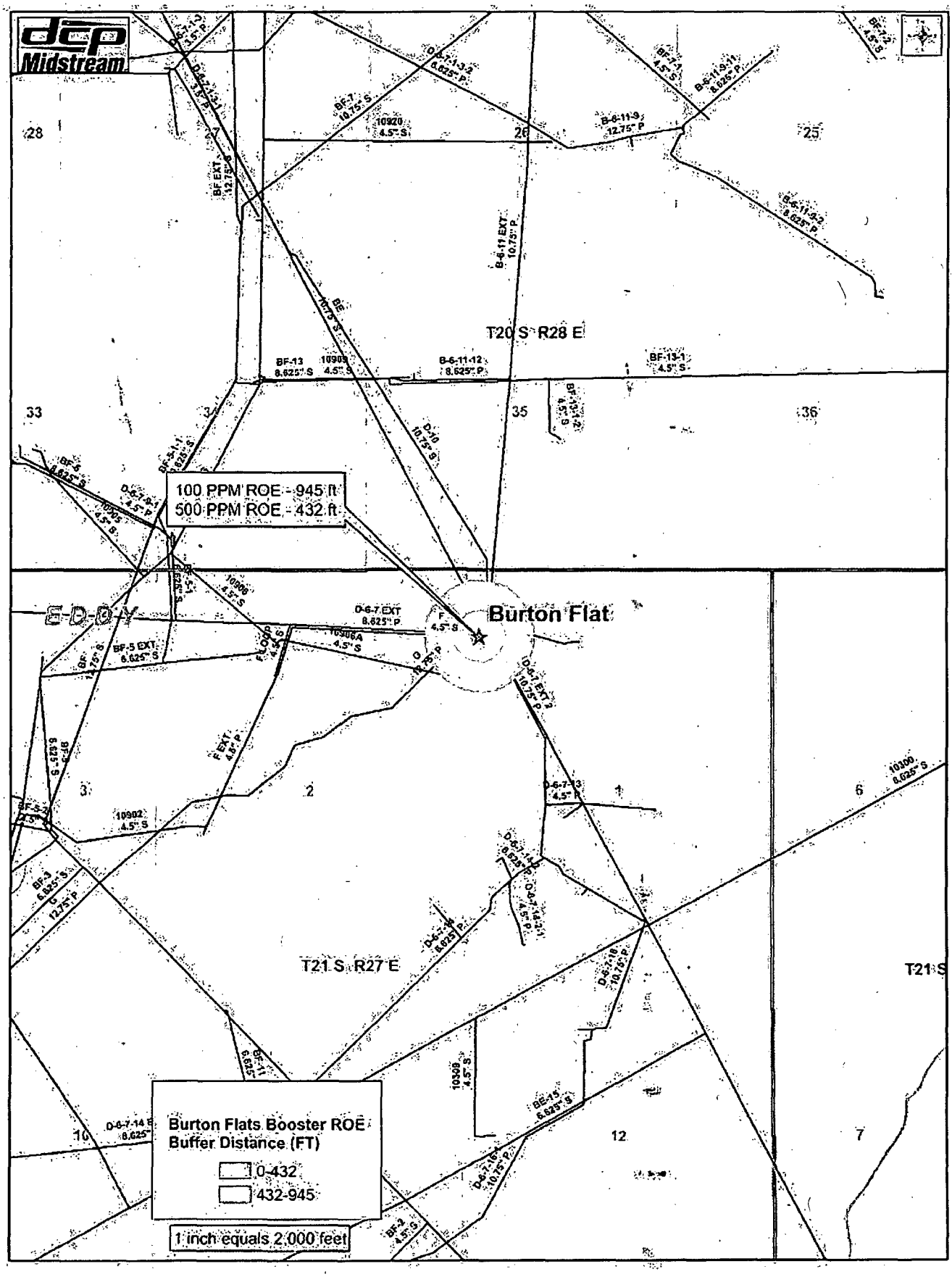
Attachment 11 – W. Burton Flats Booster

Carlsbad Field Booster

Site Specific Information

Facility:	**Burton Flats Booster**		
Driving Directions:	From the intersection of US 62-180 and US 285 go North on 285 (Canal Street) 3.7 miles to Relief Road stop sign and continue straight on County Road 206 1.9 miles. Turn right on County Road 600 (Rains Road) at the Burton Flats Booster sign. Drive 2.2 miles to a 4-way caliche road intersection. Continue straight on caliche road for 1.2 miles the "Y" intersection. Stay to right and drive 1.7 miles crossing one cattle guard to the booster site.		
GPS:	320 31'-162" N 1040 0900.902" W		
Gas stream is:	**SOUR**		
Volume/day:	12-14 MM		
Inlet Pressure:	30 psig	**Size of Piping:**	12", 10" & 8"
Outlet Pressure:	860 psig	**Size of Piping:**	10"
Piggible?	Discharge - Yes		
Gas comes in from:	Gathering System		
Gas goes to:	Artesia Plant		
Treating at facility?	NO		
	If so – what kind?	n/a	
Is there storage?	YES		
	If so – what type & how much?	Lube Oil 1700 gal.	Coollant 1000 gal. Methanol 1000 gal. Slop Oil 420 bbl.
What safety systems are on site?	ESD to shut down unit, MSDS Book, SCADA		
What safety equipment is on site?	Wind Socks, 5 30# Fire Extinguishers, SCADA		
What safety equipment does operator have in vehicle?	First Aid Kit, BBP Kit, Fire Extinguisher, H_2S Monitor, PPE, Cell Phone, Multi-gas Detector		

ROE – W. BURTON FLATS BOOSTER

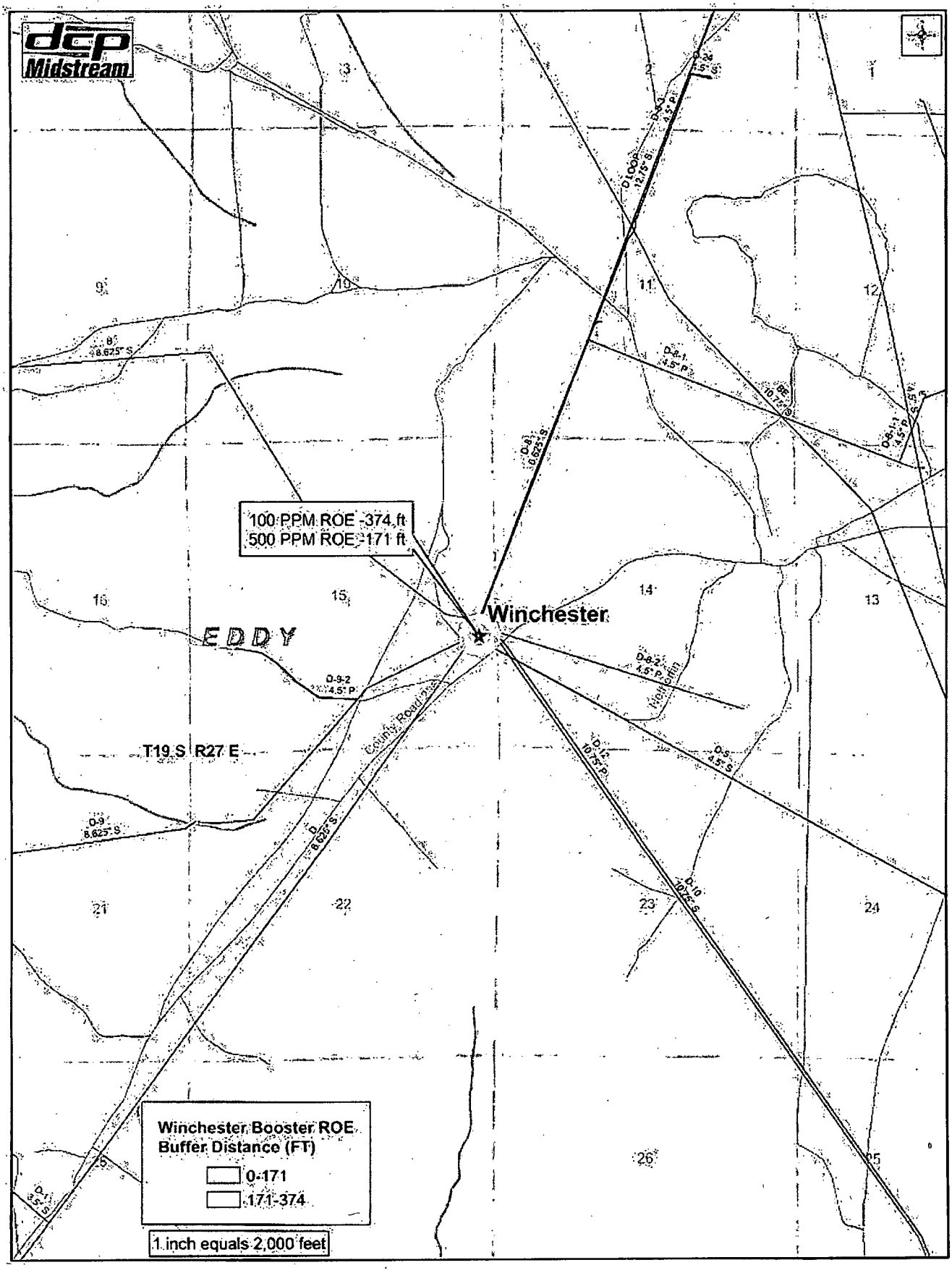


Attachment 12 – Winchester Booster

Site Specific Information

Facility:	**Winchester Booster**		
Driving Directions:	From Artesia: Traveling east on US Highway 82, go 12 miles to County Road 206 (Illinois Camp Road). Turn right on County Road 206 and travel approximately 13 miles to County Road 236. Turn west and travel 2.3 miles to the booster, which is on the right.		
GPS:	32 39'31.213"N 104 15'29.232"W, 3467'		
Gas stream is:	SOUR		
Volume/day:	5.5 mmcf/d		
Inlet Pressure:	6 psi	**Size of Piping:**	10"
Outlet Pressure:	810 psi	**Size of Piping:**	6"
Piggible?	YES		
Gas comes in from:	Artesia 750 Gathering		
Gas goes to:	Artesia Gas Plant		
Treating at facility?	NO		
	If so – what kind?	n/a	
Is there storage?	YES		
	If so – what type & how much?	Lube Oil (1000 gal.) - Anti-Freeze (1000 gal.) – Slop Oil (420 gal.) – Methanol (1000 gal.)	
What safety systems are on site?	SCADA Alarms, Windsocks, ESD System, H_2S Monitors		
What safety equipment is on site?	SCADA Alarms, Windsocks, 2 - 30# Ansul Fire Extinguishers 2 - H_2S Monitors		
What safety equipment does operator have in vehicle?	H_2S Monitor, Multi-gas Detector, Fire Extinguisher, First Aid Kit, Bloodborne Pathogen Kit, Cellular Phone		

ROE – WINCHESTER BOOSTER



Attachment 12 – Artesia/Carlsbad Gathering System

Please see attached information.

Map of Gathering System and ROE Data.

Hazardous Materials Incident Notification Information Checklist

The following information should be given to dispatch. Dispatch should be instructed to give all information received to response agencies.

Notification	Time Dispatch Notified:
Caller	Caller Name: _____ Caller Location: _____ Caller Phone Number: _____
Hazardous Materials Information	Incident location _____ (Address or Nearest Milepost or Exit) Time Incident Occurred _____ Container Type _____ (Truck, train car, drum storage Tank, pipeline, etc.) Substance _____ UN Identification Number _____ Other Identification _____ (Placards, shipping papers, etc.) Amount of material spilled/released _____ Current condition of material _____ (Flowing, on fire, vapors present, etc.)
Scene Description	Weather conditions _____ (i.e., sunny, overcast, wet, dry, etc.) Wind direction _____ Wind speed _____ Terrain _____ (i.e., valley, stream bed, depression, asphalt, etc.) Environmental Concerns _____ (Streams, sewers, etc.)
Affected Population	Number of people affected _____ Condition of people affected _____
Resources	Resources required _____ (EMS, HazMat Team, Fire Department, etc.)
Response	Response actions anticipated And/or in progress (i.e., rescue, fire suppression, containment, etc.)
Comments	_____ _____ _____ _____ _____

DISTRIBUTION LIST

NEW MEXICO OIL & GAS CONSERVATION DIVISION	1 COPY
NEW MEXICO DEPARTMENT OF PUBLIC SAFETY STATE POLICE	1 COPY
CARLSBAD FIRE DEPARTMENT	1 COPY
ARTESIA FIRE DEPARTMENT	1 COPY
MEDICAL FACILITY (Carlsbad)	1 COPY
MEDICAL FACILITY (Carlsbad)	1 COPY
EDDY COUNTY SHERIFF DEPARTMENT	1 COPY
LOCAL EMERGENCY MANAGEMENT COMMISSIONER	1 COPY
DCP MIDSTREAM CARLSBAD PLANT OFFICE	1 COPY
DCP MIDSTREAM HOBBS OFFICE	1 COPY
DCP MIDSTREAM MIDLAND OFFICE	1 COPY

H_2S Program
DCP Midstream - SENM Asset

Hydrogen Sulfide Program

Introduction

This program has been developed to assist all applicable operations in working safely with Hydrogen Sulfide (H_2S) gas. The program contains information in the areas of training, employee and local management responsibilities, safety equipment selection, general work practices, overview of hazards associated with H_2S/SO_2 gases, emergency procedures, and the contingency plan outline. This information was compiled from the American Petroleum Institute (API) Recommended Practices, general industry practices, plus governing company rules and regulations.

All areas known or suspected to contain an H_2S environment such as production fields, plants, gas treating facilities, and completed wells should be surveyed as described in this program to determine the levels of H_2S concentration for each area. Surveys should be conducted once every two years, or sooner if changes in the process introduce different levels of H_2S. Only personnel properly trained in the hazards of H_2S should conduct the H_2S surveys.

Definitions and Abbreviations

The following definitions and abbreviations are used throughout this program.

ANSI	American National Standards Institute
API	American Petroleum Institute
ASME	American Society of Mechanical Engineers
DCPM	DCP Midstream
H_2S Environment	Any atmosphere that contains a concentration greater than 10 PPM of Hydrogen Sulfide at the source.
IDLH	Immediately Dangerous to Life or Health: Any atmosphere that poses an immediate hazard to life or produces immediate irreversible debilitating effects on health.
NACE	National Association of Corrosion Engineers
PPM	Parts Per Million
Safe Briefing Area (Safe Area)	An area designated to be safe, usually upwind or cross wind from the source of Hydrogen Sulfide during a release of Hydrogen Sulfide.
SCBA	Self Contained Breathing Apparatus
SO_2	Sulphur Dioxide
TLV-TWA	Threshold Limit Value - Time Weighted Average: The time-weighted average concentration for a normal eight hour work day and a forty hour work week, to which nearly all workers may be repeatedly exposed, day after day, without adverse effect.
TLV-STEL	Threshold Limit Value - Short Term Exposure Limit: The concentration to which workers can be exposed continuously for a short period of time without suffering from: (1) irritation (2) chronic or irreversible tissue damage, or (3) narcosis of sufficient degree to increase the likelihood of accidental injury, impair self-rescue, or materially reduce work efficiency, and provide that the daily TLV-TWA is not exceeded. It is not a separate independent exposure limit; rather, it supplements the time-weighted average (TWA) limit where there are recognized acute effects from a substance whose toxic effects are primarily of a chronic nature. STELs are recommended only where toxic effects have been reported from high short-term exposures in either humans or animals. A STEL is defined as a 15-minute TWA exposure which should not be exceeded at any time during a workday even if the eight hour TWA is within the TLV-TWA. Exposures above the TLV-TWA up to the STEL should not be longer than 15 minutes and should not occur more than four times per day. There should be at least 60 minutes between successive exposures in this range. An averaging period other than 15 minutes may be recommended when this is warranted by observed biological effects.

H_2S Program
DCP Midstream - SENM Asset

H_2S Health Effects and Exposure Standards

The American Conference of Governmental Industrial Hygienists (**ACGIH**) and **OSHA** have adopted an eight-hour time-weighted average (TWA) exposure limit of 10 parts per million (ppm).

The National Institute for Occupational Safety and Health (**NIOSH**) lists 300 ppm (unprotected exposure) as its 30 minute Immediately Dangerous to life or Health (**IDLH**) atmosphere. Concentrations of 1,000 ppm hydrogen sulfide gas may cause cessation of respiration and death if not properly resuscitated.

The API Recommended Practices for Conducting Oil and Gas Operations Involving Hydrogen Sulfide (API RP 55 October, 1981) indicates H_2S concentrations of 100 ppm cause "coughing, eye irritation, loss of sense of smell after 3 to 15 minutes." H_2S concentrations at 200 ppm "kills sense of smell rapidly, burns eyes and throat." H_2S concentrations of 500 ppm cause "dizziness, loss of sense or reasons and balance, breathing problems in a few minutes." API RP 55 -goes on to state that H_2S concentrations at 700 ppm can cause "unconsciousness quickly." Similarly, the American National Standards Institute (ANSI) Standard No. 237.2-1972 regarding hydrogen sulfide indicates the H_2S exposures in the 500 to 700 ppm range cause "loss of consciousness and possibly death in 30 minutes to one hour."

The following is a summary of H_2S exposure limits and appropriate precautions required by DCP Midstream:

10 ppm - is the ACGIH eight-hour, time weighted average (TWA) exposure limit and DCP's ceiling limit. Exposures equal to or above this limit require the donning and wearing of a positive pressure SCBA or supplied air with a five-minute escape pack. Exposures below 10 ppm require no respiratory protection. 10 ppm is also the federal OSHA TWA and 15 ppm is the Federal short-term exposure level (15 minutes).

300 ppm - DCP Midstream's policy requires the use of positive pressure type breathing apparatus and the presence of a standby man trained and equipped for the rescue when breathing zone exposures are equal to or above this concentration.

Windsocks are required when thief hatch concentrations exceed 100 ppm.

Based on the toxicity of H_2S as described in API Recommended Practices RP 55 and the ANSI Standard, the required practice that employees wear a full face supplied air pressure demand type breathing apparatus when breathing zone exposures equal or exceed 10 ppm will be enforced. A total catastrophic failure of the respiratory equipment during tank gauging operations should not impair an employee's ability to lower the thief hatch and move to a safe area when airborne concentrations of H_2S are below 300 ppm. Usually, lowering the thief hatch will be the only action necessary to lower the exposure concentration to a safe level.

H_2S Program
DCP Midstream - SENM Asset

Requirements for Hydrogen Sulfide Program

I. Program Overview

A. Each operating location with hydrogen sulfide (H_2S) shall have a written H_2S safety program to govern company activities that may expose personnel to H_2S. This program will satisfy that requirement if all provisions set forth below are met.

B. Governmental regulations (OSHA) and company policy regarding operations where H_2S may be present are specific.
   1. The Corporate Safety Director will coordinate this program.
   2. The operating supervisors are responsible for implementing and enforcing it.

Any site-specific procedures developed for a location in addition to this program must be as stringent as those outlined herein and established in writing.

C. No person shall enter an area where H_2S concentrations are known or suspected to be greater than ten parts per million (10 ppm) by volume in air at the employees breathing zone without wearing proper supplied air respiratory protective equipment.

D. All contract personnel working for Duke Energy shall be required to comply with the same H_2S safety requirements as do company personnel.

II. RESPONSIBILITIES FOR PROGRAM

A. The Facility Supervisor, with the aid of the Safety Coordinator, has the key responsibility for ensuring that all aspects of the H_2S program are in place and adhered to by all personnel and any persons entering the facility. They are to:
   1. Know the company policy regarding H_2S.
   2. Know the safe work practices and include them in instructions when teaching job methods.
      a. Every employee must clearly understand the hazards of H_2S gas.
      b. He/she must also know the safe practices which will be necessary to prevent accidents.
   3. He/she is to be alert to unsafe conditions and actions.
   4. Supervisors are to see that employees expected to use respiratory protective equipment are properly trained in the use and maintenance of such equipment.
   5. The Supervisor or person in charge is to take immediate actions deemed necessary when H_2S gas is released, suspected or detected.
   6. All supervisors should know the workers under their control well enough to notice quickly any changes in attitudes, physical conditions, or mental conditions.
   7. See that safety meetings are held for employees. These meetings will be used to instruct, review, or discuss safe working practices. They will also be used to discuss and take action on unsafe conditions or actions, which have been observed. Employees should be encourage to take an active part in these meetings, since their constructive suggestions are an aid in the keeping safe practices up-to-date.
   8. Conduct training sessions regularly for employees in the use and maintenance of breathing apparatus. **Training sessions are a MUST!!!**
   9. The Supervisor or person in charge of the facility is responsible for ensuring all visitors to the facility fully understand the hazards of H_2S before being authorized to enter.

10. Supervisors should ensure that all contract and sub-contract personnel are properly trained on hazards of H_2S, use of respiratory equipment and emergency rescue; prior to start-up of work activities. **All contract personnel must provide documentation of current H_2S training/certification.**
11. Supervisors are to ensure that all contractors have been cleared to perform work on or in DCP Midstream facilities before commencing work. This includes having completed and returned a master service agreement and all necessary documentation.

B. Employee Responsibilities
1. The employee should fully understand the hazards involved in any duty to be performed in a hazardous H_2S environment.
2. Employees are to take all necessary safety precautions prior to emergency evacuations or entering IDLH atmospheres.
3. No employee is to attempt emergency rescue without the required training.
4. Employees should use the provided respiratory protection equipment in accordance with manufacturer instruction and should not tamper with or misuse the breathing apparatus.
5. Employees are responsible for seeing that all respirators are clean and in a sanitary condition, operating properly, and stored in their designated location.
6. Employees should report any breathing equipment malfunctions or deficiencies to their supervisor immediately.
7. Employees should know and fully understand the location, proper use, care, capabilities, and limitations of all personal protective equipment.
8. Employees are responsible for timely maintenance inspections and proper use of all H_2S safety equipment which apply to their job tasks.
   a. All H_2S safety equipment is to be inspected prior to use.
   b. All H_2S safety equipment is to be inspected monthly when not used. All documentation is to be kept on file for these inspections.

III. General Information Concerning H_2S and SO_2

A. Hazards Associated with Hydrogen Sulfide Gas
1. Hydrogen Sulfide (H_2S) is an extremely toxic, colorless, flammable gas which is commonly referred to as "sour gas".
2. H_2S has a foul odor, characteristic of rotten eggs and the sense of smell can be lost quickly; therefore, the sense of smell should never be relied upon to detect hydrogen sulfide gas.

H_2S PROPERTIES	
Color	Colorless
Odor	Very offensive - commonly referred to as odor of rotten eggs.
Vapor Density	1.189 (Air = 1.0) -- H_2S is heavier than air.
Boiling Point	-76° F
Explosive Limits	4.3% to 46% by volume in air.
Ignition Temperature	500° F
Water Soluble	Yes (4 volumes gas in 1 volume water at 32° F)
Flammability	Forms explosive mixtures with air or oxygen.

3. The physiological effects on humans when inhalation of H_2S occurs, varies at different concentrations and may be as in the following.

CONCENTRATIONS		PHYSIOLOGICAL EFFECTS
% By Volume	PPM	
.0002	.2	Odor Threshold
.001	10	Obvious odor. TLV-TWA
.0015	15	Employee's 15 minute STEL.
.005	50	Mild respiratory tract irritation.
.01	100	Loss of sense of smell after 2-15 minutes exposure. Throat irritation after 30 minutes exposure.
.015	150	Throat and eye irritation after 15-30 minutes exposure. Difficult breathing after 1-4 hours exposure.
.02	200	Pain in eyes. Burns throat. Lose sense of smell quickly. 8-48 hours exposure = death.
.03	300	Immediately IDLH per NIOSH.
.05	500	Dizziness, severe pain in eyes and head, breathing stops in a few minutes, prompt resuscitation needed. 1-4 hours exposure = death.
.07	700	Quickly unconscious, will die without prompt rescue and artificial respiration. 30 - 60 minutes exposure = death.
.1	1000	Immediate unconsciousness, possible permanent brain damage, artificial respiration needed immediately. 2-15 minutes exposure = death.

B. Sweetening/Sulfur Recovery Facilities
Sweetening primarily consists of lowering the hydrogen sulfide and carbon dioxide content in natural gas. Hydrogen sulfide is removed from natural gas by contact with amine, Sulfinol, iron sponge, caustic solutions and other sulfur converting chemicals. Heat regenerates amine or Sulfinol for reuse. Iron sponge, caustic solutions and other sulfur converting chemicals are spent in the process as hydrogen sulfide is converted to iron sulfide and other sulfur compounds.

C. Residual hydrogen sulfide may pose a serious respiratory hazard. Utilize a combustible gas indicator for residual h6ydrocarbons and a H2S detector for residual H2S.

H_2S Program
DCP Midstream - SENM Asset

III. Training Program - Employees

A. A safety training program shall be given to all personnel who may be required to work in a known or suspected H_2S environment. This training must be given prior to working in an H_2S environment. The following areas must be covered in the program.
   1. Hazards and characteristics of H_2S and sulfur dioxide (SO_2) gases.
   2. Toxicity and properties of H_2S and SO_2.
   3. Use of H_2S detection devices.
   4. Use and limitations of respiratory protection equipment. (See E. below.)
   5. Symptoms of exposure.
   6. First aid procedures and equipment.
   7. Emergency Procedures.
   8. H_2S alarms and contingency plans.
   9. DCPM policy and procedures for H_2S locations.
   10. Use of the "buddy system" and emergency rescue procedures.

   An Example of the training program may be found in Appendix A.

B. All personnel who work in or may be required to work in an H_2S area (contractors) shall complete a refresher course in H_2S safety annually.

C. All training shall be documented. Documentation is to include name of attendants, job title, social security number or employee number, work location, and ate of training. An example of the training form is provided in Appendix B.

D. Documentation of the participants' comprehension of the H_2S training is required. To satisfy this requirement, a questionnaire and answer sheet is provided in Appendix C.

E. Employees expected to use respiratory protective equipment should be trained in the use and inspection of such equipment initially and have periodic follow-up training. Training must be conducted by a person knowledgeable of the equipment and the hazards to be encountered. All training is to be documented.

F. Respiratory Protective Equipment Training will include, but not be limited to, the following.
   1. Why respirators are needed.
   2. Nature of respiratory hazards.
   3 Handling of respirator.
   4. Fitting instructions with demonstration.
   5. Adjustment instructions.
   6. Test of face piece-to-face seal.
   7. Wearing a respirator in normal and abnormal atmospheres.
   8. Cleaning, disinfecting and storage of respiratory equipment.

IV. Visitors

1. An indoctrination should be conducted whenever there is a potential exposure to H2S of 10 PPM or greater. See Appendix D for H_2S Indoctrination Form.
2. Visitors should be indoctrinated with the following information and procedures:
   a. Characteristics of hydrogen sulfide
   b. Physiological effects of H_2S
   c. Identification and purpose of wind socks (wind streamers)
   d. Procedures if evacuation alarm sounds
      i. The type of alarm which will sound for evacuation
      ii. Location of the evacuation safe areas
   e. Areas of potential exposures

H_2S Program
DCP Midstream - SENM Asset

VII. Contractors

A. All contractors and sub-contractors should be aware of and follow guidelines outlined in the DCPM Hydrogen Sulfide Program.

B. Contractors should be warned of H_2S prior to work being performed to allow them to make necessary precautions in working safely within such an environment.

C. Contractors and sub-contractors are required to provide verification of current H_2S training of their employees prior to any such person working at a DCPM facility with a known, or potential H2S environment.

D. All contractors and sub-contractors will be required to go through a facility overview and safety orientation.
   1. Upon completion of the overview and safety orientation the contractor or sub-contractor will be required to take a test to verify comprehension of the material.
   2. A score of 80% or more will be required before the contractor or sub-contractor will be allowed access to the facility to perform any work.
   3. A Contractor Orientation Card will be used to verify successful completion of the orientation. The card will show the name of the contractor, the company the contractor represents, and the date.
   4. The Contractor Card will be good for one year. After one year, a refresher will be required before another card will be issued.

E. All contractors must go to the sign in area of a facility to check in and for verification of the required training before any work can be performed at a DCPM facility.

F. Each facility will use a sign-in/sign-out sheet which all contractors must complete when entering and leaving the facility. (Review Visitor Safety Policy)

G. A contractor safety meeting is to be conducted prior to start-up of work involving contractors at any DCPM facility. The safety meeting is to cover the following.
   1. H_2S levels for specific locations.
   2. Work which will be conducted.
   3. Safety equipment required.
   4. Emergency procedures.

H. All meetings should be documented on a safety meeting form. The following are some work activities which would require proper warnings and possible safety meetings.
   1. Tank or vessel repair.
   2. Valve and meter repair.
   3. Facility piping or pipeline repair.
   4. Drilling and workover operations.

I. Contractors are responsible for the following.
   1. Depending on the work activity, contractors should follow and fully understand recommendations outline in API 49, 53 and 55, plus any applicable federal and/or state regulation(s).
   2. Supply their own safety equipment such as SCBA's, hoseline units, escape packs, monitors, hearing protection, eye protection, etc. This is a preferred recommendation; however, in some situations it is not feasible. When this recommendation is not feasible and DCPM equipment is distributed to contractors, a waiver should be accompanied with all issuing equipment stating that contractors are responsible for ensuring that all equipment is working properly, prior to used. (An example of a waiver that could be used in Appendix M.
   3. Ensure that all personnel are properly H_2S trained, with proof of documentation, as discussed in Section A.

H_2S Program
DCP Midstream - SENM Asset

VIII. Hydrogen Sulfide Respiratory Protective Equipment

A. Type/Selection
   1. Only positive pressure self-contained breathing apparatus (SCBA) or positive pressure airline units with an escape unit will be used in any known or suspected H_2S environment of 10 ppm or greater in the breathing area. The use of canister type gas masks for protection against is H_2S prohibited in Duke Energy operations.
   2. Only positive pressure SCBA (self-contained breathing apparatus) or positive pressure air line respirators with an emergency egress bottle shall be used when an employee is exposed to hydrogen sulfide (H_2S), oxygen deficient atmospheres, or atmospheres designated as immediately dangerous to life and health. The Safety Director shall be consulted if there are questions as to when or what type respiratory protective equipment is necessary.
   3. All SCBA and supplied air face pieces shall be fitted with a nose cup where temperatures may drop below 32°F and operated in the positive pressure mode.

B. Personnel Requirements
   1. Company personnel must be physically able to utilize a SCBA or airline unit if they are to be assigned to a work location where H_2S is present or suspected.
   2. Facial hair shall not come into contact with the sealing portion of the face piece. Please refer to Respirator Fit in the Respiratory Protection Program.

C. Maintenance, Cleaning, Storage
   1. Respirators shall be visually inspected prior to and after each use to ensure they are in proper operating condition. Visual inspections do not have to be documented. Respirators shall also be inspected monthly and documented on an inspection record. Copies of sample inspection forms are in the Respiratory Protection Program of the manual.
   2. The Operating Supervisor at each field location where respirators are made available is responsible for ensuring the monthly inspection and any necessary maintenance is performed on the units.
   3. Respirators must be cleaned after each use in accordance with the procedures outlined in the Respiratory Protection Program.
   4. Breathing equipment must be stored in its carrying case or other designated container in a convenient location to facilitate easy access in an emergency situation.
   5. Respirators shall be kept in a full and ready state at all times. They shall be refilled if their air supply falls below 85 percent of the cylinder capacity.
   6. Respirator storage areas must be clearly identified.
   7. Compressed breathing air cylinders shall be hydrostatically tested in accordance with the manufacture's recommendation.

IX. Breathing Air Quality

A. All breathing air in SCBA's and air line respirators shall meet or exceed ANSI Z86-1-1973 specifications for Grade D breathing air.

B. Suppliers of compressed breathing air must furnish written documentation at each batch filling of air cylinders that the air meets Grade D specifications.

C. Documentation confirming the air purity shall be kept on file at the field or plant location where breathing is used.

D. Company owned breathing air compressors must be tested every 90 days to assure the air meets Grade D specifications. Documentation must be kept at the field office where the air is used.

E. See Appendix E for Grade D Breathing Air Specifications and a Moisture Conversion Table.

H_2S Program
DCP Midstream - SENM Asset

X. Atmospheric Testing and General Sign Requirements

A. H_2S concentrations can be measured in the breathing zone or in the vapor space on all manually gauged sour crude and condensate tanks within DCPM operations.

B. All field locations, plants, and production facilities, that present a potential H_2S exposure shall be so designated at their access points with danger signs that warn personnel of potential H_2S exposures at all access points. Additional signs may be posted as the Operations Supervisor deems appropriate.

C. Locations with limited public road access may use one H_2S sign at each given access point to a group of well locations rather than placing a sign at each location. However, all tank battery access roads must have a sign in place. Sign wording should be: Danger: Poison Gas. Signs already in-place that convey the same meaning do not have to be replaced with signs that have this exact wording.

XI. Specific Work Procedures

A. No tank, line, valve, flange, etc. which may create a H_2S concentration of 10 ppm or greater in the employees breathing zone shall be opened to the atmosphere unless proper respiratory protection is worn by personnel performing the job.

B. When possible, the equipment should be depressurized, isolated and purged/cleaned before opening.

C. After opening equipment to atmosphere, the potential H_2S source area shall be sampled to determine the H_2S level. Respiratory protection must be worn when opening the equipment to atmosphere and during testing. If concentrations exceed 10 ppm in the breathing zone, respiratory protection must be worn for the duration of the job or until the H_2S level drops below 10 ppm in the breathing zone.

D. Personal monitoring equipment shall be used by personnel working without respiratory equipment where there is a probability that H_2S levels may exceed 10 ppm in the breathing zone, i.e. catwalks at sour tanks, water stations and header buildings where dissolved H_2S in the water is greater than 300 ppm. Operations supervision will determine where such probabilities might occur in a given facility. Personal monitoring devices must be set to alarm at 10 ppm so the employee is alerted to vacate the area to get respiratory equipment if the area is equipped with a fixed detection system then personal monitoring devices are not required. These devices shall be calibrated prior to use in accordance with the manufacturer specifications.

E. A standby person is required when an employee may be exposed to 300 ppm H_2S in their breathing zone during the course of his/her work. The standby person must be equipped with a SCBA and must wear the SCBA If the potential exists for exposure to greater than 10 ppm of H_2S - OSHA equates the breathing zone as being level with the thief hatch for tank gauging operations.

F. Relief valves venting dangerous concentrations of (>300 ppm) H_2S vapors must be vented to flare or where personnel will not be exposed.

G. Personnel shall not leave wells being blown down unattended.

H. See Appendix F for Tank Gauging Procedures.
See Appendix G for Loading and Unloading Procedures.

H_2S Program
DCP Midstream - SENM Asset

XII. H_2S Emergencies

A. Personnel responsibilities during an H_2S alarm or emergency shall be established in writing by each operating location. These responsibilities shall include personnel accounting, securing the area, isolating the leak, etc.

B. Personnel will not respond to an H_2S alarm/leak alone. The buddy system must always be used in response to alarm situations. The supervisor initiating the call out must comply with this requirement unless extenuating circumstances justify sending one person.

C. All personnel shall be trained in their responsibilities regarding H_2S alarms or emergencies. Training shall be documented. This training may coincide with annual H_2S training.

D. Contractors and visitors shall be informed of their responsibilities during an H_2S alarm before they begin work on any potential H_2S location. Their responsibilities shall be to evacuate the area and report to a safe briefing area.

E. Safe briefing areas shall be established for all manned H_2S locations. Safe briefing areas shall be designated by conspicuous signs.

F. The supervisor in charge or the ranking employee on-site has the authority to decide whether an H_2S leak is to be ignited. However, some state law enforcement agencies may have jurisdiction whether to ignite an H_2S leak.

G. See Appendix H concerning Escapes Routes.

XIII. H_2S Safety Systems

This section addresses specific information about our H_2S Safety Systems including H_2S Detection Equipment, Warning Signs, Pipeline Markers, H_2S Monitors and Alarms.

A. H_2S Detection Equipment

1. Fixed H_2S detection systems shall be considered for areas that may experience H_2S leaks where personnel are present on a daily basis or where the locations are near residences or other public buildings. The system shall activate distinctive audible and visual alarms.
2. Sensors shall be set to enunciate at 10 ppm for a low alarm and a maximum of 300 ppm for a high alarm.
3. The system shall be calibrated at least every 90 days.
4. All H_2S alarms shall be treated as an actual gas release.
5. H_2S alarms shall be distinctive from all other alarms and shall be consistent throughout the facility.
6. Hand held detection instruments should be utilized for spot checking areas. All electronic hand held instruments shall be calibrated before use per the manufacturer specifications. All calibrations shall be documented and retained on file.

B. Warning Signs

Facilities which have H_2S concentrations in excess of 10 ppm have must have a hazard warning sign posted at the entrance stating "**DANGER -- POISON GAS**" alerting persons to this potential hazard.

C. Pipeline Markers

Pipeline markers for road crossings, etc., must contain the words "**DANGER -- POISON GAS**" to indicate the potential hazards of the pipeline's contents.

D. H_2S Monitors and Alarms
   1. Manned facilities which have a potential "100 ppm exposure radius" in excess of 50 feet are to be equipped with a H_2S monitoring and alarm system which will "shut-in" the equipment or provide an audible alarm at 10 ppm H_2S in the air.
   2. Unmanned facilities (wells, compressor stations, etc.) which have a potential "100 ppm exposure radius" greater than one half mile (2640 feet) are to be equipped with a H_2S monitoring and alarm system which will "shut in the well and provide an audible alarm at 10 ppm H_2S in the air.
   3. Each affected production well is to have safety devices (High/Low Pressure Sensors) installed to prevent the undetected continuing escape of Hydrogen sulfide.
   4. The systems required in #1, #2 and #3 are to be calibrated and tested on a quarterly basis.

E. Wind Indicators
   Wind direction equipment is to be installed at prominent locations at all plants, leases, and compressor stations where alarms and monitors have been installed.

XIV. First Aid Treatment of Hydrogen Sulfide Victims

A. Always don a SCBA before entering a potential H_2S area, then remove victim to a safe area and begin artificial resuscitation.
B. Activate your Emergency Action Plan.
C. Request mechanical resuscitator (continue mouth to mouth resuscitation until it arrives). Resuscitators must be available at all H_2S locations with employees trained in their proper use. This training can occur during the CPR training.
D. Initiate CPR if circulation has stopped.
E. Treat for shock (keep the victim warm).
F. Ensure DCP Midstream personnel overcome by H_2S are examined by a physician.

APPENDIX A

Employee Training

H_2S Program
DCP Midstream - SENM Asset

APPENDIX A

EXAMPLE OF H_2S TRAINING COURSE OUTLINE

I. Characteristics of H_2S
   - A. Definition of H_2S
   - B. Physical Properties
   - C. Health Effects

II. Where and When H2S May Be Encountered
   - A. Locations
     1. Review map of area showing H_2S Concentrations
     2. Review H_2S surveys and facilities
   - B. Work Tasks - Activities where there is potential for H_2S exposure.

III. Methods to Control Exposure
   - A. Monitors - Personal, Portable, and Fixed
     1. Locations - work tasks requiring monitors
     2. Routine check for proper operation
     3. Procedures for response to alarm
     4. "Hands-On" with monitors
   - B. Respiratory Protection
     1. Locations - work tasks requiring Respiratory Protection
     2. Routine check for inspection and proper operation
     3. Type of respirator required - SCBA's vs. Hoseline Units at various settings
     4. Demonstration of proper donning and operating equipment
     5. "Hands-On" with equipment
   - C. Work Practices
     1. Keep system "closed" whenever possible
     2. Follow warning signs
     3. Check wind directions
     4. Remain upwind, when possible, during work
   - D. Emergency Procedures
     1. Description of steps to follow
     2. Notification of others
     3. Required use of respiratory protection
     4. First Aid - Artificial Respiration - CPR
     5. Required medical attention/supervision

Instructors should use examples, be specific and ensure that all attendants understand and can properly operate all equipment. Emphasize that participation in the program is very important for personal safety.

Training Aids

There are a number of H_2S video programs which have been commercially prepared. When any of these programs are used as a portion of the training presentation, time should be allotted to conduct a group discussion of the main points. At the conclusion of the discussion, the instructor should summarize the main points which pertain to DCPM operations.

The videos could also be used as a review at periodic safety meetings when time or need permits.

APPENDIX B

Employee Training Documentation Form

H_2S Program
DCP Midstream - SENM Asset

SAFETY MEETING SIGN-IN ROSTER

	Name -- *PRINT*	Signature	Employee #
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			
26			
27			
28			
29			
30			

H_2S Program
DCP Midstream - SENM Asset

SAFETY MEETING REPORT

Location	Date:	**Time**	**Attendance**	**Training Records**
		Start: Stop:	DCPM _____ Others _____ Total _____	DCPM _____ Total hrs. _____

Fire Extinguishers checked?	Yes	No	Monthly Meeting _____
Respiratory equipment checked?	Yes	No	Tool Box Meeting _____
New MSDS sheet discussed	Yes	No	Other _____
MSDS reviewed: _____			Video: _____

SAFETY MEETING TOPIC(s):

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____

Attach copy of handout material and topic outline to location file copy.

SAFETY HAZARDS OR SUGGESTIONS THIS MONTH HAZARDS OR SUGGESTION SHOULD REMAIN ON FUTURE REPORTS	DATE REPORTED	DATE RESOLVED

Meeting Conducted By: _____

Distribution: Safety
Supervisor

APPENDIX C

H_2S Questionnaire
&
Answer Key

H_2S Program
DCP Midstream - SENM Asset

APPENDIX C

H_2S QUESTIONNAIRE

Name: _____ Date: _____

1. Can you depend on the sense of smell to detect lethal concentrations of H_2S?
   Check One: Yes _____ No _____

2. List the physical and chemical properties associated with H_2S.
   a. _____
   b. _____
   c. _____
   d.

3. What should you do if you are nearby when a person is overcome by H_2S?
   a. _____
   b. _____
   c. _____
   d. _____
   e. _____

4. How long should you continue artificial respiration on a victim who has been overcome by H_2S?
   _____

5. What is the greatest physical hazard of high concentrations of H_2S gas?
   _____

6. Is H_2S flammable? Yes _____ No _____

7. List sources of H_2S.
   a. _____
   b. _____
   c. _____

8. Name two types of respirators that can be utilized in a hazardous H_2S environment.
   a. _____
   b. _____

9. What is the breathing time duration for the respirators mentioned above?
   a. _____
   b. _____

10 When should the Buddy System be used?
   a. _____
   b. _____
   c. _____

H_2S Program
DCP Midstream - SENM Asset

APPENDIX C

H_2S QUESTIONNAIRE - Answer Key

Name: *Individual's Name* Date: XX - XX - XX

1. Can you depend on the sense of smell to detect lethal concentrations of H_2S?
   Check One: Yes _____ No __X__
   (Some people can't detect H2S odor and concentration of 100 PPM or more due to olfactory paralysis.)
2. List the physical and chemical properties associated with H_2S.
   a. Heavier than air (specific gravity of 1.189).
   b. Colorless gas at atmospheric temperature and pressures.
   c. Foul odor at low concentrations.
   d. Burns with a blue flame to produce SO_2.

3. What should you do if you are nearby when a person is overcome by H_2S?
   Follow Emergency Rescue Procedures (if additional backup person is available).
   a. Don appropriate breathing apparatus.
   b. Remove victim by mobing corsswind then upwind. NEVER DOWNWIND!
   c. If breathing has stopped, perform artificial respiration.
   d. If available, use a oxygen resusciatator to replace artificial respiration.
   e. Treat for shock. Keep victim warm.

4. How long should you continue artificial respiration on a victim who has been overcome by H_2S?
   Until normal breathing is resumed, or relieved by appropriately trained individual, or the person is pronounced dead by medical personnel. (UNTIL PHYSICALLY UNABLE TO CONTINUE.)

5. What is the greatest physical hazard of high concentrations of H_2S gas?
   Poisoning by inhalation.

6. Is H_2S flammable? Yes __X__ No _____
   (It has an explosive range from 4.3% 6o 45.5% by volume of air.)
7. List sources of H_2S.
   a. Drilling Operations
   b. Confined Space Entry
   c. Equipment Maintenance, etc.

8. Name two types of respirators that can be utilized in a hazardous H_2S environment.
   a. S.C.B.A. - Self Contained Breathing Apparatus
   b. Hoseline unit with emergency egress cylinder.

9. What is the breathing time duration for the respirators mentioned above?
   a. S.C.B.A. = 15 - 30 Minutes
   b. Hoseline System: Continuous (depending upon available air supply)
      Egress Cylinder = 5 minutes.

10 When should the Buddy System be used?
   a. Atmospheres Immediately Dangerous to Life or Health (300 PPM+)
   b. All confined space entries

c. Rescue attempts (if additional backup person is available)

APPENDIX D

H_2S INDOCTRINATION FORM

H_2S Program
DCP Midstream - SENM Asset

APPENDIX E

H_2S INDOCTRINATION FORM

HYDROGEN SULFIDE SAFETY ORIENTATION PROGRAM

DCP Midstream is extremely committed to providing a safe and healthy work environment for all of it's employees, contractors, and visitors. We have been successful in this objective through active cooperation towards this very important goal.

Field surveys have been conducted, indicating potential toxic levels of H_2S gas present in our process facilities and well production areas in the SENM Asset Operations. This information is to provide you with the knowledge of H_2S needed for your protection, and to familiarize you with the proper procedures used when entering a known H_2S environment:

A. Hazards and Characteristics of H_2S
B. Physiological Effects of H_2S
C. Purpose of Wind Socks
D. Emergency Evacuation Procedures
E. Hazardous Locations

Your cooperation is requested in taking the time to read and fully understand the information included here for your protection.

Thank you,

_____
(Name)

_____
(Title)

H_2S Program
DCP Midstream - SENM Asset

HYDROGEN SULFIDE SAFETY ORIENTATION PROGRAM

Hazards and Characteristics of H_2S:

1. H_2S, also referred to as "sour gas", is extremely toxic, colorless, and flammable.

2. The principal hazard is asphyxiation or poisoning by inhalation.

3. H_2S has an offensive odor, like rotten eggs, at low concentrations. Breathing low concentrations for a long period of time can desensitize the sense of smell and cause injury or death.

4. At higher concentrations, it kills the sense of smell rapidly. Therefore, never rely on sense of smell to detect hydrogen sulfide gas. Also, at even higher concentrations death can occur by paralysis of the lungs before an odor is detected.

5. Susceptibility to H_2S poisoning varies according to individuals.

6. H_2S is heavier than air, with a specific gravity of 1.189 (air sp. Gr. = 1.00). Therefore, H_2S will have the tendency to be found at ground or lower levels, i.e., pits, trenches, etc.

7. H_2S burns with a blue flame and produces Sulfur Dioxide (SO_2) gas.

H_2S PROPERTIES	
Color	Colorless
Odor	Very offensive - commonly referred to as odor of rotten eggs.
Vapor Density	1.189 (Air = 1.0) -- H_2S is heavier than air.
Boiling Point	-76° F
Explosive Limits	4.3% to 46% by volume in air.
Ignition Temperature	500° F
Water Soluble	Yes (4 volumes gas in 1 volume water at 32° F)
Flammability	Forms explosive mixtures with air or oxygen.

H_2S Program
DCP Midstream - SENM Asset

HYDROGEN SULFIDE SAFETY ORIENTATION PROGRAM - Continued:

Physiological Symptoms of H_2S and SO_2

H_2S - The physiological effects on humans when inhalation of H_2S occurs, varies at different concentrations and may be as in the following.

CONCENTRATIONS		PHYSIOLOGICAL EFFECTS
% By Volume	PPM	
.0002	.2	Odor Threshold
.001	10	Obvious odor. TLV-TWA
.0015	15	Employee's 15 minute STEL.
.005	50	Mild respiratory tract irritation.
.01	100	Loss of sense of smell after 2-15 minutes exposure. Throat irritation after 30 minutes exposure.
.015	150	Throat and eye irritation after 15-30 minutes exposure. Difficult breathing after 1-4 hours exposure.
.02	200	Pain in eyes. Burns throat. Lose sense of smell quickly. 8-48 hours exposure = death.
.03	300	Immediately IDLH per NIOSH.
.05	500	Dizziness, severe pain in eyes and head, breathing stops in a few minutes, prompt resuscitation needed. 1-4 hours exposure = death.
.07	700	Quickly unconscious, will die without prompt rescue and artificial respiration. 30 - 60 minutes exposure = death.
.1	1000	Immediate unconsciousness, possible permanent brain damage, artificial respiration needed immediately. 2-15 minutes exposure = death.

SO_2 - The physiological effects on humans when inhalation of SO_2 occurs, varies at different levels of concentrations and may be as follows:

Concentrations		Physiological Effect
0.3-1	PPM	Detection level - pungent odor.
2	PPM	Threshold Limit Value (TLV) - Time Weighted Average (TWA).
5	PPM	15 minutes = Short Term Exposure Limit (STEL) permitted by OSHA.
6 - 12	PPM	Irritation of the throat and nose.
20	PPM	Eye irritation.
100	PPM	Immediately Dangerous to Life or Health (IDLH) set by NIOSH.

H_2S Program
DCP Midstream - SENM Asset

HYDROGEN SULFIDE SAFETY ORIENTATION PROGRAM - Continued:

Purpose of Wind Socks (Wind Streamers)

The purpose of the wind sock is to indicate wind direction and if a H2S gas leak occurs, the direction of dissipation. Be familiar with location(s) of wind socks in case of an emergency condition and /or evacuation.

Emergency Evacuation Procedures

Visitors are to be informed of the type of alarm to expect for an emergency evacuation and location of designated evacuation (safe) areas. Once an emergency evacuation alarm is sounded, visitors will proceed to one of the designated areas and wait for further instructions. If the designated area appears to be unsafe, move crosswind and away from the hazardous area.

Hazardous Location

These areas vary and any changes must be identified to the visitors. *(See attached maps if applicable*).

H_2S Program
DCP Midstream - SENM Asset

HYDROGEN SULFIDE SAFETY ORIENTATION PROGRAM - Continued:

Verification of Indoctrination

Person being Indoctrinated:

I have read and fully understand the DCP Midstream's Hydrogen Sulfide Gas Indoctrination Pamphlet – including hazards and characteristics of H_2S gas, physiological symptoms and H_2S and SO_2, identification and purpose of wind socks, emergency evacuation procedures and identification of hazardous locations.

Signed: _____
Print Name: _____
Employer: _____
Date: _____

For Instructor of Orientation:

I have discussed the DCPM Hydrogen Sulfide Gas Indoctrination Pamphlet with the above named. I am satisfied that this individual has been indoctrinated for entry into area where H2S may be present.

Signed: _____
Date: _____

File - Do Not Discard

APPENDIX E

BREATHING AIR SPECIFICATIONS

H_2S Program
DCP Midstream - SENM Asset

APPENDIX E

GRADE D BREATHING AIR SPECIFICATIONS

Carbon Monoxide (Maximum)	10 ppm
Carbon Dioxide (Maximum)	1,000 ppm
Oxygen	19.5 - 23.5 percent by volume
Oil Mist (Condensed hydrocarbon) (Maximum)	5 mg/M3
Odor	Free from pronounced odor
Water	Line pressure dewpoint should at least be 18°F below the maximum ambient temperature for that location. *See the table below for further information on acceptable moisture levels in the compressed air.*

Moisture Conversion Table

Dew Point Degrees F	Dew Point Degrees C	PPM	MG/LT	MG/M3
-110	-78.9	4.58	0.00045	0.45
-105	-76.1	0.94	0.00070	0.7
-100	-73.3	1.5	0.0011	0.1
-95	-70.5	2.3	0.0017	1.7
-90	-67.8	3.2	0.0024	2.4
-85	-65.0	5.0	0.0037	3.7
-80	-62.2	7.1	0.0055	5.5
-75	-59.4	10.6	0.0079	7.9
-70	-56.7	16.1	0.012	12
-65	-53.9	24.2	0.018	18
-60	-51.1	30.9	0.023	23
-55	-48.3	43.0	0.032	32
-50	-45.6	60.5	0.045	55
-45	-42.8	87.3	0.065	65
-40	-40.0	121	0.09	90
-35	-37.2	161	0.12	120
-30	-34.4	229	0.17	170
-25	-31.6	382	0.21	210
-20	-28.9	403	0.30	300
-15	-26.1	538	0.40	400
-10	-23.3	685	0.51	510
-5	-20.5	900	0.67	670
-0	-17.8	1180	0.88	88

APPENDIX F

Tank Gauging Procedures

H_2S Program
DCP Midstream - SENM Asset

APPENDIX F

Tank Gauging Procedures - Background

Manual tank measurements from the top of crude oil and produced water tanks are sometimes necessary for a variety of reasons. These reasons vary from the need to know the fluid change in a tank not equipped with a LACT unit to the sale and transfer measurement(s) of product tanks not accessible by pipeline.

The most common measurement made from the tank top is that for fluid volume. This is made through the thief hatch using a gauge-tape and plumb bob. Other activities that require an employee to open and stand near a tank's thief hatch include measurement of oil temperature, gravity, and sample collection (thieving) for BS&W concentration. None of those measurements require more than approximately five minutes time at the thief hatch to complete.

Opening the thief hatch allows the release of gases and vapors that have accumulated in the vapor space of the storage tank. The rate of release of those gases changes with such variables as the rate of fluid influx into the tank, fluid level in the tank, fluid temperature, gas break -out rates, how long the fluid has weathered, etc.

Vapors and gases from petroleum tanks and produced water tanks do not normally present known or recognized health hazards requiring any special precautions unless they contain a toxic chemical such as hydrogen sulfide. This is because the majority of those vapors and gases are composed of simple asphyxiants such as methane, ethane, propane, and butane. Simple asphyxiants must dilute the oxygen content of air before they become a serious health hazard. Dilution with outside air is rapid once the gas has escaped the thief hatch. The presence of hydrogen sulfide in the vapor space of a tank, However, presents a different problem. Hydrogen sulfide is a toxic gas that has little or no warning properties at lethal concentrations.

The following is a summary of H_2S exposure limits and appropriate precautions required by Duke Energy:

10 ppm - is the ACGIH eight-hour, time weighted average (TWA) exposure limit and DCP Midstream's ceiling limit. Exposures equal to or above this limit require the donning and wearing of a positive pressure SCBA or supplied air with a five-minute escape pack. Exposures below 10 ppm require no respiratory protection. 10 ppm is also the federal OSHA TWA and 15 ppm is the Federal short-term exposure level (15 minutes).

300 ppm - DCP Midstream's policy requires the use of positive pressure type breathing apparatus and the presence of a standby man trained and equipped for the rescue when breathing zone exposures are equal to or above this concentration.

Windsocks are required when thief hatch concentrations exceed 100 ppm.

Based on the toxicity of H_2S as described in API Recommended Practices RP 55 and the ANSI Standard, the required practice that employees wear a full face supplied air pressure demand type breathing apparatus when breathing zone exposures equal or exceed 10 ppm shall be enforced. A total catastrophic failure of the respiratory equipment during tank gauging operations should not impair an employee's ability to lower the thief hatch and move to a safe area when airborne concentrations of H_2S are below 300 ppm. Usually, lowering the thief hatch will be the only action necessary to lower the exposure concentration to a safe level.

H_2S Program
DCP Midstream - SENM Asset

Safe Operating Procedures for Tank Gauging Operations Containing Hydrogen Sulfide Gas

A. Equipment Requirements and Testing
   1. Respiratory protective equipment shall be worn by all employees during tank gauging operations when hydrogen sulfide concentrations in the breathing zone are equal to or greater than 10 ppm. Local exhaust ventilation may be used in lieu of respiratory protective equipment if it is capable of reducing the hydrogen sulfide concentrations in the employees breathing zone to less than 10 ppm.
   2. Positive pressure supplied airline respirator equipped with a five-minute escape pack, or a positive pressure self-contained breathing apparatus (SCBA), shall be used by personnel gauging tanks.
   3. When concentrations in the breathing zone exceed 300 ppm of hydrogen sulfide, or when performing other function that equals or exceeds 300 ppm in the breathing zone, the use of a standby person shall be required. This standby person is required at all times, including call outs, when an employee is gauging a tank that contains 300 ppm H_2S gas in the breathing zone. The standby person must have positive pressure SCBA Immediately available on the work site so they may perform as a rescuer. When concentrations in the breathing zone exceed 300 ppm of hydrogen sulfide, or when performing other function that equals or exceeds 300 ppm in the breathing zone, the use of a standby person shall be required. This standby person is required at all times, including call outs, when an employee is gauging a tank that contains 300 ppm H_2S gas in the breathing zone. The standby person must have positive pressure SCBA Immediately available on the work site so they may perform as a rescuer.
   4. H_2S measurements shall be made on the basis of Tutwiler test, gas chromatograph results, the use of calorimetric detector tubes or by use of electronic detection devices taken at each respective tank. Preferably, sampling shall be taken during the warmer months to determine the worst-case worker exposure. Monitoring to determine H_2S concentrations in the breathing zone must meet accepted industrial hygiene practices. Consult your Safety Director for acceptable practices.
   5. Testing shall be completed in accordance with Topic XI, D of this section.

B. Warning Sign Requirements
   1. When breathing zone concentrations of hydrogen sulfide gas exceed 10 ppm, the following sign shall be posted at the base of the stairs. This sign will be required at those locations where the tank vents through the hatch.
      (red, black and white)

      Danger
      Hydrogen Sulfide
      Positive Pressure
      Respiratory Protection Required When Tank Opened

   2. At those locations where breathing zone concentrations exceed 300 ppm of hydrogen sulfide, warning signs indicating the need for a standby person shall be posted. A sign shall be installed at the base of the stairs and shall consist of the following wording:
      (red, black and white)

      Danger
      Hydrogen Sulfide
      Positive Pressure Respiratory Protection and
      Standby Person Required When Tank(s) Opened

3. When breathing zone concentrations are less than 10 ppm when measured level with the thief hatch, no sign or respiratory protection is required for tank gauging operation.
4. Those central tank batteries (CTB) that have various hydrogen sulfide concentration levels in the tank must be properly identified on the individual tank or with the appropriate warning sign installed at the base of the stairs. Example: some tanks with less than 100 ppm, some greater than 100 ppm but less than 300 ppm and some greater than 300 ppm unless respiratory protection is required for all tanks at this CTB. If a standby man is necessary, it should be appropriately identified. Those central tank batteries (CTB) that have various hydrogen sulfide concentration levels in the tank must be properly identified on the individual tank or with the appropriate warning sign installed at the base of the stairs. Example: some tanks with less than 100 ppm, some greater than 100 ppm but less than 300 ppm and some greater than 300 ppm unless respiratory protection is required for all tanks at this CTB. If a standby man is necessary, it should be appropriately identified.

C. Additional Facility Guidelines - Sour Tank Batteries
1. At all tank battery locations where breathing zone concentrations of hydrogen sulfide gas exceed 100 ppm, a Windsock or similar wind direction indicator shall be installed.
2. These wind indicators shall be installed at such a height, as so they will give an accurate indication of wind direction at the height gauging operations will be performed.

XV. H_2S Testing Requirements for Production Tanks In Known or Suspected H_2S **Locations**

A. Production tanks are defined as all tanks that are used in storing, shipping, or holding produced fluids, Produced fluids are oil, condensate, and water, or any combination thereof. These tanks include but are not limited to production, shipping, slop, recycle or pop tanks. Production tanks do not include process vessels, towers, columns, or bullets.

B. All production tanks in areas known or suspected to have H_2S - contaminated production must be tested initially to determine the H_2S levels. Documentation of previous tests will satisfy the initial testing requirement.

C. Tests may be done using hand held pumps and detector tubes or equivalent approved electronic tester. Consult the Safety Director for testing equipment requirements. All samples can be taken level with the thief hatch or in the vapor space. The thief hatch samples must be taken level with the hatch.

D. After the initial tests in areas known or suspected to have H_2S contaminated production, the following schedule shall be followed as a minimum for retesting:

Initial H_2S Concentration	**Retest**
Equal to or Less than 10 ppm in the breathing zone.	Every 7 Years

Concentrations above this are retested at the discretion of operations Supervisor in consultation with Safety Director. The primary justification to retest a tank having measurements above 10 ppm in the breathing zone is to determine if a standby person is necessary.

References

Occupational Health and Safety Administration, Department of Labor 29 CFR 1910.134, 1910.1000.

APPENDIX G

SAFE WORK PRACTICE H_2S LOADING AND UNLOADING PROCEDURES

H_2S Program
DCP Midstream - SENM Asset

APPENDIX G

SAFE WORK PRACTICE

H_2S
LOADING AND UNLOADING PROCEDURES

1. Before loading any newly purchased crude oil in a suspected H_2S area, the area must be first tested for H_2S. DCP Midstream safety coordinator, the facility manager, or an employee who has been properly trained in this procedure will do the testing. The concentration must be documented.

2. A H_2S personal monitor will be worn at all times when loading, unloading or on any location where H_2S is present.

3. The buddy system will be used whenever the concentration of H_2S is over 250 PPM. OSHA has set the IDLH (Immediately Dangerous to Life and Health) at 300 PPM. To allow for the possibility of a 25% error in the analyzer tubes -- ***DCP Midstream IDLH will be set at 250 PPM.***

4. Placarding will be as follows:

   A. Less than 300 PPM of H_2S — Placard: UN 1267
   B. More than 300 PPM of H_2S — Placard: UN 1267 Plus Poison

5. When arriving on location where H_2S is present, note which way the wind is blowing. All locations will have a windsock in the yard. The wind will help dissipate the H_2S in the area -- **on a still and humid day use extreme caution, as H_2S is heavier than air**.

6. It is very important to position your unit up wind when loading or unloading, if at all possible.

7. In order to protect employees from IDLH atmospheres, all drivers and employees that are required to use air supplied respirator equipment, must be clean shaven. Beards and long side burns that prevent a good face-to-mask seal will not be allowed.

8. If, at any time during the loading or unloading procedure, a personal monitor goes off:
   a. The driver must leave the area and call the employee to test the concentration of H_2S in that area.
   b. If the concentration is over 10 PPM the driver must wear his/her air supplied breathing respirator until the concentration is over 10PPM,the driver must wear his/her air supplied breathing respirator until the loading or unloading procedure is finished.
   c. The amount of H_2S must be documented. This is to ensure that the TWA (Time Weighted Average) for H_2S is not exceeded.

TWA means we can work in H2S with concentrations less than 10 PPM for eight hours a day -- Not to exceed a 40-hour work week.

H_2S Program
DCP Midstream - SENM Asset

Safe Work Practice - H_2S Loading and Unloading Procedures - Continued

9. At no time is anyone allowed to go up the ladder on a lease containing H_2S -- without their air-supplied respirator or a 30-minute SCBA on. This also applies to opening the thief hatch and gauging the tank -- **NO EXCEPTIONS!!!** Refer to item #3.

10. Sampling or re-sampling for H_2S is to be done at a minimum of every two months at each loading and unloading location. This includes tank batteries, new or old that are suspected to contain H_2S. If a new well is turned in to, or an old well has been reworked at an existing location, testing must be done upon completion. Concentrations found must be documented. Samples will be taken as follows:
    A. At ground level
    B. Half-way up the ladder
    C. At breathing level -- on each tank
    D. Six inches above the thief hatch -- on each tank.

11. After a load of crude oil with H_2S has been loaded and/or unloaded, the danger of exposure to H_2S gas does not end. Always remember that the hose tubes, load and unload hoses, oil samples, vent lines and the trailer still contain H_2S gas. Caution must be used when loading and unloading every load.
    NOTE: It takes three loads of sweet crude oil to dissipate the H_2S gas as in the above.

12. All drivers and gaugers must report anything out of the ordinary to their supervisors, i.e. dead animals around locations, potential hazards, equipment failure to transports, tank batteries, and personal equipment failure. *This is for your safety as well as the safety of others.*

13. All of the above rules apply to loading as well as unloading, with no exceptions.

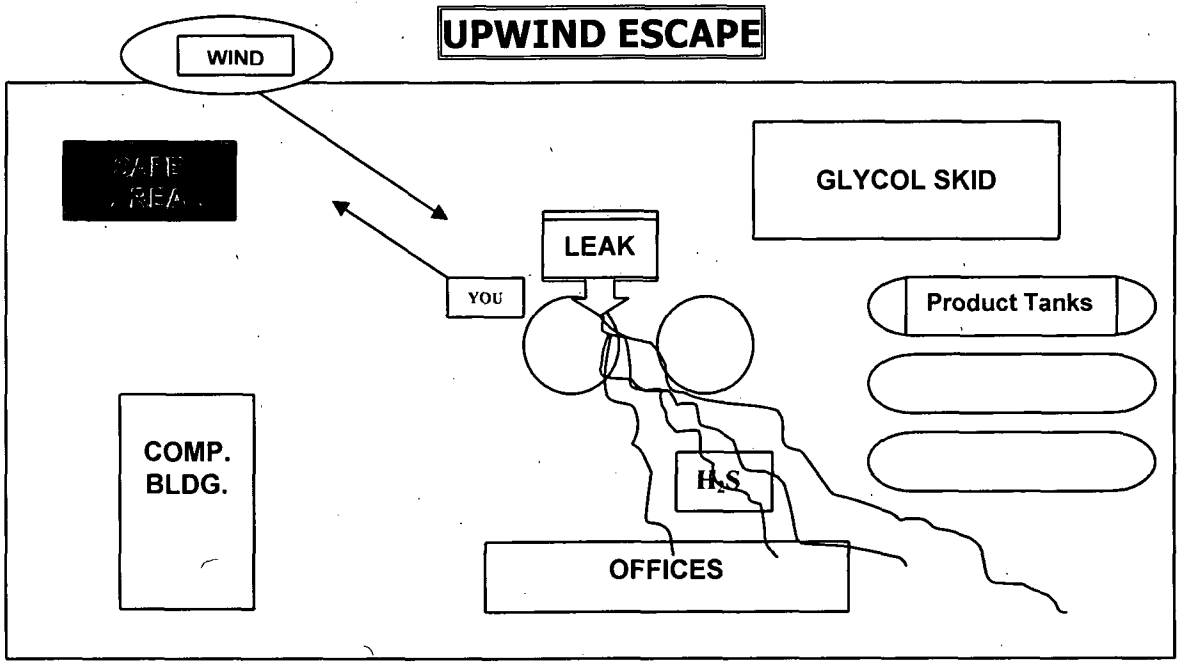
APPENDIX H

ESCAPES ROUTES

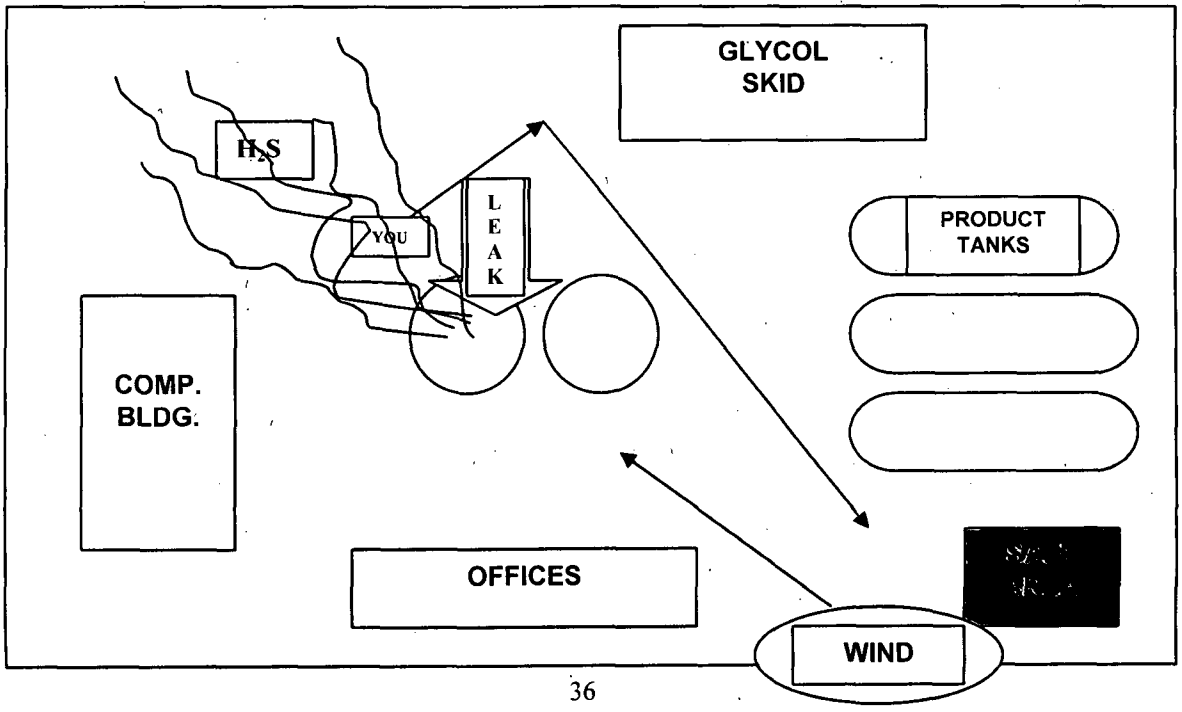
H_2S Program
DCP Midstream - SENM Asset

APPENDIX H
ESCAPE ROUTES

UPWIND ESCAPE



CROSSWIND ESCAPE



APPENDIX I

1. H_2S Concentrations & Typical Body Responses
2. Toxicity of Various Gases

H_2S Program
DCP Midstream - SENM Asset

H_2S CONCENTRATION	TYPICAL BODY RESPONSES
0.13 PPM	Minimal perceptible odor.
4.60 PPM	Easily detectable Moderate odor.
10 PPM	Beginning eye irritation.
27.0 PPM	Strong, unpleasant odor, but not intolerable.
100 PPM	Coughing, eye irritation, loss of sense of smell after 2-5 minutes.
200 - 300 PPM	Marked conjunctivitis (eye inflammation) and respiratory tract irritation after one hour of exposure.
500 - 700 PPM	Loss of consciousness and possibly death in 30 minutes to one hour.
700 - 1000 PPM	Rapid unconsciousness, cessation (stopping or pausing) of respiration, and death.
1000 - 2000 PPM	Unconsciousness at once, with early cessation of respiration and death in a few minutes. Death may occur even if individual is removed to fresh air at once.

Table taken from "Acceptable Concentrations of Hydrogen Sulfide" by American National Standards Institute ANSI Standard No. Z37.2 – 1972

H_2S Program
DCP Midstream - SENM Asset

TOXICITY OF VARIOUS GASES

Common Name	Chemical Formula	Weight To Air	Threshold Limit	Lethal Concentration
Hydrogen Cyanide	HCN	Lighter	10 PPM	300 PPM
Hydrogen Sulfide	H_2S	Heavier	20 PPM	600 PPM
Sulfur Dioxide	SO_2	Heavier	5 PPM	1,000 PPM
Chlorine	CI_2	Heavier	1 PPM	1,000 PPM
Carbon Monoxide	CO	Lighter	50 PPM	1,000 PPM
Carbon Dioxide	CO_2	Heavier	5,000 PPM	10% or 100,000 PPM
Methane	CH_4	Lighter	90,000 PPM	

APPENDIX J

INSPECTION FORMS

H_2S Program
DCP Midstream - SENM Asset

CASCADE SYSTEM INSPECTION REPORT

Unit Number: ____________________

Inspected By: ____________________

Inspect the following:

1. Air Pressure in the Cascade Bottle
2. Check Regulator for Defects
3. Check ALL Air-Line and Air-Line Fittings
4. Check Condition of Hose Reel

NOTE: Inspections will be done daily - when equipment is in use. On all other systems, Inspection is to be performed Monthly and the Documentation on file for easy access.

Date	Air Pressure	Defects in Regulator	Air-line and Fittings	Hose Reel and Others

H_2S Program
DCP Midstream - SENM Asset

H_2S INSPECTION REPORT

Location/Area: ______________________________

Inspected By: ______________________________

Inspect the following:

1. Each loading and unloading location known to contain H_2S.
2. New and old locations suspected to contain H_2S **(Tested before Hauling).**
3. Any re-worked or new well turned into a existing well **(Tested before Hauling).**
4. Check Condition of Hose Reel

NOTE: Inspection is to be performed Monthly and the Documentation on file for easy access.

Date	New or Old Location Name	Tank #	H_2S PPM	Other Remarks

H_2S Program
DCP Midstream - SENM Asset

HIP AIR PACK WITH 5 MINUTE BOTTLE - INSPECTION REPORT

Unit Number: ______________________________

Inspected By: ______________________________

Inspect the following:

1. Air pressure in the 5 minute bottle -- BEFORE USE
2. Condition of face mask -- BEFORE USE
3. All hoses on work pack-- BEFORE USE
4. Check O-ring for cracks and wear -- MONTHLY
5. Check all straps for wear and tears -- MONTHLY

NOTE: Inspections will be done daily - when equipment is in use. On all other systems, Inspection is to be performed Monthly and the Documentation on file for easy access.

Date	Air Pressure	Face Mask	Air Hose	O-Ring	Straps	Other

H_2S Program
DCP Midstream - SENM Asset

30 MINUTE S.C.B.A. - INSPECTION REPORT

Unit Number: ______________________________

Inspected By: ______________________________

Inspect the following:

1. Air pressure in the 30 minute bottle -- BEFORE USE
2. Condition of face mask -- BEFORE USE
3. Condition of the hose from the face mask to the regulator-- BEFORE USE
4. Check regulator for defects-- BEFORE USE
5. Check O-ring for cracks and wear -- MONTHLY
6. Check all straps for wear and tears -- MONTHLY

NOTE: Inspections will be done before each use. On all other systems, Inspection is to be performed Monthly and the Documentation on file for easy access.

Date	Air Pressure	Face Mask	Air Hose	O-Ring	Straps	Other

H_2S Program
DCP Midstream - SENM Asset

H_2S Program
DCP Midstream - SENM Asset

MAINTENANCE AND CALIBRATION FORM

Manufacturer: _____ Model: _____

Serial #: _____ Assigned to: _____

Date: _____ Checked by: _____

TYPE OF CALIBRATION	REQUIRED	SETTING	COMMENTS
H_2S	0		
Initial reading	25 PPM		
Initial reading with gas applied	10PPM		
Audio Alarm set at	10 PPM		
Visual alarm set at			
Combustible			
Initial reading	0		
Initial reading with gas applied	50% LEL		
Audio alarm set at	20% LEL		
Visual alarm set at	20% LEL		
O2			
Initial reading	20.9		
Initial reading with gas applied	0.0		
Audio alarm set at	19.5		
Visual alarm set at	19.5		
Other:			
Initial reading			
Initial reading with gas applied			
Audio alarm set at			
Visual alarm set at			

APPENDIX K

H_2S SURVEY FORM

H_2S Program
DCP Midstream - SENM Asset

APPENDIX K
H_2S Contingency Plan Information

Facility:			
Driving Directions:			
GPS:			
Gas stream is:	~~SWEET~~ SOUR		
	If sour – ppm:		
Volume/day:			
Inlet Pressure:		Size of Piping:	
Outlet Pressure:		Size of Piping:	
Piggible?			
Gas comes in from:			
Gas goes to:			
Treating at facility?	YES NO		
	If so – what kind?		
Is there storage?	YES NO		
	If so – what type?		
	- how much?		
What safety systems are on site?			
What safety equipment is on site?			
What safety equipment does operator have in vehicle?			

APPENDIX L

TESTING & BREATHING EQUIPMENT REQUIRED

H_2S Program
DCP Midstream - SENM Asset

APPENDIX L
SAFE WORK PRACTICE

TESTING AND BREATHING EQUIPMENT REQUIRED

THE FOLLOWING EQUIPMENT IS REQUIRED TO BE IN YOUR UNIT, AND UTILIZED BEFORE ATTEMPTING TO LOAD H2S WITH OEVER 250 PPM.

1. H_2S Personal Monitor
   a. Single Gas Monitor
   b. Range: 0-5 PPM
   c. Operating Temp: -4 to 113°F
   d. Alarm Rising/Falling, H_2S Sensor Circuit Failure and Low Battery Indicator
   e. Display LCD
   f. Power Source: One 9 Volt Battery
   g. Battery Life: 100 - 200 Hours

2. Supplied-Air Respirator (All Drivers)
   a. Five Minute Egress Bottle
   b. 100 ft. Airline plus Airline Reel
   c. 2.5 Hour Cascade Bottle with Regulator
   d. Dual Air-Line Hook-Up

3. Self Contained Breathing Apparatus (All Guagers)
   a. 30 Minute Ultra-light Bottle
   b. Spare 30 Minute Ultra-light Bottle
   c. Work Mask Face Piece
   d. Carrying Case

4. MSA H_2S Quick Draw Pump Plus H_2S Detector Tubes
   a. Hydrogen Sulfide Tubes
   b. Tube Range: 10 - 4000 PPM

APPENDIX M

CONTRACTOR WAIVER FOR EQUIPMENT

H_2S Program
DCP Midstream - SENM Asset

APPENDIX M

CONTRACTOR WAIVER FOR EQUIPMENT

LEND/LEASE EQUIPMENT USE RELEASE
Description of Equipment - Itemized by Component/Part
(Use back for additional space)

Location where equipment is to be used: _____

Dept. _____ Unit _____ Tank No. _____ Area _____

_____

_____

_____

_____

It is understood that DCPM, without warranty or representation of any degree, hereby lend/leases to the borrower-lessee the above described equipment for its designed use. The borrower-lessee accepts the equipment "as is" and agrees to keep it in the borrower-lessee's exclusive custody and control during the period of use and to return it in the identical condition in which it was received. Cleanliness and function are mandatory, however, reasonable wear and tear is expected. Equipment is to be returned promptly when no longer in use by the borrower/lessee or sooner should its return be desired by DCPM.

The borrower-lessee has examined the equipment and certifies it to be suitable for the application it is to be used.

The borrower-lessee declares that the operation, function, and application of the equipment is understood by his representative.

The borrower-lessee acknowledges direct accountability for instructing, training, and the practical application of the equipment.

The borrower-lessee understands that replacement or repair is required at its current cost should the equipment or a part not be returned in a functional condition.

Borrower-lessee agrees to indemnify and hold DCPM, its agents, employees, and insurance carriers harmless from any and all losses, claims, acts, costs, expenses, judgments, subrogation, or other damages resulting from injury to any person, including injury resulting in death, or damage, including loss or destruction to property of whatever nature or to any person arising out of or incident to he use of the above described equipment by borrower-lessee, including but not limited to borrower-lessee's employees, agents, sub-contractors, and others designated by borrower-lessee to perform part of the work or service, in or about, or attendant to, the work and services performed while the equipment is being leased or borrower.

This lend/lease agreement is subject to all the terms and conditions outlined herein.

DCP Midstream

Accepted By: _____
Borrower-Lessee Company

Date: _____ Per: _____
Received Supervisor

Signature: _____
Safety Representative

Date: _____
Returned

Conditions and description of the equipment returned:

_____

_____

_____

_____

APPENDIX N

SULFIDE STRESS CRACKING

H_2S Program
DCP Midstream - SENM Asset

SULFIDE STRESS CRACKING

Hydrogen Sulfide gas is highly corrosive. Due to the corrosive process, hydrogen and sulfides are released and exposure can cause various metals and materials to become brittle. There are three types of corrosion attacks of H_2S on steel. They are as follows:

1. In the presence of water an acidic solution results which causes general metal loss resulting in the loss of strength.
2. Pitting or localized corrosion which can cause rapid penetration of the metal.
3. Sulfide stress cracking which has little evidence of metal loss but the stresses developed by the atomic hydrogen generated by the corrosion and penetration of the metal causes early failures. The atomic hydrogen diffuses into the crystal structure of the steel then expands as molecular hydrogen is formed and produces stresses for cracking.

Utilizing materials, equipment, processes, and procedures set forth in the NACE Standard MR-01-75 (Sulfide Stress Cracking Resistant Metallic Material For Oil Field Equipment), and API Recommended Practices 49 and 55, will assist in controlling sulfide stress cracking. All pressure vessels and piping systems should be designed and constructed according to ASME and ANSI codes. These standards should be used as a minimum and other forms of corrosion and modes of failure should be considered in design and operation of oil field equipment in sour gas environments.

Considerations that help minimize embrittlement are as follows:

1. During drilling operations, maintain mud pH at 10.5 or higher to neutralize H_2S in the wellbore.
2. Use corrosion inhibitors in sour gas piping systems, mud systems, producing wells, etc.
3. Use material and equipment described in NACE Standard MR-01-75.
4. Use drill pipe coated internally with plastic (only effective when exposure occurs during drill stem testing or drilling).
5. Control H_2S concentrations, pH and water content of system fluids, mechanical stresses, and operating changes of components system caused by corrosion.
6. Minimize down-hole stresses in the drill string.
7. Avoid exposing high strength drill pipe (Rockwell hardness of 22 or greater) to H_2S gas.

APPENDIX O

Visitor Safety Orientation

H_2S Program
DCP Midstream - SENM Asset

Visitor Basic Safety Instruction Check-List

Facility: _____ **Date:** _____

Name: _____ **Company:** _____

Trainer: _____

	Initial on Completion Visitor	Reviewer
Review the requirement of the program.		
1. Visitor signs into the log book of Plant Facility upon arrival		
2. Basic Safety Instruction		
a. Required PPE		
- Hard Hat		
- Safety Glasses – Side shields		
- Hearing Protection		
- Proper Footwear – leather shoe or boots required		
- Flame Resistant Clothing (FRC) – outer layer		
b. Potential Hazards of the facility/location		
- Hazardous Materials – H_2S, Benzene, Flammable Liquids and gasses		
- Construction Activity		
- Moving Equipment		
- Vehicle Safety		
c. No-Smoking Policy – designated smoking areas		
d. Listen and obey all instructions from Visitor Escort		
e. Report any injury or incident – *no matter how slight or insignificant it may appear* – to DCP personnel		
f. "Say Something Program" – say something about any safety hazard or concern observed		
g. What to do in event of an emergency or emergency alarm – vehicles, equipment, egress path, mustering area, duty to report		
- Vehicles – turn off and DO NOT DRIVE		
- Equipment – Turn off and leave in place		
- Egress Path – note windsocks and safest route to mustering area		
- Primary, Secondary, etc. mustering area		
- Duty to Report – ALL persons must report and be verified as safe. DO NOT LEAVE!		
3. Is visitor to be unescorted or will be returning on a regular basis? If so – they will be required to watch safety orientation video.		
4. Visitor owned PPE inspected to ensure compliant		

5. Listing of PPE issued to visitor which must be returned	**Issued**	**Returned**
a. Hard Hat		
b. Safety Glasses		
c. FRC		
d. Other - list		
7. Visitor must sign out of the sign-in/sign-out log book.		
8. List any additional topics covered (heat, cold, misc.)		

_____

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Tuesday, September 20, 2011 8:14 AM
To: 'Jamerson, Kelly D'
Subject: RE: H2S Contingency Plan Receipt and Update

Mr. Jamerson:

I double-checked with OCD Staff to see if we received the analytical for Pecos Diamond and the H2S CP from the Eunice Gas Plant, and the OCD is lacking this information.

I also checked the OCD Online file for the Pecos Diamond (GW-237) at http://ocdimage.emnrd.state.nm.us/imaging/AEOrderFileView.aspx?appNo=pENV000GW00252; and Eunice GP (GW-016) at http://ocdimage.emnrd.state.nm.us/Imaging/FileStore/santafeadmin/ao/92708/penv000gw00017_7_ao.tif.

The OCD requests the information. Thank you.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Dept.
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Dr., Santa Fe, New Mexico 87505
Office: (505) 476-3490
Fax: (505) 476-3462
E-mail: CarlJ.Chavez@state.nm.us
Website: http://www.emnrd.state.nm.us/ocd/
"Why not Prevent Pollution; Minimize Waste; Reduce the Cost of Operations; & Move Forward with the Rest of the Nation?" To see how, go to "Pollution Prevention & Waste Minimization" at:
http://www.emnrd.state.nm.us/ocd/environmental.htm#environmental)

From: Jamerson, Kelly D [mailto:KDJamerson@dcpmidstream.com]
Sent: Sunday, September 18, 2011 11:17 AM
To: Chavez, Carl J, EMNRD
Subject: RE: H2S Contingency Plan Receipt and Update

Mr. Chavez,

Analytical data was submitted on the Pecos Diamond Plant this previous week. Please advise if you do not receive it.

The Eunice Plant is a sour plant and inlet gas contains hydrogen sulfide gas. This plant has a H2S contingency plan on file with the OCC. A copy was previously submitted to the Santa Fe office. Please advise if did not receive.

Kelly Jamerson
Director - SENM Asset
DCP Midstream
575-397-5539 (o)
325-226-3357 (c)

From: Chavez, Carl J, EMNRD [mailto:CarlJ.Chavez@state.nm.us]
Sent: Tuesday, September 13, 2011 7:34 AM
To: Jamerson, Kelly D
Subject: H2S Contingency Plan Receipt and Update

Mr. Jamerson:

Good morning. The OCD has received the [H2S] analytical data confirming DCP Midstream, L.P.'s initial determination that OCD H2S Contingency Plans do not apply to the following gas plant facilities:

Eddy County:

- East Carlsbad Gas Plant (GW-069)

Lea County:

- Lee Gas Plant (closed)
- Antelope Ridge Gas Plant (GW-162)
- Hobbs Gas Plant (GW-175)
- Zia Gas Plant (145)

Analytical data from DCP to date has not been received for the following gas plants:

Eddy County:

GW-237	DCP MIDSTREAM, LP	DUKE PECOS DIAMOND GP	Gas Plant	A	Eddy	DUKE PECOS DIAMOND GP	G-3-18 S-27 E

Lea County:

GW-016	DCP MIDSTREAM, LP	DUKE EUNICE GP	Gas Plant	A	04/25/2009	Keith Warren 303-605-2176	Lea	DUKE EUNICE GP	H-5-21 S-36 E

The OCD will be expecting the data soon for the above gas plants. Please contact me if you have questions. Thank you.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Dept.
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Dr., Santa Fe, New Mexico 87505
Office: (505) 476-3490
Fax: (505) 476-3462
E-mail: CarlJ.Chavez@state.nm.us
Website: http://www.emnrd.state.nm.us/ocd/
"Why not Prevent Pollution; Minimize Waste; Reduce the Cost of Operations; & Move Forward with the Rest of the Nation?" To see how, go to "Pollution Prevention & Waste Minimization" at:
http://www.emnrd.state.nm.us/ocd/environmental.htm#environmental)

New Mexico Energy, Minerals and Natural Resources Department

Susana Martinez
Governor

Brett F. Woods, Ph.D.
Acting Cabinet Secretary

Daniel Sanchez
Acting Division Director
Oil Conservation Division

March 1, 2011

Mr. Tony Lee
Asset Manager
DCP Midstream, LP
370 17th Street, Suite 2500
Denver, CO 80202

Dear Mr. Lee:

Re: Duke Eunice Gas Plant (GW-016) Oil and Gas Facilities/Operations that may Vent and/or Flare H_2S Gas

The New Mexico Oil Conservation Division (OCD) is writing to operators of the above-referenced types of facilities or operations that may have New Mexico Environmental Department (NMED) - Air Quality Bureau (AQB) Oil and Gas type Permits. The purpose of this communication is to inform operators of such facilities regarding OCD Rules that may be applicable to gas plant operators and/or oil and gas facilities/operations in the hope that it provides some clarification regarding the applicability of these rules, and to ultimately increase overall compliance

In New Mexico, the OCD Rules that pertain to Hydrogen Sulfide (H_2S) Gas are provided at § 19.15.11 et seq. NMAC (Hydrogen Sulfide Gas). The OCD Oil and Gas Rules that address "No-Flare" and the OCD Form C-129 process are provided at § 19.15.7.37 et seq. NMAC (Application for Exception to No-Flare). Gas plants have gas gathering pipelines with meters connected to operators who then either sell or vent casinghead gas into the gas gathering pipelines that feed into the plants. The OCD Rules that pertain to "Casinghead Gas" are provided at § 19.15.18.12 et seq. NMAC (Production Operating Practices).

This letter was precipitated by a recent event where a gas plant operator shut-in a "gas gathering pipeline." This "shutting-in" of the pipeline impacted approximately thirty individually-metered operators who may have continued operating instead of "shutting-in" their well(s). In spite of the fact that approximately thirty operators were impacted, the OCD observed that only one of those thirty operators contacted the OCD via Form C-129 as required under the OCD Rules to obtain approval of their application for an "exception to no-flare." (The operator initially had contacted the OCD to request approval to vent H_2S gas into the air rather than shut-in the well.) The OCD has serious public safety concerns when operators do not properly shut-in their wells when gas gathering pipelines and/or meters are shut-in, especially where the wells are near populated and/or agricultural areas due to the potential for loss of life from toxic gas.

In subsequent communications with gas plant operators who flare gas, the OCD discovered that the operators were under the impression that if their facility has an NMED- AQB Construction Permit which includes a provision to flare/emit gas, then this is all that is needed to operate in New Mexico. This is actually only partially

correct because operators are also required to comply with the requirements set out in the OCD Rules regarding flaring and venting. For example, in the situation where a gas plant operator has notified connected well operators of a gas-gathering pipeline shut-down, each of those well operators is required to shut-in its well(s) or to obtain OCD District Supervisor approval to flare via an OCD C-129 Form. Operators who do not comply are illegally venting and/or flaring gas under OCD Rules.

In addition, gas plants and/or oil and gas operators may be required to satisfy OCD § 19.15.11 et seq. NMAC (Hydrogen Sulfide Gas) Contingency Plan requirements for facilities and wells in cases where 100 ppm or greater H_2S concentrations may impact public areas. OCD records indicate that DCP Midstream, LP does **not** currently have an H_2S Contingency Plan (CP) on file with the OCD. If you do not have an approved CP under § 19.15.11 et seq. NMAC (Hydrogen Sulfide Gas) for your gas plant yet, please submit your CP to the OCD Environmental Bureau in Santa Fe on or before August 11, 2011. (*The OCD notes that it is aware of some operators who have recently submitted CPs to the OCD that are currently under review. Please advise if this is the case for DCP Midstream.*)

The OCD recognizes that when multiple sets of Rules, Regulations and Statutes apply, it can sometimes be tricky to definitively determine which requirements apply, to whom and in what circumstances. Operators must, however, take all care to ensure that they are at all times operating in compliance with all applicable state, federal and/or local rules and regulations. In this instance, this means that operators are subject not only to the requirements imposed by the NMED-AQB permitting structure, but also to those set forth in the OCD Rules.

We hope that this communication has helped to clarify the issue regarding the applicability of the OCD Rules in these situations, regardless of the existence of a valid NMED-AQB permit. Please contact Carl Chavez of my staff at (505) 476-3490 if you have questions or need assistance with the CP. The OCD looks forward to bringing your facility into compliance with OCD Rules if it is not currently already in compliance. Thank you for your cooperation in this matter.

Sincerely,

Daniel Sanchez,
Compliance & Enforcement Manager

xc: Richard Goodyear, NMED- AQB
OCD Environmental Bureau
OCD District Offices