

LEGACY RESERVES OPERATING, L. P.
HYDROGEN SULFIDE (H₂S) CONTINGENCY PLAN
LEA UNIT 60H

Assumed 100 ppm ROE = 3000'

HOBBS OCD

SEP 18 2017

100 ppm H₂S concentration shall trigger activation of this plan.

RECEIVED

This is an open drilling site. H₂S monitoring equipment and emergency response equipment will be rigged up and in use when the company drills out from under surface casing. H₂S monitors, warning signs, wind indicators and flags will be in use.

- A. All personnel shall receive proper H₂S training in accordance with Onshore Order 6 III.C.3.a
- B. Briefing Area: Two perpendicular areas will be designated by signs and readily accessible.
- C. Required Emergency Equipment:
 - Well control equipment
 - a. Flare line 150' from wellhead to be ignited by flare gun.
 - b. Choke manifold with a remotely operated choke.
 - c. Mud/Gas Separator.
 - Protective Equipment for essential personnel.
Breathing apparatus:
 - a. Rescue Packs (SCBA) – 1 unit shall be placed at each briefing area. 2 units shall be stored in the safety trailer.
 - b. Work/Escapes packs – 4 packs shall be stored on the rig floor with sufficient air hose not to restrict work activity.
 - c. Emergency Escape Packs – 4 packs shall be stored in the doghouse for emergency evacuation.
Auxiliary Rescue Equipment:
 - a. Stretcher
 - b. Two OSHA full body harness
 - c. 100 ft. 5/8" OSHA approved rope
 - d. One 20# class ABC fire extinguisher
 - H₂S detection and monitoring Equipment:
The stationary detector with three sensors will be placed in the upper doghouse, set to visually alarm @ 10 ppm and audible @ 14 ppm. Calibrate a minimum of every 30 days or as needed. The sensors will be placed in the following places: Rig floor, Bell nipple, end of flare line or where well bore fluid is being discharged (Gas sample tubes will be stored in the safety trailer).
 - Visual warning systems.
 - a. One color code condition sign will be placed at the entrance to the site reflecting the possible conditions at the site.
 - b. A colored condition flag will be on display, reflecting the current condition, at the drilling site.
 - c. Two wind socks will be placed in strategic locations being visible from all angles.

- **Mud Program:**
The mud program has been designated to minimize the volume of H₂S circulated to surface. The operator will have the necessary mud products to minimize hazards while drilling in H₂S bearing zones.
- **Metallurgy:**
 - a. All drill strings, casings, tubing, wellhead, blowout preventer, drilling spool, kill lines, choke manifold and lines, shall be suitable for H₂S service.
 - b. All elastomers used for packing and seals shall be H₂S trim.
- **Communication:**
Communication will be via two way radio in emergency and company vehicles. Cell phones and land lines where available.

H₂S Operations

Though no H₂S is anticipated during the drilling operation, this contingency plan will provide for methods to ensure the well is kept under control in the event an H₂S reading of 100 ppm or more are encountered. Once personnel are safe and the proper protective gear is in place and on personnel, the operator and rig crew essential personnel will ensure the well is under control, suspend drilling operations and shut-in the well (unless pressure build up or other operational situations dictate suspending operations will prevent well control), increase the mud weight and circulate all gas from the hole utilizing the mud/gas separator downstream of the choke, the choke manifold and the emergency flare system located 150' from the well. Bring the mud system into compliance and the H₂S level below 10 ppm, then notify all emergency officers that drilling ahead is practical and safe.

Proceed with drilling ahead only after all provisions of Onshore Order 6, Section III.C. have been satisfied.

Ignition of Gas source

Should control of the well be considered lost and ignition considered, take care to protect against exposure to Sulfur Dioxide (SO₂). Intentional ignition must be coordinated with the NMOCD and local officials. Additionally the NM State Police may become involved. NM State Police shall be the Incident Command on scene of any major release. Take care to protect downwind whenever this is an ignition of the gas.

Characteristics of H₂S and SO₂

Common Name	Chemical Formula	Specific Gravity	Threshold Limit	Hazardous Limit	Lethal Concentration
Hydrogen Sulfide	H ₂ S	1.189 Air = 1	10 ppm	100 ppm/hr	600 ppm
Sulfur Dioxide	SO ₂	2.21 Air = 1	2 ppm	N/A	1000 ppm

Contacting Authorities

Legacy Reserves Operating's personnel must liaison with local and state agencies to ensure a proper response to a major release. Additionally, the OCD must be notified of the release as soon as possible but no later than 4 hours. Agencies will ask for information such as type and volume of release, wind direction, location of release, etc. Be prepared with all information

available including directions to site. The following call list of essential and potential responders has been prepared for use during a release. Legacy's response must be in coordination with the State of New Mexico's "Hazardous Materials Emergency Response Plan" (HMER).

Emergency Assistance Telephone List

<u>PUBLIC SAFETY:</u>	<u>911 or</u>
Lea County Sheriff or Police	(575) 396-3611
Fire Department	(575) 397-9308
Hospital	(575) 492-5000
Ambulance	911
Department of Public Safety	(392) 392-5588
Oil Conservation Division	(575) 748-1823
New Mexico Energy, Minerals & Natural Resources Department	(575) 748-1283

LEGACY RESERVES OPERATING LP

Legacy Reserves Operating LP	Office (432) 689-5200
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Drilling Manager:	Office (432) 689-5200
Daniel Breeding	Cell (432) 853-1680

Drilling Engineer:	Office (432) 689-5200
Matthew Dickson	Cell (432) 212-5698

Operations Manager:	Office (432) 689-5200
Ernie Hanson	Cell (432) 230-9009

Legacy Company Representative:	
Rick Massey	Cell (575) 942-4035

DRILLING CONTRACTOR-McVAY 4

Tool Pusher:	
Terry Johnson	Cell: (575) 370-5620

Relief Tool Pusher:	
Olin Vaught	Cell: (575) 631-7799

Drilling Manager:	Office: (575) 397-3311
Michael McVay	Cell: (575) 602-1839

LEGACY SAFETY **Hobbs (575) 393-7233**

EHS Coordinator:Field Operations Manager:	Office: (432) 689-5200
Randy Williams	Cell: (432) 260-5566

Field Safety Technician:	Office: (432) 689-5200
Randy Turner	Cell: (432) 536-6473

Evacuee Description:

Residents: THERE ARE NO RESIDENTS WITHIN 3000' ROE.



Prevailing Winds
Direction SW

H2S Briefing Areas and Alarm Locations

