

CONTINGENCY PLAN FOR H₂S

Plantation Operating, LLC
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Production Units:

Justis Well #10
E-Sec 20, T-25S, R-37E
API: 30-025-27630

Justis Well #12
E-Sec 20, T-25S, R-37E
API: 30-025-28805

397

Lea County, New Mexico
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1 Process Safety Control Plan

When implemented, this process safety control plan will adequately protect the employees and contractors of, as well as, the public and environment from routine and unplanned releases of natural gas and production fluids that may contain toxic quantities of Hydrogen Sulfide (H₂S). This will be accomplished through administrative, as well as, operational controls. The management of *Plantation Operating, LLC* is responsible for implementation and maintenance of this plan.

1.1 Objective

This plan will discuss the hazards present at the referenced *Plantation Operating, LLC* production units and specifically address administrative and operational controls that will be sufficient to protect the residents domiciled in sensitive areas, recreational transients, and *Plantation Operating, LLC* employees and contractors.

1.2 Hazards

This *Plantation Operating, LLC* lease produces natural gas and condensate which are flammable and/or toxic (H₂S). Historically, i.e., for the past 20 years, there is no record of personal injury due to fire or H₂S exposure resulting from an atmospheric release from a *Plantation Operating, LLC* facility. *Plantation Operating, LLC* facilities also contribute, from time to time, odors and noise classified as "nuisance." The New Mexico Oil Conservation Division (NMOCD) has issued air quality regulation exemptions and atmospheric release permits, on a location by location basis, where routine releases of natural gas occur.

1.2.1 Fire

Fire hazards are present at all *Plantation Operating, LLC* facilities and, except for the central battery where the crude oil and natural gas is separated, a fire would be composed of both crude oil and natural gas. Each *Plantation Operating, LLC* lease operator will have in the field vehicle an adequate and operable fire extinguisher for use in extinguishing incipient fires. Ignition sources at *Plantation Operating, LLC* locations will be reasonably eliminated.

1.2.1.1 Crude Oil

Crude oil is a flammable liquid confined to the flow lines, tank batteries, and trunk lines. Unplanned releases or spills present a flammable hazard.

1.2.1.2 Natural Gas

Limited quantities of flammable natural gas are present in the flow lines, tank batteries, and trunk lines which comprise the production gathering system. Unplanned releases or spills present a flammable hazard.

1.2.2 Toxicity

The production fluids and natural gas contain H₂S and has been summarized in the 2.3 Attachment #1 titled, **H₂S Survey and Radius of Exposure Determination for Production Units: Justis Well #10 and Justis Well # 12, September 2006**. Allowable occupation exposure to this compound is limited to 10 ppm in an eight hour period (Permissible Exposure Limit-PEL) or 15 ppm for a single 15 minute period during an eight hour day (Short Term Exposure Limit-STEL) (OSHA/ANSI/NIOSH). Concentrations > 300 ppm H₂S are considered to be Immediately Dangerous to Life and Health (IDLH). Releases to the environment and exposure of individuals should be maintained as low as reasonably achievable.

1.2.2.1 Production Fluids

Production fluids are composed of natural gas and formation water. Both contain dissolved H₂S that eludes during agitation or heating and the formation water contains varying concentrations organic salts. During normal operations the head space gases of the storage tanks for crude oil and formation water contain hazardous concentrations of H₂S. Unplanned releases or spills of the production fluids will have a negative

impact on the affected ecosystem matrices, i.e., soil, ground water, and surface water and pose a health risk to exposed individuals.

1.2.2.2 Natural Gas

The natural gas produced at some *Plantation Operating, LLC* locations contains hazardous H₂S concentrations. Exposures should be avoided.

1.3 Process Safety Controls

To protect the *Plantation Operating, LLC* employees, contractors and individuals in sensitive areas, *Plantation Operating, LLC* will design and implement a system of safety controls on equipment within sensitive areas.

1.3.1 Operational Controls

Operational controls consist of safety devices installed on production and handling equipment to immediately stop or reduce the release to the environment of fluid or gas resulting from an equipment failure.

1.3.1.1 Determination of H₂S concentrations and Radius of Exposures

Based on information and calculations contained in the 2.3 Attachment #1 (H₂S Survey and Radius of Exposure Determination for Production Unit: *Justis Well #10 and Justis Well #12, September 2006*), *Plantation Operating, LLC* is able to prescribe operational and administrative controls which will maintain exposures of employees, contractors, individuals living in sensitive areas, and the environment "as low as reasonably achievable." The "Zero back Pressure Flow Rates" and consequently the Radius of Exposures from representative wells in sensitive areas were verified empirically in this 2.3 Attachment #1.

1.3.1.2 Signs

Signs will be used to communicate the hazards presented by *Plantation Operating, LLC* equipment and activities to the affected individuals.

1.3.1.2.1 *Plantation Operating, LLC* Emergency Notification Number

These permanently posted signs will facilitate notification of *Plantation Operating, LLC* field operations personnel of an equipment or system failure by individuals domiciled within sensitive areas. The sign will read:

Property of Plantation Operating, LLC
In Case of Emergency
Call
505-631-7790 or 505-395-3367
505-631-7791 or 505-631-7794
505-631-7798 or 505-631-7939

1.3.1.2.2 All Tank Batteries and Test Headers, and Pumping Units within Sensitive Areas
All bulk oil and produced water storage tank battery facilities and test headers, as well as, pumping units within sensitive areas will have signs lettered,

WARNING/DANGER H₂S GAS PRESENT

and will be permanently attached to an adequate structure.

1.3.1.2.3 Buried Flow Lines and Trunk Lines

Buried flow lines and trunk lines will be marked with signs identifying *Plantation Operating, LLC* as the owner and the number to call to report a leak or plan an excavation in the area. These signs will be constructed of flexible Carsonite and will be placed at appropriate intervals directly above the buried line and at all road crossings.

1.3.1.3 Security

These controls will limit, deter, and restrict access to *Plantation Operating, LLC* properties that pose health or environmental hazards. This will also insure to some degree that the integrity of the operational systems will not be perturbed.

1.3.1.3.1 Fencing

All *Plantation Operating, LLC* facilities within sensitive areas will be enclosed with a chain link fence at least 8 feet high. Additionally, pumping units located near schools will be totally enclosed. Tank batteries and Test headers outside sensitive areas will be fenced with 4-strand barbed wire.

1.3.1.3.2 Locks

All facilities enclosed by chain link fencing will be locked. Padlocks will be keyed alike.

1.3.1.3.3 Plugging Valve Openings

Valve openings will be plugged and ball valve handles removed at facilities within sensitive areas.

1.3.1.4 H₂S Monitoring

These monitors are designed to inform, by alarm, the *Plantation Operating, LLC*, employee or contractor of hazardous and dangerous accumulations or releases of H₂S.

1.3.1.4.1 Personal Monitors

All *Plantation Operating, LLC* employees and contractors will be required to have on their person while working in and around *Plantation Operating, LLC* properties a personal H₂S monitor. *Plantation Operating, LLC* will provide its' employees with monitors and train them in their use. Contractors will see that their employees are likewise equipped and trained.

1.3.1.5 Employee and Contractor Training

All *Plantation Operating, LLC* employees and contractors are required to attend annual H₂S Safety and Respiratory Protection training and will have on their person, as evidence of training, a field verification card showing the date of training and provider.

1.3.1.6 Well Workover/Completion

During Workover Operations, *Plantation Operating, LLC* will close in well immediately with BOP's and install TIW valve on tubing in case of release of natural gas during this operation. If release is necessary, *Plantation Operating, LLC* will flare gas during blow down of this operation thence minimizing toxic gas in atmosphere (API RP55 9.12 and 9.14). During the release of toxic gas there will be a hydrogen sulfide package with hydrogen sulfide monitoring and detection instruments and respiratory protection available. All respirators shall meet the requirements of OSHA's Respiratory Protection Standard (refer to 29 Code of Federal Regulations Part 1910.134) and be approved under procedures outlined in ANSI Z88.2. All breathing air cylinders shall meet U.S. Department of Transportation (DOT) or other appropriate regulatory requirements (refer to 30 Code of Federal Regulations, Part 1910.134, Chapter 1, Subchapter B, Part II, Subpart H, Par. 11.80 and 49 Code of Federal Regulations Part 178, Subpart C). The following types of breathing equipment with full face piece meet these requirements and should be used where the work area atmospheric concentration exceeds 10 ppm for hydrogen sulfide or 2 ppm for sulfur dioxide:

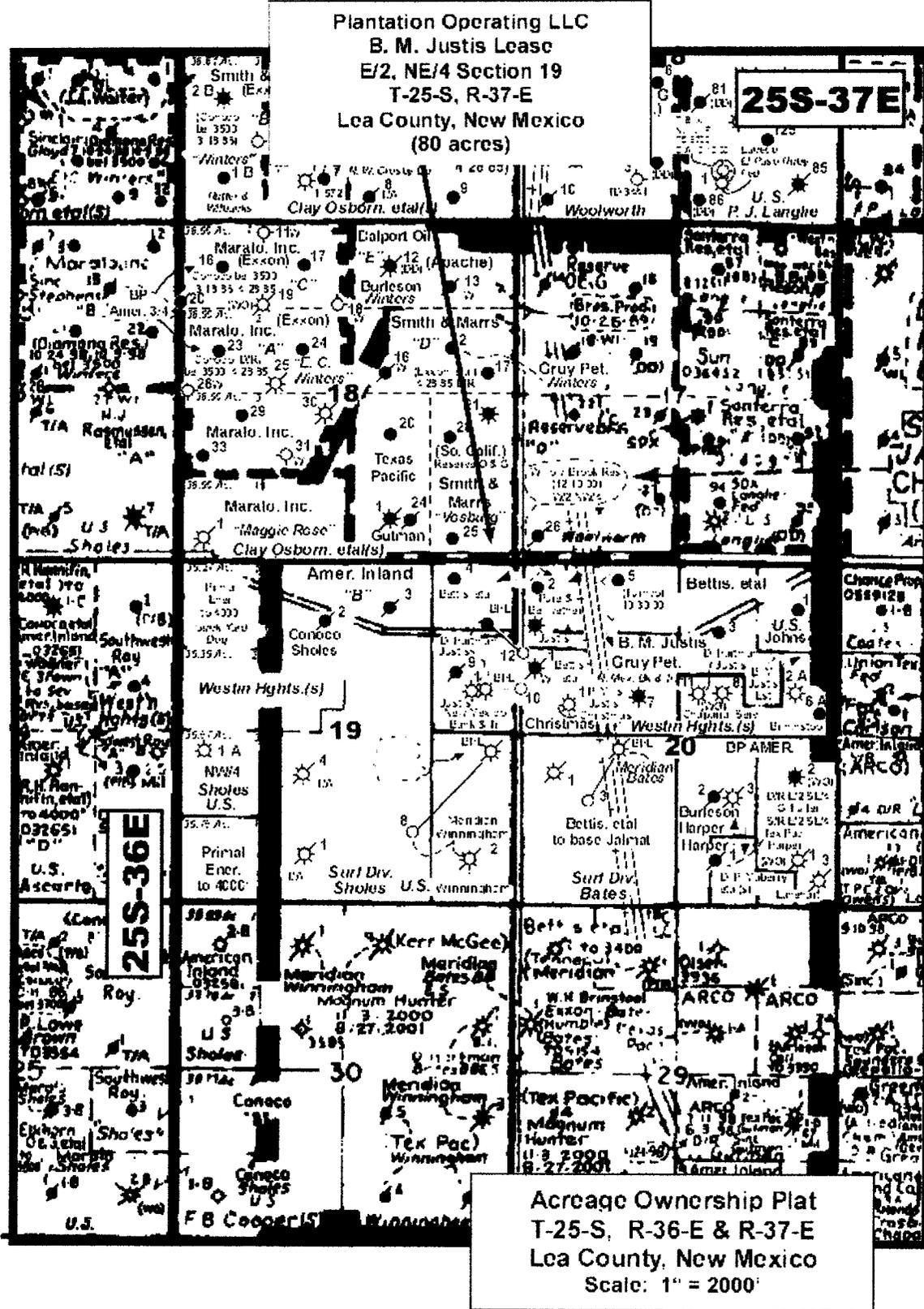
- a. Self-contained, positive-pressure/pressure-demand breathing equipment that provides respiratory protection in any atmospheric concentration of hydrogen sulfide or sulfur dioxide.
- b. Positive-pressure/pressure-demand, air-line breathing equipment, with an auxiliary self-contained air supply (rated for a minimum of five minutes). This type unit can be used for entry as long as the air line is connected to a source of breathing air. The auxiliary self-contained air supply (rated for less than fifteen minutes) is suitable only for escape or self-rescue use.

Notes:

1. Personal assigned job-related tasks requiring routine use of breathing equipment shall have a periodic review to determine their physiological and psychological adequacy for use of this equipment (refer to ANSI Z 88.2 and 29 Code of the Federal Regulations Part 1910.134).
2. Positive-pressure/pressure-demand, air-line or self-contained breathing apparatus, as appropriate, with full face piece shall be worn by personnel exposed to atmospheres containing concentrations of hydrogen sulfide and sulfur dioxide above OSHA's ACC's, STEL's, PEL's for air contaminants (refer to 29Code of Federal Regulations Part 1910.1000).

CAUTION: Gas mask canister type breathing and demand type (negative pressure) equipment shall not be used in oil and gas producing and gas processing plant operations when a hydrogen sulfide or sulfur dioxide environment could be entered.

1.4 Maps of Sensitive Areas



2 Contingency Plan

In the event of a natural disaster or equipment failure that subsequently results in an atmospheric release of hazardous fluids or gas, *Plantation Operating, LLC* will implement this Contingency Plan. This plan will direct appropriate responses of *Plantation Operating, LLC* employees and affected individuals within sensitive areas.

2.1 Operational Contingencies

Plantation Operating, LLC equipment and facilities are designed to contain all production fluids and gas. All facilities are visually inspected/check for leaks or deterioration by field personnel once every 24 hours, if leaks are noted the employee responds appropriately. This, along with the system check valves and high and low-pressure shut downs will minimize inadvertent or accidental releases. However, in sensitive areas, where the public is in close proximity to the pumping units, flow lines, and test headers and are present locally 24 hours a day, it is important that they know how to safely and effectively respond to *Plantation Operating, LLC* system leaks or spills.

2.1.1 Plantation Operating, LLC Employee Response

The employee of *Plantation Operating, LLC* that first responds to the release, whether the discoverer or directed by management, will be responsible for de-energizing equipment and closing valves to stop the release or spill and notifying affected residents of the area. If appropriately trained, the employee will also attempt to contain the spill. The employee will also contact the local emergency response agency or Fire Department for assistance. The matrix below contains pertinent telephone numbers.

Emergency Notification Telephone List	
State Police	911 or 505-395-2501
Emergency Medical / Ambulance Service	911 or 505-395-3340
Fire Department	911 or 505-395-2221
Hospital	505-395-3400
Sheriff's Department	911 or 505-395-2121
New Mexico Oil Conservation Division	505-393-6161
<i>Plantation Operating, LLC</i> Foreman: William Pilkington	505-631-7790
<i>Plantation Operating, LLC</i> COO: Don Dotson	281-796-1645
Callaway Safety Equipment Co., Inc.	505-392-2973

2.1.1.1 Communication Equipment

Plantation Operating, LLC personnel will have communication devices available 24 hours a day.

2.1.1.1.1 Cell Phones

Plantation Operating, LLC supervisors and field personnel will have cell phones on their person or in their presence 24 hours a day making them accessible during any emergency event.

2.1.2 Individual or Public Response

Individuals domiciled in sensitive areas or recreational transients shall be made aware of the hazards presented by the oil and gas extraction activities conducted by *Plantation Operating, LLC*. This will be accomplished with the use of adequate signage and marking. If an individual discovers an inadvertent

release or spill, the appropriate response is to contact a representative of *Plantation Operating, LLC* at the telephone number listed on the signs:

**Property of Plantation Operating, LLC
In Case of Emergency
Call
505-631-7790 or 505-395-3367
505-631-7791 or 505-631-7794
505-631-7798 or 505-631-7939**

2.2 Awareness Program

Plantation Operating, LLC will implement this program to ensure appropriate response of individuals domiciled in sensitive areas or recreational transients, as well as, utility companies who traditionally install underground service and emergency response agencies.

2.2.1 Affected Individuals and Businesses

Plantation Operating, LLC will compose and distribute a written notice to individuals and businesses located within sensitive areas and will contain the following information. To verify delivery and receipt the affected individual will be asked to sign an addressed delivery roster.

- *Plantation Operating, LLC*, identified as the property owner
- Discuss hazards and nuisance.
- Telephone number to report a leak or equipment failure
- Stay away from the leak, especially children and pets
- Do not enter fenced areas. Call *Plantation Operating, LLC* to retrieve items within.

2.2.2 Utility Companies and Emergency Response Agencies

Plantation Operating, LLC will develop and transmit letters describing the locations of surface facilities and buried flow lines and associated hazards. This will enable utility companies to avoid contact with the buried lines and is necessary information that could feasibly affect emergency response procedures relative to a non-related emergency. Additionally, reporting requirements of SARA Title III have been filed with the New Mexico Oil Conservation Division (NMOCD) and other appropriate emergency response agencies.

