# H2S - 44

# $H_2S$ CONTINGENCY PLAN GP w/ AGI Well

# (Also see GW-020)

GEOLEX®
INCORPORATED

Alberto A. Gutiérrez, C.P.G.

October 31, 2012



Glenn von Gonten
New Mexico Energy, Minerals & Natural Resources Department
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Drive
Santa Fe, New Mexico 87505

RE: Revised Rule 11 Plan
Frontier Maljamar Gas Processing Plant
Per NMOCD Order #R-13443

Dear Mr. von Gonten,

I am transmitting to you two copies of the Revised Rule 11 Plan for Frontier Field Services Maljamar Gas Processing Plant. This is in follow-up to the electronic copies of this plan that Julie Gutierrez from our offices also transmitted to you via email yesterday. The Plant has recently completed a new AGI well and associated surface facilities, and per NMOCD Order #R-13443, Item 3, Page 5, a Revised Rule 11 Plan has been completed for the plant. The revised plan is an update of the original Rule 11 Plan which was approved by OCD on May 10, 2011.

Please let us know if you require any additional information.

Sincerely,
Geolex, Inc.

Liz Hill

cc: Carl Chavez, NMOCD
Fran Brown, Environmental Health and Safety Manager, AKA Energy
John Prentiss, Plant Manager, Maljamar
Chip Burkett, Senior Process Engineer, AKA Energy

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FRONTIER

field services, llc

southern ute indian tribe

# $H_2S$ Contingency Plan

## Frontier Maljamar Gas Processing Plant
## and
## Maljamar AGI Facility
## 1001 Conoco Road
## PO Box 7
## Maljamar, NM 88264
## (575-676-3528)

**November 1, 2012**

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## APPENDICES

# Location of Facility

**1) Frontier Field Services, LLC, Maljamar Gas Processing Plant and Maljamar AGI Facility**

The physical location of the Plant and the AGI Facility is in Section 21, Township 17S, Range 32E, Lea County, NM. These facilities are located approximately three miles south of the town of Maljamar, NM, in a very isolated area. Driving Directions to the plant are as follows: (1) At the Junction of Highway 82 and County Road 126 (State Road 33) go south 2.6 miles and turn right onto Conoco Road and take first paved road south to the office. (2) At the Junction of Highway 529 and County Road 126 go north 1.9 miles and turn left onto Conoco Road and take first paved road south to the office (see Figure 1).

The mailing address of the plant is:
1001 Conoco Road
P.O. Box 7
Maljamar, NM 88264

**2) The Maljamar Gas Plant Measurement Office on the Plant site (See Figure 3)** will serve as the Communication Center during the response to an $H_2S$ release. If this location must be evacuated, the secondary staging area located one mile south of the intersection of Maljamar Road and CR 126A (See Figures 3 and 5) will be used to direct activities, utilizing cell phones and company radios.

## I. Introduction [API RP-55 7.1]

The Frontier Field Services Maljamar Processing Plant is a natural gas processing plant which process field gas containing hydrogen sulfide ($H_2S$) and handles and/or generates sulfur dioxide ($SO_2$). Frontier has just completed construction of an Acid Gas Injection (AGI) Facility at this site, which consists of an AGI well (Maljamar AGI #1) and associated compression facilities. This revised safety plan is being submitted to include that new AGI Facility. This revised $H_2S$ contingency plan is created to document procedures that are to be followed in the event of an $H_2S$ release that occurs at any location on the Plant or the AGI Facility. This plan complies with the ***New Mexico Oil Conservation Division (OCD) Rule 11(§ 19.15.11 et. seq. NMAC)***. The plan and operation of the Maljamar Plant also conform to standards set forth in ***API RP-55 "Recommended Practices for Oil and Gas Producing and Gas Processing Plant Operations Involving Hydrogen Sulfide".*** The Maljamar Plant does not have any storage tanks in which hydrogen sulfide or other gas or gas products are stored, and thus, API regulations and OCD regulations (specifically 19.15.11.12.E NMAC) relative to those types of storage are not applicable for this plant or the AGI Facility.

## II. Scope [API RP-55 7.2]

This contingency plan is specific to the Frontier Maljamar Gas Processing Plant and Maljamar AGI Facility. It contains procedures to provide an organized response to an unplanned release from the Plant or the AGI Facility and documents procedures that would be followed to alert and protect any members of the public, residents in surrounding areas and/or contractors working on or around the plant in the event of an unplanned release. This $H_2S$ Contingency Plan has been prepared to minimize the hazard resulting from an $H_2S$ release. It will be used to inform company personnel, local emergency responders and the public of actions to be taken before, during and after an $H_2S$ release. All operations shall be performed with safety as the primary goal. The primary concern of Frontier Field Services Maljamar Gas Plant, during an $H_2S$ release, is to protect company employees, contractors and the public; the secondary concern is to minimize the damage and other adverse effects of the emergency. Any part of the operation that might compromise the safety of individuals will cease until the operation can be re-evaluated and the proper engineering controls to assure safety can be implemented. No individual should place the protection of the Plant property above his or her own personal safety.

It must be kept in mind that in a serious situation involving a Hydrogen Sulfide ($H_2S$) release, not only Frontier Field Services personnel are involved, but local Fire Departments, Law Enforcement, County and even State of New Mexico agencies may be interested parties. Cooperation will expedite all decisions. In any emergency situation involving a $H_2S$ release, delegation of duties will be made to appropriate employees and groups. These duties will be reviewed on an annual basis to ensure complete understanding and facilitate a well-coordinated response by all involved personnel to the emergency situation.

## III. Plan Availability [API RP-55 7.3]

This contingency plan shall be available to all personnel responsible for implementing any portion of the plan (see Appendix C for distribution list). Frontier Field Services or their

designee will distribute copies of the approved plan to the following agencies: OCD; New Mexico Department of Public Safety (DPS), Local Emergency Planning Committee (LEPC); Maljamar, Lovington, Artesia, Hobbs and Loco Hills, Fire Departments; New Mexico State Police District 3 Office, Roswell, NM; Lea County Sheriff's Department, and the Bureau of Land Management (BLM) Carlsbad Field Office. The Plan will be available at the following Frontier Field Services, LLC locations: Maljamar Processing Plant, Maljamar, NM; Frontier Field Services Main Office, 4200 Skelly Drive, Suite 700, Tulsa, OK 74135; AKA Energy Corporate Headquarters, 65 Mercado Street, Suite 250, Durango, CO 81301; Conoco Phillips Lovington Office, Mid-America Pipeline Company, LLC.

## IV. Emergency Procedures [NMAC 19.15.11.9.B(2)(a)] [API RP-55 7.4 a] [29 CFR 1910.1200]

### A. Responsibilities and Duties of Personnel During an Emergency

All visitors and Plant personnel that are not operators will proceed to a Level I muster area in the event that a 10 ppm $H_2S$ intermittent alarm and/or flashing blue beacon is activated. The Plant operator(s) will make a determination of the level of the incident as detailed below and will respond immediately, if required, by donning 30-minute Self Contained Breathing Apparatus (SCBA). They will determine if any personnel are in distress and will assist any distressed personnel to evacuate to a designated Emergency Assembly Area. Emergency services (911) will be contacted if there are injuries or as otherwise deemed necessary. At the sound of the alarm and/or upon observation of the flashing beacons, all other personnel in the Plant and AGI Facility are to stop work, check the prevailing wind direction and immediately proceed along designated evacuation routes and/or upwind to the pre-designated Emergency Assembly Area(s) that are shown in Figure 5.

Roll call shall be conducted at the Emergency Assembly Area to assure all personnel have evacuated safely. This facility requires that all visitors check in before entering the Plant or AGI Facility, and thus the check-in sheet will be used at the Emergency Assembly Areas to make a full accounting of all personnel, contractors and visitors.

The Plant Manager or designee will serve as the Incident Commander (IC) and head of the Incident Command Team. The IC will bear the overall responsibility to see that objectives of the Plan are met and to insure the safety of the public and all personnel involved in the response. The IC will monitor all activities being carried out. Members of the Maljamar Plant Incident Response Team will keep him informed of conditions throughout the release emergency. The IC's role is to ensure control of the emergency incident. He will notify or delegate responsibility for notification of all Frontier or contract personnel and any civil authorities needed to respond to the incident. The IC will assign any additional personnel to support roles as needed. Upon notification or discovery of an $H_2S$ release, the following steps will be initiated by the Frontier IC or designee:

- Assume the role of Incident Commander (IC) and gather as much information as is possible regarding the release of $H_2S$.
- Alert other emergency response personnel of the potential hazard.
- Arrange for support personnel to be sent to the location of the release.
- Proceed to the site to assess emergency response actions needed.
- Set up an on-site command station.
- Implement the $H_2S$ Incident Response Plan as necessary.
- Remain on site as IC until relieved or the incident is under control.

The following is a description of key personnel responsibilities during an Incident Response. Depending on the specific circumstances surrounding the release, a single individual may serve multiple roles for key personnel outlined below.

1. **Incident Commander (IC).**
   a. Obtain initial incident briefing from on scene or prior IC, if available
   b. Ensure the safety of all personnel involved in the response.
   c. Assess the incident situation and develop appropriate strategies. Conduct site investigations as needed. Establish response priorities.
   d. Conduct initial and ongoing briefings with IC staff.
   e. Activate elements of the Incident Command System as required.
   f. Ensure planning response meetings are conducted.
   g. Keep Frontier Field Services line and senior management informed of response situation.
   h. Manage all incident operations.
   i. Ensure a Frontier Field Services media representative has approved all information releases prior to release or issue.

2. **Operations Section Chief.**
   a. Obtain briefing from IC.
   b. Ensure the safety of all personnel under Operations Section Chief supervision.
   c. Brief and assign operations personnel in accordance with Incident Response needs.
   d. Supervise operations; ensure personnel have the equipment, materials supplies and support needed to respond in a safe, efficient and effective manner.
   e. Determine Operations Section needs and request additional resources as necessary.
   f. Report information about special activities, events and occurrences to the IC.
   g. Ensure site security.

3. **Safety Officer**
   a. Obtain briefing from IC.
   b. Exercise emergency authority to stop and prevent unsafe acts.
   c. Apply for manpower, equipment and services necessary to ensure safe operations at all sites.
   d. Ensure hazard communications systems, including Material Safety Data Sheets (MSDS's), are in place at all involved field locations.
   e. Identify hazardous situations associated with the incident.
   f. Ensure all regulatory requirements as related to safety are satisfied.
   g. Ensure that employees and contractors entering the clean-up sites are properly briefed as to the dangers and precautions to be observed at the site. Ensure only those involved in the response are involved in the clean-up of hazardous materials; otherwise, review their training and qualifications.
   h. Determine the types of air monitoring equipment (direct reading, personal monitoring, etc.) necessary to support response operations.
   i. Participate in response planning meetings.
   j. Lead Incident Investigation Teams for any incident occurring during or after the emergency. Document and review findings with all team members.

4. **Logistics Section Chief**
   a. Obtain briefing from the IC.
   b. Identify and provide logistics support for planned and expected operations.
   c. Coordinate and process requests for additional resources.
   e. Assist Officers and Section Chiefs from other functions in resources procurement.
   f. Advise on current service and support capabilities.

5. **Information Officer**
   a. Obtain briefing from IC.
   b. Establish a single incident information center whenever possible.
   c. Identify and communicate public, community, and media concerns to the IC.
   d. Respond to special requests for information.

6. **Planning Section Chief**
   a. Obtain briefing from IC.
   b. Reassign initial response and incident personnel into incident positions as needed.
   c. Assemble information on alternative strategies.
   d. Identify need for use of specialized resources.
   e. Advise IC staff of any significant changes in incident status.
   f. Distribute IC's orders and prepare plans for implementation.

7. **Other Employees and Contractors**

   All employees on duty should be on standby awaiting instructions from the IC. They may be called on to provide support contacting vendors for supplies, contacting local support groups for assistance to the general public, provide onsite logistical support to the responders, blocking roads, assist with evacuations, etc.

***No employee or contractor will be asked to provide incident scene support that they are not comfortable in their ability to perform or have not been specifically trained to perform.***

## B. Immediate Action Plan

The following outlines the Immediate Action Plan that is illustrated by the response flow diagrams included in Appendix A. The Immediate Action Plan is divided into three levels which are activated in response to increased severity of an unanticipated release of $H_2S$ at the Plant. The following procedures are to be used when responding to an $H_2S$ release. In the event of activation of an $H_2S$ alarm, the Plant Operator will assess the situation pursuant to Paragraph IV. A. above and determine the appropriate level of response consistent with Immediate Action Plan. Additional or long-term response actions will be determined on a case-by-case basis, if needed, once the Incident Command Center (ICC) and System (ICS) are established following the immediate response.

| Level | Alarms | Actions |
|---|---|---|
| I | Continuous audible alarm sounded and flashing blue lights activated for $H_2S$ at 10 ppm or greater. | **1.** The audible signal for a Plant or AGI Facility emergency and evacuation is a continuous siren alarm and a flashing blue beacon. An $H_2S$ alarm is activated and a blue light flashes when 10 ppm or greater are detected. The audible alarm and flashing blue lights are redundant systems which function independently of one another so that should one system fail, the other would remain active. These systems incorporate back-up battery capabilities as recommended in API RP 55 which insure their operation in the event of a power failure. A computer in the control room and in the Plant Operator's office establishes which $H_2S$ monitor has activated the alarm and/or flashing blue beacon. At the initial sound of the intermittent alarm or the flashing blue beacon, assigned operator will assess the location of the alarm and make an initial determination of the cause of the alarm. The operator will attempt to rule out potential false alarms based on sensor malfunction or other conditions, and if a release is detected, he will make a determination of prevailing wind and estimated magnitude of the release. If the cause of the release is a minor problem such as a packing or seal leak, the operator will take the necessary steps to correct the situation and eliminate the source of the release. If necessary, the operator will make a call to the supervisor on call for back-up. Once the operator has back-up they will put on a 30 minute self-contained breathing apparatus (SCBA). (There is one operator at the plant at all times, and at least 13 SCBA devices are located where they are accessible to the operator.) In the event that the operator cannot immediately identify and resolve the alarm all other personnel in the Plant or AGI Facility complex shall proceed immediately to the closest Level I Emergency Assembly Area (see Figure 5). The operators, using a buddy system will first help any persons in distress evacuate to a Level I Emergency Assembly Area. If deemed necessary by the Plant Manager (IC) or Plant Supervisor, local emergency response service providers will be contacted by Plant personnel designated by the IC or Plant Supervisor.<br>**2.** In the event that the operator cannot immediately identify and resolve the alarm, all entities within the 500 ppm radius of exposure (ROE) will be notified (by telephone) of a release if the audible alarm is activated at 10 ppm $H_2S$ or greater. Notification will be done by personnel designated by the IC or his designee. The nature of the release and status of containment will be conveyed. Businesses will be advised to report the incident to employees working near the Plant or AGI Facility and to alert any third party contractors or service companies working in the Plant or AGI Facility vicinity or imminently scheduled to work in the vicinity of the release. In the event that the operator cannot immediately identify and resolve the alarm, all individual third party contractors shall be instructed to proceed immediately to the closest Level I Emergency Assembly Area (see Figure 5) until further notice. There are no known residences within the 500 or 100 ppm ROE. The only businesses within the 100 ppm ROE are an unmanned compressor station owned by Mid-America Pipeline Company and an unmanned Conoco Phillips Field Warehouse. In the event of an $H_2S$ release that cannot immediately be resolved, the Conoco Philips Field Warehouse will be contacted by Frontier personnel, and if individuals are present they will be advised either to evacuate to an Emergency Assembly Area or to shelter in place, as deemed appropriate by the IC. Frontier personnel will also make a visual inspection of the ROE area to insure that no individuals are seen inside the ROE, and if any are observed, they will be advised to immediately report to one of the designated Level I Emergency Assembly areas, described above.<br>**3.** Wearing the SCBAs, the operator(s) will attempt to fix the cause of the release. The $H_2S$ levels at the Emergency Assembly Area will be monitored with a hand held or personal monitor. If $H_2S$ levels in the Level I Emergency Assembly Areas exceed 10 ppm $H_2S$, everyone will evacuate to the alternate Level II/III Emergency Assembly Area, as designated by the IC (See Figure 5).<br>**4.** The IC will set up secondary re-entry team(s) with 30 minute SCBAs to re-enter and resolve the situation. Re-entry will occur in 15 minute shifts at the direction of the IC until the problem is resolved or the emergency shutdown (ESD) is activated. If release is resolved and monitored levels in the Plant and AGI Facility are less than 10 ppm $H_2S$, personnel may re-enter. The OCD shall be notified within four hours of any release that activates the Plan. If the release is not resolved and $H_2S$ levels continue to increase, Level II Response is indicated.<br>**5**. Initiate a Chronologic Record of Events Log. |

| Levels | Alarms | Actions |
|---|---|---|
| II | Continuous audible alarm sounded and flashing blue lights activated or $H_2S$ greater than 20 ppm measured with handheld device | **1.** The continuous audible alarm and blue flashing lights indicate the detection of $H_2S$ greater than or equal to 10 ppm and the operator(s) have been unable to stop the release of $H_2S$ or level measured with handheld device exceeds 20 ppm. The audible alarm and flashing lights are redundant systems which function independently of one another so that should one system fail, the other would remain active. These systems incorporate back-up battery capabilities as recommended in API RP 55 which insure their operation in the event of a power failure. A control panel in the Process Control Room establishes which $H_2S$ monitor has activated the alarm and or flashing blue beacon. If Level II Response is activated, operators will immediately put on 30 minute SCBAs, and all other personnel in the Plant and AGI Facility complex will put on emergency escape packs (located throughout the plant) and evacuate using the evacuation routes to the Level II/III Emergency Assembly Area specified by the IC or his designee (see Figure 5). The operators, upon suit up with the SCBAs, will first help any persons in distress evacuate to the Emergency Assembly Area. See Section IV. F. (see Page12) for a listing of respirator equipment available at the Plant. If deemed necessary, local emergency response service providers will be contacted by the IC or his designee.<br>**2.** All other entities within the 100 ppm ROE will be contacted by phone and notified of release and asked to evacuate. The nature of the release and status of containment will be conveyed. Depending on release status and prevailing wind conditions, some entities within the 100 ppm ROE may be asked to shelter in place rather than evacuate. Those entities will be instructed to close any windows and shut off any air conditioning/heating until further notice. In addition, they will be instructed to contact other employees/residents not currently present and instruct them not to enter/reenter the area until further instruction.<br>**3.** The LEPC and law enforcement will be contacted by phone and notified of the release and status of containment. The IC will assign responsibility for notification to appropriate personnel. There are no known residences within the 100 ppm ROE. The only businesses are an unmanned compressor station owned by Mid-America Pipeline Company and an unmanned Conoco Phillips Field Warehouse. In the event of an $H_2S$ release, the Conoco Philips Field Warehouse will be contacted by Frontier personnel, and if personnel are present, they will be advised either to evacuate to an Emergency Assembly Area or to shelter in place, as deemed appropriate by the IC. Frontier personnel will also make a visual inspection of the ROE area to insure that no individuals are seen inside the ROE, and if any are observed, they will be advised to immediately evacuate to the designated Emergency Assembly Area as described above.<br>**4.** Operator(s) with 30 minute SCBAs will assess the release and attempt to resolve it. If after 15 minutes on scene there is no resolution, the operator(s) will notify the Plant Manager to determine if the emergency shutdown (ESD) should be activated.<br>**5.** If monitored $H_2S$ levels at the Emergency Assembly Area exceed 10 ppm, everyone will evacuate to an alternate Emergency Assembly Area, as designated by the IC.<br>**a)** Re-entry will occur in full SCBA and in 15 minute shifts at the direction of the IC until IC determines problem has been resolved or emergency shut downs (ESDs) are activated.<br>**b)** If release is resolved and monitored levels of $H_2S$ in the Plant and AGI Facility are less than 10 ppm, personnel may return. The OCD shall be notified within four hours of any release that activates the Plan. All entities previously notified will be informed that the release has been resolved and advised of the current monitored $H_2S$ levels at the Plant.<br>**c)** No resolution requires activation of Level III Response with notifications and reporting as per Plan. If the release is not resolved and/or $H_2S$ levels continue to increase, Level III Response is indicated.<br>**5.** Maintain the Chronological Record of Events Log. |

| Level | Alarms | Actions |
|---|---|---|
| III | Continuous audible alarm sounded and flashing blue lights activated for catastrophic release; red lights for fire or explosion<br><br>ESD alarm is a continuous audible alarm with flashing red lights | **1.** Level III Response indicated in the event of a catastrophic release; fire; explosion; a continuous release of maximum volume for 24 hours; or as per NMAC 19.15.11 there is indication of 100 ppm in any defined public area; 500 ppm at any public road; or 100 ppm at a distance greater than 3,000 feet from the site or the release. If $H_2S$ is at 20 ppm or greater and repair efforts at Level II have been unsuccessful, then a Level III response may be implemented at the discretion of the IC. Emergency Shutdown (ESD) procedures will immediately be implemented if a Level III Response is initiated.<br>**2.** Road blocks will be set up as shown on Figure 5.<br>**3.** All personnel shall have evacuated to the Level II/III Emergency Assembly Area. Evacuation of all entities within the 100 ppm ROE will have been confirmed. Full $H_2S$ Plan with all notifications and public agency involvement will be implemented. Notifications to all entities within the 100 ppm ROE will include the nature of the release and status of containment. Notifications will include but are not limited to the following:<br>**a)** All businesses within the 100 ppm ROE will be instructed to immediately alert all company personnel, third party contractors and/or services companies working in the area, and those imminently scheduled to work in the area, of the release and evacuation status of the Plant and AGI Facility. They will be instructed to immediately leave and/or not enter/reenter the area within the roadblocks until further instruction.<br>**b)** All other entities within the 100 ppm ROE will be instructed to immediately shelter in place, if appropriate, based on the source of the release and the wind direction. Those entities will be instructed to close any windows and shut off any air conditioning/heating until further notice. In addition, they will be instructed to contact other employees/residents not currently present and instruct them to not enter/reenter the area until further instruction.<br>**c)** The IC will make the decision based on, but not limited to, $H_2S$ concentration and wind direction, whether a safe evacuation can be implemented, and recommend an evacuation route.<br>There are no known residences within the 100 ppm ROE. The only businesses within the 100 ppm ROE are an unmanned compressor station owned by Mid- America Pipeline Company and an unmanned Conoco Phillips Field Warehouse. In the event of an $H_2S$ release, the Conoco Philips Field Warehouse will be contacted by Frontier personnel, and if personnel are there, they will be advised either to evacuate to an Emergency Assembly Area or to shelter in place, as deemed appropriate by the IC. Frontier personnel will also make a visual inspection of the 500 ppm ROE area to insure that no individuals are seen inside the ROE, and if any are observed, they will be advised to immediately evacuate to the designated Emergency Assembly area, described above.<br>**4.** If escaping vapors have ignited, the vapors should be allowed to continue to burn unless the fire endangers personnel, other property, or other equipment.<br>**5.** When applicable, maintain communication with the Plant Manager, or his designee, to keep him up-to-date of the situation and the action taken prior to his arrival at the location.<br>**6.** Maintain the Chronological Record of Events Log.<br>**7.** Within one hour after the activation of the $H_2S$ Plan, begin agency notifications by calling OCD and National Response Center (NRC).<br>**8.** Establish media staging area adjacent to the Emergency Assembly Area and direct all media to it.<br>**9.** Once resolved, and monitored levels in the Plant, AGI Facility and at the Emergency Assembly Area are less than 10 ppm, roadblocks will be removed, and all entities within the 100 ppm ROE will be allowed to return. All entities previously notified will be informed that the release has been resolved and advised of the current monitored $H_2S$ levels.<br>**10.** Monitoring will continue after problems are abated, at the direction of the Plant Manager<br>**11.** Agency reports to be submitted as required. |

## C. Telephone Numbers and Communication Methods

### 1. Emergency Services

| AGENCY | | TELEPHONE # |
|---|---|---|
| Lovington Fire Department | | (575) 369-2359 |
| Maljamar Fire Department | | (575) 676-4100 |
| Artesia Fire Department | | (575) 746-5050 |
| Hobbs Fire Department | | (575) 397-9308 |
| Loco Hills Fire Department | | (575) 677-2349 |
| | | |
| Ambulance Services | Hobbs | (575)397-9308 |
| | Artesia | (575) 746-5050 |
| | Carlsbad | (575) 885-2111 |
| | Lovington | (575) 396-2359 |
| | | |
| Hospitals | Artesia General | (575) 748-3333 |
| | Carlsbad Medical Center | (575) 887-4100 |
| | Lovington-Nor Lea | (575) 396-6611 |
| | Hobbs- Lea Regional | (575) 392-6581 |
| | Lubbock University Medical Center (UMC) Level I Trauma Center | (806)775-8200 |
| | | |
| State Police (HMER) Eddy County | | (575) 885-3137 |
| Poison Control (Albuquerque) | | (800) 222-1222 |
| Helicopter Services | | |
| | Lifeguard (Albuquerque) | 1-888-866-7256 |
| | Southwest Medivac (Hobbs) | 1-800-971-4348 |
| | AeroCare (Lubbock) | 1-800-823-1991 |
| | Air Med (El Paso) | (915) 772-9292 |

### 2. Government Agencies

| AGENCY | TELEPHONE # |
|---|---|
| Oil Conservation Division, Santa Fe, NM (OCD)<br>Oil Conservation District Office (Artesia)<br>Air Quality Bureau, Santa Fe, NM | (505) 476-3440<br>(575) 748-1283<br>(505) 827-1494 |
| US BLM (Carlsbad District Office) | (575) 887-6544 |
| Local Emergency Planning Committee (LEPC) | (575) 887-9511 |
| National Response Center (NRC) | 1-800-424-8802 |

### 3. Operators and Contractors

| COMPANY | SERVICE | CONTACT | PHONE |
|---|---|---|---|
| B&H Construction | Construction/Maint. | Mike Wright | 505-887-9755 |
| Cooper Cameron Valves | Valve Repair | Dean Bohannon | 432-362-1151 |
| Cubix Corp. | Emissions Testing | Marc McDaniel | 512-243-0202 |
| Desert X-Ray | X-Ray Services | Elic Brymer | 432-363-0669 |
| E. D. Walton Const. | Construction Services | Wade Lancaster | 800-657-9190 |
| Environmental Plus | Spill Remediation | Gabino Rosa | 505-394-3481 |

| | | | |
|---|---|---|---|
| Ferguson Const. | Construction Services | Mark Wieser | 505-396-3689 |
| Fite Fire & Safety | Safety Services | Tim Nolen | 432-689-6492 |
| Gandy Corp. | Oilfield Service | Larry Gandy | 505-396-4948 |
| Geolex, Inc. | Environmental/Regulatory Support | Alberto Gutierrez | 505-259-4283 |
| Hanover Compression | Compression Service | Vicki Egan | 281-447-8787 |
| Hughes Services | Vacuum Service | Donnie Mathews | 505-677-3113 |
| Industrial Insulation | Insulation Service | Scott Fulton | 432-332-8203 |
| Kenemore Welding | Welding Service | George Kenemore | 505-676-2332 |
| Mark's Crane & Rigging | Crane Services | David Landreth | 432-337-1538 |
| Mobile Labs | Laboratory Service | Jenny Linley | 432-337-4744 |
| Permian Valve Repair | Valve Repair | Raymond Tucker | 432-381-1313 |
| Plant Maint. Services | Chemical Cleaning | Dale Carter | 432-580-5900 |
| BJ-Coiltec | Nitrogen Services | Stephen Baugh | 432-683-1887 |
| Smith & Son's | Construction Service | Randy Smith | 505-397-1852 |
| Southwest Safety | Safety Services | Scott Magness | 505-392-8080 |
| TWS, Inc. | Crane, Man Lift Service | Randy Gandy | 505-398-3811 |

**4. Public N/A There are no residences within the 100 ppm ROE. The plant is located in a very isolated area.**

**5. Frontier Internal Call List**

| NAME | TITLE | Office # | Cell # | Home # |
|---|---|---|---|---|
| | Maljamar Plant Control Room | (575) 676-2400 | | |
| | 24 Hour Emergency Number | (800) 503-5545 | | |
| Mike Hicks | Executive Vice President of Operations | (918) 388-8417 | (918) 699-5738 | |
| John Prentiss | Plant Manager/Incident Commander | (575) 676-3528 | (575) 706-6983 | (575) 885-1265 |
| Joe Ysusi | Manager, Compliance Safety Officer | (575) 676-3505 | (575) 706-9670 | (575) 746-2213 |
| Steve Maker | Operations Section Chief | (575) 676-3502 | (575) 361-3108 | (575) 396-3771 |
| Rudy Lizardo | Maintenance Foreman, Planning Section Chief | (575) 676-3504 | (575) 361-0135 | (575) 396-3771 |
| Jerry Wright | Measurement Foreman, Information Officer | (575) 676-3506 | (575) 361-0154 | (575) 396-5556 |
| Joe Calderon | Field Foreman, Logistics Section Chief | (575) 676-3506 | (575) 361-0148 | (575) 885-3504 |

**6. Internal Communications**

Frontier Field Services, LLC will use 2-way radios and telephones to communicate internally. Telephones will be used for external communication. Land lines and high speed internet access are available at the plant office.

**D. Location of Nearby Residences, Roads, and Medical Facilities**

1. There are no residences are located within the ROE of the Plant.

2. The following roads are located within the ROE:
   a) Various lease roads.
   b) Conoco Phillips Field Warehouse service roads
   c) Mid America Pipeline Compressor Station service roads

3. The following facilities are located within the ROE of the Plant:
   a) Mid America Pipeline Compressor Station
   b) Conoco Philips Field Warehouse

   Note: The Mid America Compressor Station is an unmanned facility. The Conoco Philips Field Warehouse has no employees who regularly work at that facility. In the event of an H2S release, Conoco Philips will be contacted by Frontier personnel identified by the IC or his designee. If personnel are there, they will be advised to evacuate or shelter in place as deemed appropriate the IC.

4. There are no medical facilities located within the ROE.

5. In addition to notifying the facilities listed above, Frontier personnel as designated by the IC will make a visual inspection of the ROE area to insure that no individuals are seen inside the ROE, and if any are observed, they will be advised to immediately evacuate to the designated Emergency Evacuation Area, described above.

## E. Evacuation Routes, Emergency Assembly Areas, and Road Block Locations

1. The Maljamar Gas Plant Measurement office will serve as the Communication Center during the response to an $H_2S$ release (See Figure 3). If this location must be evacuated, the Level II/III Emergency Assembly Area located approximately one mile south of the intersection of Maljamar Road and CR 126A (outside the 100 ppm ROE) will be used to direct activities, utilizing cell phones and company radios. Personnel not directly involved in the response will be instructed to refrain from using company mobile phones, hand held radios and telephones during a response.

2. Evacuation Routes and Emergency Assembly Areas are shown on Figure 5. Should a Level II or Level III response be required all personnel must evacuate to locations outside the 100 ppm ROE, and an Emergency Assembly area must be established outside the 100 ppm ROE perimeter. The evacuation route to be utilized in the event of such a response and the location of the Level II/III Emergency Assembly area are shown on Figure 5.

3. Pre-planned road block locations (which would be utilized in the event of a Level II or Level III response) are shown on Figure 5. Each location will have pre-positioned, portable road barriers with lights. The locations will have flashing lights and warning signs. The IC will designate a representative to staff each of the roadblocks. If deemed necessary by the IC, the State or Local Police will be asked to assist with maintaining the roadblocks.

## F. Monitoring Equipment, Alarm Systems, Safety Equipment, and Supplies Available

1. EMERGENCY SHUTDOWN SYSTEM (ESD): There are 12 ESD manual stations located at various points in the Plant and 3 ESD manual stations in the AGI Facility. Figure 3 shows the location of the ESD stations. The Plant and AGI Facility ESD can be activated at any time by any employee or at the direction of the IC. If a Level III Response is initiated, then ESD will immediately be activated. When any one of the Plant or AGI Facility manual stations is activated, the system will be shut-down and the natural gas inlets and outlets will be blocked. The operators are also able to auto close the one main block valve on the incoming gas line to the Plant and the TAG block valves upstream and downstream of the compression facility. Activating these should allow the plant to avoid a Level III response. The IC can send trained personnel to designated off-site manual block valves. There are also various methods to shut down gas flow at the various wellheads and incoming gathering lines. These can and would be evaluated on a case by case basis. Designated employees will have remote access to the plant controls including ESD capabilities.

2. PLANT ALARMS, VISIBLE BEACONS & WIND INDICATORS: Colored beacons, horns, and wind direction indicators are situated in various locations throughout the Plant and are shown in Figure 3. At least one wind direction indicator can be seen at any location within the Plant and AGI Facility complexes, as well as from any point on the perimeter of the plant and AGI Facility.

3. GAS DETECTION EQUIPMENT: The Plant and AGI Facility use RAE Guard EC, FGM-1300 fixed $H_2S$ sensors. These sensors are part of a fixed point monitoring system used to detect the presence of hydrogen sulfide in ambient air. The blue flashing beacon is activated at $H_2S$ concentrations of 10 ppm or greater. The horn is also activated with a continuous alarm at $H_2S$ concentrations of 10 ppm or greater. The fixed hydrogen sulfide monitors are strategically located throughout the Plant to detect an uncontrolled released of hydrogen sulfide. The Plant operators are able to monitor the $H_2S$ levels of all the Plant sensors on the control monitor located in the control room. In addition, select employees can access this information remotely. These sensors are shown on Figure 3. These sensors all have to be acknowledged and will not clear themselves. This requires immediate action for any occurrence or malfunction. The sensors have battery backup systems and are calibrated monthly. Audible alarm systems are also calibrated monthly.

   Handheld gas detection monitors are available to plant personnel to check specific areas and equipment prior to initiating maintenance or working on equipment. There are 4 handheld monitors and each individual is assigned a personal $H_2S$ monitor. The handheld gas detection devices are RKI GSX-2900 4-way monitors. The detectors have sensors for oxygen, LEL (lower explosive limit hydrocarbon atmospheres), hydrogen sulfide, and carbon monoxide. They indicate the presence of $H_2S$ with a beeping sound at 10 ppm. The beeps change in tone as $H_2S$ increases to 20 ppm. The personal monitors are set to alarm (beep) at 10 ppm with the beeps becoming closer together as the $H_2S$ concentration increases to 20 ppm. Both the handheld and personal monitors have digital readouts of $H_2S$ ppm concentration.

The Plant compressor building has two methane sensors; one sends a call out at the 30% lower explosive limit (LEL); the second shuts the compressors down at 50% LEL. The methane sensors are visual and audible alarms. The compressor building also is equipped with fire eyes that will also shut the units down. The four product pumps also have LEL sensors.

4. RESPIRATORS: The facility has 13 Drager 30-minute self-contained breathing apparatus (SCBA) respirators and 8 Scott 5-minute escape packs strategically located throughout the Plant and AGI Facility. There are also 2 emergency packs with supplied air lines distributed throughout the plant. All Plant personnel are certified to use the self-contained breathing apparatus (SCBAs) respirators and emergency packs.

5. FIRE FIGHTING EQUIPMENT: The Plant personnel are trained only for insipient stage fire-fighting. The fire extinguishers located in the Plant and AGI Facility process areas, compressor buildings, process buildings, and company vehicles are typically an Ansul 30# ABC dry chemical fire extinguisher. The Plant does not have a fire water system, only a utility water system that is not designed for fire- fighting.

6. TRAFFIC CONTROL KIT: The Plant has a Traffic Control Kit located in the office which contains the necessary equipment to initiate and maintain traffic control.

7. FIRST AID EQUIPMENT LOCATIONS:
   a) First Aid Kits are located at the following locations:
      - Control Room
      - Office

   b) Eye Wash stations are located at the following locations:
      - Lab
      - Office
      - Engine Buildings, Maintenance Shop, Welding Shop

8. PERSONAL $H_2S$ MONITORS: All Frontier personnel assigned to the Plant and associated field personnel are issued and required to use personal $H_2S$ monitors while on duty.

10. SIGNS and MARKERS: The Plant and AGI Facility have warning, caution and notice signs indicating the presence of "$H_2S$/Poisonous Gas" and high pressure gas at the entrance to the Plant. Emergency response phone numbers are posted at the entrance to the Plant. Signs are located at the Plant gate entrance indicating that all visitors are to sign in.

## V. Characteristics of Hydrogen Sulfide ($H_2S$), Sulfur Dioxide ($SO_2$) and Carbon Dioxide ($CO_2$) [NMAC 19.15.11.9.B(2)(b)] [API RP-55 7.4 b.]

**A. Hydrogen Sulfide ($H_2S$):** Hydrogen Sulfide ($H_2S$): The treated acid gas (TAG) stream to the AGI Facility will contain an average of 11 mole percent of hydrogen sulfide based on data generated from the sampling of the TAG stream at least daily. Hydrogen sulfide is a colorless, toxic and flammable gas, and has the odor of rotten eggs. Hydrogen sulfide gas is heavier than air. Hydrogen sulfide presents a significant health hazard by paralyzing the respiratory system resulting in serious injury or death.

| Hydrogen Sulfide Properties and Characteristics | |
|---|---|
| CAS No. | 7783-06-4 |
| Molecular Formula | $H_2S$ |
| Molecular Weight | 34.082 g/mol |
| Ceiling Concentration | 20 ppm (OSHA) |
| Ceiling Peak Concentration | 50 ppm (OSHA) |
| Threshold Limit Value (TLV) | 15 ppm (ACGIH) |
| Time Weighted Average (TWA) | 10 ppm (NIOSH) |
| Short Term Exposure Level (STEL) | 15 ppm (ACGIH) |
| Immediately Dangerous to Life or Health (IDLH) | 100 ppm |
| Specific Gravity Relative to Air (Air=1.0) | 1.189 |
| Boiling Point | -76.5F |
| Freezing Point | -121.8F |
| Vapor Pressure | 396 psia |
| Autoignition Temperature | 518F |
| Lower Flammability Limit | 4.3% |
| Upper Flammability Limit | 46.0% |
| Stability | Stable |
| pH in water | 3 |
| Corrosivity | Reacts with metals, plastics, tissues and nerves |

| Physical Effects of Hydrogen Sulfide | | |
|---|---|---|
| Concentration | | |
| Ppm | % | Physical Effects |
| 1 | 0.00010 | Can be smelled (rotten egg odor) |
| 10 | 0.0010 | Obvious & unpleasant odor; Permissible exposure level; safe for 8 hour exposure |
| 20 | 0.0020 | Acceptable ceiling concentration |
| 50 | 0.0050 | Loss of sense of smell in 15 minutes |
| 100 | 0.0100 | Immediately dangerous to life and health(IDLH) loss of sense of smell in 3-15 minutes; stinging in eyes & throat; Altered breathing |
| 200 | 0.0200 | Kills smell rapidly; stinging in eyes & throat |
| 500 | 0.0500 | Dizziness; Unconscious after short exposure; Need artificial respiration |
| 700 | 0.0700 | Unconscious quickly; death will result if not rescued promptly |
| 1000 | 0.1000 | Instant unconsciousness; followed by death within minutes |

**B. Sulfur Dioxide ($SO_2$)**: Sulfur dioxide is produced as a by-product of $H_2S$ combustion at the flare. The compression facility and the well will be connected to the acid gas flare in order to allow for purging of any acid gas trapped between the Plant and the subsurface safety valve or for temporary flaring of TAG at the AGI Facility in the event of an emergency. It is colorless, transparent, and is non-flammable, with a pungent odor associated with burning sulfur. Sulfur dioxide is heavier than air, but will be picked up by a breeze and carried down-wind at elevated temperatures. Sulfur dioxide can be extremely irritating to the eyes and mucous membranes of the upper respiratory tract.

| **Sulfur Dioxide Properties & Characteristics** | |
|---|---|
| CAS No. | 7446-09-5 |
| Molecular Formula | $SO_2$ |
| Molecular Weight | 64.07 g/mol |
| Permissible Exposure Limit (PEL) | 5 ppm(OSHA) |
| Time Weighted Average (TWA) | 2 ppm(ACGIH) |
| Short Term Exposure Level (STEL) | 5 ppm(ACGIH) |
| Immediately Dangerous to Life and Health (IDLH) | 100 ppm |
| Specific Gravity Relative to Air (Air = 1.0) | 2.26 |
| Boiling Point | 14°F |
| Freezing Point | -103.9°F |
| Vapor Pressure | 49.1 psia |
| Autoignition Temperature | N/A |
| Lower Flammability Limit | N/A |
| Upper Flammability Limit | N/A |
| Stability | Stable |
| Corrosivity | Could form an acid rain in aqueous solutions |

| **Physical Effects of Sulfur Dioxide** | |
|---|---|
| **Concentration** | **Effect** |
| 1 ppm | Pungent odor, may cause respiratory changes |
| 2 ppm | Permissible exposure limit; Safe for an 8 hour exposure |
| 3-5 ppm | Pungent odor; normally a person can detect sulfur dioxide in this range |
| 5 ppm | Short Term Exposure Limit (STEL); Safe for 15 minutes of exposure |
| 12 ppm | Throat irritation, coughing, chest constriction, eyes tear and burn |
| 100 ppm | Immediately Dangerous To Life & Health (IDLH) |
| 150 ppm | So irritating that it can only be endured for a few minutes |
| 500 ppm | Causes a sense of suffocation, even with first breath |
| 1,000 ppm | Death may result unless rescued promptly. |

**C. Carbon Dioxide ($CO_2$):** The proposed TAG stream to the AGI Facility will contain approximately 86 mole percent of carbon dioxide based on data generated from the sampling of the inlet gas at least daily. $CO_2$ is colorless, odorless, non-flammable and heavier than air.

| Carbon Dioxide Properties & Characteristics | |
|---|---|
| CAS No. | 124-38-9 |
| Molecular Formula | $CO_2$ |
| Molecular Weight | 44.010 g/mol |
| Time Weighted Average (TWA) | 5,000 ppm |
| Short Term Exposure Level (STEL) | 30,000 ppm |
| Immediately Dangerous to Life and Health (IDLH) | 40,000 ppm |
| Specific Gravity Relative to Air (Air = 1.0) | 1.5197 |
| Boiling Point | -109.12°F |
| Freezing Point | -69.81°F |
| Vapor Pressure | 830 psia |
| Autoignition Temperature | N/A |
| Lower Flammability Limit | N/A |
| Upper Flammability Limit | N/A |
| Stability | Stable |
| pH in Saturated Solution | 3.7 |
| Corrosivity | dry gas is relatively inert & not corrosive; can be corrosive to mild steels in aqueous solutions |

| Physical Effects of Carbon Dioxide | |
|---|---|
| **Concentration** | **Effect** |
| 1.0 % | Breathing rate increases slightly |
| 2.0 % | Breathing rate increases to 50% above normal level. Prolonged exposure can cause headache, tiredness |
| 3.0 % | Breathing rate increases to twice normal rate and becomes labored. Weak narcotic effect. Impaired hearing, headache, increased blood pressure and pulse rate |
| 4 – 5 % | Breathing increases to approximately four times normal rate, symptoms of intoxication become evident, and slight choking may be felt |
| 5 – 10 % | Characteristic sharp odor noticeable. Very labored breathing, headache, visual impairment, and ringing in the ears. Judgment may be impaired, followed within minutes by loss of consciousness |
| 10 – 100 % | Unconsciousness occurs more rapidly above 10% level. Prolonged exposure to high concentrations may eventually result in death from asphyxiation |

## D. Radii of Exposure [NMAC 19.15.11.7.K]

The basis for worst case scenario calculations is as follows:

- The $H_2S$ content of the gas inlet stream fully expanded plant will average .14 mole percent, as determined from average daily inlet analysis, and the anticipated maximum daily (24 hour) processing volume of the fully expanded plant will be 135 MMCFD.

- The $H_2S$ content of the TAG stream from the amine unit to the AGI Facility will average 11 mole percent as determined from average daily TAG analyses, and the anticipated maximum daily (24 hour) processing volume of the fully expanded plant will be 1.8 MMCFD of TAG.

- It should be noted that two different sets of worst case ROE calculations are provided in this Plan: one that utilizes the TAG stream $H_2S$ content and MMCFD, and the other that utilizes the inlet gas stream $H_2S$ content and MMCFD. These calculations, included in Appendix B, and almost identical. However, the more conservative calculation (larger ROE) has been utilized in establishing the 100 ppm and 500 ppm ROE shown in Figure 4.

- The worst case scenario ROE assumes an uncontrolled instantaneous release of the entire 24-hour throughput from the inlet contactor at the facility, the amine tower, the AGI well or the pipelines connecting them. Because the Plant is a throughput process plant, it is impossible that the entire 24-hour throughput volume of the Plant could be released instantaneously as is assumed in the worst case scenario calculations of the ROE. Further, the Plant's ESD systems would be activated in the event of an emergency and would prevent the flow of gas into the plant. However, to comply with NMAC 19.15.11, the worst case scenario in the formulas and calculations (assuming an instantaneous release of the 24 hour processing and/or TAG volume) are provided here and in Appendix B.

**The formulas for calculating the 100 ppm and the 500 ppm radii of exposure are as follows:**

100 ppm ROE Calculation (as per 19 NMAC 15.11.7.K.1):

$$X=[(1.589)(\text{hydrogen sulfide concentration})(Q)]^{(0.6258)}$$

500 ppm Radius of Exposure Calculation (as per 19 NMAC 15.11.7.K.2):

$$X=[(0.4546)(\text{hydrogen sulfide concentration})(Q)]^{(0.6258)}$$

Where:

X = radius of exposure in feet

hydrogen sulfide concentration = the decimal equivalent of the mole or volume fraction of hydrogen sulfide in the gaseous mixture

Q = Escape rate expressed in cubic feet per day (corrected for standard conditions of 14.73 psi absolute and 60 degrees Fahrenheit)

| Maljamar AGI #1 Well Facility | |
|---|---|
| **500-ppm ROE** | **1,260 feet** |
| **100-ppm ROE** | **2,758 feet** |

Both the 500 ppm and the 100 ppm radii of exposure for the Plant and the AGI Facility are shown on Figure 4. This ROE pattern is designed to include the 100 and 500 ppm radii for a potential worst case failure.

## VI. Facility Description, Maps, and Drawings [NMAC 19.15.11.9.B(2)(c)] [API RP-55 7.4 c.]

### A. Maljamar Processing Plant Description of Operations

The primary function of the plant is to remove $H_2S$ and $CO_2$ from sour field gas so that the gas can meet pipeline specifications. The plant has been designated a primary Standard Industrial Classification (SIC) Code of 1311. The original Frontier Maljamar Gas Plant was intended to process up to 60 MMCFD of gas, and the facility was authorized to operate continuously (8,760 hrs/yr) at design maximum capacity processing rates with a cap of five tons per day of sulfur emission. The plant has been upgraded, and the process capacity of the upgraded plant will be approximately 135 MMCF, an increase of over 125%. For this reason, an AGI Facility has been constructed in order to dispose of acid gas without a need for flaring, except in case of an emergency.

The gas is treated to remove acid gas components, dehydrated to remove water and processed to remove heavy (liquid) hydrocarbons from the gas stream. Several plant systems are involved in performing these functions. The amine unit is designed to remove acid gas components (carbon dioxide, hydrogen sulfide and mercaptans) from the natural gas stream. These components are removed from the natural gas because they are corrosive, hazardous to health, and reduce the heating value of the natural gas stream. In addition, the carbon dioxide can freeze in the cryogenic unit forming dry ice and forcing the shutdown of the facility. This process is known as the gas sweetening process. Prior to the installation of the Maljamar AGI Facility, the $H_2S$ gas removed by the amine unit was routed to the flare for incineration, and the $CO_2$ was released to the atmosphere. With the installation of the Maljamar AGI Facility, the $H_2S$ and $CO_2$ removed during the sweetening process will be compressed at the AGI Facility and then injected into the Maljamar AGI #1 Well.

### B. Maljamar AGI Facility Description and Operation

While the injected fluid will be dehydrated, the line that will convey the TAG to the well from the compression facilities will be a 3 inch steel line (304 or 316) to provide added corrosion protection. The design for the injection well is shown in Figure 2, and the schematic of the new AGI facilities and tie-in to the existing Frontier Plant are shown on Figure 3. The final design for the AGI compression facilities and associated piping and layout of $H_2S$ alarms and other safety equipment is also shown in Figure 3.

The Maljamar AGI #1 is a vertical well, completed on property leased by Frontier Field Services LLC from the BLM and will a provide access to the primary injection zone (Wolfcamp Formation). The well was drilled to a final total depth of approximately 10,183 feet.

The well has each string of the telescoping casing cemented to the surface and includes a subsurface safety valve (SSV) on the production tubing to assure that fluid cannot flow back out of the well during an injection equipment failure event. This valve is designed to isolate and automatically shut in the injection well if a leak occurs. The injection string within the well is also constructed with multiple safety features which include L80 ULTRA FJ 2-7/8" corrosion resistant tubing stabbed into a Halliburton BWD Perma-Series permanent packer, made of Incoloy® 925 with fluorel elements set at 9,452 feet and an automated Halliburton subsurface safety valve also made of Incoloy® 925 set at 250 feet. Incoloy® 925 is a nickel-iron chromium alloy that is resistant to corrosion and pitting. In addition, the annular space between the projection tubing and the well bore is filled with corrosion-inhibited diesel as a further safety measure and is designed to allow the pressure in the annular space to be monitored and recorded continuously. If a pressure excursion outside the narrow predetermined operating range occurs, the acid gas compressor is shut down and the automatic safety valves at the wellhead are automatically closed to prevent any escape of acid gas. The acid gas stream would then be routed to the flare until the problem with the well could be corrected and the system safely re-started. These redundant systems are compliant with API RP 55 and API RP 49, various applicable NACE standards for sour gas service and current best management practices.

C. **Map of Plant and AGI Facility**

See Figure 3.

## VII. Training and Drills [NMAC 19.15.11.9.B(2)(d)] [API RP-55 7.4 d]

### A. Responsibilities and Duties of Essential Personnel

Please See Section IV. Emergency Procedures (Page 2) for a detailed listing of responsibilities of essential personnel during a response. Personnel responsible for implementing this plan shall be trained on their duties and responsibilities related to this plan during the annual on-site or table top training exercises. All Plant and AGI Facility personnel, visitors, and contractors must attend an overview orientation prior to obtaining permission to enter the Plant or AGI Facility. A refresher course on this training is required annually for all persons. This training also complies with the requirements of the Frontier Field Services, LLC Corporate Safety Program.

### B. On-Site or Classroom Drills

Frontier Field Services, LLC may use table top exercises as well as hands-on emergency response training methods. Training and drills in emergency response procedures help ensure personnel are adequately prepared to handle most emergency situations. Frontier personnel will be trained on the $H_2S$ Incident Response Plan and procedures annually. Everyone's role and responsibilities will be covered. The need for emergency preparedness will be emphasized through the use of drills and other exercises that simulate an emergency in which personnel perform or demonstrate their roles in the emergency. These drills can be either "table-top" discussions or realistic drills in which equipment will be deployed and contractors will participate. Frontier Field Services, LLC shall conduct a table top exercise annually at a minimum.

### C. Notification and Training of Others on Protective Measures in Emergency Situations

At the time of submission of this plan there are no residences within the 100 ppm ROE. However, in the event of a release, Frontier personnel will make a visual inspection of the ROE area to insure that no individuals are seen inside the ROE, and if any are observed, they will be advised to immediately evacuate to the designated Emergency Evacuation Area. Businesses located within the 100 ppm ROE include an unmanned Mid-America Pipeline Company Compressor Station and a Conoco Phillips Field Warehouse. The Conoco Phillips Warehouse has no employees who regularly work at that facility. Conoco Philips personnel will, however, be invited to participate in and/or observe annual drills where they will be briefed on notification, evacuation and shelter in place plans such as shutting off any air conditioning/heating units until they are notified that it is safe. The Conoco Philips Field Warehouse will be contacted by Frontier personnel in the event of a release.

### D. Training and Attendance Documentation

All training and drills will be documented. Documentation of the training, drills and reviews will be on file at the Frontier Field Services office at the Maljamar Plant Documentation shall include sign in sheets, synopsis of the training conducted, and an after action review of the training.

### E. Briefing of Public Officials on Evacuation and Shelter in Place Plans

Local law enforcement, first responders, and fire personnel will also be invited to participate and/or observe annual drills, as well as being briefed on notification, evacuation, and shelter in place plans.

## VIII. Coordination with State Emergency Plans [NMAC 19.15.11.9.B(2)(e)]

### A. Oil Conservation Division (OCD)

OCD will be notified by the IC or their designee via email or fax to the District II office advising of the activation of the $H_2S$ Contingency Plan if any of the alarms are activated at 10 ppm $H_2S$ or greater. In the event of a power failure, a phone call will be made within four hours. All subsequent paperwork will be filed in a timely fashion.

### B. New Mexico State Police/ New Mexico Hazardous Materials Emergency Response Plan

The New Mexico State Police are responsible for overall scene management and coordination of all resources. A designated Emergency Response Officer (ERO) will establish the National Interagency Incident Management System (NIIMS) Incident Command System (ICS) as the Incident Commander (IC) and be responsible for management of all response resources on scene. Off-scene coordination of response resources will be handled through designated Headquarters Emergency Response Officers. Law enforcement-related activities will be coordinated by State Police.

## IX. Plan Activation [NMAC 19.15.11.9.C] [API RP-55 7.4 d]

### A. Activation Levels

**Level I**– Continuous audible alarm sounded and/or flashing blue beacons activated for $H_2S$ greater than or equal to 10 ppm

**Level II** – Continuous audible alarm sounded and/or flashing blue beacons activated for $H_2S$ greater than or equal to 10 ppm and H2S release unable to be resolved or level of H2S in excess of 20 ppm measured with handheld detection devices.
**Level III**–Catastrophic release; fire; explosion; a continuous release of maximum volume for 24 hours; or NMAC 19.15.11: mandatory activation of indication of 100 ppm in any defined public area; 500 ppm at any public road; or 100 ppm at a distance greater than 3,000 feet from the site or the release.

### B. Events that Could Lead to a Release of $H_2S$

- Inlet and plant piping failure
- Amine still failure
- Flange/gasket leaks on inlet and plant piping
- Flange/gasket leak on the acid gas compressors
- Flange/gasket or valve packing leak at the AGI Well or associated piping
- Valve packing
- Seal failure on acid gas compressors
- Failure of flare to ignite during Plant emergency blow down
- Damage to Maljamar AGI #1 Wellhead

## X. Submission of $H_2S$ Contingency Plans [NMAC 19.15.11.9.D]

### A. Submission

Frontier Field Services, LLC submitted this $H_2S$ Contingency Plan to the OCD for review and approval on October 29, 2012.

### B. Retention

Frontier Field Services, LLC shall maintain a copy of the contingency plan at the Maljamar Gas Plant and at Frontier Field Services Headquarters office in Tulsa, OK and the AKA Energy Corporate Offices in Durango, CO. The plan as approved by the OCD will be readily accessible for review by the OCD at the facility upon request.

### C. Inventory

1. Frontier Field Services, LLC will file an annual inventory of wells, facilities and operations for which plans are on file with the OCD, to the Local Emergency Planning Committee (LEPC) and the State Emergency Response Commission as per NMAC 19.15.11.

2. The inventory shall include the name, address, telephone number, and point of contact for all operations in which plans are on file.

# FIGURES


**Figure 1: Location of Frontier Maljamar Gas Plant and SGI Facility**

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FRONTIER field services llc

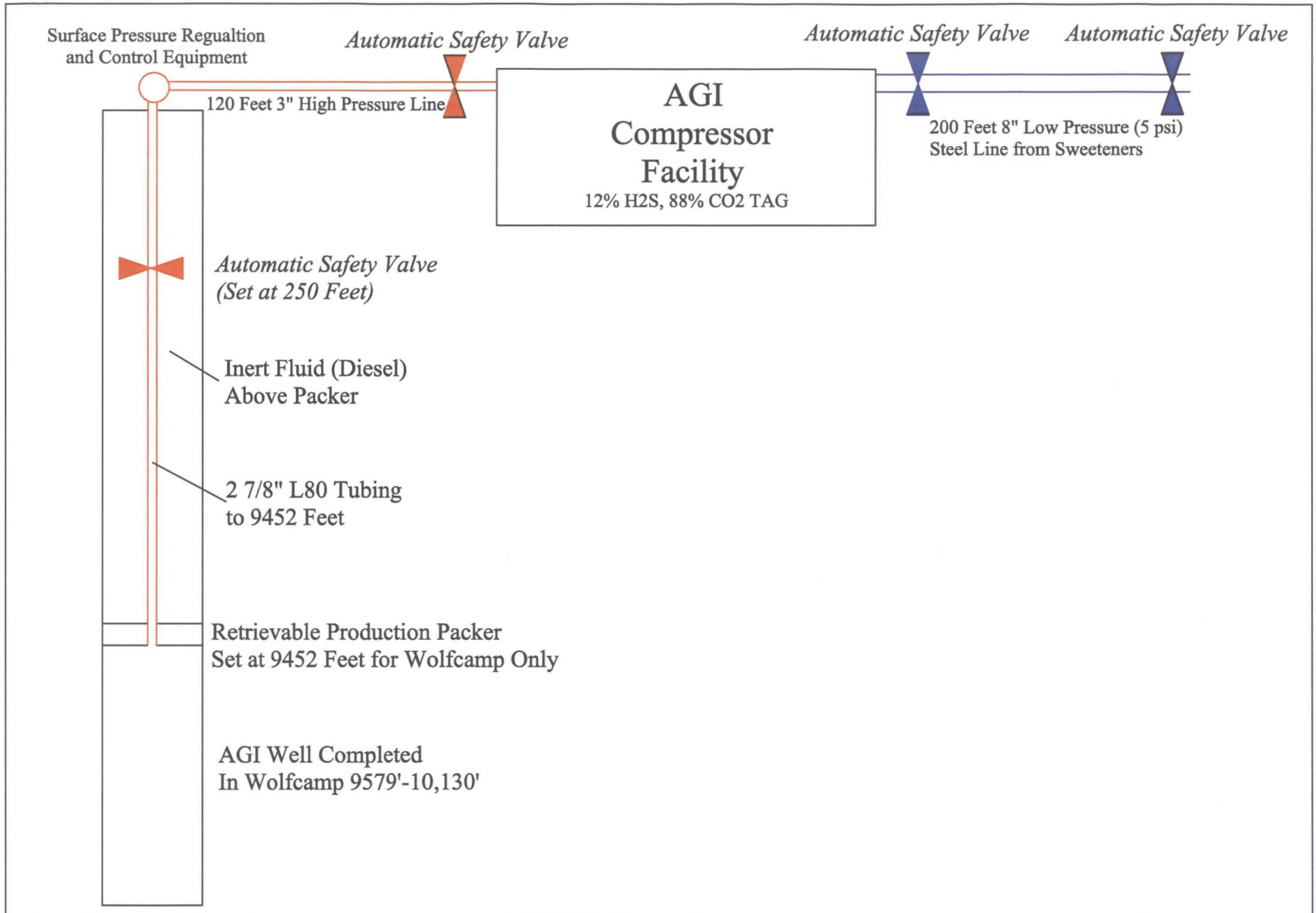


Figure 2: Schematic of Frontier Field Services, LLC Maljamar Gas Plant Acid Gas Injection System Components (Lower Wolfcamp Completion)

GEOLEX INCORPORATED

FRONTIER

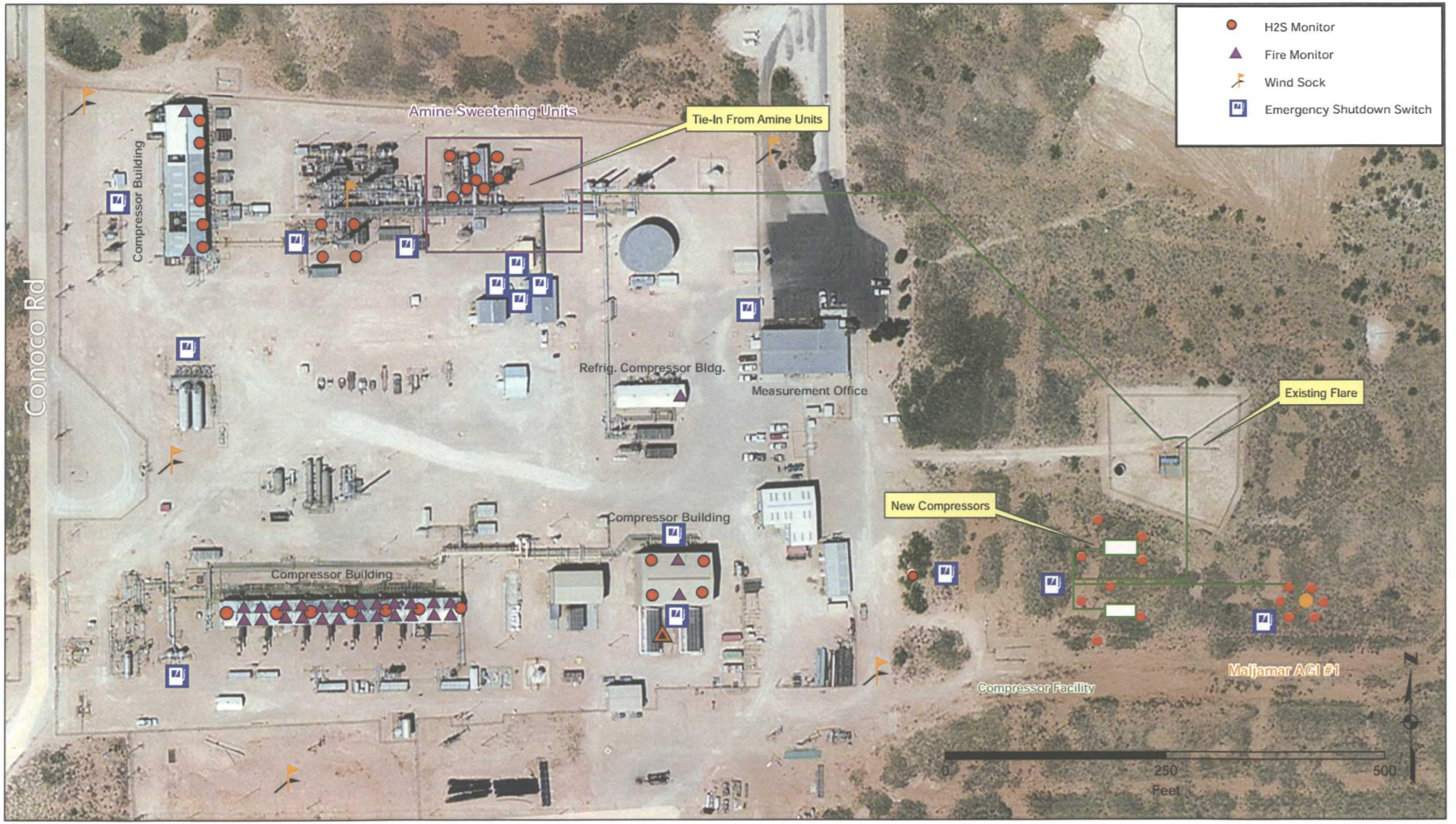


Figure 3: Alarms, Monitors and Safety Equipment

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FRONTIER field services llc

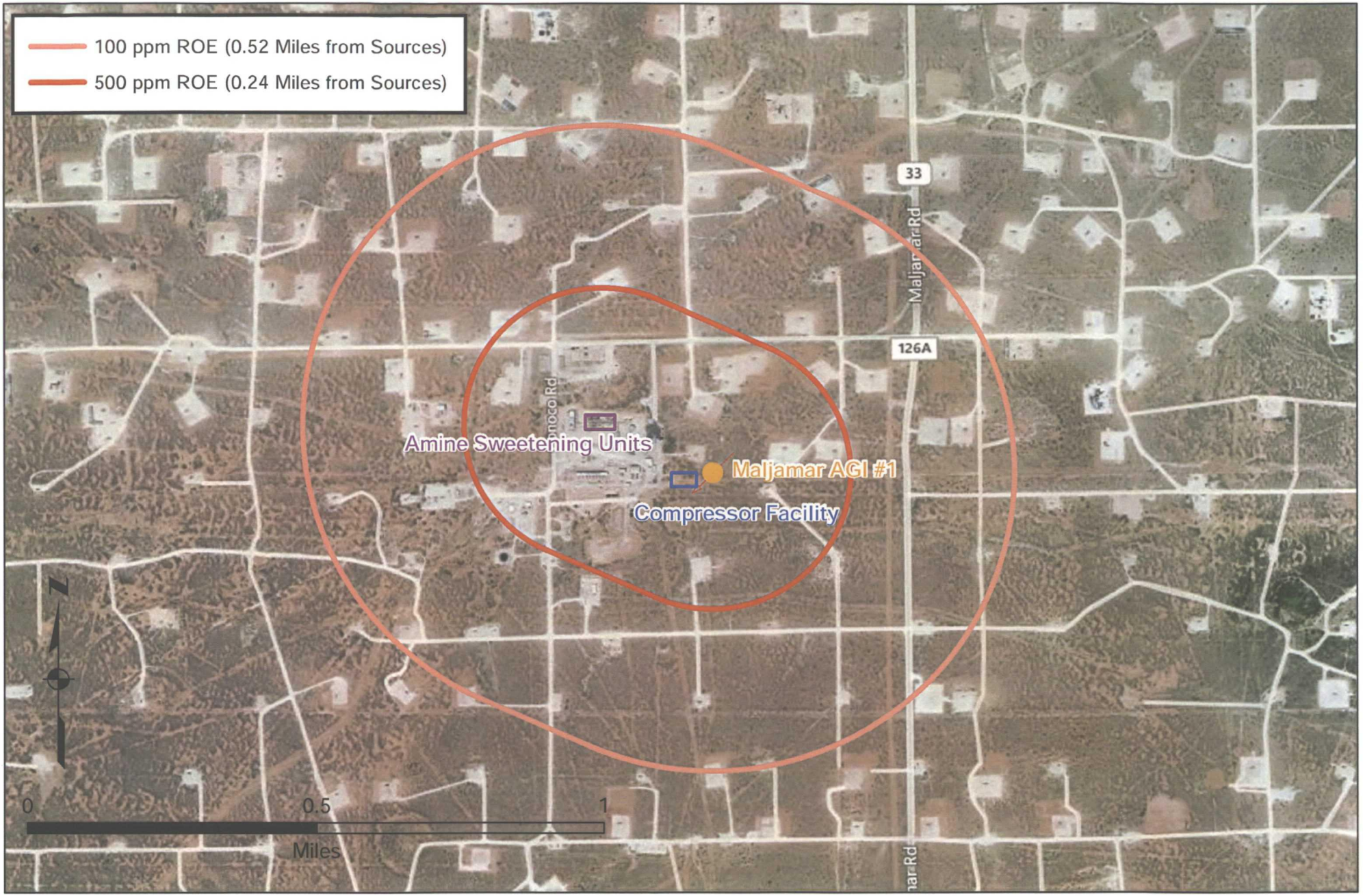


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Figure 4: 500 and 100 PPM ROE Map

FRONTIER field services, llc

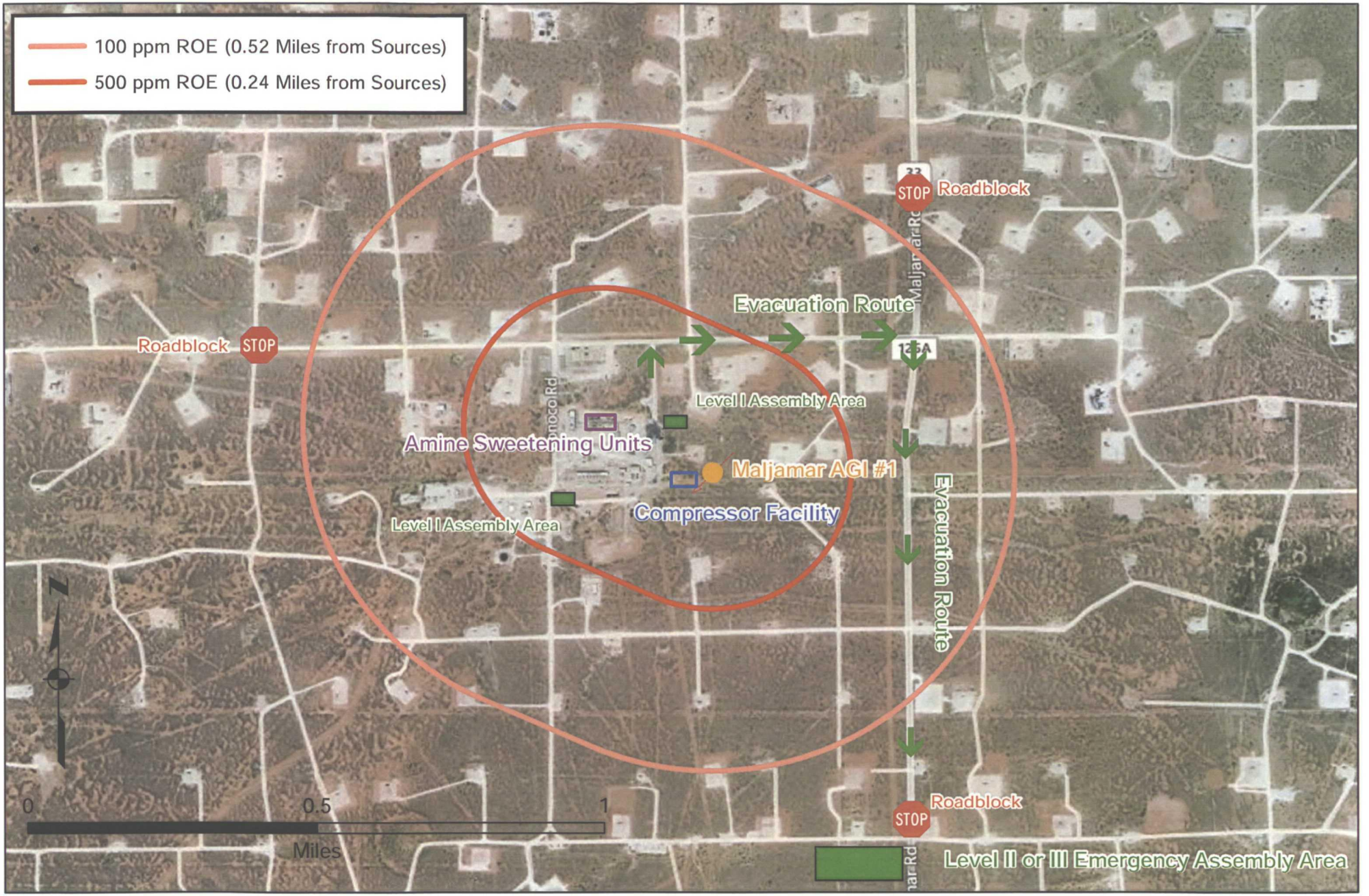



Figure 5: Roadblocks and Emergency Assembly Areas for Levels I, II and III Responses

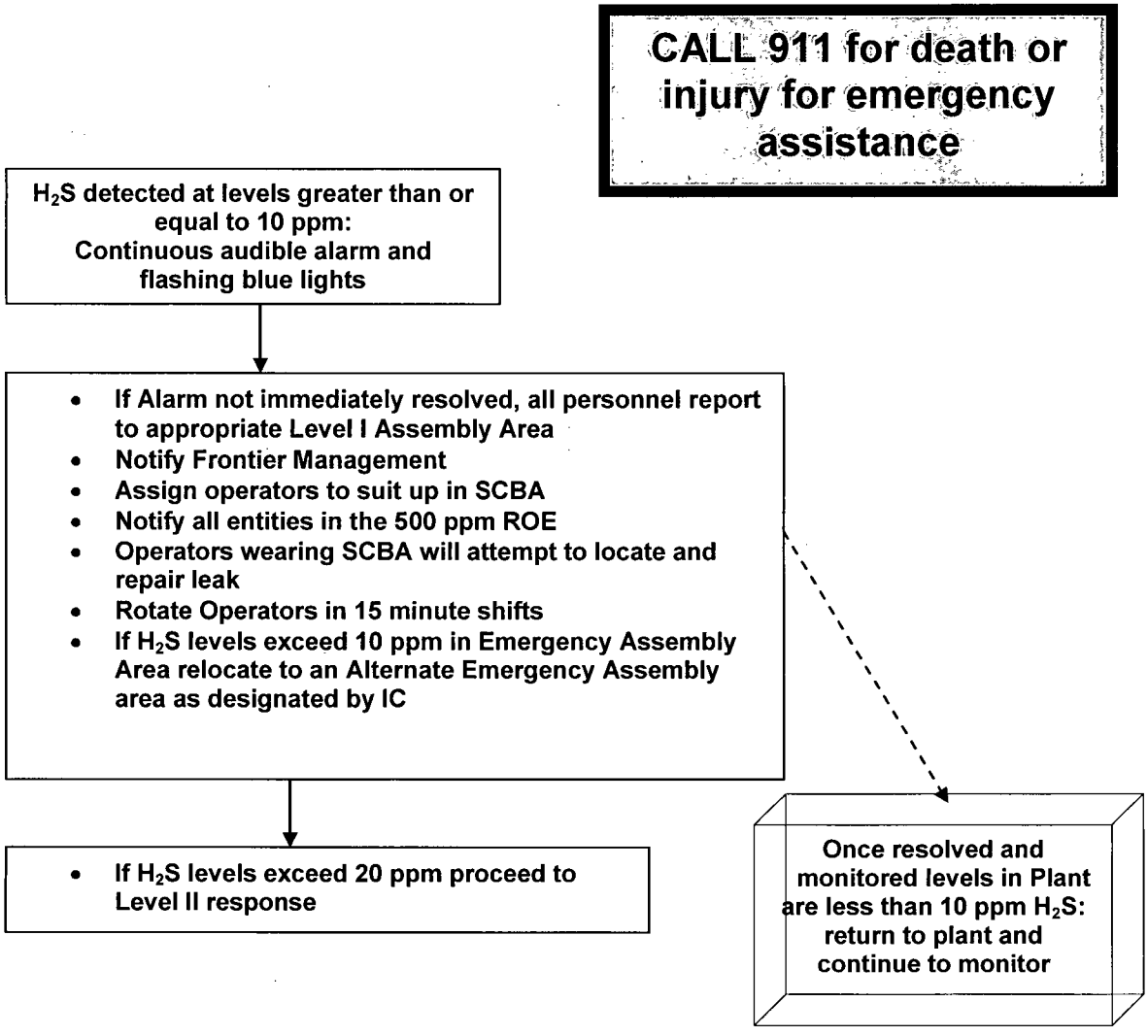
# APPENDICES

# APPENDIX A

# RESPONSE FLOW DIAGRAMS

# APPENDIX A
# RESPONSE FLOW DIAGRAMS

## LEVEL I RESPONSE



# APPENDIX A
# RESPONSE FLOW DIAGRAMS

## LEVEL II RESPONSE

**CALL 911 for death or injury for emergency assistance**

$H_2S$ detected greater than or equal to 20 ppm or Level I release not resolved: continuous audible alarm and flashing blue lights

- Operators put on SCBA
- Others put on Emergency Respirators
- Evacuate all personnel from plant to designated Level II/III Emergency Assembly Area
- Assign operators to suit up in SCBA
- Notify entities in the 100 ppm ROE to shelter in place or evacuate depending on weather and release conditions (IC determines this ) if perimeter alarms are activated
- Operators wearing SCBA attempt to locate and repair leak
- Rotate Operators in 15 minute shifts
- Re-entry will occur for 45 minutes or until the IC determines the ESD must be activated
- Notify LEPC
- If $H_2S$ levels exceed 10 ppm in Emergency Assembly Area relocate to an alternate Emergency Assembly Area

Once resolved and monitored levels in Plant are less than 10 ppm $H_2S$: return to plant and continue to monitor

- If $H_2S$ levels exceed 20 ppm and repair efforts are unsuccessful, worst case scenario and/or catastrophic release have occurred then implement Level 3 response

# APPENDIX A
# RESPONSE FLOW DIAGRAMS

## LEVEL III RESPONSE

**CALL 911 for death or injury for emergency assistance**

**$H_2S$ detected greater than 20 ppm: continuous audible alarm and flashing blue lights**
**repair efforts are unsuccessful, worst case scenario and/or catastrophic release have occurred**

- **Set up road blocks on Conoco Rd and CR 126**
- **Confirm all personnel have evacuated the 500 ppm ROE**
- **Instruct all personnel in the 100 ppm ROE to evacuate to Level II/III Emergency Asembly Area or shelter in place as determined by the IC**
- **If vapors have ignited, continue to let burn unless fires endanger personnel**
- **Within one hour of activation of the plan notify NMOCD and the NRC**
- **Establish a Media staging area**
- **Submit agency reports as required**

**Once resolved and monitored levels in Plant are less than 10 ppm $H_2S$: return to Plant continue to monitor**

# APPENDIX A
# RESPONSE FLOW DIAGRAMS

## LEVEL III RESPONSE

**CALL 911 for death or injury for emergency assistance**

$H_2S$ detected greater than 20 ppm:
continuous audible alarm and flashing blue lights
repair efforts are unsuccessful, worst case scenario and/or catastrophic release have occurred

- Set up road blocks on Conoco Rd and CR 126
- Confirm all personnel have evacuated the 500 ppm ROE
- Instruct all personnel in the 100 ppm ROE to evacuate to Emergency Asembly Area or shelter in place as determined by the IC
- If vapors have ignited, continue to let burn unless fires endanger personnel
- Initiate a chronological record of events
- Within one hour of activation of the plan notify NMOCD and the NRC
- Establish a Media staging area
- Submit agency reports as required

Once resolved and monitored levels in Plant are less than 10 ppm $H_2S$:
return to Plant
continue to monitor

# APPENDIX B

# ROE CALCULATIONS

APPENDIX B ROE CALCULATIONS

| **Frontier Field Services Proposed Maljamar AGI #1 ROE CALCULATIONS PURSUANT TO RULE 11 TAG STREAM ROE** | | | |
|---|---|---|---|
| The radius of exposure is calculated using the following equations: | | | |
| 100 ppm ROE calculation (as per 19 NMAC 15.11.7.K.1) | | | |
| $X_{100ppm} = [(1.589)(Conc_{H2S})(Q)]^{(0.6258)}$ | | | |
| 500 ppm ROE calculation (as per 19 NMAC 15.11.7.K.2) | | | |
| $X_{500ppm} = [(0.4546)(Conc_{H2S})(Q)]^{(0.6258)}$ | | | |
| | | | |
| Where: | | | |
| X = radius of exposure (ft) | | | |
| $Conc_{H2S}$ = the decimal equivalent of the mole or volume fraction of $H_2S$ in the gas | | | |
| Q = daily plant throughput corrected to standard conditions (SCFD) | | | |
| | | | |
| Plant parameters | | | |
| Q = | 1.8 MMSCFD = | 1800000 SCFD | |
| $Conc_{H2S}$ = | 110000 ppm = | 11 mole % = | 0.11 mole fraction |
| | | | |
| ROE calculation: | | | |
| $X_{100ppm}$ = | [(1.589)*(0.11)*(1800000)]^(0.6258) | | |
| $X_{100ppm}$ = | 2758 ft = | 0.52 miles | |
| | | | |
| $X_{500ppm}$ = | [(0.4546)*(0.11)*(1800000)]^(0.6258) | | |
| $X_{500ppm}$ = | 1260 ft = | 0.24 miles | |

MANLEY GAS TESTING, INC.
P.O. DRAWER 193 ODESSA, TEXAS 79760
OFFICE(432)367-3024 FAX(432)367-1166 E-MAIL: MANLEYGAST@AOL.COM

CHARGE..... 150 - 0
REC. NO. .... 7
TEST NUMBER.. 11314

DATE SAMPLED..... 07-19-12
DATE RUN..... 07-30-12
EFFEC. DATE..... 08-01-12

STATION NO. ... 06311001

PRODUCER ..... FRONTIER FIELD SERVICES

SAMPLE NAME.... ACID GAS FLARE TYPE: SPOT

RECEIVED FROM.. FRONTIER FIELD SERVICES LLC - MALJAMAR

FLOWING PRESSURE ..... 13.6 PSIA FLOWING TEMPERATURE ..... 103 F

SAMPLED BY: BM CYLINDER NO. ... 139

FRACTIONAL ANALYSIS
CALCULATED @ 14.650 PSIA AND 60F

| | MOL% | GPM (REAL) |
|---|---|---|
| HYDROGEN SULFIDE... | 11.000 | |
| NITROGEN..... | 0.624 | |
| CARBON DIOXIDE..... | 86.246 | |
| METHANE..... | 1.644 | |
| ETHANE..... | 0.331 | 0.089 |
| PROPANE..... | 0.087 | 0.024 |
| ISO-BUTANE..... | 0.009 | 0.003 |
| NOR-BUTANE..... | 0.027 | 0.008 |
| ISO-PENTANE..... | 0.002 | 0.001 |
| NOR-PENTANE..... | 0.002 | 0.001 |
| HEXANES +..... | 0.028 | 0.012 |
| TOTALS ..... | 100.000 | 0.138 |

H2S PPMV = 110000

'Z' FACTOR (DRY) = 0.9941
'Z' FACTOR (WET) = 0.9936

CALC. MOL. WT. = 42.33

..CALCULATED SPECIFIC GRAVITIES..

REAL, DRY ..... 1.4697

REAL, WET ..... 1.4556

..CALCULATED GROSS HEATING VALUES..

BTU/CF - REAL, DRY .... 27

BTU/CF - REAL, WET .... 27

DISTRIBUTION AND REMARKS:


ANALYZED BY: KC
** R **

APPROVED:

APPENDIX B ROE CALCULATIONS

| **Frontier Field Services Maljamar Plant ROE CALCULATIONS PURSUANT TO RULE 11** | | | |
|---|---|---|---|
| **INLET GAS ROE** | | | |
| The radius of exposure is calculated using the following equations: | | | |
| 100 ppm ROE calculation (as per 19 NMAC 15.11.7.K.1) | | | |
| $X_{100ppm} = [(1.589)(Conc_{H2S})(Q)]^{(0.6258)}$ | | | |
| 500 ppm ROE calculation (as per 19 NMAC 15.11.7.K.2) | | | |
| $X_{500ppm} = [(0.4546)(Conc_{H2S})(Q)]^{(0.6258)}$ | | | |
| | | | |
| Where: | | | |
| X = radius of exposure (ft) | | | |
| $Conc_{H2S}$ = the decimal equivalent of the mole or volume fraction of $H_2S$ in the gas | | | |
| Q = daily plant throughput corrected to standard conditions (SCFD) | | | |
| | | | |
| Plant parameters | | | |
| Q = | 135 MMSCFD = | 1.35E+08 SCFD | |
| $Conc_{H2S}$ = | 1400 ppm = | 0.14 mole % = | 0.0014 mole fraction |
| | | | |
| ROE calculation: | | | |
| $X_{100ppm}$ = | [(1.589)*(0.0014)*(135000000)]^(0.6258) | | |
| $X_{100ppm}$ = | 2678 ft = | 0.51 miles | |
| | | | |
| $X_{500ppm}$ = | [(0.4546)*(0.0014)*(135000000)]^(0.6258) | | |
| $X_{500ppm}$ = | 1224 ft = | 0.23 miles | |

MANLEY GAS TESTING, INC.
P.O. DRAWER 193 ODESSA, TEXAS 79760
OFFICE(432)367-3024 FAX(432)367-1166 E-MAIL: MANLEYGAST@AOL.COM

CHARGE..... 150 - 0
REC. NO. .... 45
TEST NUMBER.. 11499

DATE SAMPLED..... 09-13-12
DATE RUN..... 09-18-12
EFFEC. DATE..... 10-01-12

STATION NO. ... 06312785

PRODUCER ..... FRONTIER FIELD SERVICES

SAMPLE NAME.... CONTACTOR INLET TYPE: SPOT

RECEIVED FROM.. FRONTIER FIELD SERVICES LLC - MALJAMAR

FLOWING PRESSURE ..... 974.4 PSIA FLOWING TEMPERATURE ..... 111 F

SAMPLED BY: BM CYLINDER NO. ... 083

FRACTIONAL ANALYSIS
CALCULATED @ 14.650 PSIA AND 60F

| | MOL% | GPM (REAL) |
|---|---|---|
| HYDROGEN SULFIDE... | 0.140 | |
| NITROGEN..... | 3.500 | |
| CARBON DIOXIDE..... | 1.132 | |
| METHANE..... | 73.086 | |
| ETHANE..... | 12.316 | 3.287 |
| PROPANE..... | 6.087 | 1.673 |
| ISO-BUTANE..... | 0.743 | 0.243 |
| NOR-BUTANE..... | 1.734 | 0.546 |
| ISO-PENTANE..... | 0.396 | 0.145 |
| NOR-PENTANE..... | 0.377 | 0.137 |
| HEXANES +..... | 0.489 | 0.212 |
| TOTALS ..... | 100.000 | 6.243 |

H2S PPMV = 1400

'Z' FACTOR (DRY) = 0.9963
'Z' FACTOR (WET) = 0.9959

CALC. MOL. WT. = 22.09

..CALCULATED SPECIFIC GRAVITIES..

REAL, DRY ..... 0.7653

REAL, WET ..... 0.7632

..CALCULATED GROSS HEATING VALUES..

BTU/CF - REAL, DRY .... 1247

BTU/CF - REAL, WET .... 1225

DISTRIBUTION AND REMARKS:

ENTERED

ANALYZED BY: BC
** R **

APPROVED: mc

# APPENDIX C

# *APPENDIX C – $H_2S$ Contingency Plan Distribution List*

**New Mexico Oil Conservation Division**
1625 N. French Drive
Hobbs, NM 88240

**New Mexico Department of Public Safety**
5100 Jack Gomez Blvd.
Hobbs, NM 88240

**Lea Co. Local Emergency Planning Committee**
100 North Main
Lovington, NM 88260

**Bureau of Land Management Hobbs Field Office**
Carlsbad Field Office
620 E. Greene Street
Carlsbad, NM 88220

**Maljamar Fire Department**
U.S. Highway 82 and 126
Maljamar, NM 88264

**Lovington Fire Department**
213 S Love ST
Lovington, NM 88260

**Artesia Fire Department**
309 North 7th Street
Artesia, NM 88210-1913

**Hobbs Fire Department**
301 E White Street
Hobbs, NM 88240

**Loco Hills Fire Department**
132706 Lovington HWY
Loco Hills, NM 88255

**New Mexico State Police, District 3 Office**
4207 West 2nd Street
Roswell, NM 88201

**Lea County Sheriff's Department**
1417 South Commercial Street
Lovington, NM 88260

**Maljamar Gas Plant**
1001 Conoco Rd.
Maljamar, NM 88264

**Frontier Field Services LLC Main Office**
4200 Skelly Drive, Suite 700
Tulsa, OK 74135

**AKA Energy Corporate Headquarters**
**65 Mercado Street, Suite 250**
**Durango, CO 81301**

**Conoco Phillips Lovington Office for Conoco Phillips Field Warehouse**
29 Vacuum Complex Lane
Lovington, NM 88260

**Mid America Pipeline Company LLC for Mid America Compressor Station**
P.O. Box 4018
Houston, TX 77210