GW - 032

H_2S CONTINGENCY PLAN

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Thursday, July 15, 2010 4:27 PM
To: 'Schmaltz, Randy'; Riege, Ed
Cc: VonGonten, Glenn, EMNRD
Subject: RE: H2S Exposure

Gentlemen:

The Oil Conservation hereby concurs with your July 9, 2010 letter indicating an H2S Contingency Plan nor public training under the OCD H2S Regulations will be required for your refineries unless conditions change, which you need to cognizant of and alert the OCD of conditions with hydrogen sulfide that may require an H2S Contingency Plan for your refinery(ies).

Thank you for your cooperation.

Cc: OCD Online GW-1 and GW-32 "H2S Contingency Plan" Thumbnails

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Dept.
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Dr., Santa Fe, New Mexico 87505
Office: (505) 476-3490
Fax: (505) 476-3462
E-mail: CarlJ.Chavez@state.nm.us
Website: http://www.emnrd.state.nm.us/ocd/index.htm
(Pollution Prevention Guidance is under "Publications")

From: Schmaltz, Randy [mailto:Randy.Schmaltz@wnr.com]
Sent: Thursday, July 15, 2010 4:14 PM
To: Riege, Ed; Chavez, Carl J, EMNRD
Subject: RE: H2S Exposure

Carl,

That is correct, Bloomfield's worst case was for full-scale operation.

Thanks
Randy

From: Riege, Ed
Sent: Thursday, July 15, 2010 4:11 PM
To: Schmaltz, Randy
Subject: FW: H2S Exposure

Randy,
Please respond to Carl.

Ed Riege
Environmental Manager

Western Refining
Gallup Refinery
Route 3 Box 7
Gallup, NM 87301
(505) 722-0217

ed.riege@wnr.com

Safety starts with "S", but always begins with "You"

From: Chavez, Carl J, EMNRD [mailto:CarlJ.Chavez@state.nm.us]
Sent: Thursday, July 15, 2010 4:05 PM
To: Riege, Ed
Subject: RE: H2S Exposure

Ed:

I'm in receipt. I trust the Bloomfield data reflect full-scale operation and not under present operating conditions.... I'll get back with you. Thanks.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Dept.
Oil Conservation Division, Environmental Bureau
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Fax: (505) 476-3462
E-mail: CarlJ.Chavez@state.nm.us
Website: http://www.emnrd.state.nm.us/ocd/index.htm
(Pollution Prevention Guidance is under "Publications")

From: Riege, Ed [mailto:Ed.Riege@wnr.com]
Sent: Thursday, July 15, 2010 4:04 PM
To: Chavez, Carl J, EMNRD
Cc: Schmaltz, Randy
Subject: H2S Exposure

Hi Carl,
Here is the additional information you requested.

Bloomfield
The Distillate Hydrotreater (DHT) unit has the highest level of H2S. The 8000 ppm used in the worst case was a measured value. The maximum escape rate 764,000 scf/day is an engineering estimate based on the assumption the worst case would exceed the average measured flow rate of 674,000 scf/day. See attached pg 21.

Gallup
The basis for the assumed value of 450,000 ppm of H2S concentration is from our Air Quality Bureau permit for the Thiosolv unit, where we estimated a total mass flow rate (design-basis maximum) for the Amine unit of 11.61 lb-mol/hr at a molecular weight of 36.67 (or 36.67 lb/lb-mol) = 425.7387 lbs/hr, and an H2S mass flow rate of 5.445 lb-mol/hr at a molecular weight of 34 (or 34 lb/lb-mol) = 185.13 lbs/hr. The mass fraction of H2S then becomes 185.13 lbs/425.7387 lbs = 0.434844, or 434,844 ppm. The Amine unit itself does not have a permit from the Air Quality Bureau as it is a closed system. We have in our radius of exposure calculations used a more conservative number of 451,000 ppm.
The Amine unit's flows are measured instantaneously for control purposes at two split streams. The Amine unit (that has the highest H2S concentrations) sends acid gas to the Thiosolv unit, and a part (generally from overpressure and as a back-up) to the Sulfur Recovery Unit (SRU). As the streams are monitored separately and at discrete intervals it is not simply a matter of adding the averages of the two streams to get a daily average. That is, if flow begins to the SRU, the Thiosolv flow may at times begin to go down. Therefore, averaging a sum of the two flows is not straightforward from daily averages that have been calculated from polling intervals that are not identical for the control of each unit. However, as we pointed out, the assumption of the entire Amine assumed flow rate of 85,000 standard cubic feet (scf)/day venting directly to the atmosphere without any treatment and for a duration that lasts the entire day is extremely conservative. At this time, for example, the Amine unit is sending 81,000 scf/day to the Thiosolv and, 0 scf/day to the SRU. Even if the Amine unit generated more flow at any given time, this could not at our assumed rate of 85,000 scf/day vent to the atmosphere for the whole day. Many emergency systems would be activated – for example, sending the gases to the flare system, shutting other gas generating units down, etc. This is why we believe an assumed rate of 85,000 scf/day venting to the atmosphere and lasting the whole day is an extremely conservative estimate. See attached pg 28.

Thanks,

Ed

Ed Riege
Environmental Manager

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ed.riege@wnr.com

Safety starts with "S", but always begins with "You"

H_2S CONTINGENCY PLAN
Bloomfield Refinery

Western Refining Southwest, Inc
Bloomfield Refinery
#50 County Road 4990
Bloomfield, New Mexico 87413

APRIL 2010

APPENDIX A – Radius of Exposure Calculations

Worst-case Scenario

The Distillate Hydrotreater (DHT) unit has the highest level of H_2S concentration in its process gases. This concentration has been measured previously as 8,000 ppm.

The average measured flow rate in the DHT process unit of high-H_2S containing process gases is 674,000 scf/day. Therefore, we have assumed a maximum escape rate that lasts a whole day as 764,000 scf/day.

The worst-case scenario assumes that process gases from the DHT unit at 8,000 ppm of H_2S are released for a 24-hour period at the flow rate of 764,000 scf/day.

In the existing situation, if there was a failure of any kind at the DHT unit, high H_2S gases would be routed to the flare and combusted. If the flare system also failed, the units would be shut down. The DHT is equipped with an Emergency Shutdown device. Therefore, there is almost no possibility of high-H_2S gases being continuously released from the DHT unit at 8,000 ppm and at a flow rate of 764,000 scf/day for a full 24-hour period.

By assuming this extreme and unlikely worst-case scenario, we have accounted for all other scenarios of smaller impacts.

Radius of Exposure Calculations

The formula for calculating the two ROEs (as specified in the OCD regulations) are as follows:

500-ppm Radius of Exposure calculation

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

Where:

X = radius of exposure in feet

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

Q = Escape rate expressed in standard cubic feet per day

For, hydrogen sulfide concentration = 8,000 ppm (0.008 moles), and Q = 764,000 scf/day,

X = 143 feet

100-ppm Radius of Exposure calculation

$X = [(1.589)(\text{hydrogen sulfide concentration})(Q)]^{0.5259}$

Where:

X = radius of exposure in feet

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

Q = Escape rate expressed in standard cubic feet per day

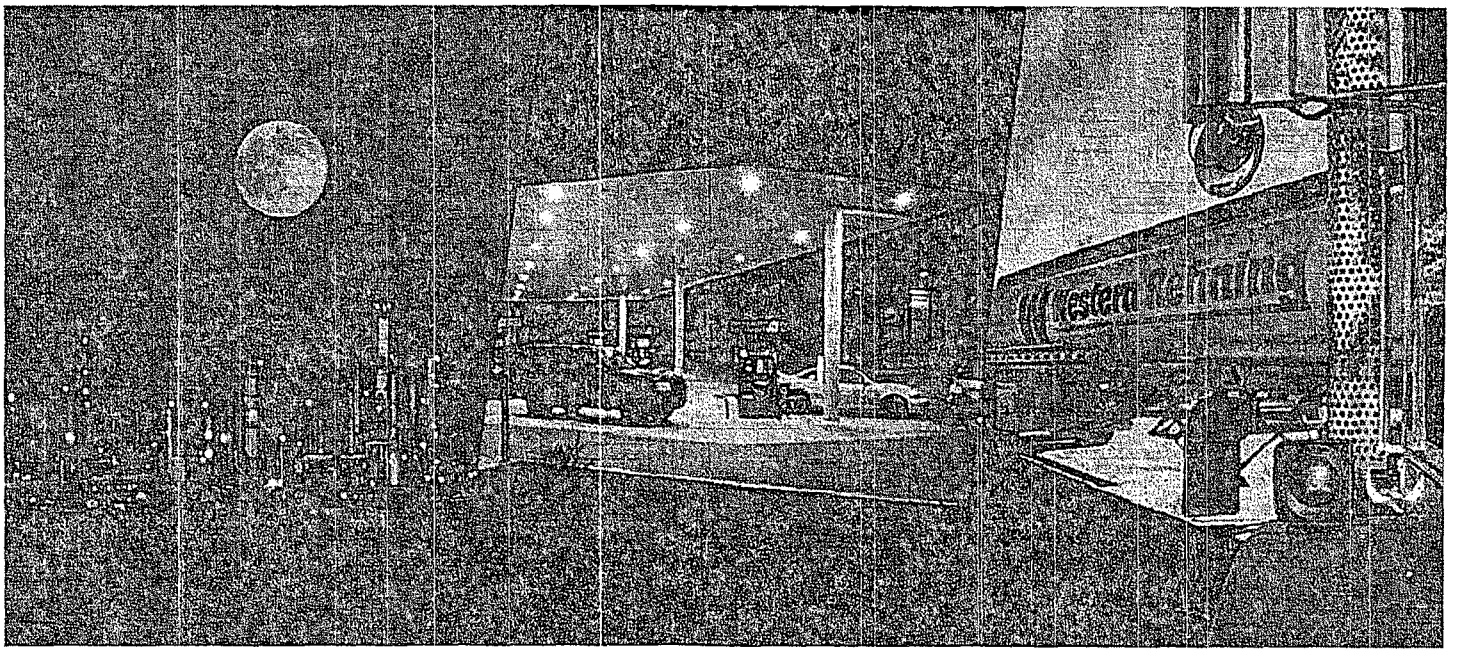
For, hydrogen sulfide concentration = 8,000 ppm (0.008 moles), and Q = 764,000 scf/day,

X = 313 feet

H2S Contingency Plan: Gallup Refinery

Western Refining
Gallup, New Mexico

April 2010



Appendix A: ROE Calculations

Worst-case Scenario

The Amine unit has the highest level of H2S concentration in its process gases. This concentration has been measured previously as 451,000 ppm.

The average measured flow rate in the amine unit of high-H2S containing process gases, as measured in recent months (at maximum charge rates), is 80,000 scf/day, rising to a temporary (< 1-hour) maximum of about 90,000 scf/day. Therefore, we have assumed a maximum escape rate that lasts a whole day as 85,000 scf/day.

The worst-case scenario that we assume is that process gases from the Amine unit at 451,000 ppm of H2S are released for a 24-hour period at the flow rate of 85,000 scf/day.

In the existing situation, if there was a failure of ay kind at the Amine unit, high-H2S gases would be routed to the Sulfur Recovery Unit (SRU) and treated. If the SRU unit also failed, the gases would be routed to the flare system. And, if the flare system also failed, the units would be shut down. Therefore, there is almost no possibility of high-H2S gases being continuously released from the Amine unit at 451,000 ppm and at a flow rate of 85,000 scf/day, for a full 24-hour period.

By assuming this extreme and unlikely worst-case scenario, we have accounted for all other less worse scenarios.

Radius of Exposure Calculations

The formula for calculating the two ROEs (as specified in the OCD regulations) are as follows:

500-ppm Radius of Exposure calculation

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

Where
X = radius of exposure in feet
Hydrogen sulfide concentration = decimal equivalent of mole or volume fraction of hydrogen sulfide in the gaseous mixture
Q = Escape rate expressed in standard cubic feet per day

For, hydrogen sulfide concentration = 451,000 ppm, and Q = 85,000 scf/day,

X = 405 feet

100-ppm Radius of Exposure calculation

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

Where
X = radius of exposure in feet
Hydrogen sulfide concentration = decimal equivalent of mole or volume fraction of hydrogen sulfide in the gaseous mixture
Q = Escape rate expressed in standard cubic feet per day

For, hydrogen sulfide concentration = 451,000 ppm, and Q = 85,000 scf/day,

X = 860 feet

July 9, 2010

Mr. Carl Chavez
Oil Conservation Division
Environmental Bureau
1220 S. St. Francis Dr.
Santa Fe, NM 87505

Re: Hydrogen Sulfide Contingency Plan (Plan)

Dear Mr. Chavez:

Western reviewed the regulations and based on the results of the Radius of Exposure (ROE) calculations it was determined that the Hydrogen Sulfide Contingency Plans (Plans) for the Gallup and Bloomfield Refineries are not required. The Plans indicate there are no offsite impacts expected from the worst case scenario based on the Radius of Exposure (ROE) calculations. A Plan is required if a facility involves a potentially hazardous volume of hydrogen sulfide as per 19.15.11.9. A potentially hazardous volume is defined in 19.15.11.7 H. and neither refinery meets these definitions as indicated in the attached ROEs. Western therefore believes that public notice and training is not required for the Gallup and Bloomfield refineries since there is not a potentially hazardous volume as shown in the enclosed attachments from the Plans.

The Plans includes the Regulatory Threshold as required by 19.15.11.8. If a change or alteration may materially increase the hydrogen sulfide concentration at the facility then a new determination will be made at that time. It was a good exercise to write the Plans otherwise the ROEs would have been unknown.

Please contact me at (505) 722-0217 if you have any comments or questions regarding this submittal.

Sincerely,

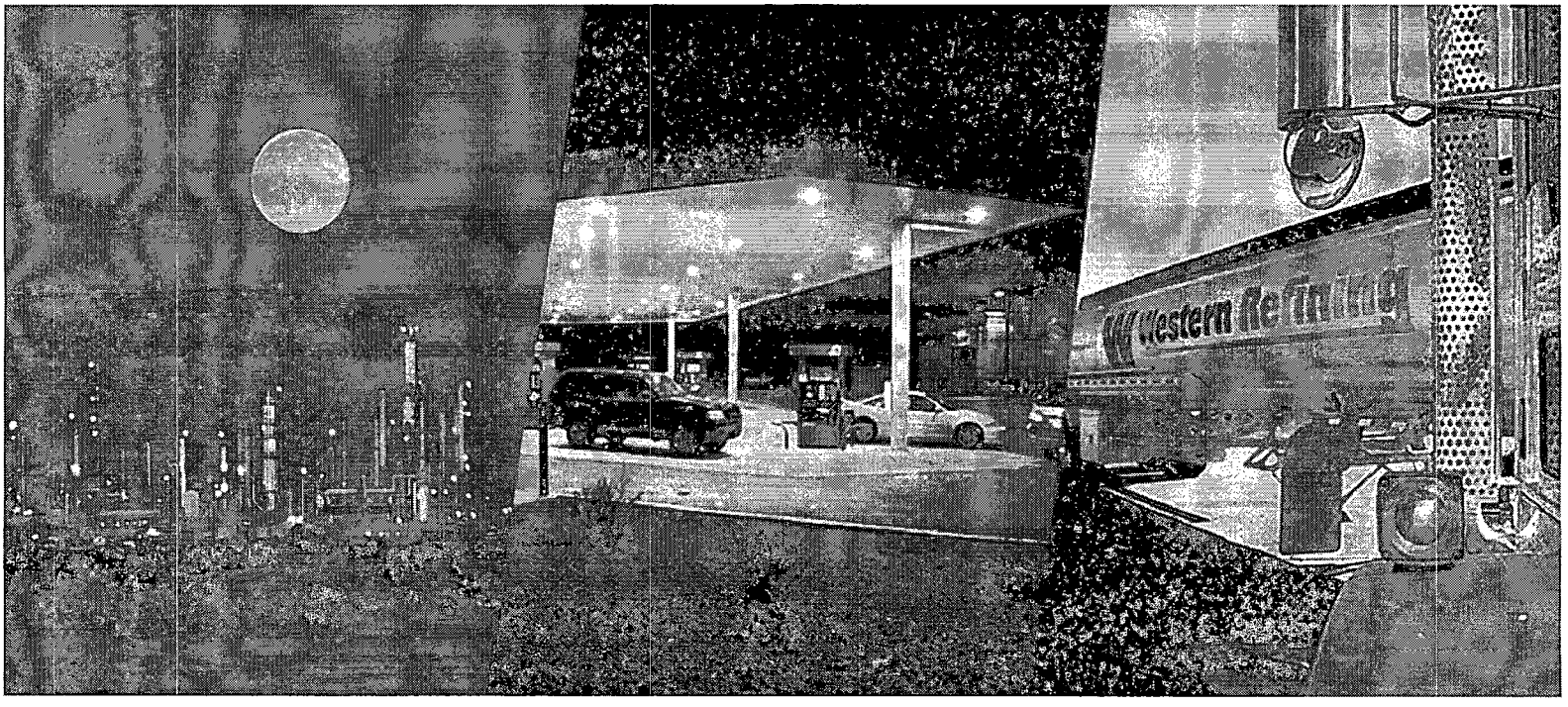
Ed Riege
Environmental Manager

C: Ms. Hope Monzeglio
Mark B. Turri
Randy Schmaltz
Vic McDaniel
Bill Robertson
Jim Lieb

H2S Contingency Plan: Gallup Refinery

Western Refining
Gallup, New Mexico

April 2010



Physical Effects of Hydrogen Sulfide		
Concentration		
ppm	%	Physical Effect
1	.00010	Can be smelled (rotten egg odor)
10	0.0010	Obvious & unpleasant odor; Permissible Exposure Limit; Safe for 8-hour exposure
15	0.0015	Short Term Exposure Limit (STEL); Safe for 15 minutes of exposure without respirator
50	0.0050	Loss of sense of smell in 15 minutes
100	0.0100	Immediately Dangerous to Life & 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
1,000	0.1000	Instant unconsciousness; followed by death within minutes

3.2 Radii of Exposure (ROE)

For the existing operations, the "Radius of Exposure" for both 500-ppm and 100-ppm of H2S gas was determined using the maximum escape rate and the maximum H2S concentration expected in process gases (worst-case scenario). Details of the rates and other variables used to calculate the ROEs are presented in Appendix A and a figure showing the 500-ppm ROE and the 100-ppm ROE is presented in Appendix B. Appendix B also depicts a figure showing

the locations of wind indication devices that are visible from all locations in the refinery; and a figure showing the locations of H2S area monitors.

Table 1: Calculated ROE for 500-ppm and 100-ppm of H2S gas

Concentration (ppm)	ROE (feet)
500	405
100	860

3.3 Main conclusion

Based on the ROE calculations, there are no impacts to off-site public areas expected from the worst-case scenario. A detailed Process Hazard Analysis of the Amine and Sour Water Stripping Units was conducted for the Gallup Refinery in 2005. This PHA also concluded that there would be no impacts to off-site areas from releases at these units. As there are no off-site impacts expected, even under a highly unlikely worst-case scenario, we have not planned for warning signs to be placed in the external areas of the refinery or for any provisions to raise warning flags. There are adequate signs posted in all areas of the refinery that use or produce H2S and other hazardous gases, and access to such areas within the refinery is extremely secure. All plant personnel will be alerted to dangers through the refinery's warning systems, and the raising of flags is not deemed to be required from within a secure facility for no off-site impacts.

Appendix A: ROE Calculations

Worst-case Scenario

The Amine unit has the highest level of H2S concentration in its process gases. This concentration has been measured previously as 451,000 ppm.

The average measured flow rate in the amine unit of high-H2S containing process gases, as measured in recent months (at maximum charge rates), is 80,000 scf/day, rising to a temporary (< 1-hour) maximum of about 90,000 scf/day. Therefore, we have assumed a maximum escape rate that lasts a whole day as 85,000 scf/day.

The worst-case scenario that we assume is that process gases from the Amine unit at 451,000 ppm of H2S are released for a 24-hour period at the flow rate of 85,000 scf/day.

In the existing situation, if there was a failure of ay kind at the Amine unit, high-H2S gases would be routed to the Sulfur Recovery Unit (SRU) and treated. If the SRU unit also failed, the gases would be routed to the flare system. And, if the flare system also failed, the units would be shut down. Therefore, there is almost no possibility of high-H2S gases being continuously released from the Amine unit at 451,000 ppm and at a flow rate of 85,000 scf/day, for a full 24-hour period.

By assuming this extreme and unlikely worst-case scenario, we have accounted for all other less worse scenarios.

Radius of Exposure Calculations

The formula for calculating the two ROEs (as specified in the OCD regulations) are as follows:

500-ppm Radius of Exposure calculation

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

Where
X = radius of exposure in feet
Hydrogen sulfide concentration = decimal equivalent of mole or volume fraction of hydrogen sulfide in the gaseous mixture
Q = Escape rate expressed in standard cubic feet per day

For, hydrogen sulfide concentration = 451,000 ppm, and Q = 85,000 scf/day,

X = 405 feet

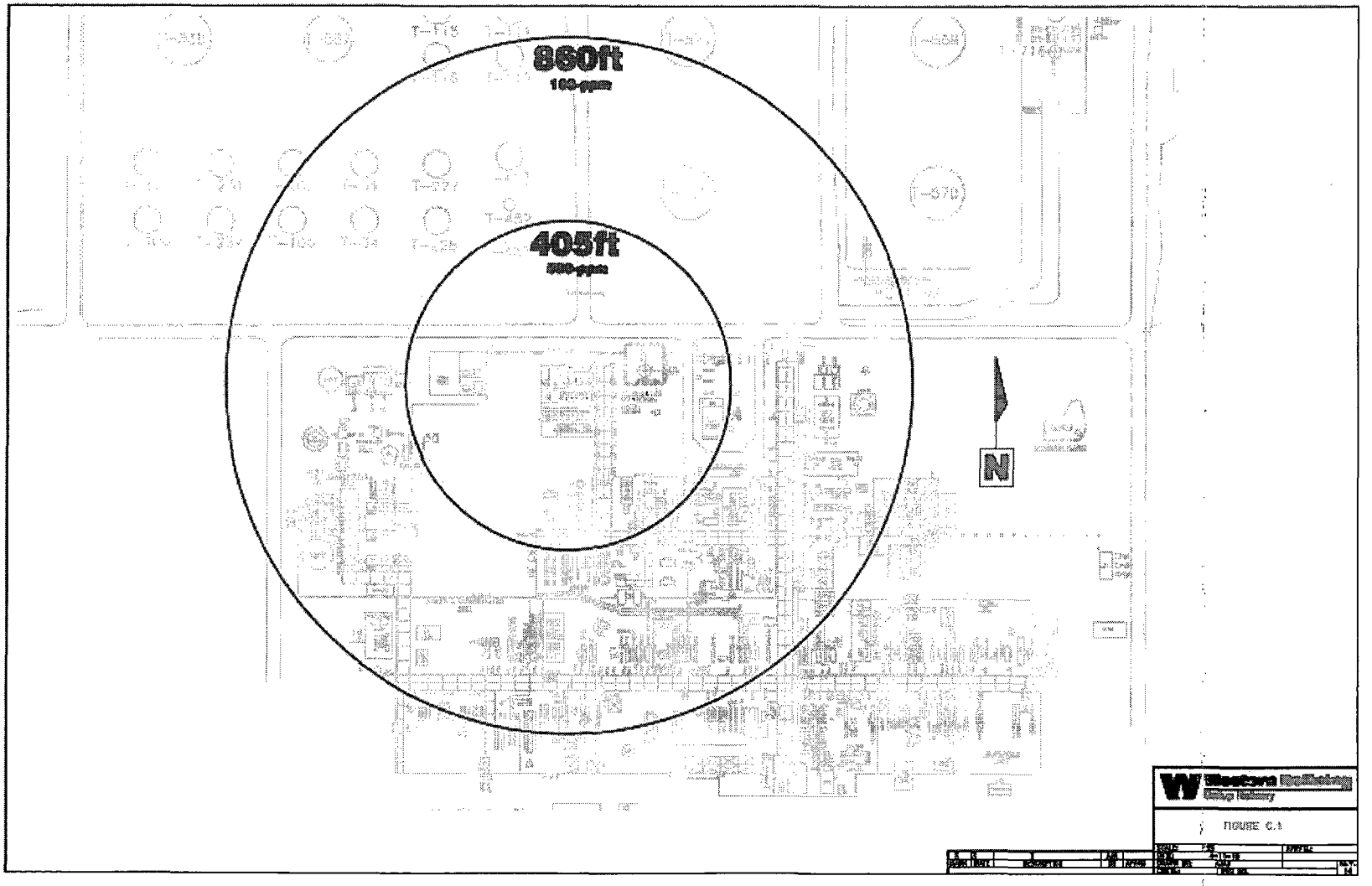
100-ppm Radius of Exposure calculation

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

Where
X = radius of exposure in feet
Hydrogen sulfide concentration = decimal equivalent of mole or volume fraction of hydrogen sulfide in the gaseous mixture
Q = Escape rate expressed in standard cubic feet per day

For, hydrogen sulfide concentration = 451,000 ppm, and Q = 85,000 scf/day,

X = 860 feet


860ft
100-ppm
405ft
N

Appendix B: Figures showing 500-ppm and 100-ppm ROE; locations of wind-indicating devices; and area monitors for H2S

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Wednesday, July 07, 2010 8:11 AM
To: 'Schmaltz, Randy'; 'Riege, Ed'
Cc: VonGonten, Glenn, EMNRD
Subject: FW: Artesia Refinery Public Training Notice H2S Contingency Plan OCD Draft Review

Randy and Ed:

FYI, it appears that Navajo Refining Company is having some issues with its H2S Contingency Plan and what it thinks is necessary to train the public on its H2S Contingency Plan.

I am forwarding this message to you because OCD had intended to use the Artesia Refinery as a public training model for Western's refineries. Please review the information below and contact me by COB this Friday to discuss your refinery's plans for public training on your recently submitted H2S Contingency Plans. The OCD does not want Navajo's delay to become your delay so any thoughts you can provide that can move you forward with your public training process would be appreciated. The OCD wants to work with Western to complete its public training requirement under the H2S regulations. Thank you.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Dept.
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Dr., Santa Fe, New Mexico 87505
Office: (505) 476-3490
Fax: (505) 476-3462
E-mail: CarlJ.Chavez@state.nm.us
Website: http://www.emnrd.state.nm.us/ocd/index.htm
(Pollution Prevention Guidance is under "Publications")

From: Chavez, Carl J, EMNRD
Sent: Wednesday, July 07, 2010 8:07 AM
To: 'Lackey, Johnny'
Cc: Dade, Randy, EMNRD; VonGonten, Glenn, EMNRD; Whatley, Michael; Moore, Darrell; Sanchez, Daniel J., EMNRD; Jelmini, David
Subject: RE: Artesia Refinery Public Training Notice H2S Contingency Plan OCD Draft Review

Johnny:

The OCD has completed its review of your response to the OCD's July 2, 2010 e-mail communiqué associated with the above subject.

The OCD has become more concerned based on your responses, i.e., "The OCD will be notified when the plan is activated due to a H2S release that could result in the public being exposed to H2S concentrations above the 500 or 100 ppm thresholds." It would appear based on your responses that Navajo Refining Company's (NRC) emergency measures are in need of revision?

The purpose of the H2S Contingency Plan (CP) is for NRC to develop a CP that would outline measures taken in the event of a major release of H2S that could adversely affect nearby public areas. All that is remaining for NRC to do is to train the public on its CP and who does what in the event of an emergency.

Therefore, the OCD requires that NRC make a determination on whether it needs to update its emergency measures sections of its CP by COB on Friday, July 9, 2010. If not, NRC should provide an outline of how it proposes to train the general public on its completed CP. If revisions are needed, NRC needs to provide the OCD with a deadline for completion of the updates that will include a date and time for a public training or information meeting to discuss its completed CP emergency measures with the general public to satisfy the intent of the H2S Regulations.

Since NRC has put together its CP with lists of emergency information and contacts, the above should make your meeting straight forward on what you need to train the public about. As you mentioned the refinery has more safety measures than ever, this should highlighted when you discuss the contents of your CP with the public. Thank you.

Carl J. Chavez, CHMM
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Oil Conservation Division, Environmental Bureau
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Fax: (505) 476-3462
E-mail: CarlJ.Chavez@state.nm.us
Website: http://www.emnrd.state.nm.us/ocd/index.htm
(Pollution Prevention Guidance is under "Publications")

From: Lackey, Johnny [mailto:Johnny.Lackey@hollycorp.com]
Sent: Tuesday, July 06, 2010 11:32 AM
To: Chavez, Carl J, EMNRD
Cc: Dade, Randy, EMNRD; VonGonten, Glenn, EMNRD; Whatley, Michael; Moore, Darrell; Sanchez, Daniel J., EMNRD; Jelmini, David
Subject: RE: Artesia Refinery Public Training Notice H2S Contingency Plan OCD Draft Review

See Navajo's response below.

Johnny Lackey
Environmental Manager
Navajo Refining Company, L.L.C.
Office - 575-746-5490
Cell - 972-261-8075
Fax - 575-746-5451
Johnny.Lackey@hollycorp.com

From: Chavez, Carl J, EMNRD [mailto:CarlJ.Chavez@state.nm.us]
Sent: Friday, July 02, 2010 3:41 PM
To: Lackey, Johnny
Cc: Dade, Randy, EMNRD; VonGonten, Glenn, EMNRD; Whatley, Michael; Moore, Darrell; Sanchez, Daniel J., EMNRD
Subject: RE: Artesia Refinery Public Training Notice H2S Contingency Plan OCD Draft Review

Johnny:

Good afternoon. The OCD had perceived from the most recent meetings and communiqués on the above subject with Navajo Refining Company (NRC) that NRC and OCD had identified to use of the public notice as a process for soliciting or peaking the interest of the public or community for the public training requirements of the H2S Regulations for the facility.

Navajo will coordinate notification and training requirements for the public with City officials and determine the most effective method for conducting the training, sharing information, number of meetings required, how to present the training, what the content of the training should be, etc. These details should be planned and organized in advance to most effectively present the information to the public. The Rule does not provide any guidance other than "The hydrogen sulfide contingency plan shall also provide for training of residents as appropriate...and shall provide for briefing of public officials on issues such as evacuation or shelter in place plans". Company and city officials will determine how this should

be addressed now that the plan has been submitted and approved. Navajo has had one meeting with city officials (including OCD Representatives) and is trying to set up another meeting to plan the next step in this process (public awareness and training). Navajo plans to accomplish this through public meetings, if city officials feel this is the most effective way to present this information, and will include the local ERO's. It is anticipated that the ERO's will receive the highest volume of follow-up inquiries (concerns, notifications, fears, etc.). The public notice as it was being developed could have created undue public concerns. The wording suggested by OCD indicates the 'worst case scenario' is imminent. Nothing similar to the 'worst case H2S release scenario' has happened at Navajo in the 41 years since the company was established. In addition, the refinery has many more early warning and mitigation systems in place than ever before, so the likelihood of the 'worst case scenario' is much less likely than it has been in the past. Therefore, information and training must be prepared with a well thought approach by persons with appropriate expertise to prevent creation of unwarranted fears within the public sector. The intent is to inform, not cause alarm.

It is my understanding that NRC and OCD were both aware that the public notice process was not a regulatory requirement, but a path forward process for developing public training interest and to satisfy the H2S Regulations public training requirement. The OCD is on board with NRC in order to meet the public training requirement, but feels based on your message that you are now cutting off communications with the OCD and are attempting to move on your own path to satisfy the OCD H2S Regulations. OCD had indicated that due to the proximity of the public areas and ROEs calculated by NRC in its H2S Contingency Plan for the facility that a public meeting was imminent to make sure the public is informed, trained to know what to do and what will happen in the event of an H2S worse case release scenario that would threaten the safety of the community.

There is no intent to exclude the OCD from this process. As mentioned above, OCD was included in the meeting with city officials to discuss the plan. The Rule gives direction to the company for implementing requirements within the plan as necessary. The OCD will be notified when the plan is activated due to a H2S release that could result in the public being exposed to H2S concentrations above the 500 or 100 ppm thresholds. Navajo fully intends to work with the city officials to provide training and notification to the public. The training content and means to present the training will be developed and approved by those that will assume the burden of satisfying the public need – i.e. the local public officials, ERO's and Navajo.

It appears based on your message below that NRC is uncomfortable with the public notice process and seems to indicate that OCD required it. This is not correct. Therefore, NRC is still obligated to satisfy the H2S Public Training Requirement in the OCD Regulations with the OCD. Based on your reply, "Navajo has no further comment and will work closely with Artesia Public officials to provide for training of residents as appropriate on the proper protective measures to be taken in the event of a release and shall provide for briefing of public officials on issues such as evacuation or shelter in place plans."

The "no further comment" statement was referencing OCD's comments to the Public Notice Draft that was submitted. As stated, after further review the public notice is not required and Navajo was under the impression from our previous meeting that this was a requirement from OCD and was proceeding accordingly. Yes, NRC is uncomfortable with a public notice via newspaper ad especially without inclusion of the local public officials who will be required to respond to perceived as well as actual emergencies.

The OCD hereby requires NRC to provide it with its new training agenda by a date agreed to by the OCD and NRC to satisfy the OCD H2S Regulations and specifically the "Public Training" provision. Please contact me by next Wednesday so we can communicate on NRC's new plans to educate the public and protect public safety based on the H2S Contingency Plan developed by the NRC.

Due to the large role and responsibility that will be required of the local public officials and ERO's, Navajo believes that they must be included in deciding the appropriate date based on the timing required to develop their response plan in the unlikely event of a 'worst case scenario'. Navajo plans to meet with city officials and ERO's to develop communication plans, training requirements and timing. As stated previously, we are trying to schedule this meeting ASAP. Navajo is awaiting response from city officials. Nothing in the rule or API 55 guidance requires companies to furnish the Bureau with training agendas, content or a date to submit this information.

The OCD wishes to communicate and work with NRC to our mutual satisfaction as long as we can meet the intent of the OCD H2S Regulations. Thank you.

Mutual satisfaction must include the local public officials and ERO's.

File: OCD Online GW-028 "H2S Contingency Plan"

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Dept.
Oil Conservation Division, Environmental Bureau
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E-mail: CarlJ.Chavez@state.nm.us
Website: http://www.emnrd.state.nm.us/ocd/index.htm
(Pollution Prevention Guidance is under "Publications")

From: Lackey, Johnny [mailto:Johnny.Lackey@hollycorp.com]
Sent: Friday, July 02, 2010 3:14 PM
To: Chavez, Carl J, EMNRD
Cc: Dade, Randy, EMNRD; VonGonten, Glenn, EMNRD; Whatley, Michael; Moore, Darrell
Subject: RE: Artesia Refinery Public Training Notice H2S Contingency Plan OCD Draft Review

Carl:

After further review and research, Navajo finds no directive in rule 19.15.11, Hydrogen Sulfide Gas or in API Recommended Practice 55 that requires the company to provide notice to the general public regarding H2S Contingency Plans. The Rule you cited in an earlier email (20.6.2.3108) is a requirement for application for a discharge permit, modification or renewal; therefore, Navajo has no further comment and will work closely with Artesia Public officials "to provide for training of residents as appropriate on the proper protective measures to be taken in the event of a release and shall provide for briefing of public officials on issues such as evacuation or shelter in place plans".

Johnny Lackey
Environmental Manager
Navajo Refining Company, L.L.C.
Office - 575-746-5490
Cell - 972-261-8075
Fax - 575-746-5451
Johnny.Lackey@hollycorp.com

From: Chavez, Carl J, EMNRD [mailto:CarlJ.Chavez@state.nm.us]
Sent: Tuesday, June 22, 2010 4:10 PM
To: Lackey, Johnny
Cc: Dade, Randy, EMNRD; VonGonten, Glenn, EMNRD
Subject: FW: Artesia Refinery Public Training Notice H2S Contingency Plan OCD Draft Review

Johnny:

Please find attached OCD's comments on Navajo Refinery's draft public notice. I think some of the items Randy Dade mentioned in his e-mail below should be incorporated into what happens when the contingency plan is activated. Remember that the public needs to be training on what would happen in a worse case scenario so they will know how to react and what to do in the event of a major H2S release to the community.

I had commented that we should just post a public meeting date, time and location to discuss the H2S Contingency Plan Emergency Procedures. Perhaps the meeting could be termed, "H2S Contingency Plan & Public Training Meeting" to satisfy the H2S Regulations.

Please contact me to discuss or resend another draft to Randy and I by COB next Friday, July 2, 2010.

Thank you for your cooperation in this matter.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Dept.
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Dr., Santa Fe, New Mexico 87505
Office: (505) 476-3490
Fax: (505) 476-3462
E-mail: CarlJ.Chavez@state.nm.us
Website: http://www.emnrd.state.nm.us/ocd/index.htm
(Pollution Prevention Guidance is under "Publications")

From: Dade, Randy, EMNRD
Sent: Tuesday, June 22, 2010 1:54 PM
To: Chavez, Carl J, EMNRD
Subject: RE: Artesia Refinery Public Training Notice H2S Contingency Plan OCD Draft Review

It was brought up at the meeting that at the public meeting, both the fire and police departments would be represented. It was also mentioned that all persons in the affected area that had telephone landlines would be notified by reverse 911. Navajo also mentioned setting up a phone system to take calls and leave comments during the initial public notice. I don't have any comments yet. I would like to read the final draft before it goes public. If there is anything else, give me a call, Randy.

From: Chavez, Carl J, EMNRD
Sent: Tuesday, June 22, 2010 1:07 PM
To: Dade, Randy, EMNRD
Cc: VonGonten, Glenn, EMNRD
Subject: Artesia Refinery Public Training Notice H2S Contingency Plan OCD Draft Review

Randy:

Here are my comments. Do you have any? I want to send our draft back to Johnny and let them send us another one to look at....

I think we should also indicate in the end that a public meeting will be scheduled....? Should we schedule a date and time for the public meeting in the public notice to give the location, date and time of the meeting.....

Give me a call to discuss. Thanks.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Dept.
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Dr., Santa Fe, New Mexico 87505
Office: (505) 476-3490
Fax: (505) 476-3462
E-mail: CarlJ.Chavez@state.nm.us
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Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Tuesday, June 29, 2010 10:30 AM
To: 'Schmaltz, Randy'; 'Riege, Ed'
Cc: VonGonten, Glenn, EMNRD
Subject: H2S Contingency Plan Public Notice

Hey guys.

FYI, I will be forwarding you a copy of the most recent public notice draft by the Navajo Refining Company (NRC) next week for consideration in your public notices to the general public with information on what will happen in the event of a worst case scenario from your facility.

Note that NRC held a meeting with the LEPC or Fire Marshall as part of the process to generate a public notice. NRC fell short on the details of evacuation and specifying specifically what actions would be taken in a worst case scenario. So Western may want to meet with the LEPC to see who does what in the event of a worst case scenario. I reference the Hazwoper Guide of evacuations to NRC....

Please contact me if you have questions. Thank you.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Dept.
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Dr., Santa Fe, New Mexico 87505
Office: (505) 476-3490
Fax: (505) 476-3462
E-mail: CarlJ.Chavez@state.nm.us
Website: http://www.emnrd.state.nm.us/ocd/index.htm
(Pollution Prevention Guidance is under "Publications")

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Thursday, May 20, 2010 9:02 AM
To: 'Lackey, Johnny'
Cc: 'Schmaltz, Randy'; 'Riege, Ed'; VonGonten, Glenn, EMNRD
Subject: H2S CP & Public Notice

Johnny, et al.:

FYI, you are probably already aware of the Emergency Response Guidebook usually provided during Hazwoper Training Courses. This gives detailed guidance on evacuation radius, etc.

Also, OCD wants the LEPC and Fire Departments to be fully engaged during facility emergencies. The communities are relying on their local Fire Marshals and Fire Departments to step up to plate when they need to stand and deliver during emergencies. We do not want to see the LEPC excluded or turned away from refinery gates during emergencies at refineries in New Mexico. They must become an integral part of the response, solution, provide command and control infrastructure during an emergency, and catastrophies, etc. Please be sure to include them in the emergency process at the refineries in New Mexico.

Thank you.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Dept.
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Dr., Santa Fe, New Mexico 87505
Office: (505) 476-3490
Fax: (505) 476-3462
E-mail: CarlJ.Chavez@state.nm.us
Website: http://www.emnrd.state.nm.us/ocd/index.htm
(Pollution Prevention Guidance is under "Publications")

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Friday, May 14, 2010 5:54 AM
To: 'Riege, Ed'
Subject: RE: H2S Contingency Plan (GW-032)

Ed:

Ok. Thanks.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Dept.
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Dr., Santa Fe, New Mexico 87505
Office: (505) 476-3490
Fax: (505) 476-3462
E-mail: CarlJ.Chavez@state.nm.us
Website: http://www.emnrd.state.nm.us/ocd/index.htm
(Pollution Prevention Guidance is under "Publications")

From: Riege, Ed [mailto:Ed.Riege@wnr.com]
Sent: Thursday, May 13, 2010 4:34 PM
To: Chavez, Carl J, EMNRD
Cc: Schmaltz, Randy
Subject: RE: H2S Contingency Plan

Carl,

Gallup will also submit a draft for OCD review on or before July 1, 2010.

Thanks,
Ed

Ed Riege
Environmental Manager

Western Refining
Gallup Refinery
Route 3 Box 7
Gallup, NM 87301
(505) 722-0217
ed.riege@wnr.com

Safety starts with "S", but always begins with "You"

From: Chavez, Carl J, EMNRD [mailto:CarlJ.Chavez@state.nm.us]
Sent: Thursday, May 13, 2010 2:36 PM
To: Schmaltz, Randy
Cc: McDaniel, Vic; Robertson, Bill; Riege, Ed; VonGonten, Glenn, EMNRD; Perrin, Charlie, EMNRD
Subject: RE: H2S Contingency Plan

Randy:

Depending on the public interest, it may only become an annual public notice. At most, a 2-hour public meeting would be conducted to go over the H2S Plan and what happens when there is an emergency. What OCD does not to happen, is for the LEPC or Fire Departments to be turned away from emergencies by the refinery, as the communities are relying on

them to keep them safe in an emergency or catastrophic event. We hope the refinery can foster a good working relationship with the LEPC, City Emergency Plan folks, etc. in the community. We may even learn some things from the community on what they view is important by having an open meeting.

OCD looks forward to reviewing Western's public notices by July 1, 2010.

Thank you.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Dept.
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Dr., Santa Fe, New Mexico 87505
Office: (505) 476-3490
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E-mail: CarlJ.Chavez@state.nm.us
Website: http://www.emnrd.state.nm.us/ocd/index.htm
(Pollution Prevention Guidance is under "Publications")

From: Schmaltz, Randy [mailto:Randy.Schmaltz@wnr.com]
Sent: Thursday, May 13, 2010 2:28 PM
To: Chavez, Carl J, EMNRD
Cc: McDaniel, Vic; Robertson, Bill; Riege, Ed
Subject: H2S Contingency Plan

Carl,

In response to your request for a proposed date to submit a draft of Public Notice, Western Refining Southwest Inc. – Bloomfield Refinery will submit a "Draft" for OCD review on or before July 1, 2010. Bloomfield Refinery will schedule a meeting with the LEPC and the Bloomfield Fire Department to get their thoughts and comments to be included in the "Draft". Bloomfield will also have to get approval of the release from Western's legal department.

Thanks

Randy Schmaltz
Environmental Manager

Western Refining Southwest, Inc.
Bloomfield Refinery
#50 County Road 4990
Bloomfield, New Mexico 87413
(505) 632-4171
(505) 320-6989
email: randy.schmaltz@wnr.com

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Thursday, May 13, 2010 2:36 PM
To: 'Schmaltz, Randy'
Cc: McDaniel, Vic; Robertson, Bill; Riege, Ed; VonGonten, Glenn, EMNRD; Perrin, Charlie, EMNRD
Subject: RE: H2S Contingency Plan

Randy:

Depending on the public interest, it may only become an annual public notice. At most, a 2-hour public meeting would be conducted to go over the H2S Plan and what happens when there is an emergency. What OCD does not to happen, is for the LEPC or Fire Departments to be turned away from emergencies by the refinery, as the communities are relying on them to keep them safe in an emergency or catastrophic event. We hope the refinery can foster a good working relationship with the LEPC, City Emergency Plan folks, etc. in the community. We may even learn some things from the community on what they view is important by having an open meeting.

OCD looks forward to reviewing Western's public notices by July 1, 2010.

Thank you.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Dept.
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Dr., Santa Fe, New Mexico 87505
Office: (505) 476-3490
Fax: (505) 476-3462
E-mail: CarlJ.Chavez@state.nm.us
Website: http://www.emnrd.state.nm.us/ocd/index.htm
(Pollution Prevention Guidance is under "Publications")

From: Schmaltz, Randy [mailto:Randy.Schmaltz@wnr.com]
Sent: Thursday, May 13, 2010 2:28 PM
To: Chavez, Carl J, EMNRD
Cc: McDaniel, Vic; Robertson, Bill; Riege, Ed
Subject: H2S Contingency Plan

Carl,

In response to your request for a proposed date to submit a draft of Public Notice, Western Refining Southwest Inc. – Bloomfield Refinery will submit a "Draft" for OCD review on or before July 1, 2010. Bloomfield Refinery will schedule a meeting with the LEPC and the Bloomfield Fire Department to get their thoughts and comments to be included in the "Draft". Bloomfield will also have to get approval of the release from Western's legal department.

Thanks

Randy Schmaltz
Environmental Manager

Western Refining Southwest, Inc.
Bloomfield Refinery
#50 County Road 4990
Bloomfield, New Mexico 87413
(505) 632-4171
(505) 320-6989

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Friday, May 07, 2010 6:39 AM
To: 'Schmaltz, Randy'; Riege, Ed
Cc: VonGonten, Glenn, EMNRD; Perrin, Charlie, EMNRD
Subject: Western Refining SW- Bloomfield (GW-001) & Gallup (GW-032) Refineries H2S Contingency Plans

Randy and Ed:

Good morning. Similar to the Navajo Refining Company (NRC) Refineries in southern New Mexico, the OCD is requiring a public notice of the H2S emergency procedures to fulfill the public training section of the H2S Regulations. I have provided excerpts from OCD's discussions of the public notice to fulfill public training requirements with NRC for your consideration. Note that Western and OCD need to assess the interest from the public based on the public notice in order to determine whether a public meeting should be scheduled. If there is little or no interest, perhaps an annual posting may satisfy the requirement at a certain time each year? Please contact me by next Friday May 14, 2010 COB let me know your plans.

Thanks in advance for your cooperation in this matter.

NRC should look over its recent submittal to address the needed information for the public education/training requirement of the regulations.

OCD looks forward to receiving your draft public notice by June 18, 2010 for final approval or approval with additional requirements from the OCD-EB before the public notice is placed in the local newspaper. A good primer for the public notice process is 20.6.2.3108 NMAC (English and Spanish) which may include posting outside of the classified ad section of the newspaper and at key locations for the general public (i.e., library), etc. NRC should state a time limit to receive inquiries of about 30 days so we can bring closure to the process.

There should be a mail address, e-mail address and telephone number to an Refinery Representative who can answer technical questions, address concerns of callers, and record the concerns of citizens and this log needs to be provided to the local Fire Marshal (or LEPC), State Police, OCD-EB and OCD Aztec District Office for determination of a meeting. The information should identify the exact action steps the refinery working in concert with the local Fire Marshal, State Police, OCD would undertake to protect public safety from a release of H2S and SO2 from the facility. A map with ROEs at a minimum should be displayed.

Carl:

In response to your request for a proposed date to submit a draft of the Public Notice to the OCD, NRC will submit a draft for OCD review on or before June 18, 2010. Navajo will schedule a meeting with the local emergency response groups (Fire Dept., Police Dept.) and District OCD representatives to get their thoughts and comments to be included in the draft as well as approval of the release from our legal department prior to submittal to the local newspaper. NRC will include the OCD recommendations listed below in the notification.

Thanks,

Johnny:

Re: As we discussed, once the plan is approved, NRC will prepare a "Public Notice" for the local newspaper to publish which will serve as notice to those that may be affected by a release from the refinery. I will send a copy of the proposed release to you for review and approval before sending to the newspaper for publishing.

The most immediate concern to OCD based on the NRC Artesia Refinery Plan is the ROEs (100 & 500 ppm) overlapping the nearby community and public health concerns. Fortunately, NRC has maintained good communication throughout the Plan preparation and we discussed a plan for educating the public on what Navajo will do in the event of an H2S release that threatens public safety..

OCD's recommendation and in consideration of any recommendation(s) by OCD District Office Supervisor, NRC shall submit a draft of its public notice for the local newspaper(s) for OCD review and comment. We want the map to be shown, an explanation of what H2S and SO2 are and why they are dangerous, and the emergency action steps that Navajo will undertake to protect the community with a mail address and phone number for all incoming calls on the matter and letters to be logged and shared with the OCD. The OCD's position is that if there is significant interest voiced and/or documented by letter to Navajo, OCD feels it is in the best interest to hold a "Safety Meeting" open to the community where any questions, issues, etc. may be discussed with the community with the local Fire Marshal in attendance along with the OCD.

Please let me know your thoughts with proposed date to submit your draft to Randy and I so we can proceed to address the H2S Public Safety issues together for the NRC Refineries. Thank you.

Copy: GW-001 & GW-032 "H2S Contingency Plan" OCD Online Folder

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Dept.
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Dr., Santa Fe, New Mexico 87505
Office: (505) 476-3490
Fax: (505) 476-3462
E-mail: CarlJ.Chavez@state.nm.us
Website: http://www.emnrd.state.nm.us/ocd/index.htm
(Pollution Prevention Guidance is under "Publications")

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Friday, April 30, 2010 6:40 AM
To: 'Rajen, Gaurav'
Cc: Riege, Ed
Subject: RE: H2S Contingency Plan

Raj:

The OCD is in receipt of your H2S Contingency Plan (Plan). Please consider your submittal to have satisfied the intent of the OCD regulations.

OCD reserves the right to require modifications to the Plan at a future date and will work with Western when, and if necessary.

Thank you.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Dept.
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Dr., Santa Fe, New Mexico 87505
Office: (505) 476-3490
Fax: (505) 476-3462
E-mail: CarlJ.Chavez@state.nm.us
Website: http://www.emnrd.state.nm.us/ocd/index.htm
(Pollution Prevention Guidance is under "Publications")

From: Rajen, Gaurav [mailto:Gaurav.Rajen@wnr.com]
Sent: Wednesday, April 28, 2010 2:16 PM
To: Chavez, Carl J, EMNRD
Cc: Riege, Ed
Subject: H2S Contingency Plan

Dear Carl:

It is a pleasure to submit to you in an electronic fashion a copy of our H2S Contingency Plan and cover letter. We will also be sending paper copies in the mail.

You may have to view some maps and figures in an expanded view in the electronic version. The paper copies will have full-scale maps attached.

Please acknowledge receipt of our submittal when you have a moment.

Gaurav Rajen, Ph.D.
Environmental Engineer
Gallup Refinery, Western Refining
Tel: 505-722-0227

Safety starts with "S", but always begins with "You"

Western Refining
GALLUP

WNR
LISTED
NYSE

April 28, 2010

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

Re: Gallup Refinery H2S Contingency Plan

Dear Carl:

It is a pleasure to send you our H2S Contingency Plan as per the OCD's requirements. We will use this plan to alert and protect the public in accordance with the Subsections B through I of 19.15.11.9 NMAC

As you will note in the plan, there are no off-site impacts even for our worst case scenario, with a large flow rate and an extremely high concentration of H2S. These estimates were performed using OCD guidelines and recommended estimation procedures for the radius of exposure.

We look forward to your review at your earliest convenience, and please contact Gaurav Rajen if you have any questions.

Sincerely,

Ed Riege
Environmental Manager

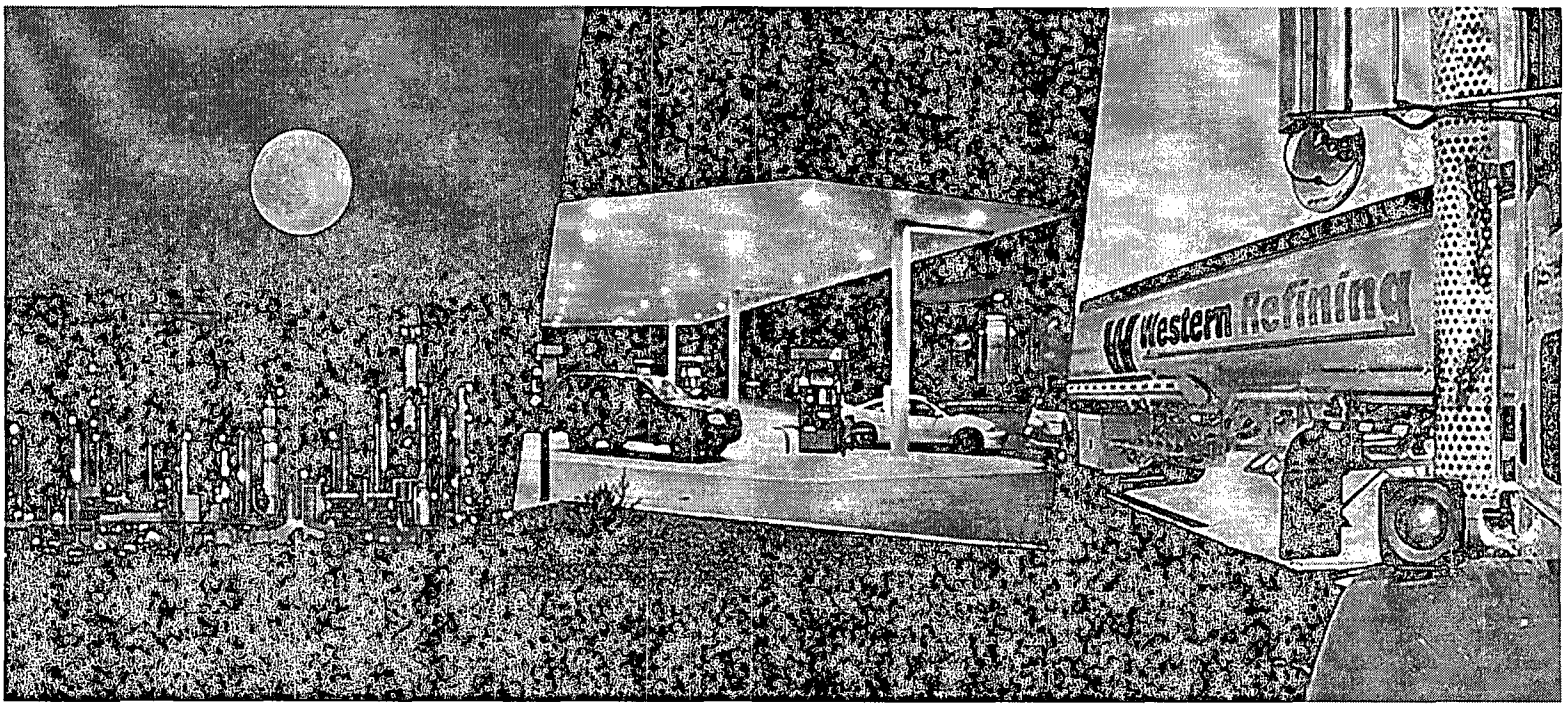
C: G. Rajen

I-40 Exit 39, Jamestown, New Mexico 87347 • 505 722-3833 • www.wnr.com
Mail: Route 3 Box 7, Gallup, New Mexico 87301

H2S Contingency Plan: Gallup Refinery

Western Refining
Gallup, New Mexico

April 2010



H2S Contingency Plan
Gallup Refinery

Western Refining
Gallup, New Mexico

April 2010

Prepared by:

Gaurav Rajen, Ph.D.
Environmental Engineer

Reviewed by:

Ed Riege, M.P.H.
Environmental Manager

Table of Contents

List of Figures

List of Tables

1.0 Introduction

The Gallup Refinery of Western Refining is a hydrocarbon (crude and/or other hydrocarbon feedstock) processing plant that handles and/or generates hydrogen sulfide and/or sulfur dioxide; therefore, this Hydrogen Sulfide Contingency Plan, the "H2S Plan" or the "Plan", has been developed to satisfy the New Mexico Oil Conservation Division Rule 11.

This Plan also conforms to API Recommended Practices for Oil and Gas Producing and Gas Processing Plant Operations Involving Hydrogen Sulfide, RP-55:

Essentially, the Plan creates a site-specific hydrogen sulfide contingency plan that outlines the emergency response procedures that will be implemented to ensure a coordinated efficient and immediate action plan for alerting and protecting operating personnel and the public as well as to prevent or minimize environmental hazards and damage to property. The terms used in this Plan are to be used in the same manner as defined in Title 19 Chapter 15 part II of the New Mexico Administrative code (19.15.11.7 – definitions) unless otherwise noted herein.

1.2 Plant description and maps

This Plan pertains to the Western Refining Southwest Inc. Gallup Refinery located at Exit 39 on Interstate I-40. This refinery is known as the Gallup Refinery and is located at Jamestown New Mexico, approximately 17 miles east of Gallup. Figure 1 shows the regional location of the Gallup Refinery.

The owner is:

	Western Refining	(Parent Corporation)
	123 W. Mills Avenue	
	El Paso, TX 79901	
Operator:	Western Refining Southwest Inc	(postal address)
	Route 3, Box 7	
	Gallup, New Mexico 87301	
	Western Refining Southwest Inc	(physical address)
	I-40, Exit 39	
	Jamestown, New Mexico 87347	

SIC code 2911 (petroleum refining) applies to the Gallup Refinery.

The following regulatory identification and permit govern the Gallup Refinery:

U.S. EPA ID Number NMD000333211
OCD Discharge Permit No. GW-032

The facility status is corrective action/compliance.

The refinery is situated on an 810 acre irregular shaped tract of land that is substantially located within the lower one quarter of Section 28 and throughout Section 33 of Township 15 North, Range 15 West of the New Mexico Prime Meridian. A small component of the property lies within the northeastern one quarter of Section 4 of Township 14 North, Range 15 West. Figure 2 is a topographic map showing the general layout of the refinery in comparison to the local topography. Figure 3 presents the facility boundary.

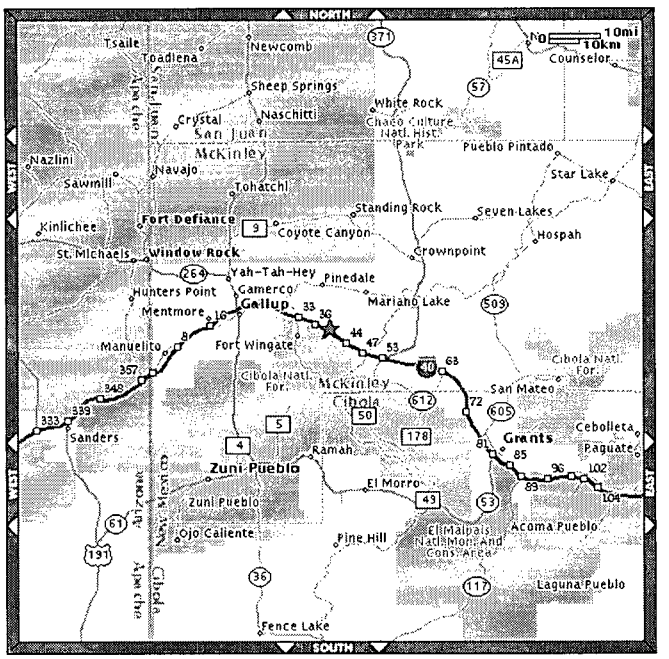


Figure 1: Regional map showing the location of the Gallup Refinery (red star along Interstate-40, 20 miles east of the City of Gallup).

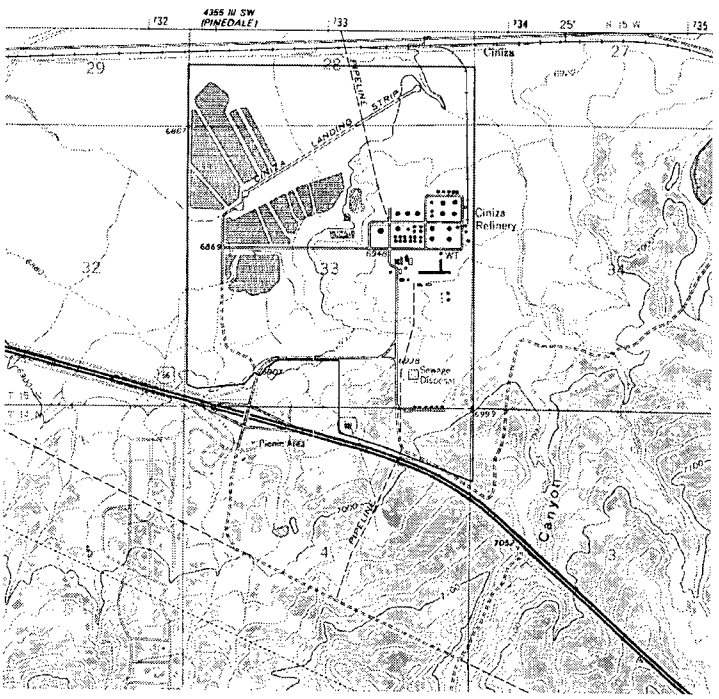


Figure 2: Topographic Map of the Gallup Refinery Site - USGS Topographical Map - Gallup Quadrangle (Revised 1980)

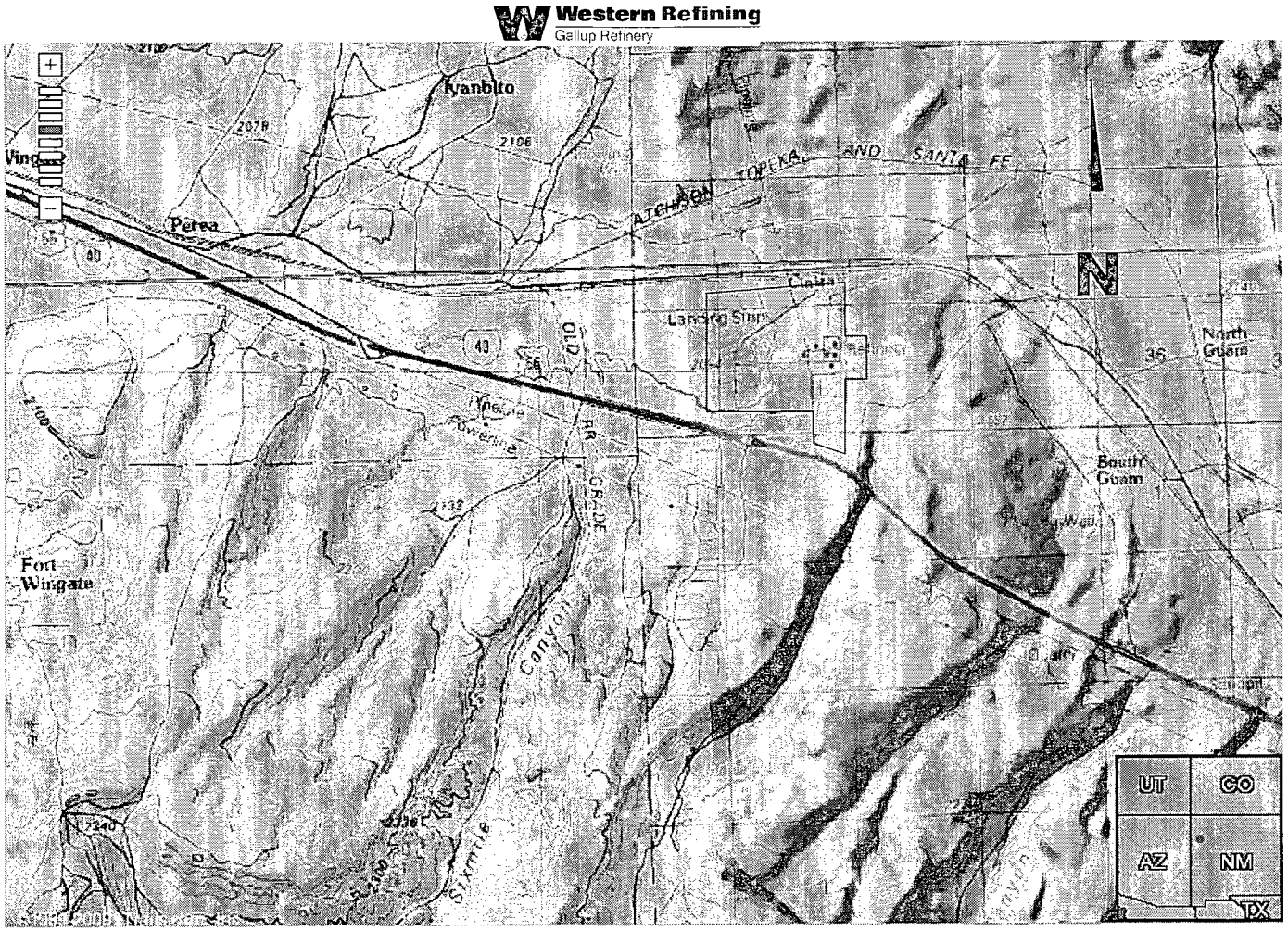


Figure 3: Map showing the facility boundary

Built in the 1950s, and refurbished and expanded over time, a petroleum refinery is located on a man-made terrace towards the central and southern portions of the facility.

The refinery primarily receives crude oil via two 6 inch diameter pipelines; Bisti Pipeline comes down from the Four Corners Area and enters the refinery property from the north and Hospah Pipeline comes in from the northeast and is an interconnection with a main interstate pipeline. In addition, the refinery also receives natural gasoline feedstock via a 4-inch diameter pipeline that comes in from the west along the Interstate 40 corridor from the Conoco gas plant. Crude oil and other products also arrive at the site via railroad cars. These feedstocks are then stored in tanks until refined into products. The refinery has an overall capacity to process up to 23,000 barrels per day of crude oil and additional petroleum hydrocarbon feedstocks.

The Gallup Refinery is a crude oil refining and petroleum products manufacturing facility. The Standard Industrial Classification (SIC) code is 2911 and the NAIC is 32411. There are no organic chemicals, plastics, or synthetic fibers manufactured that contribute to our process flow of wastewater. We do not manufacture lubricating oils.

The Refinery receives and processes crude oil and other feedstocks, and then produces various finished products. These include propane, butane, naphtha, unleaded gasoline, diesel (low sulfur and ultra-low sulfur), and residual fuel. Ammonium Thiosulfate and elemental sulfur are also produced as by-products through our desulfurization processes as described below.

The following regulatory identification and permit governs the Gallup Refinery:

- U.S. EPA ID Number NMD000333211
- OCD Discharge Permit No. GW-032

The Gallup Refinery is located within a rural and sparsely populated section of McKinley County. The setting is a high desert plain on the western slope of the continental divide. The nearest occupied structures are the Pilot (formerly Giant) Travel Center refueling plaza located about a half-mile southeast of the Refinery, and a small cluster of Western-owned employee homes located on the south side of Interstate 40 approximately 2 miles southwest of the Refinery. The Interstate-40 highway corridor passes approximately a half-mile south of the Refinery. The surrounding land is comprised primarily of public lands and is used for cattle and sheep grazing at a density of less than six cattle or 30 sheep per section. McKinley County is predominantly rural, as are the adjoining portions of neighboring counties.

The Refinery incorporates various processing units that convert crude oil and natural gasoline into finished products. These units are briefly described as follows.

- The crude distillation unit separates crude oil into various fractions; including gas, naphtha, light oil, heavy oil, and residuum.

- The fluidized catalytic cracking (FCC) unit breaks up long-chain hydrocarbon molecules into smaller molecules, and essentially converts heavier oils into naphtha and lighter oils.

- The alkylation unit combines specific types of hydrocarbon molecules into a high octane gasoline blending component.

- The reforming unit recombines low octane naphtha molecules to form high octane naphtha.

- The hydrotreating unit removes undesirable sulfur and nitrogen compounds from intermediate feedstocks, and also saturates these feedstocks with hydrogen.

- The isomerization unit converts low octane hydrocarbon molecules into high octane molecules.

- The treater units remove impurities from various intermediate and blending feedstocks in order to produce finished products that comply with sales specifications.

- The ammonium thiosulfate unit accepts high H2S and ammonia containing gas streams from the Amine and the Sour Water Stripper units, and converts these into a useful fertilizer product, ammonium thiosulfate.

- The sulfur recovery unit converts and recovers various sulfur compounds from the gases and liquids produced in other processing units to create a solid elemental sulfur product. This unit only operates when the ammonium thiosulfate unit is inoperable or cannot handle incoming loads.

As a result of these processing steps, the Refinery produces a wide range of petroleum products including propane, butane, unleaded gasoline, diesel, and residual fuel.

Storage tanks are used throughout the refinery to hold and store crude oil, natural gasoline, intermediate feedstocks, finished products, chemicals, and water. These tanks are all located aboveground and range in size from 80,000 barrels to less than a 1,000 barrels. A grouping of tanks is commonly referred to as a "tank farm" such as the hot oil "tank farm".

Pumps, valves, and piping systems are used throughout the refinery to transfer various liquids among storage tanks and processing units.

A railroad spur track and a railcar loading rack are used to transfer feed-stocks and products from refinery storage tanks into and out of railcars.

Several tank truck loading racks are used at the refinery to load out finished products and also may receive crude oil, other feedstocks, additives, and chemicals.

A pipeline from the refinery carries diesel fuel to the Pilot (formerly Giant) Travel Center. Gasoline is delivered to the Pilot Center via tanker truck.

A firefighting training facility is used to conduct employee firefighting training. Waste water from the facility, when training is conducted, is pumped into a tank which is then pumped out by a vacuum truck. The vacuum truck pumps the oily water into a process sewer leading to the New API Separator (NAPIS).

The process wastewater system is a network of curbing, paving, catch basins, and underground piping that collects waste water effluent from various processing areas within the refinery and then conveys this wastewater to the NAPIS.

The NAPIS is a two compartment oil water separator. Oil is separated from water based on the principle that, given a quiet surface, oil will float to the water surface where it can be skimmed off. The skimmed slop oil is passed to a collection chamber where it is pumped back into the refinery process. The clarified water is piped to the top of dual stripping columns where benzene is removed. The stripped water flows into the first aeration lagoon. Sludge sinks to the bottom of the NAPIS which is periodically vacuumed out by a vacuum truck and disposed as hazardous waste at an approved landfill or recycled and reused in refineries that have this allowable exemption under RCRA.

At the stripping columns, ambient air is blown upwards through the falling cascade of clarified wastewater as it passes through distillation column packing. Countercurrent desorption of benzene from the water occurs due to the high volume of air passing over the relatively large surface area provided by the packing. The desorbed benzene is absorbed into the air stream and vented to the atmosphere. Effluent from the stripper columns gravity flows through piping into the first aeration lagoon.

At the aeration basins, the treated wastewater is mixed with air in order to oxidize any remaining organic constituents and increase the dissolved oxygen concentration available in the water for growth of bacteria and other microbial organisms. The microbes degrade hydrocarbons into carbon dioxide and water. Three 15-hp mechanical aerators provide aeration in the first aeration lagoon with two 15-hp aerators providing aeration in the second lagoon. Effluent from the second aeration lagoon flows onward into the first of several evaporation ponds of various sizes.

At the evaporation ponds, wastewater is converted into vapor via solar and mechanical wind-effect evaporation. No wastewater is discharged from the refinery to surface waters of the state because all of the waste water evaporates. Therefore, the refinery is not required to have a NPDES discharge permit for discharge of treated process water. However, the Gallup refinery does have a NPDES permit for storm water discharge.

The storm water system is a network of valves, gates, berms, embankments, culverts, trenches, ditches, natural arroyos, and retention ponds that collect, convey, control, treat, and release storm water that falls within or passes through refinery property. Storm water that

falls within the processing areas is considered equivalent to process wastewater and is sent through the NAPIS, benzene strippers and wastewater treatment system for retention in evaporation ponds. Storm water that falls on undeveloped land is allowed to accumulate behind berms, and discharged if free from contamination. Storm water discharge from the refinery is very infrequent due to the arid desert-like nature of the surrounding geographical area. The Gallup Refinery maintains a storm water pollution prevention plan (SWPPP) that includes Best Management Practices (BMPs) for effective storm water pollution prevention. The refinery has constructed several new berms in various areas and improved outfalls to minimize the possibility of contaminated runoff leaving the refinery property.

2.0 The Plan

2.1 Responsibility for conformance with the H2S Plan

It is the responsibility of all personnel on-site to follow the safety and emergency procedures outlined in the H2S Plan as well as the following documents:

- Integrated Contingency Plan
- Risk Management Plan
- Gallup Refinery Safety and Health Policies, Procedures and Programs
- Western Refining Environmental Policies and Programs

2.2 Revisions to the Plan

The H2S Plan will be reviewed annually by the Refinery's Environment and Safety Departments and revised at the time as necessary to address changes to the Plant facilities, operations, training requirements, contact information, and especially to those areas within the radii-of-exposure.

2.3 Availability of the H2S Plan

The H2S Plan shall be available to all personnel responsible for implementation regardless of their normal location assignment. A copy of the Plan will be maintained at the Plant in the Safety department and at the Western Refining Corporation Headquarters in El Paso, Texas.

2.4 Content of the Plan

At a minimum the H2S Plan will contain information regarding the following: 1) the emergency procedures to be followed in the event of an H2S release that may pose a threat to the Plant, public, or public areas; 2) the characteristics of H2S; 3) a facility description map and/or drawings; and, 4) information regarding training and drills to be conducted related to this Plan.

3.0 Plan Design Considerations

3.1 Characteristics of gases of concern

Major gases and vapors of concern at the Gallup Refinery are – hydrogen sulfide, sulfur dioxide, carbon dioxide, carbon monoxide, ammonia, and hydrofluoric acid vapors. In this plan we are concerned primarily with hydrogen sulfide. Other gases are discussed in other documents of the Gallup refinery, such as the Risk Management Plan, etc. In this section, therefore, we present information on hydrogen sulfide.

Hydrogen Sulfide Properties & Characteristics	
CAS No.	7783-06-4
Molecular Formula	H_2S
Molecular Weight	34.082
TWA	10 ppm
STEL	15 ppm
IDLH	100 ppm
Specific Gravity (air = 1.0)	1.189
Boiling Point	-76.5°F
Freezing Point	-121.8°F
Vapor Pressure	396 psia
Autoignition Temperature	518°F
Lower Flammability Limit	4.3%
Upper Flammability Limit	46.0%
Stability	Stable
pH in water	3
Corrosivity	Reacts with metals, plastics, tissues & nerves

Physical Effects of Hydrogen Sulfide		
Concentration		
ppm	**%**	**Physical Effect**
1	.00010	Can be smelled (rotten egg odor)
10	0.0010	Obvious & unpleasant odor; Permissible Exposure Limit; Safe for 8-hour exposure
15	0.0015	Short Term Exposure Limit (STEL); Safe for 15 minutes of exposure without respirator
50	0.0050	Loss of sense of smell in 15 minutes
100	0.0100	Immediately Dangerous to Life & 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
1,000	0.1000	Instant unconsciousness; followed by death within minutes

3.2 Radii of Exposure (ROE)

For the existing operations, the "Radius of Exposure" for both 500-ppm and 100-ppm of H2S gas was determined using the maximum escape rate and the maximum H2S concentration expected in process gases (worst-case scenario). Details of the rates and other variables used to calculate the ROEs are presented in Appendix A and a figure showing the 500-ppm ROE and the 100-ppm ROE is presented in Appendix B. Appendix B also depicts a figure showing

the locations of wind indication devices that are visible from all locations in the refinery; and a figure showing the locations of H2S area monitors.

Table 1: Calculated ROE for 500-ppm and 100-ppm of H2S gas

Concentration (ppm)	ROE (feet)
500	405
100	860

3.3 Main conclusion

Based on the ROE calculations, there are no impacts to off-site public areas expected from the worst-case scenario. A detailed Process Hazard Analysis of the Amine and Sour Water Stripping Units was conducted for the Gallup Refinery in 2005. This PHA also concluded that there would be no impacts to off-site areas from releases at these units. As there are no off-site impacts expected, even under a highly unlikely worst-case scenario, we have not planned for warning signs to be placed in the external areas of the refinery or for any provisions to raise warning flags. There are adequate signs posted in all areas of the refinery that use or produce H2S and other hazardous gases, and access to such areas within the refinery is extremely secure. All plant personnel will be alerted to dangers through the refinery's warning systems, and the raising of flags is not deemed to be required from within a secure facility for no off-site impacts.

4.0 Emergency Action Procedures

For H2S-related emergencies, signified by any release greater than 10 ppm, the Gallup Refinery has a set of safety policies, procedures and programs provided in Appendix C. Training procedures and requirements are also presented in Appendix C. For ease of revision of this plan, these are not repeated here; and the reader is referred to Appendix C. What is of most relevance is that a response procedure is activated for any levels of H2S greater than 10 ppm, either on a personal monitor or an area alarm.

Because the Gallup Refinery processes crude oils that may be high in hydrogen sulfide (H2S), this highly hazardous gas may be present in specific areas of the plant at various times. Additionally, because accurate detection of H2S is not possible with the normal human senses, we require that all individuals entering the H2S hazard areas of the Gallup Refinery to perform work must wear a personal H2S monitor.

Personal H2S detecting monitor, with audio, visual or digital indicator are set to alarm at 10 PPM. Monitor must be self-calibrating and last at least 24 months.

The following personal H2S monitors have been approved for Gallup Refinery and contractor personnel. The employees may use any model that meets the above specifications.

- Lumidor "Gas Bug" disposable (2 Year) non-digital indicator H2Smonitor
- Lumidor "ToxiBee" disposable (2 Year) H2S Monitor
- BW Technologies "GasAlertClip" (2 Year) H2S Monitor
- Drager PAC 3000, disposable (2 Year) digital indicator H2Smonitor

a. All personnel performing work inside the Gallup Refinery are required to wear a personal H2S monitor. An "area type" monitor is an acceptable substitute for personal monitors if being used as part of a work party.

b. Monitors must be worn between the waist and the chest level, on the outside of all clothing or other protective gear (except in the Alkylation unit when wearing proper Hydro Fluoric Acid Personal Protection Equipment (PPE)) in a manner that the air sensing port is clear of obstructions and the audio, visual or digital indicator is detectable in all noise conditions encountered in the refinery.

c. If the monitor's alarm sounds, the individual must exit the area immediately and notify the Gallup Operations control room. Continuing to work under alarm conditions is a direct violation of company policy and will be considered a very serious violation.

d. In the event that an employee's H2S monitor alarms while making rounds or performing routine duties, he/she must contact the Safety Department or Shift Supervisor who will conduct air sampling of the area with a portable gas monitor to

assist in identifying the source of the H2S. If no source is found the area should be isolated and monitored for four hours, every thirty minutes, to ensure no leaks are encountered. If no more alerts are found in the four hour period, the area can be considered clear, and operators can resume normal duties and rounds through the area.

e. In an urgent situation such as a pump seal failure etc., in an area known to contain H2S gas, the employee may don the necessary PPE (Self-contained Breathing Apparatus (SCBA) or Supplied Air Unit) prior to entering the area only after other actions such as activating a fire monitor to cool or suppress vapors or isolating the equipment from an alternate source is not feasible.
f. When summoned, the Safety Department or Shift Supervisor will approach the area in question from a crosswind or upwind direction and begin sampling to identify the source of the leak. By utilizing a 6' sampling probe and pump driven monitoring device, the Safety Representatives and Shift Supervisor can perform this task with minimum exposure. In the event that their monitoring results indicate elevated levels of H2S gas at or above the 10-PPM level, they shall vacate the area and obtain the necessary PPE (SCBA's) prior to re-entering.

The Gallup Refinery also has an Emergency Response plan that is provided in Appendix D. This plan encompasses H2S-related emergencies. Here, we highlight some of the most relevant sections of these plans.

4.1 Levels of emergencies

There are four levels of emergencies -

Level I Emergency:

A Level I is an emergency which does not require a response by the Refinery Emergency Response Team (ERT). This may be a medical emergency where an employee or contractor is injured or ill, does not require rescue, but needs immediate medical care and transport to an off site medical facility by ambulance. It may involve a fire that was immediately extinguished in the incipient stage by use of a fire extinguisher or a small release that was immediately controlled by closing a valve or shutting down a pump.

At no time shall a fire or release that is not immediately controlled be designated as a Level 1 Incident in anticipation that it will be brought under control by workers in the area. Such an incident shall be designated a Level II emergency.
Level I Audible Signal: None

Level II Emergency:

A level II emergency is one that requires response by the ERT members on-site at the refinery. This response will be for fires or releases which may require Operations and Support Brigade ERT response. All on site ERT members will immediately go to the firehouses, don turnout gear, start equipment and prepare to respond on order from Western Command. All non-essential personnel will move to their emergency assembly points, conduct head count and stand by for instructions.
Level II Audible Signal: Two- Five Second Blasts

Level III Emergency:

This is an out of control emergency which requires a response by all available refinery ERT members and a major response by Mutual Aid Resources. Level III fires and releases are large, dangerous events which will require the commitment of major resources. In the case of a Level III emergency, Security will initiate the Emergency Response Call Out System for off-duty refinery personnel. Call Out Instructions are kept at the Main Gate and Shift Supervisors Office. All non-essential personnel will move to their emergency assembly points, conduct head count and stand by for instructions.
Level III Audible Signal: Two - Five Second Blasts

Level IV Emergency:

This is any out of control emergency which requires evacuation of the refinery and the surrounding community. See Appendix D for evacuation details.
Level IV Audible Signal: Four - Five Second Blasts

All Clear:

Western Incident Command shall make the determination when the All Clear is to be sounded. This incident status will indicate that the incident is stabilized and the majority of normal operations can be resumed. All work in the refinery must be re-permitted.

Audible Signal: Three (3) - Five Second Blasts

Table 2: Incident Level Summary Table

Incident Level	ERT Response	Evacuation	Audible Alarm
I	None	None	None
II	On-site ERT	Partial to Safe Havens	Two Blasts
III	ERT call-out	Non-essential personnel to Safe Havens	Two Blasts
IV	Controlled Evacuation	Full Evacuation	Four Blasts
All Clear		return to workstations	Three Blasts

Appendix D details the roles and responsibilities of each Western member of the Unified Incident Command structure and details how the Refinery emergency response organization will interface with the New Mexico State Police and Mutual Aid Resources.

4.2 Emergency response organization

On Scene Command: (filled by Emergency Response Coordinator or Shift Supt.)

- Respond to and initiate size-up of incident. Determine if there are casualties or, missing personnel. Determine if there are personnel who need rescue.
- Provide briefing on conditions and needs at the scene of the emergency, particularly if medical or rescue assistance is needed.
- Develop initial tactical plan and deploy resources. Use ERT (or Rescue Squad if needed) to evacuate non-ambulatory casualties to EMS pick up sites as soon as possible.
- In conjunction with Refinery Security and the McKinley County Sheriff's Department, secure the Refinery from unauthorized entry and establish access control.

Western Liaison: (role filled by Operations Off Sites Terminal Operator or his designee upon arrival of Mutual Aid Resources)

- Join with the Mutual Aid Resources Incident Commander in staging area South of Guard Gate and give briefing on the emergency. Notify On Scene Command of the arrival of Mutual Aid Resources. NOTE: The New Mexico State Police IC is legally in charge of the incident and is the final authority in the decision making process.
- Establish communication with Western On Scene Command and obtain briefing on the conditions and needs at the scene of the emergency.
- Maintain constant communication with the Mutual Aid Resources Incident Commander, keeping him apprised of Plant operational concerns and coordinate Western emergency response activities.
- Maintain constant communication with Western Emergency Operations Center (EOC) and keep them apprised of emergency response activities. Coordinate with EOC to insure that all necessary resources are obtained and support activities occur.
- In conjunction with Refinery Security and the McKinley County Sheriff's Department, secure the Refinery from unauthorized entry and establish access control.

Safety Officer(s): (Safety Supervisor)

- Respond to incidents and establish communication with the Western On Scene Command.
- Establish and delineate the boundaries of the "Hot Zone". Notify Western Command when this is done.
- Establish communication with Mutual Aid Resources Safety Officer or other agency with jurisdiction and coordinate safety efforts.
- Continuously monitor conditions at the scene to protect responders and verify location of "Hot Zone" boundaries.
- Provide frequent updates to Western Incident Command on Safety issues.

ERT Team Leaders: (role filled by selected members of ERT)

- Respond to scene and fill role of Emergency Team Leader.
- As Team Leader, respond to firehouse with team members. Establish communication with Western On Scene Command and respond to scene with team and apparatus on order from Western Command.
- As Team Leader, direct and control the deployment of ERT members and equipment.
- As Team Leader, provide frequent situation updates to Western On Scene Command including needs and requirements to sustain or withdraw the team as appropriate.

EMERGENCY OPERATIONS CENTER

The Emergency Operations Center (EOC) will be established in the Administration building main conference room for all LEVEL II and greater emergencies. The EOC will be the focal point for coordinating all support aspects of the Refinery's response to the incident.

EOC ROLES AND RESPONSIBILITIES

Incident Command /EOC Director: (Role filled by Refinery Manager or designated member of Management)

- Provide overall guidance and direction for the Refinery's response.
- Spokesperson for the Refinery to local city/county government figures.

- Directs HR/PIO Manager as necessary in dealing with the media, public or employees and families (particularly in major events involving casualties or personnel evacuation)..
- A current copy of the Corporate "**Crisis Communication Plan**" will be readily available in the Emergency Control Center for reference by members of local management
- Directs the Logistics Officer in provided needed support for the incident.

Logistics Officer: (role filled by Maintenance Manager or designee)

- Respond to Emergency Operation Center and establish communication with IC.
- Provide logistical support to response and support personnel as requested by IC and/or On Scene Western Command including but not limited to:
    - Food and Water.
    - Fire Fighting Foam Re-supply.
    - Heavy Equipment.
    - Spill Control Equipment.
    - Responder Rehabilitation Facilities.
    - Lighting and Electrical Power
    - Shade From Heat
    - Portable Bathroom Facilities
    - Radios and Replacement Batteries
    - Breathing Air Bottle Re-Filling
    - Air Purifying Respirators
    - Chemical Suits
- Establish communications with Mutual Aid Resources logistics and staging officers to coordinate procurement and distribution of supplies and equipment.
- Provide updates to IC and EOC on status of logistic requirements.

Manager of Human Resources/Public Information Officer (PIO): (normally filled by the Manager of Human Resources)

- Provides overall guidance and direction to staff in the EOC in dealing with the media, the public and employees and their families.
- Prepares and presents briefings to the media as necessary.
- Contacts employee family members in the event employees are injured.

- Contacts needed off-duty employees to return to the refinery as required. Those individuals on the Call-Out list will have been called by Security.
- Updates IC on HR/PIO issues as appropriate.

Finance Director: (role normally filled by Accounting Manager)

- Provide overall guidance and direction to logistics, finance and purchasing effort for the Refinery response.

Purchasing Director: (role normally filled by Purchasing Manager)

- Process and direct any requests for unique or specialized equipment and for purchase of supplies and materials from the Logistics Officer.

Environmental Director: (role filled by Environmental Manager)

- Provide overall guidance and direction to the environmental staff in support of the response.
- Communicate with and provide guidance to IC and Western On Scene Command on environmental issues arising as a result of the incident.
- Prepare and present briefings to Federal/State or Local authorities and/or media on environmental issues related to the incident.
- Update IC on environmental concerns and status of any remediation efforts.

4.3 Plant evacuation, emergency assembly areas, and emergency response contact lit and telephone numbers

This section is to be used if shelter-in-place or evacuation procedures need to be implemented in the Refinery, associated facilities or the surrounding community.

There are incident scenarios which could require Refinery workers and/or people in the surrounding community to either shelter-in-place or evacuate to a safe area. The Western Incident Command in communication with On Scene Command must rapidly evaluate the situation and initiate the appropriate actions to protect life and safety. Depending on the location and severity of the incident, personnel may be required to:

- Evacuate threatened portions of the Refinery to designated "Safe Havens" (Modular Office Complex) and shelter-in-place.

- Evacuate the Refinery and surrounding community for a radius of up to two miles from the source.

During an emergency "Western Command" will determine the required action to be taken by refinery employees. This will be communicated by Radio Channel One & Two and repeated by Security on the remaining radio channels. The required actions to be taken will be indicated as follows:

LEVEL I INCIDENT No action required by personnel outside of the affected unit. (no audible alarm)

LEVEL II INCIDENT Limited evacuation from specified emergency locations of non-essential personnel to designated safe havens.

LEVEL III INCIDENT Limited evacuation from specified locations to full evacuation from the refinery of all non-essential personnel to designated safe havens.

LEVEL IV INCIDENT Full evacuation of the refinery to the off-site assembly point.

SHELTER-IN-PLACE

Move all Refinery personnel to Safe Havens (Modular Office Complex). The route taken should be crosswind to the release. Evacuation of control room should be based on proximity to the release, wind direction and air monitoring results. It may be necessary to advise the NMSP IC to evacuate the surrounding community within a radius of one-half to one mile of the release.

Scenarios which may require evacuation from threatened locations to "Safe Havens" for shelter-in-place:

- Large release of hydrogen sulfide (H_2S) gas.
- Release of HF Acid
- Moderate Release with Vapor Cloud Explosion (VCE) potential

SAFE HAVENS

Because of their construction and location, the Safe Havens listed below will provide protection for H_2S releases and VCE/Boiling Liquid, Expanding Vapor Explosion (BLEVE) events in lieu of full evacuation of the refinery.

- Administration Building west side offices.
- South Modular Office Buildings

- Pilot Travel Center

SHELTER-IN-PLACE GUIDELINES

When sheltering in place the following guidelines should be adhered to:

- Move to interior offices or center of building away from all windows and glass doors. Close doors.
- If toxic gas is a hazard, shut down HVAC systems and seal cracks around doors with tape.
- Supervisors obtain shelter count by name and total number in shelter. Give count to IC if requested.
- Monitor radio channel I for additional instructions or All-Clear signal.
- Remain in shelter until All-Clear is sounded or additional instructions are received from IC.
- Remain calm.

REFINERY-WIDE / PUBLIC EVACUATION

Scenarios which would require evacuation of the Refinery and surrounding community out to a radius of up to one mile will involve a potential LPG vessel BLEVE or large VCE threat. Advise the NMSP IC to evacuate the surrounding community according to the county's Emergency Operations Plan. This may include occupied areas within a radius of up to one mile of the release.

EVACUATION ROUTES

Potential BLEVE or large VCE threat. Employees should take a crosswind path away from the release following a route directly away from the incident:

EVACUATION GUIDELINES

The following guidelines should be followed when evacuating the refinery:

- Distance will be determined by the nature and location of the incident and be made by the Western Incident Command in communication with the On Scene Command.
- Evacuation will be on foot or by company vehicles. Personnel with company vehicles should pick up passengers on the way to Modular Office Complex. Vehicles will be driven slowly and carefully to avoid injury to personnel.

- Evacuating personnel should take small personal items of a valuable nature, required medication and appropriate clothing if weather is a factor.
- Evacuating control houses and leaving process plants running is an extremely difficult decision. But the control houses are not adequate protection in some scenarios and should be evacuated. Plant Operators should do what they can to "safe" the plants before they evacuate the control houses.
- Supervisors and Security Officers will assist in guiding personnel to the evacuation route and final assembly point.
- At the final assembly point, roll shall be taken and all personnel accounted for. Each work group supervisor will account for their personnel and report to the HR Manager. The IC will be notified of the results of the roll call.
- The Incident Command and Emergency Operation Center (EOC) will be moved to the Modular office Complex.
- Personnel will remain in the Final Assembly Area until relocated by bus to other shelter, released to go home, or until they

Table 3: Emergency Notification Telephone List

Name	Telephone Number
Mark Turri, Refinery Manager	505-979-1320
Dan Farris, Safety Manager	505-879-1023
Teddy Orr, Safety Inspector	505-870-8258
Pipeline, Bisti Station	505-632-8006
Pipeline, Hospah Station	505-632-8006
Conoco Natural Gas, Wingate	505-863-3900
Rinchem Company	505-345-3655
Fuhs Trucking Company, Gallup	505-722-6909
Riley Industrial Services	505-327-4947
Gallup Fire Department/Ambulance	911
Gallup Police Department	911
Thoreau Fire Department/Ambulance	505-862-7770
Fort Wingate Fire Department	505-488-5261
Med Star Ambulance	505-722-7746
Whispering Cedars Fire Department	911 - or – 505-488-5528
City of Gallup – 24 Hour Emergency	505-863-1200
Local Emergency Planning Committee (LEPC)	911
McKinley County Sheriff's Office	505-863-1410/ 505-722-7205
New Mexico State Police	505-863-9353
State Emergency Response Commission (SERC)	505-476-9681
State of New Mexico Hazardous Materials Emergency, Santa Fe	505-476-9681
State of New Mexico Oil Conservation Division, Aztec	505-334-6178
State of New Mexico Environmental Department, Gallup	505-722-4160
State of New Mexico Environmental Department, Santa Fe	505-827-9329
National Response Center	1-800-424-8802
Federal On-Scene Coordinator (OSC)	214-665-6489
Environmental Protection Agency, Region VI	214-655-7112
OSHA Regional Office	505-248-5302
Navajo EPA, Arlene Arthur	928-871-7994
Rehoboth McKinley County Hospital	505-863-7000
Santa Fe Railroad Trainmaster	505-722-2
Radio Station KGAK	505-863-4444
Radio Station KGLX/FM Q106	505-863-9391
Radio Station KXTC	505-722-4442
Television Station KOBF	505-863-2413
Television Station KRQE	505-243-2285
Weather Service (Albuquerque)	505-243-0702
New Mexico State Road Conditions	505-863-9353

Appendix A: ROE Calculations

Worst-case Scenario

The Amine unit has the highest level of H2S concentration in its process gases. This concentration has been measured previously as 451,000 ppm.

The average measured flow rate in the amine unit of high-H2S containing process gases, as measured in recent months (at maximum charge rates), is 80,000 scf/day, rising to a temporary (< 1-hour) maximum of about 90,000 scf/day. Therefore, we have assumed a maximum escape rate that lasts a whole day as 85,000 scf/day.

The worst-case scenario that we assume is that process gases from the Amine unit at 451,000 ppm of H2S are released for a 24-hour period at the flow rate of 85,000 scf/day.

In the existing situation, if there was a failure of ay kind at the Amine unit, high-H2S gases would be routed to the Sulfur Recovery Unit (SRU) and treated. If the SRU unit also failed, the gases would be routed to the flare system. And, if the flare system also failed, the units would be shut down. Therefore, there is almost no possibility of high-H2S gases being continuously released from the Amine unit at 451,000 ppm and at a flow rate of 85,000 scf/day, for a full 24-hour period.

By assuming this extreme and unlikely worst-case scenario, we have accounted for all other less worse scenarios.

Radius of Exposure Calculations

The formula for calculating the two ROEs (as specified in the OCD regulations) are as follows:

500-ppm Radius of Exposure calculation

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

Where
X = radius of exposure in feet
Hydrogen sulfide concentration = decimal equivalent of mole or volume fraction of hydrogen sulfide in the gaseous mixture
Q = Escape rate expressed in standard cubic feet per day

For, hydrogen sulfide concentration = 451,000 ppm, and Q = 85,000 scf/day,

X = 405 feet

100-ppm Radius of Exposure calculation

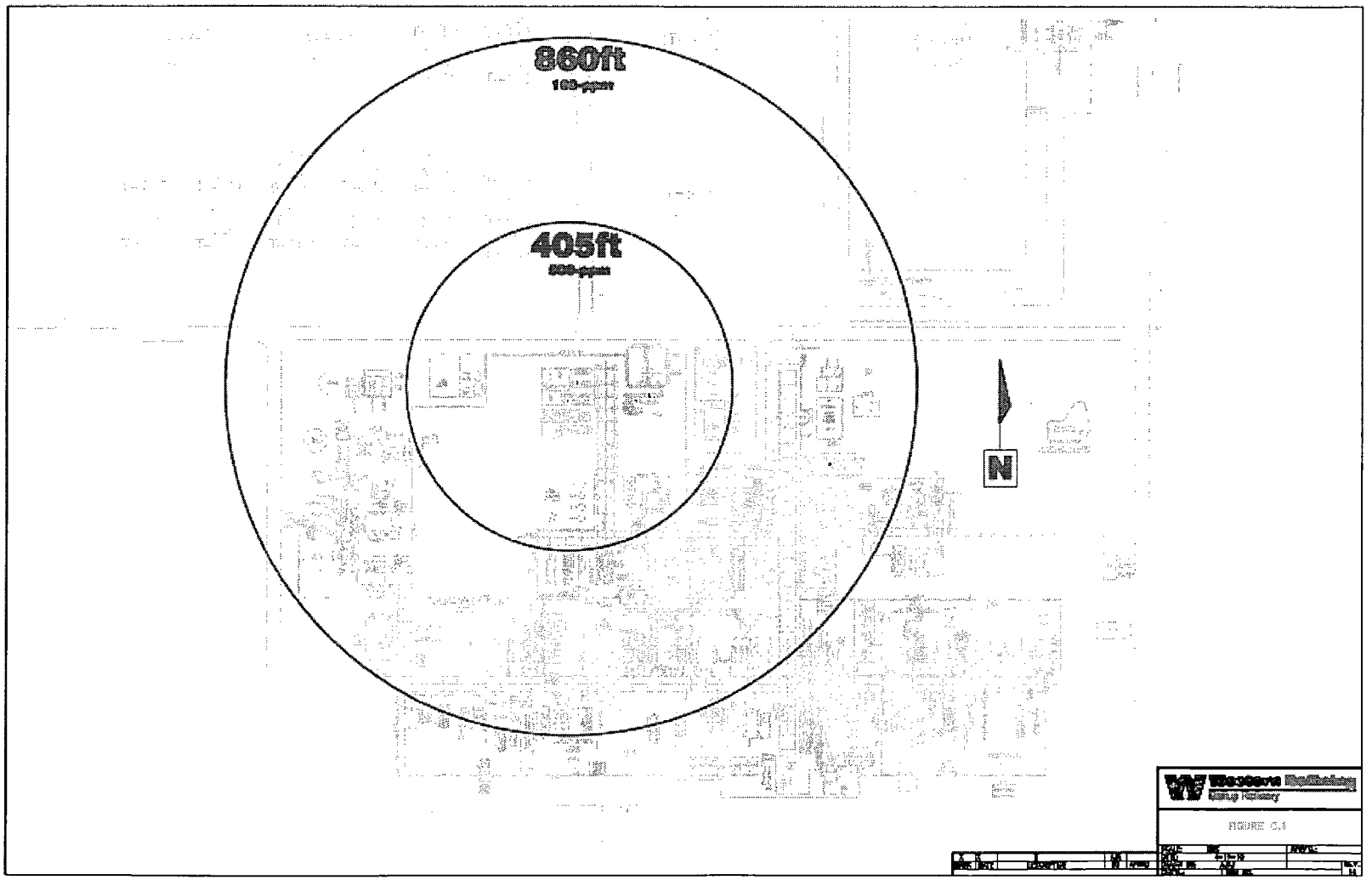
$X = [(1.589)(\text{hydrogen sulfide concentration})(Q)]^{0.6258}$

Where
X = radius of exposure in feet
Hydrogen sulfide concentration = decimal equivalent of mole or volume fraction of hydrogen sulfide in the gaseous mixture
Q = Escape rate expressed in standard cubic feet per day

For, hydrogen sulfide concentration = 451,000 ppm, and Q = 85,000 scf/day,

X = 860 feet

Appendix B: Figures showing 500-ppm and 100-ppm ROE; locations of wind-indicating devices; and area monitors for H2S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405ft
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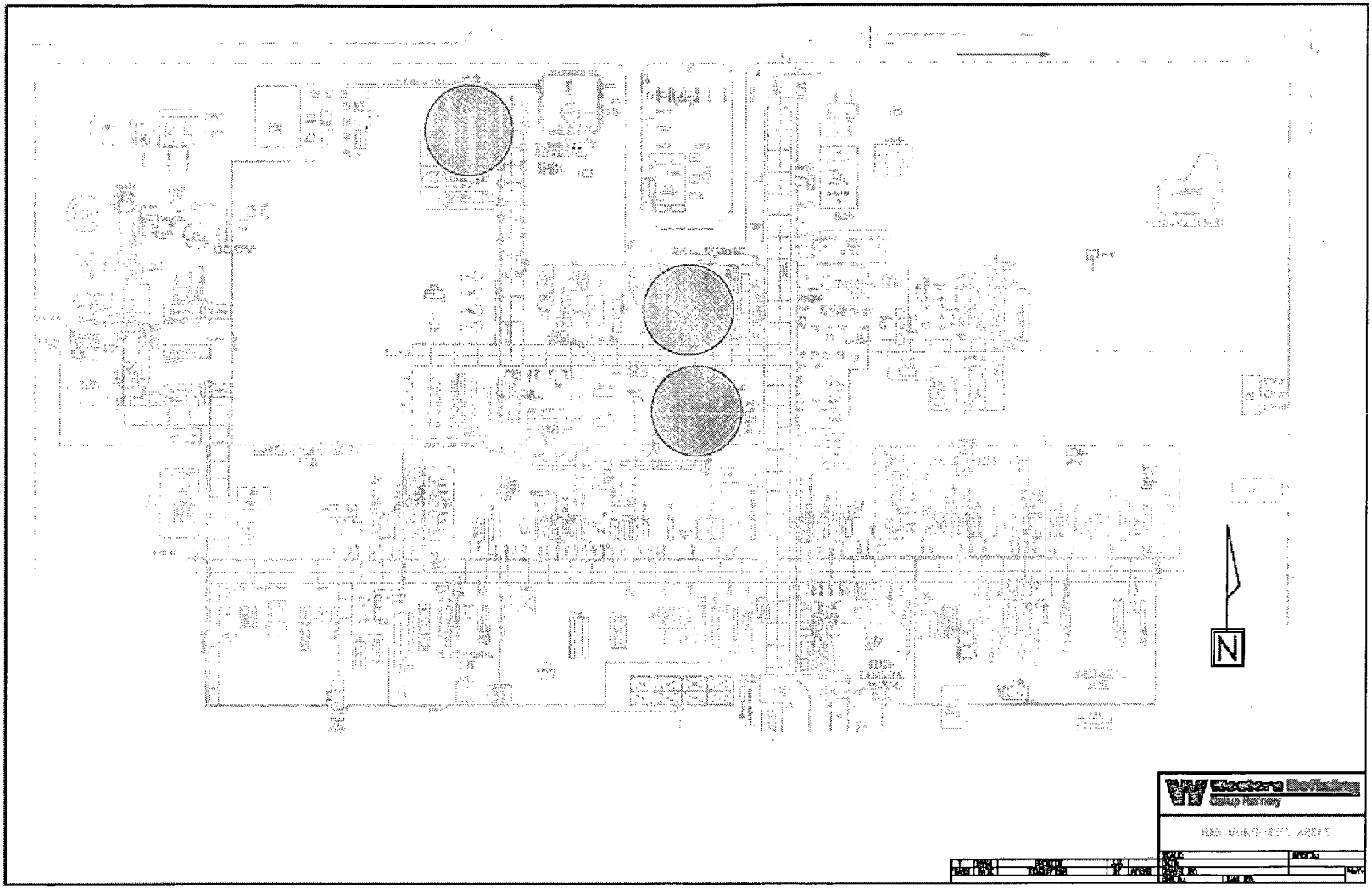
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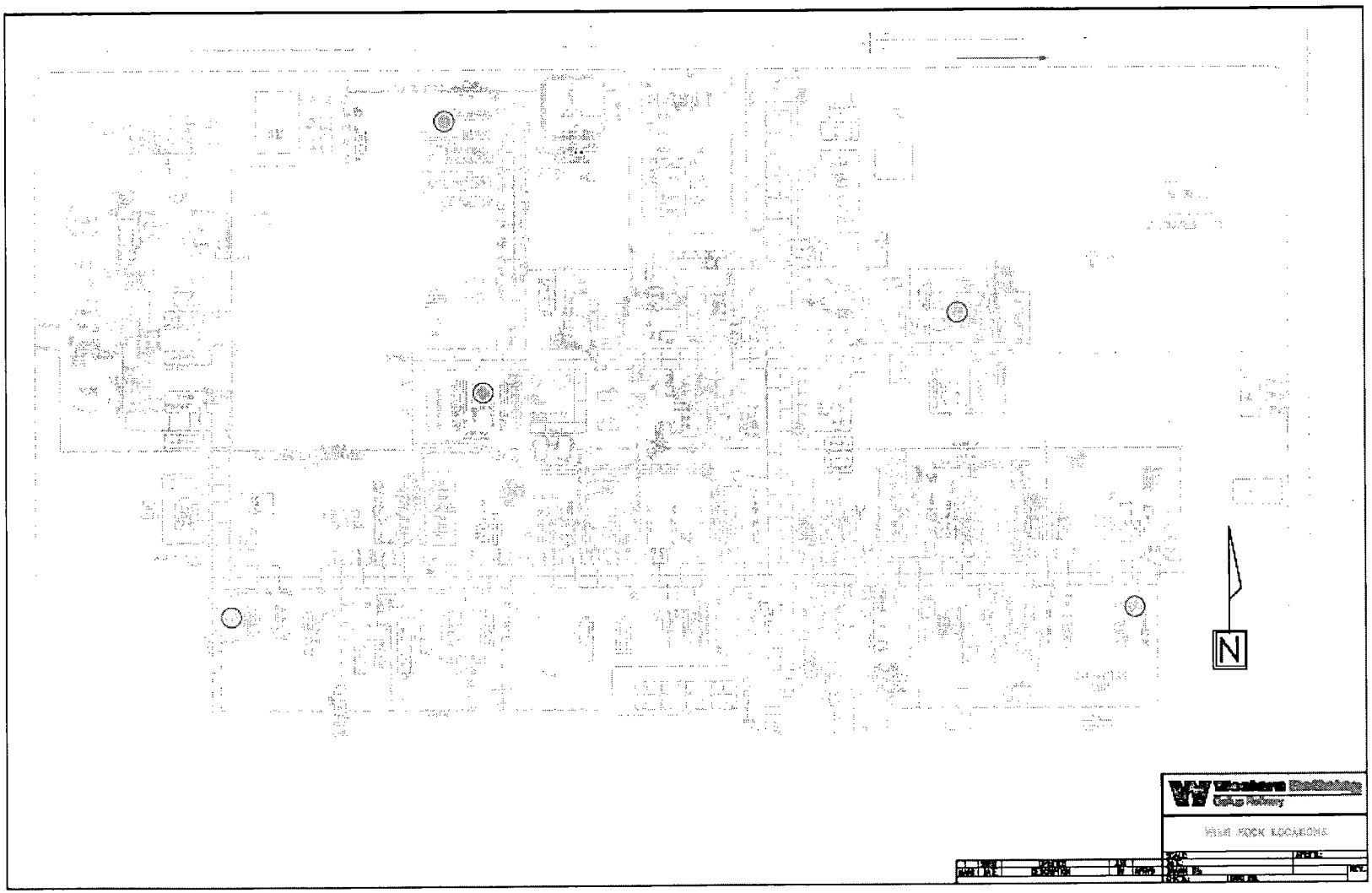
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Appendix C: H2S-related Safety Policies and Procedures

SAFETY POLICY – SAFE WORK PROCEDURE
SAFE WORK PROCEDURE #109

PURPOSE:

To establish procedures defining required activities in support working around H2s and potential H2S sources.

SCOPE:

The intent of this procedure at a minimum is to meet the requirements of 29 CFR 1910.119.

PROCEDURE:

H2S Work Procedure

To specify the minimum protection required when working in areas that may contain Hydrogen Sulfide (H2S) gas. Because the Gallup Refinery processes crude oils that may be high in hydrogen sulfide (H2S), this highly hazardous gas may be present in specific areas of the plant at various times. Additionally, because accurate detection of H2S is not possible with the normal human senses, we require that all individuals entering the H2S hazard areas of the Gallup Refinery to perform work must wear a personal H2S monitor.

Monitor Specifications

Personal H2S detecting monitor, with audio, visual or digital indicator set to alarm at 10 PPM. Monitor must be self-calibrating and last at least 24 months.

Approved Models

The following personal H2S monitors have been approved for Gallup Refinery and contractor personnel. The employees may use any model that meets the above specifications.

Lumidor "Gas Bug" disposable (2 Year) non-digital indicator H2Smonitor

Lumidor "ToxiBee" disposable (2 Year) H2S Monitor
BW Technologies "GasAlertClip" (2 Year) H2S Monitor
Drager PAC 3000, disposable (2 Year) digital indicator H2Smonitor

H2S Monitor Safety Requirements

a. All personnel performing work inside the Gallup Refinery are required to wear a personal H2S monitor. An "area type" monitor is an acceptable substitute for personal monitors if being used as part of a work party.

b. Monitors must be worn between the waist and the chest level, on the outside of all clothing or other protective gear (except in the Alky when wearing proper H.F. Acid PPE) in a manner that the air sensing port is clear of obstructions and the audio, visual or digital indicator is detectable in all noise conditions encountered in the refinery.

c. If the monitor's alarm sounds, the individual must exit the area immediately and notify the Gallup Operations control room. Continuing to work under alarm conditions is a direct violation of company policy and will be considered a very serious violation.

d. In the event that an employee's H2S monitor alarms while making rounds or performing routine duties, he/she must contact the Safety Department or Shift Supervisor who will conduct air sampling of the area with a portable gas monitor to assist in identifying the source of the H2S. If no source is found the area should be isolated and monitored for four hours, every thirty minutes, to ensure no leaks are encountered. If no more alerts are found in the four hour period, the area can be considered clear, and operators can resume normal duties and rounds through the area.

e. In an urgent situation such as a pump seal failure etc., in an area known to contain H2S gas, the employee may don the necessary PPE (SCBA or Supplied Air Unit) prior to entering the area only after other actions such as activating a fire monitor to cool or suppress vapors or isolating the equipment from an alternate source is not feasible.

f. When summoned, the Safety Department or Shift Supervisor will approach the area in question from a crosswind or upwind direction and begin sampling to identify the source of the leak. By utilizing a 6' sampling probe and pump driven monitoring device, the Safety Representatives and Shift Supervisor can perform this task with minimum exposure. In the event that their monitoring results indicate elevated levels of H2S gas at or above the 10-PPM level, they shall vacate the area and obtain the necessary PPE (SCBA's) prior to re-entering.

OPERATIONS & MAINTENANCE RESPONSIBILITIES

a. If maintenance is required on a piece of equipment which may contain H2S gas, it shall be the responsibility of operations to ensure that the equipment has been blocked in and de-energized.

b. Before first-break, sampling will be done, if possible, to determine if H2S exposures will exceed 10 PPM. If sampling cannot be performed, the necessary PPE must be worn (SCBA or Supplied Air Unit) with personal H2S Monitor.

c. When samples indicate that the atmosphere concentrations are above 10 ppm or the operator overseeing the work believes the potential for this exposure level exists, SCBA's or supplied air shall be required and the following steps shall be taken:

1. The equipment shall be blinded in accordance with the Lockout/Tagout Safety Procedure.
2. Escape routes and a rescue plan must be discussed between all.
3. An independent air supply for standby personnel must be onsite and available if needed.
4. Communication requirements are in place (visual, verbal, radio, etc.)
5. The Shift Supervisor and/or Safety shall be notified before the work under breathing air is started.
6. The Shift Supervisor and/or Safety shall be notified when the work under breathing air has been completed.

NOTE: IF IN DOUBT ABOUT ANY OPERATION WITH H2S, CONTACT THE SAFETY DEPARTMENT FOR FURTHER DIRECTIONS OR ASSISTANCE.

SAFETY POLICY AND PROCEDURE #208
FACILITY SAFETY ORIENTATION ALL PERSONNEL

SAFETY ORIENTATION GUIDE

The following Safety orientation is being presented to provide you with the information you will need in order to work in compliance with Gallup Refinery Policies and Procedures and in a safe manner at this facility. To accomplish this, you will need to comply with the policies and procedures as presented in this orientation. Detailed and specific instructions concerning work procedures and emergency action plans are contained in the Gallup Refinery "Standard Safety Procedures" manual and the "Emergency Procedures" manual. Questions that arise during work activities may be answered by contacting your supervisor, reviewing these manuals, or consulting with the Gallup Refinery Safety Department.

POTENTIAL HAZARDS AT THE REFINERY

Fire & Explosion: WNR Refinery process crude petroleum into various hydrocarbon products which are heavier and lighter than air. These products are extremely combustible and flammable. Prudent management of all ignition sources through the WNR Refinery Permit process will be required at all times.

Health: WNR process, generate and / or utilize the following gases and vapors which exhibit various toxic properties: Hydrogen Sulfide (H_2S), Caustic Soda (NaOH), Hydrofluoric Acid (HF), Ammonia (NH3), and Carbon Monoxide (CO). Areas of the Refinery where these products may be encountered are marked, labeled, and monitored. Personal monitors are required when any work is performed where there is a potential for exposure to the Employee.

Physical: WNR processes create hot surfaces and involve rotating equipment.

Hazards Marking:
Red Barricades / Tape: Do Not Enter these areas unless by Permit.
Yellow Barricades / Tape: Proceed With Caution after inspecting the area for the hazards being barricaded. (The Contractor will be expected to notify WNR Operations and Safety Departments and barricade and mark any hazards created by the Contractor accordingly.)

Various signs and labels are used throughout the Refinery to warn, notify, and instruct personnel. Contractors are expected to read and adhere to posted warnings and instructions. Do not block or alter any signs or labels. Products to which the Contractor has potential for exposure will be identified to the Contractor by WNR. A Material Safety Data Sheet (MSDS) may be requested by anyone for any product at any time, if not already provided by WNR in the course of permitting the job tasks.

EMERGENCY GUIDELINES

Emergencies:

Emergencies may occur while you are working in the facility. Emergencies are classified as:

a. Fires
b. Personnel Injuries
c. Medical Emergencies
d. Release of liquids
e. Vapor release
f. Hazardous Materials Release

The #1 Priority of this facility is "Life Safety"!

Emergency response within the facility is the primary responsibility of the Gallup Refinery Fire Brigade. Emergency response and incident coordination will be conducted following the Emergency Response guidelines of the Refinery within the Incident Command Structure.

All personnel whether refinery or contractor are required to understand their responsibilities during an emergency. Basic responsibility to everyone within the facility is:

"RISC"

Recognize the Emergency
Isolate the Area
Sound the Alarm (Radio Call or Phone 3911)
Coordinate/Inform ERT of the type and extent of the emergency when they arrive.

Alarms

If an emergency occurs in the plant a steam powered whistle, located near the main office building, will be used to signal personnel.

a. Two, five second [duration] blasts signal for all contract employees to stop work and to move across and upwind to assemble at the designated "Safe" area. Your supervisor will assign this area to you during your morning safety meeting, prior to starting work.
b. Four, five second [duration] blasts signal for total evacuation of the facility. If this alarm sounds, all employees should evacuate to the area south of the main office building to the truck stop.
c. Three, five second [duration] blasts signal "ALL CLEAR, RETURN TO WORK"

CAUTION: At no time should any employee attempt to evacuate through any area where an emergency is occurring.

NOTE: The contractor emergency "staging" area is located east of the main office building. All contract employees should report to this location if an emergency occurs. Please refer to the Refinery Plot Plan (click to access electronically) on the last page of this document for the location of gates and roads utilized as emergency exits from the facility.

ALARM TEST: There are tests at 7 a.m. every morning (1 blast), and each Friday at approximately 2 p.m. (2 blasts).

Injuries or Illnesses:
ALL Injuries and work related illnesses shall be reported to your supervisor or safety person, immediately. A written report (see Safety Standards S-12 and S-13 for more information) is required from your supervisor by the end of shift.

It is the responsibility of each contractor company to provide safety personnel trained in first aid and medical care for their employees. The Western Safety Department will provide additional support and resources, if necessary. Medical supplies and trained personnel will be utilized at the discretion of the Safety Department or refinery management.

Any employee who comes into contact with blood, or the body fluids of another employee, must report to Safety immediately to be decontaminated and proper documentation completed. The OSHA Blood Borne Pathogen Standard requires that exposed employees be decontaminated and that the correct reporting procedure be followed. Please refer to Standard Safety Procedure S-14 for details.

All accidents and/or incidents causing product release, equipment damage or personal injury will be investigated by WNR representatives in addition to any Contractor investigation completed.

Permits;

There are several types of work that require Permits in the Gallup Facility:

a. Safe Work Permits
b. Hotwork Permits
c. Confined Space Permits
d. Manbasket
e. Critical Lifts
f. Excavations
g. Flare System Work

A written **Safe Work Permit** is required before entering the process area or tank farm to do any work.

Permits can be obtained from the following locations:

a. Permits for Process Units are obtained in the Petro blast shack located SW of the main control room
b. Permits for the Tank Farm and Terminal are obtained from the Petro blast shack located due north of the laboratory

A **Hot work permit** is required if any tool is used which might create a source of ignition. Some examples are torches, welding machines, grinders, chippers, jackhammers, or electric power tools.

A **Confined Space Permit** is required before entering any area that has limited egress or access and is not designed for human habitation.

Some examples are:
a. Vessels or Saddles and Skirts
b. Pipe
c. Towers
d. Exchangers
e. Ditches
f. Excavations
g. Fire boxes, etc.

A Work Permit is also required before utilizing a **man basket** to lift personnel.

A Critical Lift Permit is required before lifting any material over the process area, or live lines, or vessels in the tank farm area. Consult Safety Standard Procedure S-8 (Critical Crane Lifts) for details concerning use of cranes at the facility. A Critical Lift Permit is required to lift materials over the process units, which may require a lift plan from the Crane Operator.

Safety Work Procedure 404-Excavations

An **excavation** permit is required before excavating any soil at the facility. Ditches and excavations that exceed 4' depth are classified, as permit required confined spaces. These ditches and holes must be shored up and excess dirt removed before work is permitted. All ditches and excavations must be barricaded to prevent accidents. Additional precautions may be required at some locations.

Safety Work Procedure 408-API and Flare Entry

A written permit is required before opening any part of the **flare system** at this facility.

Electrical and Equipment Safety:

It is the responsibility of all employees to take any electrical equipment such as extension cords, lights, connectors, and electrical tools out of service if any defect is detected. Low voltage lighting and explosion proof equipment may be required and will be specified for some work sites. GFCI (ground fault circuit interrupter) shall be used whenever "low" voltage circuits are not utilized.

Do not disable any safety features of any tools, such as guards, automatic shutoffs, etc. Whip checks are required on all pressured hose connections.

Hazardous Materials Use and Storage:

Gasoline, Naphtha, Kerosene, and other flammable liquids should never be used as cleaning agents. Cleaning solvents are available at the mechanic shop, if needed.

Flammable liquids should be kept and transported in approved safety containers that are properly labeled. Compressed gas cylinders must be secured at all times. Safety caps must be in place before cylinders are moved.

Smoking:

Refer to: Safe Work Procedure 106-Smoking Privileges in the Refinery

Smoking is allowed only within designated areas within the refinery. Check with your supervisor before using designated smoking areas. Smoking areas may be closed if they are not kept clean.

Smoking is not permitted at job sites where a hot work permit has been issued. Wood matches and lighters are prohibited in the process area and tank farm.

No Smoking is permitted in vehicles or equipment within refinery fences.

Fire and Safety Equipment:

Fire fighting and safety equipment is to be used only for emergency situations.

Permission from the safety department is required before using *any* part of the fire water system or fire fighting equipment for non-emergency use. Permission must be obtained from the Safety Department prior to hooking up to fire hydrants for maintenance work.

No fire extinguisher may be removed from its designated location for non-emergency use. Fire extinguishers, located throughout the process area and tank farm, may not be used during work activities such as welding.

Hearing Protection:

Many areas within the refinery exceed the noise level of 85 dB. Hearing protection is required in all process areas of the refinery. Contact your supervisor or the safety department to obtain hearing protectors. Information on proper use of hearing protectors may be obtained from the safety department.

NOTE: If in doubt, use hearing protection.

Operation of Motor Vehicles:

Refer to: Safe work Procedure 104-Safe Vehicle Operations

Vehicle access within the refinery and process area is restricted and written permission required before entering.

The number of vehicles used should be kept to a minimum, only vehicles required for use are allowed in the Plant, not for convenience.

- The refinery speed limit is 10 MPH except around the shops/boiler house area where it is 5 mph.
- Vehicles engines must not remain running if the vehicle is left unattended.
- Vehicles shall be parked and operated in such a manner as not to block roadways. Vehicles parked in areas other than designated parking areas shall have the keys left in the ignition, doors unlocked.
- Do not drive over unprotected hoses, or beyond roadblocks or barricades.
- Trailer mounted vehicles, when parked, must be secured by chocks to prevent accidental movement.
- No vehicle shall be driven across pipe racks or any other equipment.
- Vehicles must not be parked in a manner that would obstruct fire equipment.
- Operators of any motorized vehicle must obey all road signs or privileges will be suspended.
- Roads should be kept clear for traffic at all times in case emergency vehicles are utilized.
- Personnel riding in vehicles are limited to the number of seatbelts within the vehicle. (i.e. pickups can only have three as a maximum in the front seat).
- All loads that extend beyond vehicles both side to side and front to back must be red flagged.

NOTE: At times, closure signs are placed on roads because of specific hazards. Never disregard these signs.

NOTE: Personnel SHALL NOT be allowed to ride in the back of pickups.

Operation of cranes may create specific hazards. A written lift plan is required while working in the process area and tank farm. Power lines within the facility present a hazard, and no crane work should be attempted in close proximity to power lines. Contact the safety department to ensure compliance with OSHA regulations before beginning work.

Certification is required to operate all forklifts at this facility. Passengers are not allowed on forklifts, cranes, backhoes, or other heavy equipment.

Driving vehicles and equipment without windshields requires the use of a face shield or goggles.

Personnel Protective Equipment:

Wearing appropriate clothing and personal protective equipment, which is required, is mandatory for all employees who enter the process area and tank farm. Hard hats, safety glasses with side shields, FRC, H_2S monitors and steel toed work boots with a defined heel are required in all process and tank farm areas.

Footwear such as sandals, cloth, or porous footwear, and loose fitting clothing are prohibited.

Fire Retardant Clothing must meet the following:

- Contractor-supplied FRC must have a Thermal Protection Performance (TPP) of 6. Acceptable fabrics are: 7.5 oz. Nomex II or better, 7.5 oz. Kermel, 7.9 oz. Indura or better. Other fabrics may be acceptable after review by the WNR Safety Department.
- FRC must be the outermost garment to provide the maximum protection. On occasion, other job-specific PPE may be worn over FRC, such as rain gear, chemical suits, Tyvek, and welder's leathers, but in these situations, FRC must still be worn.
- To ensure adequate protection for the extremities, FRC must be worn with long sleeves down and buttoned and pant legs down to the shoe or boot. Shirts must be worn with the top button closed. Coveralls must be worn fully zipped and the top fastener snapped closed. The very top-most button / snap (at the collar) may be left open.

Long hair should be tied back to keep out of rotating equipment.

All personnel entering the Refinery operating area must be clean shaven in the facial area that might be covered by the seal of a resuscitator or respirator.

Certain areas may require additional PPE.

FALL PROTECTION

Fall protection is required at work 4' or higher above ground level if there is no permanent deck or platform with handrail. Anchor point tie off must be capable of supporting 5000 pounds per employee. Fall protection is required to work on scaffolding. Tools and equipment must be raised and lowered with buckets and baskets. Never throw or drop any material from an elevated area.

SCAFFOLDING

Scaffolds must be constructed to comply with OSHA standards including toe boards above 6 feet, and must be inspected daily before employees use them. Use of scaffolding in the refinery will only be authorized when the scaffold has been inspected and given approval by a competent person assigned to oversee the construction of scaffolding after it is 100% completed. All scaffolding should be removed as soon as possible after it has been utilized.

HARASSMENT

Western is committed to take reasonable steps to provide a work environment free from all forms of harassment, whether based on sex, race, religious creed, color, national origin, ancestry, disability, physical or mental handicap, medical condition, marital status,

age, or any other basis protected by law. This applies to all employees, suppliers, customers, or any other individual or organization.

NOTE: Harassment in any form, including verbal, physical and visual conduct, threats, demands, or retaliation is prohibited.

All employees are required to report any incidents of harassment immediately so that complaints can be quickly investigated and fairly resolved.

ENVIRONMENTAL

Any wastes generated in association with project activities on site must be handled and disposed of in an appropriate manner. Under **NO** circumstances are project or construction wastes to be disposed of on site; nor are any of these wastes to be placed or stored at any on-site location not specifically designated for such use by the facility's Environmental Department personnel. Specific examples of some of the types of wastes being referred to here are excess concrete from construction, concrete from demolition, insulation wastes, excavated soils, or other general construction debris. All containers must be properly labeled (see Environmental Department for labeling information).

MISCELLANEOUS PROHIBITED ACTIVITIES

A. Possession or use of fire arms on company property

B. Theft

C. Malicious mischief

D. Causing or attempting bodily harm

E. Possession or use of alcohol or controlled substances

F. Sleeping or dozing

G. Violation of criminal law

H. Gambling

I. Harboring a disease which may endanger a fellow worker

J. Willful negligence or misuse of Western property

K. Scuffling, horseplay or fighting

L. Use of Cell phone or pagers in the process or tank farm area

HOUSEKEEPING

Good housekeeping encourages good morale, good workmanship, and the reduction of Employee injuries, therefore, it is the Contractor's responsibility to maintain a clean, organized work area.

1. Personnel should not leave equipment of any kind on the ground in walking areas, even for a short period, since this causes a serious tripping hazard.
2. There should be no running in buildings or on Refinery grounds at any time because of slipping, tripping, and collision hazards.
3. All walking areas should be kept clear of all obstructions, including extension cords, cables, hoses and leads.
4. Areas around equipment should be kept clear of all obstructions, and in non-slippery condition. Any spilled oil chemical, or grease should be cleaned up immediately. .
5. All tools should be kept in their proper place when not in use.
6. Care should be taken to ensure that access to fire equipment and electrical equipment is not blocked at any time.
7. No loose materials or objects should be allowed to accumulate in the work areas.
8. All pits and other openings shall be barricaded and proper warning signs erected. These signs and warning devices shall stay in place as long as the possibility of personal injury caused from falling into openings is possible.
9. Nails must be removed or bent under from all scrap lumber.
10. Broken glass should be cleaned up immediately.

HAZARD COMMUNICATION PROGRAM

In the process of producing fuels from crude oil requires the use of, and formation of various chemicals, and chemical products. It is important for you to understand how these materials may affect the body and how to avoid and protect yourself from exposure to these products. Western Refining Company, Gallup Refinery has developed a written Hazardous Communication plan. This plan specifies how information on these products will be disseminated to its employees, contractors, and visitors. This written plan as well as all the MSDS sheets are maintain by the Safety department and are kept in the Safety office. Electronic copies of all MSDS sheets can be viewed from any computer on site.

Western will provide the contractor MSDS sheet for any and all chemicals they may be exposed to.

Contractors must notify Western before bringing any chemicals or chemical products on to the plant site. The contractor must provide Western with MSDS sheets for these products

MATERIAL SAFETY DATA SHEETS are kept on file in the Safety building for all hazardous materials used in the Refinery. MSDS sheets are utilized to determine the proper procedures and level of protection needed to work with all materials and chemicals utilized in the refinery. Obtain the proper MSDS sheet before working with, or using, any material.

What Material Safety Data Sheets provide:

1. Identify the hazards
2. Physical and health hazards
3. Type of exposure
4. Personal protective equipment required
5. First Aid or actions to take if exposure occurs
6. Handling and storage

All Chemicals can be hazardous to your health; any exposure to you without the proper PPE may require first aid treatment. You have a responsibility to know what you are working with and to read the MSDS.

Some hazardous materials in this facility are:

1. **Flammable materials**: gasoline, natural gas, propane, butane, etc.
2. Various water and process treatment chemicals provided by Nalco, Unichem, Betz, and Petrolite and other vendors
3. **Ammonia**
   May cause nose, throat, or eye irritation
5. **Caustics (NAOH, KOH, various cleaners, soda ash)**
   Exposure to caustics may cause severe damage to skin or eyes (including blindness).
6. Sulfuric acid
   Sulfuric acid is corrosive and damaging to all body tissue.
7. **HF acid**
   a) Liquid anhydrous hydrofluoric acid causes immediate and serious burns on contact. Solutions with concentrations less then 50% also produce serious burns, but exposures may not produce clinical signs or symptoms for 1 to 8 hours. Exposure to solutions with concentrations less than 20% may have a latency period of 24 hours.
   Wearing clothing contaminated with HF (such as leather shoes or gloves) can result in painful delayed effects.
   b) HF vapor can cause skin irritation and inflammation of mucous membranes and burns, which become apparent a few hours after exposure. Inhaling high concentrations of HF vapor may cause lung damage and pulmonary edema.
   In the event of an exposure or suspected exposure to HF, notify your supervisor and the Western Safety Department as soon as possible for first aid treatment.
8. **Benzene**
   a) Known carcinogen commonly present in crude oil and many intermediates and products such as gasoline.
9. Asbestos
   Asbestos is used as pipe and equipment insulation in numerous locations throughout the refinery. Not all asbestos insulation has been marked. Insulation that is not marked as being asbestos-free should be assumed to contain asbestos until a determination is made

to insure that it does not contain asbestos. If you have any doubt about asbestos content, contact your WNR representative who will arrange for our local asbestos contractor to identify the material.

- **Do not disturb insulation**
- **Assume insulation contains asbestos until determined to be asbestos-free**
- **If you are unsure about asbestos content, contact your WNR representative.**
- **If unidentified insulation is disturbed, secure the area and contact the Safety Department. Isolate potentially contaminated equipment and personnel at the scene – decontamination may be required.**
- **Only approved personnel are authorized to handle asbestos materials.**
- **Refractory Ceramic Fibers (RCF) may be found in process heaters and may contain silica dust and are to be treated in the same manner as asbestos.**

10. **H2S**

Hydrogen Sulfide is present in the DHT and the Sulferox units. Sensors have been installed at these locations which detect Hydrogen Sulfide. These sensors are connected to an alarm system which is activated when 10 PPM is present at the sensor location. Red flashing lights and alarm horns will also activate to warn personnel who are in the unit. Workers who are present when these alarms activate should immediately leave the area and should not attempt to re-enter the area until a new work permit is issued. Refer to the appropriate MSDS for additional information concerning Hydrogen Sulfide.

The use of personal H2S monitors is required in the process and tank farm areas and requires evacuation of the work location if the alarm sounds. Reporting these alarms to either the control room if working in the process area or to the off sites supervisor if working in the tank farms is mandatory.

Windsocks are stationed throughout the plant on towers. These socks indicate wind direction. In case of a chemical or hydrocarbon release, you should head up wind.

Emergency eyewash and showers are located in some units (You should observe where they are located prior to starting work.).

TRAINING

When outside services enter this facility to perform work, personnel will be asked to furnish proof of training if they are to perform certain tasks. Examples:

1. Lock out / Tag out
2. Fork lift certification
3. Welder certification
4. Permit Required Confined Space Entry (when applicable)
5. Respiratory protection (when applicable)
6. Proof of competency in operating certain equipment
7. Hazard communications in all cases
8. Proof of competency

REMEMBER, YOUR SAFETY IS YOUR RESPONSIBILITY.

WESTERN REFINING COMPANY
SAFETY ORIENTATION
CONTRACTORS, VISITORS, OR OUTSIDE PERSONNEL

I, the undersigned, have read and understand Western Refinery's General Requirements for Contractors, Visitors, or Outside Personnel. I have been advised of Western's Hazard Communication and Emergency Procedures Programs. I do agree to comply with Western Refinery's Safety/Health/Environmental requirements.

Print Name	Signature	Company Name	SS #	Today's Date

Appendix D: Integrated Emergency Response Plan

1.0 PURPOSE

The Purpose of this instruction is to provide the Gallup Refinery with an emergency response plan for effectively dealing with incidents and emergencies. This instruction shall be the basic tool for dealing with all incidents and emergencies.

2.0 SCOPE

This instruction is applicable to emergencies within the confines of the Refinery and associated facilities. This instruction contains procedures applicable to all employees and contractors working in the Refinery and associated facilities. The Integrated Emergency Response Plan is organized as follows:

The Core Plan

Appendix 1	Reporting Procedures
Appendix 2	Size Up Checklist
Appendix 3	Unified Incident Command System
Appendix 4	Shelter-In-Place and Evacuation Plan
Appendix 5	Hazardous Waste Emergency Response Procedures
Appendix 6	List of Response Equipment
Appendix 7	Inclusion of SA-190 Elements in Other Plans
Appendix 8	Communicating Refinery Emergency Response Processes to Nearby Facilities
Appendix 9	Radio Channel Assignments
Appendix 10	Emergency Call Out Information

3.0 TRAINING

All employees working within the Refinery and associated facilities shall review this instruction and their roles and responsibilities in the implementation of this plan. This will be done as part of the New Employee On-Boarding Process.

4.0 DEFINITIONS

Fire Brigade

The Gallup Refinery maintains a fire brigade that draws upon resources throughout the refinery organization. The Fire Brigade is organized and managed through the Safety Department by the Emergency Response Coordinator.

It is expected that no member of the Fire Brigade will function or be assigned to a task that is beyond their level of training or beyond the capabilities of the personal protective equipment that they have been assigned.

Organization

The Fire Brigade has three distinct teams:

Shift Fire Brigade – the shift fire brigade is comprised of on shift operations personnel in an Incipient Stage Role. The Shift Fire Brigade serves in a defensive mode only, operating water and foam monitors as well as fixed deluge systems. Shift members able to be released to an emergency may vary but is expected to be four to six personnel.

Emergency Response Team – the emergency response team is comprised of volunteer members from throughout the refinery organization, including operations.
This team is trained to act in an offensive manner, employing full bunker gear, fire apparatus and hose lines. The Emergency Response Team typically has in excess of 25 members.

Fire and Safety Technicians (Kurtz Fire Department) – There are four Fire and Safety Technicians on shift at all times. This team is trained to act in an offensive manner, employing full bunker gear, fire apparatus and hose lines and integrates with the Emergency Response Team during emergencies. This team is trained in high angle and confined space rescue and serves as the facility rescue team. This team is also trained as emergency medical technicians and provides on-site emergency medical care.

5.0 EXERCISING THE PLAN

The Emergency Response Plan shall be exercised at least annually by means of a drill involving the Refinery Emergency Response Team (ERT), Fire and Safety Technicians (Kurtz), and Refinery Management. Upon occasion Mutual Aid organizations can be included in these drills. The drill shall be critiqued, documented and necessary changes made to this instruction or other response procedures.

6.0 ESTABLISHMENT OF INCIDENT COMMAND

All emergencies will be mitigated by, and all response and plant operation activities associated with the emergency will be coordinated and directed through the Refinery Incident Command System. The Refinery Incident Command System will be activated immediately upon notification that an emergency is in progress beyond incipient stage (see Level I Emergency - Appendix I).

The first qualified ERT member on the scene will assist the Shift Superintendent in the role of On-Scene-Commander and initiate size-up of the situation. Based on this size-up and assessment, an initial tactical response plan will be formulated. This plan will be based on a response that maximizes the safety of responders and will include evacuation procedures for responders and other Refinery personnel should such action become necessary. On Scene Command will continuously size-up the emergency as it unfolds and keep all appropriate personnel fully informed as the situation progresses.

In addition to the On Scene Command Post, Refinery Management and other designated individuals will establish an Emergency Operations Center (EOC) under the direction of the Refinery Manager in the Administration Building Main Conference Room. The EOC will be the focal point for management of all functions of the Refinery.

7.0 INITIAL RESPONSE ACTIONS

The following actions will be taken by employees and contractors when the emergency alarm is sounded. See Appendix I Section 4 for Emergency Level definitions and Alarms:

7.1 No evacuation is required for Level 1 emergencies. For Level 2 Emergencies, all employees, contractors and visitors will stop all work in the Refinery, "safe" their work and move to designated safe havens for head count and will stand by at these locations until they receive additional instructions from Western Command. For Level 3 Emergencies

all non-essential personnel shall report to safe havens. Western Command will evaluate the situation and will allow workers to return to work sites that are not impacted by the emergency as soon as possible.

7.2 All on duty ERT members will report to the appropriate firehouse, don fire fighting gear, start apparatus and prepare for move out on order from Western Command.

7.3 The Operations Superintendent(s) will oversee control of operating units, shutdown affected equipment, and coordinate with On Scene Operational Command of the Emergency Scene. The Operations Manager will be stationed in the Emergency Operation Center (EOC).

7.4 The Emergency Response Coordinator (ERC) (ERT Team Captain or Shift Supervisor in the absence of the ERC) will go to the emergency scene and begin size-up and assessment of the situation. This person will assume the role of Western On-Site Command. The Refinery Ambulance vehicle will be taken to a mutually decided upon location outside the "Hot Zone" to establish and identify On-Scene Command.

7.5 The Refinery Safety Supervisor will go to the scene, establish contact with Western Operation On Scene Command and will establish the boundaries of the "Hot Zone". Only properly protected ERT members and firefighters may deal with an emergency that is beyond the incipient stage. The Safety Supervisor will monitor all aspects of the emergency scene for personnel safety and coordinate with the On Scene Command.

7.6 The Maintenance Manager or his designee will report to the Incident Command at the Emergency Operation Center to perform the functions of Logistics Officer with responding outside agencies.

7.7 On duty Operations personnel will report to the control room for head count and instructions on process control changes to be made in their plants.

7.8 All Refinery Managers and other selected personnel will report to the EOC. All other Refinery employees will return to their offices, notify their supervisor of their presence and stand by for additional instructions.

7.9 The Security Patrol Vehicle and Officer will position west of the "Y" on the access road and control access to the facility.

7.10 Purchasing and administrative personnel will report to the EOC for assignment of cost tracking, phone, clerical, and other administrative duties as deemed necessary.

7.11 A press waiting center will be set up in the Modular Office Complex until such time as the Emergency Control Center is prepared to make a statement. A person designated by the Emergency Control Center will remain with press personnel and assure them they will be furnished information and updates as soon as possible. Under no circumstances will news media personnel be allowed at the fire/emergency scene

8.0 PERSONNEL SAFETY

The safety of personnel is the highest priority for the Refinery. All personnel must be rapidly accounted for. All supervisors will insure their work groups are safe and have reported to their assembly points. If any personnel are missing and unaccounted for, this information must be immediately relayed to On Scene Operational Command - particularly if they may have been in the emergency area.

9.0 DEVELOPMENT OF STRATEGY AND TACTICS

The Incident Command System will be used to develop Strategy and Tactics for emergency mitigation.

9.1 Incident Command will follow the principle of RECEO:

Rescue -- The rescue of injured or missing personnel will be the first priority, if the tactical situation is not untenable for this activity.

Exposures -- Response actions will be taken to protect exposures. Exposures are those areas, equipment or locations which if impacted by the emergency could cause threat to human life, health or safety or could have adverse effects on the environment.

Containment --The tactical plan will progress, as sufficient resources are added, to achieve containment of the emergency. The goal will be to stop the spread of the emergency and reduce its threat.

Extinguishment -- (mitigation to safe level) This will be the ultimate tactical objective. This may take hours or even days to achieve. In the

case of fire, this goal is achieved when the fire is out and the risk of re-ignition is eliminated. In other types of emergencies this goal is achieved when the situation has been stabilized to a safe level and the threat to exposures is eliminated.

Overhaul -- This is the final stage of the response and includes decontamination, clean up, inspection, refurbishing, replacement and return of emergency response equipment to the "ready-to-go" condition.

9.2 Strategic goals will be established by Incident Command to provide an overall plan for dealing with the emergency. These goals will be communicated through a communication officer (generally a member of the Tech Services group) designated by the EOC to relay information to the On Scene Command.

9.3 The tactical plans will be developed and initiated by On Scene Command in support of the Strategic goals established by Incident Command. Strategic and Tactical goals will be developed with three principles in mind:

- Prevention of injury/loss of life.
- Protection of the environment.
- Protection of property.

9.5 Based on the nature of the incident, the risk assessment, and the availability of resources, the tactical deployment will be initiated to support the strategic plan and will generally utilize one of the following modes of operation:

Offensive Mode: This mode may be utilized when the resources at hand are deemed more than adequate to safely and effectively mitigate the incident. Resources are committed in an aggressive attack to gain control of the incident. Resources are available to sustain the attack until the emergency is fully mitigated.

Defensive Mode: This mode may be utilized when the responding resources are clearly overwhelmed by the magnitude or nature of the emergency or the risk assessment demonstrates unacceptable hazards to responding personnel. In this mode responders will establish a defensive perimeter a safe distance from the emergency, protect what can be safely protected and accumulate resources to prepare to deal with contingencies.

Transition: When an offensive attack is desired, it is prudent to establish a defensive back up because it is not certain that the offensive attack will succeed.

When the resources on hand are deemed inadequate to gain control of the emergency or the risk assessment has determined the hazard to response personnel is initially too great to start an aggressive attack, responders will deploy a safe distance from the threat, protect exposures and contain the emergency as best they can. If additional resources become available and/or hazards to personnel are reduced to an acceptable level, a shift to an offensive mode may be made.

10.0 SUSTAINED ACTIONS

Large process fires/tank fires, large spills of petroleum and large Hazmat incidents may require hours or days to mitigate to a safe level. Resources will be required to sustain the response. Incident Command will plan and implement the necessary requirements to sustain the response activities.

11.0 DEMOBILIZATION AND TERMINATION

Emergencies may be scaled down and terminated when the threat to human life, safety, and/or environment, and/or property have been eliminated. The Refinery ERT may be needed to deal with the emergency in its entirety (as in the case of fire). However, in many cases there will be a transition from emergency response to cleanup (as in the case of spills). Typically the ERT will not perform cleanup, unless there are hazards which exceed the capabilities of the cleanup contractors available to do the work. Hazardous waste cleanup requires the use of personnel specifically trained and certified to perform this type of activity. Incident Command will monitor the incident and determine the appropriate time to transition from response to overhaul and cleanup. Resources will be released to demobilize and refit as the situation dictates. Incident Command will maintain contact with outside agencies (such as EPA or NMED) if appropriate, to ensure cleanup efforts are in compliance with Federal, State and local regulations.

Once the all clear is sounded, follow up actions may be taken, depending on the nature of the event. These follow up actions may include one or more of the following:

Incident Investigation: Performed in accordance with the Refinery investigation procedures. All reasonable efforts shall be undertaken to maintain the integrity of the scene for investigation purposes during the control and subsequent phases of incident mitigation.

Critique of the response: This will include all response entities and will be summarized in a written report for major incidents. This report will include "lessons learned" and recommendations for improvements in response capabilities, if appropriate.

Thorough inspection of all equipment used in the response: All response equipment will be thoroughly inspected, repaired, replaced and replenished as necessary.

Review of response plans and procedures: The Emergency Response Plan and other response procedures will be reviewed to determine their adequacy, accuracy and usefulness. Response plans and procedures will be modified if necessary as determined by this review. The ERC will be responsible for coordinating this review and for implementing any changes to these plans and procedures.

12.0 CARE OF EMERGENCY RESPONSE EQUIPMENT

The Emergency Response Coordinator shall insure that emergency response equipment is properly inspected, tested and maintained according to manufacturer's recommendations and according to municipal, state and federal regulatory requirements. He shall be supported in these activities by Maintenance, Operations, Technical and Services personnel. These activities shall be documented and records shall be maintained as required.

REPORTING PROCEDURES (Internal and External)

1.0 PURPOSE

This appendix will be used to determine the procedures and requirements for reporting all emergencies and non-emergency spills and releases, both internally and externally.

2.0 SCOPE

This appendix covers the following reporting procedures:

Procedures for internal reporting of an emergency.

- Types and levels of emergencies.
- External reporting of Refinery spills, releases and fires.

3.0 INTERNAL REPORTING

Internal reporting procedures and response activities will be based on the nature and location of the event. The refinery internal reporting system consists of three elements:

3.1 **Emergency Telephone System**: Emergency calls can be made to 3911 which rings at multiple control rooms and the guard house. The following information should be provided by the person making the report:

- The nature of the emergency
- Location of the emergency
- How many personnel are injured, ill, require rescue

Security will notify the Shift Superintendent of the emergency and take action as appropriate.

3.2 **Refinery Radio System**: Radio Channel 2 can be used to provide initial reporting of emergency conditions if a telephone is not readily available to the caller. This channel is monitored and used by the Control Room, Shift Supervisor, Boiler Plant Operators, the Emergency Response and Safety Department. Once an emergency has been declared, Radio Channel 1 will be cleared of normal traffic and becomes the On Scene Command channel for the response. Once an alarm has sounded Security will announce the situation on radio channels 1 through 8 and provide the following information:

- Type of Emergency
- Location of the Emergency
- Incident Level

REPORTING PROCEDURES (Internal and External)

3.3 **Refinery Emergency Alarm**: The emergency alarm is sounded throughout the plant by means of a steam whistle located at the Boiler House.

Once initial reporting of an emergency is made by the emergency telephone system or radio system, the Shift Superintendent or ERT member performing the initial size up will determine and announce which type of alarm signal to sound. The emergency alarm will be sounded to ensure everyone in the plant is aware of the emergency. The audible alarm will also provide information on the severity of the incident and actions to be taken. Normally, initial alarms will be either Level I or Level II as described below. The determination to upgrade the alarm condition will normally be made by On Scene Command within the Incident Command System.

4.0 INCIDENT LEVELS

Level I Emergency:

A Level I is an emergency which does not require a response by the Refinery ERT. This may be a medical emergency where an employee or contractor is injured or ill, does not require rescue, but needs immediate medical care and transport to an off site medical facility by ambulance. It may involve a fire that was immediately extinguished in the incipient stage by use of a fire extinguisher or a small release that was immediately controlled by closing a valve or shutting down a pump.

At no time shall a fire or release that is not immediately controlled be designated as a Level 1 Incident in anticipation that it will be brought under control by workers in the area. Such an incident shall be designated a Level II emergency.

Level I Audible Signal: None

Level II Emergency:

An emergency which requires response by the ERT members on-site at the refinery. This response will be for fires or releases which may require Operations and Support Brigade ERT response. All on site ERT members will immediately go to the firehouses, don turnout gear, start equipment and prepare to respond on order from Western Command. All non-essential personnel will move to their emergency assembly points, conduct head count and stand by for instructions.

Level II Audible Signal: 2- Five Second Blasts

REPORTING PROCEDURES (Internal and External)

Level III Emergency:

An out of control emergency which requires a response by all available refinery ERT members and a major response by Mutual Aid Resources. Level III fires and releases are large, dangerous events which will require the commitment of major resources. In the case of a Level III emergency Security will initiate the Emergency Response Call Out System for off-duty refinery personnel. Call Out Instructions are kept at the Main Gate and Shift Supervisors Office. All non-essential personnel will move to their emergency assembly points, conduct head count and stand by for instructions.

Level III Audible Signal: Two(2) - Five Second Blasts

Level IV Emergency:

Any out of control emergency which requires evacuation of the refinery and the surrounding community. See Appendix 4 for evacuation details.

Level IV Audible Signal: Four(4) - Five Second Blasts

All Clear:

Western Incident Command shall make the determination when the All Clear is to be sounded. This incident status will indicate that the incident is stabilized and the majority of normal operations can be resumed. All work in the refinery must be re-permitted.

Audible Signal: Three(3) - Five Second Blasts

REPORTING PROCEDURES (Internal and External)

Incident Level Summary Table

Incident Level	ERT Response	Evacuation	Audible Alarm
I	None	None	None
II	On-site ERT	Partial to Safe Havens	Two Blasts
III	ERT call-out	Non-essential personnel to Safe Havens	Two Blasts
IV	Controlled Evacuation	Full Evacuation	Four Blasts
All Clear		return to workstations	Three Blasts

5.0 **Rescue Emergency**: This is an emergency where victims are trapped or are down in either a confined space or in other locations where specialized equipment and training are needed to effect rescue. This type of emergency will require the Refinery Rescue Team to be mobilized. Depending on the severity of the incident and the number of personnel to be rescued, this may be a Level II or a Level III Emergency. If the emergency occurs outside of normal business hours, Security will initiate call-out of the Rescue Squad or a full Support Brigade as instructed by Western Command.

6.0 **Off Property Emergency**: This type of emergency may involve mobilizing of Refinery ERT members or calling in off duty personnel to respond with no internal alarm sounded. The nature of response will depend on location and severity of the emergency.

6.1 **Accident on the Access Road** involving a fuel transport tank truck with significant spillage of product and/or fire would be at least a Level II Emergency and could be a Level III Emergency if the spill and/or fire were large. Because of the threat to the Refinery, ERT members and equipment will respond to mitigate this incident. The appropriate response will be determined by Western Command after initial size-up.

6.2 **Release or Fire Involving Refinery Off-Site Pipelines/Storage Tanks:** If this incident occurs, Western Command will perform a size-up and mobilize refinery resources as deemed appropriate. Typically, response will be by ERT members.

6.3 **Requests for Mutual Aid Assistance from McKinley County**: Because of our unique fire fighting capabilities and equipment, McKinley County may request we provide equipment or supplies (such as fire fighting foam) or technical assistance in dealing with petroleum fire/spills which may occur at other facilities or in the community. These requests should be routed to the Refinery ERC. If the

ERC is unavailable, these requests should be routed to the plant Shift Supervisor. Typically, response will be by ERT members, if deemed appropriate. Accounting of all equipment and supplies leaving the refinery will be made.

7.0 EXTERNAL REPORTING

7.1 **Reporting to outside agencies**: Depending on the size and nature of the incident, notification may be required to outside agencies. These notifications will be made from the Shift Superintendent on duty to a member of the Environmental Department and should be made as soon as practical and as required by environmental regulations. In those instances when the EOC is activated, the Environmental Manager will insure that required notifications are made.

7.2 **Reporting to Corporate officers**: Reporting to corporate officers will be made by the Refinery Manager or his designee and will be in accordance with the Corporate "Crisis Communication Manual".

SIZE-UP, ASSESSMENT AND RESPONSE CHECKLIST

1.0 PURPOSE

This checklist is to be used by Western On Scene Command as an aid to size-up, assessment and response to an incident.

2.0 SIZE-UP AND ASSESSMENT OF AN INCIDENT:

is an ongoing process and not a one time event. Stay alert—use your senses—sight, sound and "feel" to continuously evaluate the situation. Use the Plant Operator as a resource—he/she knows a lot about the plant.

- **KEEP THE "BIG PICTURE" IN VIEW**. Avoid focusing on very limited aspects of the situation to the detriment of everything else (so called "tunnel vision").
- **KEEP INCIDENT COMMAND (IC) INFORMED**: about what is happening and what you think is going to happen.
- **KEEP YOUR TEAM CAPTAINS AND THE MUTUAL AID RESOURCES OPERATIONS CHIEF INFORMED:** about what is happening and give specific instructions on what you need them to do.
- **BE FLEXIBLE.** If something doesn't work, have alternative plans ready.
- **PEOPLE COME FIRST**. Commit equipment not personnel. "Distance makes the best turnout gear." Withdraw people from risk.

3.0 THE CHECKLIST:

RESCUE: Are there known injured or missing personnel?

- ☐ Is search and/or rescue possible without undue risk to rescue personnel?
- ☐ Can their whereabouts be determined?

SIZE-UP, ASSESSMENT AND RESPONSE CHECKLIST

- ☐ Can rescue be done by ERT responders or will rescue squad and specialized equipment be needed?

- ☐ What deployment is necessary to protect victims and responders and facilitate rescue?

4.0 EXPOSURES

- ☐ What materials are involved in the spill, release or fire?

- ☐ What equipment is involved? (Pumps, drums, tanks, exchangers, vessels, columns, piping, etc.)

- ☐ Is there danger of vapor cloud explosion, toxic gas cloud generation or equipment Boiling Liquid Expanding Vapor Explosion (BLEVE)?

- ☐ What are the appropriate mitigation agents to be used? (Water, fire fighting foam, inert gas, oil boom, etc.) Any water reactive substances present?

- ☐ Is there threatened equipment that needs immediate application of cooling master streams? (water, foam)

- ☐ Where should Western apparatus and resources be deployed to provide maximum effectiveness?

- ☐ Have IC and Team Captains been briefed on the tactical situation and initial deployment plan? Is the plan approved by IC and understood by responders?

5.0 CONTAINMENT:

- ☐ Has initial deployment made a positive impact on the incident?

- ☐ Are on hand resources sufficient to deploy and achieve containment? Where and how should they be deployed?

SIZE-UP, ASSESSMENT AND RESPONSE CHECKLIST

- ☐ Can additional resources be safely deployed to surround the incident and achieve containment?

- ☐ Has the Mutual Aid Resources IC (or other agency with jurisdiction) been briefed on the plan for containment and approved the plan and deployment of their resources?

- ☐ Has deployment been completed as planned?

EXTINGUISHMENT/MITIGATION:

- ☐ Have containment efforts achieved their goals?

- ☐ Are resources available to achieve extinguishment or are additional resources needed? Are they on hand?

- ☐ Should an offensive attack be launched to achieve extinguishment/mitigation? Is it safe to do so?

- ☐ Has the Mutual Aid Resources IC (or other agency with jurisdiction) been briefed on the plan for extinguishment/mitigation and approved the plan for the deployment of their resources.

OVERHAUL:

- ☐ Has all threat been eliminated?

- ☐ Has the area been made safe for entry and clean up?

- ☐ Has decontamination of personnel, apparatus, response equipment and the site been completed?

SIZE-UP, ASSESSMENT AND RESPONSE CHECKLIST

- ☐ Has debriefing of personnel and critique of the response been completed and documented?

- ☐ Has all response equipment been returned to the ready-to-go status?

- ☐ Have all materials and supplies been replenished?

UNIFIED INCIDENT COMMAND SYSTEM

1.0 PURPOSE

This appendix details the organization and function of the Unified Incident Command System used in the Refinery to deal with incidents and emergencies. This appendix details the roles and responsibilities of each Western member of the Unified Incident Command structure and details how the Refinery emergency response organization will interface with the New Mexico State Police and Mutual Aid Resources.

2.0 ICS ROLES AND RESPONSIBILITIES

On Scene Command: (filled by Emergency Response Coordinator or Shift Supt.)

- Respond to and initiate size-up of incident. Determine if there are casualties or, missing personnel. Determine if there are personnel who need rescue.
- Provide briefing on conditions and needs at the scene of the emergency, particularly if medical or rescue assistance is needed.
- Develop initial tactical plan and deploy resources. Use ERT (or Rescue Squad if needed) to evacuate non-ambulatory casualties to EMS pick up sites as soon as possible.
- In conjunction with Refinery Security and the McKinley County Sheriff's Department, secure the Refinery from unauthorized entry and establish access control.

Western Liaison: (role filled by Operations Off Sites Terminal Operator or his designee upon arrival of Mutual Aid Resources)

- Join with the Mutual Aid Resources Incident Commander in staging area South of Guard Gate and give briefing on the emergency. Notify On Scene Command of the arrival of Mutual Aid Resources. NOTE: The New Mexico State Police IC is legally in charge of the incident and is the final authority in the decision making process.
- Establish communication with Western On Scene Command and obtain briefing on the conditions and needs at the scene of the emergency.
- Maintain constant communication with the Mutual Aid Resources Incident Commander, keeping him apprised of Plant operational concerns and coordinate Western emergency response activities.
- Maintain constant communication with Western Emergency Operations Center (EOC) and keep them apprised of emergency response activities. Coordinate with

EOC to insure that all necessary resources are obtained and support activities occur.

- In conjunction with Refinery Security and the McKinley County Sheriff's Department, secure the Refinery from unauthorized entry and establish access control.

Safety Officer(s): (Safety Supervisor)

- Respond to incidents and establish communication with the Western On Scene Command.
- Establish and delineate the boundaries of the "Hot Zone". Notify Western Command when this is done.
- Establish communication with Mutual Aid Resources Safety Officer or other agency with jurisdiction and coordinate safety efforts.
- Continuously monitor conditions at the scene to protect responders and verify location of "Hot Zone" boundaries.
- Provide frequent updates to Western Incident Command on Safety issues.

ERT Team Leaders: (role filled by selected members of ERT)

- Respond to scene and fill role of Emergency Team Leader.
- As Team Leader, respond to firehouse with team members. Establish communication with Western On Scene Command and respond to scene with team and apparatus on order from Western Command.
- As Team Leader, direct and control the deployment of ERT members and equipment.
- As Team Leader, provide frequent situation updates to Western On Scene Command including needs and requirements to sustain or withdraw the team as appropriate.

3.0 EMERGENCY OPERATIONS CENTER

The Emergency Operations Center (EOC) will be established in the Administration building main conference room for all LEVEL II and greater emergencies. The EOC will be the focal point for coordinating all support aspects of the Refinery's response to the incident.

UNIFIED INCIDENT COMMAND SYSTEM

4.0 EOC ROLES AND RESPONSIBILITIES

Incident Command /EOC Director: (Role filled by Refinery Manager or designated member of Management)

- Provide overall guidance and direction for the Refinery's response.
- Spokesperson for the Refinery to local city/county government figures.
- Directs HR/PIO Manager as necessary in dealing with the media, public or employees and families (particularly in major events involving casualties or personnel evacuation)..
- A current copy of the Corporate "**Crisis Communication Plan**" will be readily available in the Emergency Control Center for reference by members of local management
- Directs the Logistics Officer in provided needed support for the incident.

Logistics Officer: (role filled by Maintenance Manager or designee)

- Respond to Emergency Operation Center and establish communication with IC.
- Provide logistical support to response and support personnel as requested by IC and/or On Scene Western Command including but not limited to:
  - Food and Water.
  - Fire Fighting Foam Re-supply.
  - Heavy Equipment.
  - Spill Control Equipment.
  - Responder Rehabilitation Facilities.
  - Lighting and Electrical Power
  - Shade From Heat
  - Portable Bathroom Facilities
  - Radios and Replacement Batteries
  - Breathing Air Bottle Re-Filling
  - Air Purifying Respirators
  - Chemical Suits
- Establish communications with Mutual Aid Resources logistics and staging officers to coordinate procurement and distribution of supplies and equipment.
- Provide updates to IC and EOC on status of logistic requirements.

UNIFIED INCIDENT COMMAND SYSTEM

Manager of Human Resources/Public Information Officer (PIO): (normally filled by the Manager of Human Resources)

- Provides overall guidance and direction to staff in the EOC in dealing with the media, the public and employees and their families.
- Prepares and presents briefings to the media as necessary.
- Contacts employee family members in the event employees are injured.
- Contacts needed off-duty employees to return to the refinery as required. Those individuals on the Call-Out list will have been called by Security.
- Updates IC on HR/PIO issues as appropriate.

Finance Director: (role normally filled by Accounting Manager)

- Provide overall guidance and direction to logistics, finance and purchasing effort for the Refinery response.

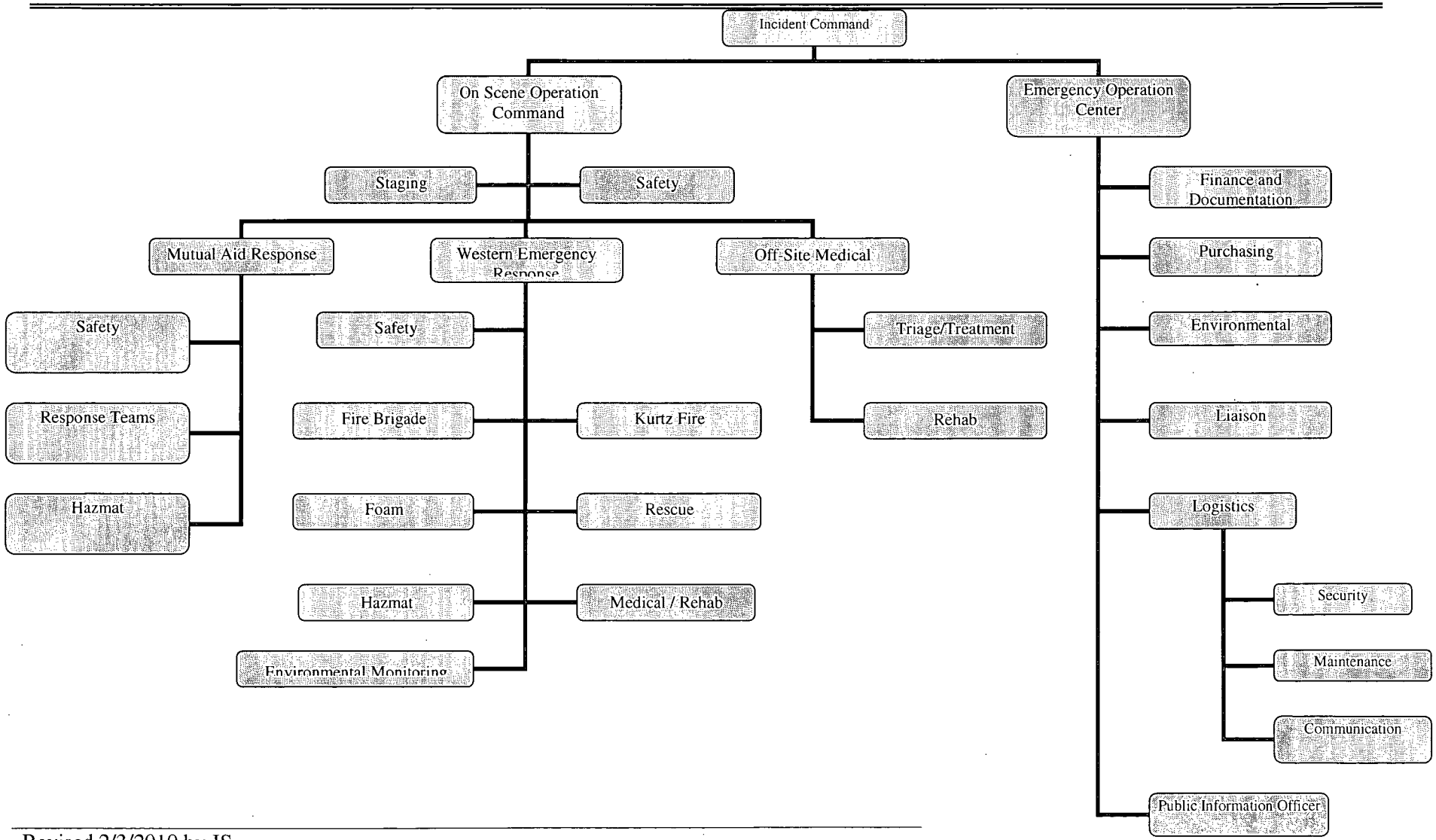
Purchasing Director: (role normally filled by Purchasing Manager)

- Process and direct any requests for unique or specialized equipment and for purchase of supplies and materials from the Logistics Officer.

Environmental Director: (role filled by Environmental Manager)

- Provide overall guidance and direction to the environmental staff in support of the response.
- Communicate with and provide guidance to IC and Western On Scene Command on environmental issues arising as a result of the incident.
- Prepare and present briefings to Federal/State or Local authorities and/or media on environmental issues related to the incident.
- Update IC on environmental concerns and status of any remediation efforts.

ATTACHMENT 1 –INCIDENT COMMAND STRUCTURE



SHELTER-IN-PLACE AND REFINERY EVACUATION PLAN

1.0 PURPOSE

This appendix is to be used if shelter-in-place or evacuation procedures need to be implemented in the Refinery, associated facilities or the surrounding community.

There are incident scenarios which could require Refinery workers and/or people in the surrounding community to either shelter-in-place or evacuate to a safe area. The Western Incident Command in communication with On Scene Command must rapidly evaluate the situation and initiate the appropriate actions to protect life and safety. Depending on the location and severity of the incident, personnel may be required to:

- Evacuate threatened portions of the Refinery to designated "Safe Havens" (Modular Office Complex) and shelter-in-place.
- Evacuate the Refinery and surrounding community for a radius of up to two miles from the source.

2.0 GENERAL

During an emergency "Western Command" will determine the required action to be taken by refinery employees. This will be communicated by Radio Channel One & Two and repeated by Security on the remaining radio channels. The required actions to be taken will be indicated as follows:

LEVEL I INCIDENT No action required by personnel outside of the affected unit. (no audible alarm)

LEVEL II INCIDENT Limited evacuation from specified emergency locations of non-essential personnel to designated safe havens.

LEVEL III INCIDENT Limited evacuation from specified locations to full evacuation from the refinery of all non-essential personnel to designated safe havens.

LEVEL IV INCIDENT Full evacuation of the refinery to the off-site assembly point.

3.0 SHELTER-IN-PLACE

Move all Refinery personnel to Safe Havens (Modular Office Complex). The route taken should be crosswind to the release. Evacuation of control room should be based on proximity to the release, wind direction and air monitoring results. It may be necessary to advise the NMSP IC to evacuate the surrounding community within a radius of one-half to one mile of the release.

SHELTER-IN-PLACE AND REFINERY EVACUATION PLAN

Scenarios which may require evacuation from threatened locations to "Safe Havens" for shelter-in-place:

- Large release of hydrogen sulfide (H_2S) gas.
- Release of HF Acid
- Moderate Release with Vapor Cloud Explosion (VCE) potential

SAFE HAVENS

Because of their construction and location, the Safe Havens listed below will provide protection for H_2S releases and VCE/BLEVE events in lieu of full evacuation of the refinery.

- Administration Building west side offices.
- South Modular Office Buildings
- Pilot Travel Center

SHELTER-IN-PLACE GUIDELINES

When sheltering in place the following guidelines should be adhered to:

- Move to interior offices or center of building away from all windows and glass doors. Close doors.
- If toxic gas is a hazard, shut down HVAC systems and seal cracks around doors with tape.
- Supervisors obtain shelter count by name and total number in shelter. Give count to IC if requested.
- Monitor radio channel I for additional instructions or All-Clear signal.
- Remain in shelter until All-Clear is sounded or additional instructions are received from IC.
- Remain calm.

4.0 REFINERY-WIDE / PUBLIC EVACUATION

Scenarios which would require evacuation of the Refinery and surrounding community out to a radius of up to one mile will involve a potential LPG vessel BLEVE or large

SHELTER-IN-PLACE AND REFINERY EVACUATION PLAN

VCE threat. Advise the NMSP IC to evacuate the surrounding community according to the county's Emergency Operations Plan. This may include occupied areas within a radius of up to one mile of the release.

EVACUATION ROUTES

Potential BLEVE or large VCE threat. Employees should take a crosswind path away from the release following a route directly away from the incident:

EVACUATION GUIDELINES

The following guidelines should be followed when evacuating the refinery:

- Distance will be determined by the nature and location of the incident and be made by the Western Incident Command in communication with the On Scene Command.
- Evacuation will be on foot or by company vehicles. Personnel with company vehicles should pick up passengers on the way to Modular Office Complex. Vehicles will be driven slowly and carefully to avoid injury to personnel.
- Evacuating personnel should take small personal items of a valuable nature, required medication and appropriate clothing if weather is a factor.
- Evacuating control houses and leaving process plants running is an extremely difficult decision. But the control houses are not adequate protection in some scenarios and should be evacuated. Plant Operators should do what they can to "safe" the plants before they evacuate the control houses.
- Supervisors and Security Officers will assist in guiding personnel to the evacuation route and final assembly point.
- At the final assembly point, roll shall be taken and all personnel accounted for. Each work group supervisor will account for their personnel and report to the HR Manager. The IC will be notified of the results of the roll call.
- The Incident Command and Emergency Operation Center (EOC) will be moved to the Modular office Complex.
- Personnel will remain in the Final Assembly Area until relocated by bus to other shelter, released to go home, or until they can be returned to the Refinery.

HAZARDOUS WASTE EMERGENCY RESPONSE PROCEDURES

PURPOSE

This appendix provides guidance for responding to emergencies involving Refinery wastes classified as hazardous under the Resource Conservation and Recovery Act (RCRA) instruction

1.0 SCOPE

This appendix details the locations of hazardous constituents that are (or *may* be) RCRA WASTES present in the various Refinery waste streams. In addition, this appendix provides a description of the typical RCRA hazardous wastes present; the basis for their identification as a RCRA hazardous waste and the location within the Refinery where these wastes are stored or accumulated.

3.0 WASTE CONTAINER MARKING

All waste storage containers in the storage and accumulation sites are to beclearly marked and labeled and are segregated and sited for safety, easy access and response actions.

4.0 RESPONSE TO EMERGENCIES

The potential for major emergencies such as spills, releases or fires to occur in the RCRA waste storage or accumulation sites is very low. However, if an emergency does occur, Western Incident Command will utilize all available resources including this appendix, MSDS documents, atmospheric monitoring equipment, weather data and incident size up to insure appropriate response actions are implemented to protect personnel and the environment. These response actions will include:

- Identification of the RCRA wastes involved in the incident.
- Identification of the constituents potentially present in the RCRA wastes involved and the hazards they may present to personnel and the environment.
- Determination and implementation of the Hot, Warm and Cold Zone boundaries based on the nature of the emergency and the types of wastes involved.
- Determination and implementation of the type of emergency response to be initiated.
- Determination and implementation of the appropriate mitigation procedures and materials to be used.
- Determination and implementation of the appropriate levels and types of personal protective equipment (PPE) to be used by response and clean up personnel.
- Determination and implementation of reporting requirements to appropriate outside agencies.

HAZARDOUS WASTE EMERGENCY RESPONSE PROCEDURES

- Determination and implementation of appropriate decontamination procedure for response and clean up personnel and equipment.
- Determination and implementation of procedures to protect the environment and effect clean up and demobilization after the incident is mitigated.

Typical RCRA Hazardous Wastes, Basis for their Identification as RCRA Hazardous, and Location of Accumulation Site(s)

Waste Stream	Examples(Common Name & EPA Code)	Primary Basis for Identifying as RCRA Hazardous Waste	Accumulation Site(s)
Wastewater Sludges	Primary Sludges (FO37) Secondary Sludges (FO38) Slop Oil Solids (KO49) API Sep Sludges (KO5 1)	For all wastewater sludges shown to the left: Benzene, Benzo(a)pyrene, Chrysene, Lead, Chromium	**Bundle Wash Pad** **90 Day Pad**
	Heat Exchanger Sludges (KO50)	Chromium	**Bundle Wash Pad** **90 Day Pad**
Tank Bottoms	Crude Oil Tanks (K169, DO18) Acid / Caustic Tanks (DO02)	Benzene Corrosive, Benzene (Caustic)	**Bundle Wash Pad** **90 Day Pad**
Spent Catalysts	Plat, DHT (KI71, D018)	Benzene	**South Laydown Area** **Northeast Laydown Area**
Filter Elements	Gasoline Filters (D0I8)	Benzene	**South Laydown Area**

RESPONSE EQUIPMENT

FIREFIGHTING EQUIPMENT

Description	Capabilities	Location Stored
Foam Engine Units		
Pumper # 1	1,000 GPM water or foam	West Side Firehouse
Mini Pumper	500 GPM water or foam	West Side Firehouse
Pumper #2	3,000 GPM water or foam	I&E Shop
Other Response Units		
ERT Response Van	Rescue Supplies	West Side Firehouse
Foam		
	7 x 265 gal totes AFFF/AR 1x6%	West Side Firehouse
	2 x 265 gal totes AFFF 1%	West Side Firehouse
	1000 gal AFFF/AR 1x6%	Pumper #2
	1000 gal FPF 3%	Pumper #1

HAZMAT GEAR

Description	Capabilities	Location Stored
Level A suits	12 Fully Encapsulating	Fire Field Conex
ERT Response Van		West Side Firehouse
SCBA	12 - 30 minute SCBA	West Side Firehouse
SCBA Bottles	10 – 30 minute SCBA	Safety Building

INCLUSION OF SA-190 ELEMENTS IN OTHER PLANS

PURPOSE

This Appendix provides a listing of other plans within the Refinery that have a requirement for emergency response within them and details the elements of this plan that will be included or referenced within those plans. The Emergency Response Coordinator will review each of these other plans and add the elements and references from SA-190 and will perform a review of these other plans on an annual basis or whenever one of these other plans is exercised to determine if additional information or corrections to existing information is necessary to keep the plan current and accurate.

1.0 OTHER REFINERY PLANS REQUIRING SA-190 DATA

- Spill Control and Countermeasures (SPCC) Plan
- Spill Cleanup and Reporting Process
- Oil Pollution Act of 1990 (OPA 90) Facility-Specific Response Plan (FRP)

2.0 SA-190 ELEMENTS TO BE ADDED TO OTHER PLANS

2.1 SPCC Plan will have portions of Appendix 1 (Reporting Procedures), Appendix 3 (Unified Incident Command System), Appendix 4 (Shelter-in-place and Evacuation Plan), and Appendix 6 (List of Personnel and Response Equipment) of SA-190 added to the Plan.

2.2 Oil Pollution Act of 1990 (OPA 90) Plan will have portions of Appendix 1 (Reporting Procedures), Appendix 3 (Unified Incident Command System), Appendix 4 (Shelter-In-Place and Evacuation Plan), and Appendix 6 (List of Personnel and Response Equipment) of SA-190 added to the Plan

COMMUNICATING REFINERY EMERGENCY RESPONSE PROCESSES TO NEARBY FACILITIES

1.0 PURPOSE

This Appendix details the methods and personnel responsibilities for sharing Refinery Emergency Response processes with nearby facilities so these facilities, NM State Police, McKinley Co. Hospital and possible mutual aid response organizations will have a better understanding of the nature of Refinery emergencies, how the Refinery responds to and deals with emergencies and how they should react to different types of emergencies.

2.0 SCOPE

Information that may be provided to nearby facilities about Refinery Emergency Response Processes will include the following:

- Types and Levels of Emergencies
- Emergency Alarm Signals
- Refinery Emergency Response Organization (Unified Incident Command System)
- Refinery Response Plans
- Tests, Exercises and Drills
- Response to HF or LPG releases

3.0 RESPONSIBILITIES

3.1 The Refinery Emergency Response Coordinator will have responsibility for the following:

3.11 In coordination with the Safety Manager and Environmental Manager, develop a list of organizations that will be invited to participate in this program.

3.12 In coordination with the Safety and Environmental Group, develop an Informational Program that contains the information listed in Item 2.0 of this Appendix.

3.13 In coordination with the Safety and Environmental Group, develop a plan for presenting this Information Program to the groups identified in 3.11.

3.14 Present the Informational Program to those facilities that have chosen to participate.

3.15 Include procedures in Appendix 3 of SA-190 for the Refinery Emergency Response Center (EOC) to communicate with appropriate nearby facilities and mutual aid organizations during Refinery Emergencies.

RADIO CHANNEL ASSIGNMENTS

PURPOSE

This appendix describes normal radio channel assignments.

RADIO CHANNEL	USERS
1	Emergency, Security, Safety/TAC 1
2	Operations 2
3	Operations 3
4	Maintenance
5	Tankfield/Off-Sites
6	TAC 2 – available tactical channel
7	TAC 3 – available tactical channel
8	Turnaround

Communicator NXT Call Out Activation

The Communicator NXT system has been set up to allow fast efficient notifications to Western Refining emergency response personnel. This system can be activated by phone or computer from any location on or off site, at any time, by those individuals who have been trained and given activation permission within the NXT system. Activation scenarios have already been created within the system and are as follows:

SCENARIO NUMBERS

1. **Fire Emergencies**
2. **Spill Emergencies**
3. **System Test notification**
4. **Fire Quarters Pager (on duty firefighters)**

RADIO CHANNEL ASSIGNMENTS

Activation instructions are as follows:

Phone activation of a scenario

1. Call one of the following remote scenario activation phone numbers.

   a. 1-877-276-1989
   b. 1-615-514-0903
   c. 1-615-514-0904

2. If the system asks for a company ID number enter **6614**, and press #
3. The system then will ask for **YOUR** user ID, enter it and press #
4. If needed, enter **YOUR** security PIN number, and press #
5. The system will then ask you to enter a scenario ID, pick a number from one of the above listed scenarios and enter it, then press #
6. Press **3** to START the scenario, listen for the scenario confirmation, and then press # to END the call.

Computer activation of a scenario

1. Login to the system, and then click the SCENARIOS tab at the top of the page
2. Choose the scenario that you wish to activate and click on the corresponding box
3. Click **PROCEED TO ACTIVATION** found to the left side of the page under activation options, click **ACTIVATE**

RADIO CHANNEL ASSIGNMENTS

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Thursday, January 28, 2010 6:25 AM
To: 'Ed.Riege@wnr.com'; 'Schmaltz, Randy'
Cc: VonGonten, Glenn, EMNRD; 'Lackey, Johnny'
Subject: FW: H2S Contingency Plan Checklist.docx
Attachments: 19.15.11 NMAC.doc; H2S Plan Checklist.docx

Gentlemen:

You may recall that the OCD had alerted you to the New Mexico Oil Conservation Division hydrogen sulfide gas regulations and the requirement to have a H2S Contingency Plan if there is a potential for a release of 100 ppm or greater of H2S at your facilities.

Please find attached a document that was shared with the Navajo Refining Company in preparation of their H2S Contingency Plan. Please find attached the H2S Regulations to review the requirements for your facilities. Also, a sample of an H2S Contingency Plan approved by the OCD that may be similar to that required at a refinery and may be found on OCD Online at http://ocdimage.emnrd.state.nm.us/imaging/AEOrderCriteria.aspx (GW-33).

Please submit your H2S Contingency Plan(s) to the OCD within 90 days of today's date (April 28, 2010). Please contact me if you wish to meet to discuss the contingency plan for your facilities. If you feel your facility does not meet the requirements of the regulations, please provide an explanation for our records.

Please contact me if you have questions or need further assistance. Thank you.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Dept.
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Dr., Santa Fe, New Mexico 87505
Office: (505) 476-3490
Fax: (505) 476-3462
E-mail: CarlJ.Chavez@state.nm.us
Website: http://www.emnrd.state.nm.us/ocd/index.htm
(Pollution Prevention Guidance is under "Publications")

From: Chavez, Carl J, EMNRD
Sent: Thursday, January 28, 2010 6:15 AM
To: 'Lackey, Johnny'
Subject: FW: H2S Contingency Plan Checklist.docx

Johnny:

Re: Refinery Hydrogen Sulfide Contingency Plan Requirements

It was a pleasure meeting with Navajo Refining Company Representatives yesterday to discuss the hydrogen sulfide contingency plan for your refineries. The OCD is working to ensure all facilities (including refineries) that may discharge H2S at concentrations greater than 100 ppm meet the NMOCD H2S Regulations. As you realized yesterday, the public training, meetings, etc. component of the H2S contingency plan is an extremely important component of a refinery contingency plan. As you indicated, refineries are a little different than a gas plant with raw gas containing H2S because a refinery produces H2S and can shut down or flare gas under emergency conditions. A Gas Plant handles raw gas that inherently contains a volume fraction of H2S with fewer controls than a refinery that produces it in its refining process.

Here is the checklist that Glen von Gonten was glad to provide and that you requested yesterday.

Disclaimer: Please be advised that the attached document is not an official guidance document from the OCD, but is provided to assist you with your evaluation of the New Mexico Hydrogen Sulfide Regulations Title 19 (Natural Resources and Wildlife), Chapter 15 [(Oil and Gas), and Part 11 (Hydrogen Sulfide Gas- 19.15.11 NMAC)].

Please contact me if you have questions. Thank you.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Dept.
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Dr., Santa Fe, New Mexico 87505
Office: (505) 476-3490
Fax: (505) 476-3462
E-mail: CarlJ.Chavez@state.nm.us
Website: http://www.emnrd.state.nm.us/ocd/index.htm
(Pollution Prevention Guidance is under "Publications")

From: VonGonten, Glenn, EMNRD
Sent: Wednesday, January 27, 2010 4:00 PM
To: Chavez, Carl J, EMNRD
Subject: H2S Plan Checklist.docx

Carl,

For Navajo.

Glenn

TITLE 19 NATURAL RESOURCES AND WILDLIFE
CHAPTER 15 OIL AND GAS
PART 11 HYDROGEN SULFIDE GAS

19.15.11.1 ISSUING AGENCY: Energy, Minerals and Natural Resources Department, Oil Conservation Division.
[19.15.11.1 NMAC - N, 12/1/08]

19.15.11.2 SCOPE: 19.15.11 NMAC applies to a person subject to the division's jurisdiction, including a person engaged in drilling, stimulating, injecting into, completing, working over or producing an oil, gas or carbon dioxide well or a person engaged in gathering, transporting, storing, processing or refining of oil, gas or carbon dioxide. 19.15.11 NMAC does not exempt or otherwise excuse surface waste management facilities the division permits pursuant to 19.15.36 NMAC from more stringent conditions on the handling of hydrogen sulfide required of such facilities by 19.15.36 NMAC or more stringent conditions in permits issued pursuant to 19.15.36 NMAC, nor shall the facilities be exempt or otherwise excused from the requirements set forth in 19.15.11 NMAC by virtue of permitting under 19.15.36 NMAC.
[19.15.11.2 NMAC - Rp, 19.15.3.118 NMAC, 12/1/08]

19.15.11.3 STATUTORY AUTHORITY: 19.15.11 NMAC is adopted pursuant to the Oil and Gas Act, NMSA 1978, Section 70-2-6, Section 70-2-11 and Section 70-2-12.
[19.15.11.3 NMAC - N, 12/1/08]

19.15.11.4 DURATION: Permanent.
[19.15.11.4 NMAC - N, 12/1/08]

19.15.11.5 EFFECTIVE DATE: December 1, 2008, unless a later date is cited at the end of a section.
[19.15.11.5 NMAC - N, 12/1/08]

19.15.11.6 OBJECTIVE: To require oil and gas operations be conducted in a manner that protects the public from exposure to hydrogen sulfide gas.
[19.15.11.6 NMAC - N, 12/1/08]

19.15.11.7 DEFINITIONS:

A. "ANSI" means the American national standards institute.

B. "Area of exposure" means the area within a circle constructed with a point of escape at its center and the radius of exposure as its radius.

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

D. "Escape rate" means the maximum volume (Q) that is used to designate the possible rate of escape of a gaseous mixture containing hydrogen sulfide, as set forth in 19.15.11 NMAC.

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

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

(3) For existing oil wells, the escape rate is calculated by multiplying the producing gas/oil ratio by the maximum daily production rate or the best estimate of the maximum daily production rate.

(4) For new oil wells, the escape rate is calculated by multiplying the producing gas/oil ratio by the maximum daily production rate of offset wells in the pool or reservoir, or the pool or reservoir average of the producing gas/oil ratio multiplied by the maximum daily production rate.

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

E. "GPA" means the gas processors association.

F. "LEPC" means the local emergency planning committee established pursuant to the Emergency Planning and Community Right-To-Know Act, 42 U.S.C. section 11001.

G. "NACE" means the national association of corrosion engineers.

H. "Potentially hazardous volume" means the volume of hydrogen sulfide gas of such concentration that:

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

(2) the 500-ppm radius of exposure includes a public road; or

(3) the 100-ppm radius of exposure exceeds 3000 feet.

I. "Public area" means a building or structure that is not associated with the well, facility or operation for which the radius of exposure is being calculated and that is used as a dwelling, office, place of business,

church, school, hospital or government building, or a portion of a park, city, town, village or designated school bus stop or other similar area where members of the public may reasonably be expected to be 19.15.11 NMAC http://www.nmcpr.state.nm.us/nmac/parts/title19/19.015.0011.htm[1/16/2009 4:18:08 PM] present.

J. "Public road" means a federal, state, municipal or county road or highway.

K. "Radius of exposure" means the radius constructed with the point of escape as its starting point and its length calculated using the following Pasquill-Gifford derived equation, or by such other method as the division may approve:

(1) for determining the 100-ppm radius of exposure: X = [(1.589)(hydrogen sulfide concentration)(Q)](0.6258), where "X" is the radius of exposure in feet, the "hydrogen sulfide concentration" is the decimal equivalent of the mole or volume fraction of hydrogen sulfide in the gaseous mixture and "Q" is the escape rate expressed in cubic feet per day (corrected for standard conditions of 14.73 psi absolute and 60 degrees fahrenheit);

(2) for determining the 500-ppm radius of exposure: X = [(0.4546)(hydrogen sulfide concentration)(Q)](0.6258), where "X" is the radius of exposure in feet, the "hydrogen sulfide concentration" is the decimal equivalent of the mole or volume fraction of hydrogen sulfide in the gaseous mixture and "Q" is the escape rate expressed in cubic feet per day (corrected for standard conditions of 14.73 psi absolute and 60 degrees fahrenheit);

(3) for a well being drilled, completed, recompleted, worked over or serviced in an area where insufficient data exists to calculate a radius of exposure but where hydrogen sulfide could reasonably be expected to be present in concentrations in excess of 100 ppm in the

gaseous mixture, a 100-ppm radius of exposure equal to 3000 feet is assumed.
[19.15.11.7 NMAC - Rp, 19.15.3.118 NMAC, 12/1/08]

19.15.11.8 REGULATORY THRESHOLD:
A. Determination of hydrogen sulfide concentration.

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

(2) The person shall conduct the tests used to make the determination referred to in Paragraph (1) of Subsection A of 19.15.11.8 NMAC in accordance with applicable ASTM or GPA standards or by another division-approved method.

(3) If the person conducted a test prior to January 31, 2003 that otherwise meets the requirements of Paragraphs (1) and (2) of Subsection A of 19.15.11.8 NMAC, new testing is not required.

(4) If a change or alteration may materially increase the hydrogen sulfide concentration in a well, facility or operation, the person shall make a new determination in accordance with 19.15.11 NMAC.

B. Concentrations determined to be below 100 ppm. If the hydrogen sulfide concentration in a given well, facility or operation is less than 100 ppm, the person is not required to take further actions pursuant to 19.15.11 NMAC.

C. Concentrations determined to be above 100 ppm.

(1) If the person determines the hydrogen sulfide concentration in a given well, facility or operation is 100 ppm or greater, then the person shall calculate the radius of exposure and comply with applicable requirements of 19.15.11 NMAC.

(2) If calculation of the radius of exposure reveals that a potentially hazardous volume is present, the person shall provide results of the hydrogen sulfide concentration determination and the calculation of the radius of exposure to the division. For a well, facility or operation, the person shall accomplish the determination, calculation and submission 19.15.11.8 NMAC requires before operations begin.

D. Recalculation. The person shall calculate the radius of exposure if the hydrogen sulfide concentration in a well, facility or operation increases to 100 ppm or greater. The person shall also recalculate the radius of exposure if the actual volume fraction of hydrogen sulfide increases by a factor of 25 percent in a well, facility or operation that previously had a hydrogen sulfide concentration of 100 ppm or greater. If calculation or recalculation of the radius of exposure reveals that a potentially hazardous volume is present, the person shall provide the results to the division within 60 days.
[19.15.11.8 NMAC - Rp, 19.15.3.118 NMAC, 12/1/08]

19.15.11.9 HYDROGEN SULFIDE CONTINGENCY PLAN:

A. When required. If a well, facility or operation involves a potentially hazardous volume of hydrogen sulfide, the person shall develop a hydrogen sulfide contingency plan that the person will use to alert and protect the public in accordance with the Subsections B through I of 19.15.11.9 NMAC.

B. Plan contents.

(1) API guidelines. The person shall develop the hydrogen sulfide contingency plan with due consideration of paragraph 7.6 of the guidelines in the API publication Recommended Practices for Oil and Gas Producing and Gas Processing Plant Operations Involving Hydrogen Sulfide, RP-55, most recent edition, or with due consideration to another division-approved standard.

(2) Required contents. The hydrogen sulfide contingency plan shall contain information on the following subjects, as appropriate to the well, facility or operation to which it applies.

(a) Emergency procedures. The hydrogen sulfide contingency plan shall contain information on emergency procedures the person will follow in the event of a release and shall include, at a minimum, information concerning the responsibilities and duties of personnel during the emergency, an immediate action plan as described in the API document referenced in Paragraph (1) of Subsection B of 19.15.11.9 NMAC, and telephone numbers of emergency responders, public agencies, local government and other appropriate public authorities. The plan shall also include the locations of potentially affected public areas and public roads and shall describe proposed evacuation routes, locations of road blocks and procedures for notifying the public, either through direct telephone notification using telephone number lists or by means of mass 19.15.11 NMAC http://www.nmcpr.state.nm.us/nmac/parts/title19/19.015.0011.htm[1/16/2009 4:18:08 PM] notification and reaction plans. The plan shall include information on the availability and location of necessary safety equipment and supplies.

(b) Characteristics of hydrogen sulfide and sulfur dioxide. The hydrogen sulfide contingency plan shall include a discussion of the characteristics of hydrogen sulfide and sulfur dioxide.

(c) Maps and drawings. The hydrogen sulfide contingency plan shall include maps and drawings that depict the area of exposure and public areas and public roads within the area of exposure.

(d) Training and drills. The hydrogen sulfide contingency plan shall provide for training and drills, including training in the responsibilities and duties of essential personnel and periodic on-site or classroom drills or exercises that simulate a release, and shall describe how the person will document the training, drills and attendance. The hydrogen sulfide contingency plan shall also provide for training of residents as appropriate on the proper protective measures to be taken in the event of a release, and shall provide for briefing of public officials on issues such as evacuation or shelter-in-place plans.

(e) Coordination with state emergency plans. The hydrogen sulfide contingency plan shall describe how the person will coordinate emergency response actions under the plan with the division and the New Mexico state police consistent with the New Mexico hazardous materials emergency response plan.

(f) Activation levels. The hydrogen sulfide contingency plan shall include the activation level and a description of events that could lead to a release of hydrogen sulfide sufficient to create a concentration in excess of the activation level.

C. Plan activation. The person shall activate the hydrogen sulfide contingency plan when a release creates a hydrogen sulfide concentration greater than the activation level set forth in the hydrogen sulfide contingency plan. At a minimum, the person shall activate the plan whenever a release may create a hydrogen sulfide concentration of more than 100 ppm in a public area, 500 ppm at a public road or 100 ppm 3000 feet from the site of release.

D. Submission.

(1) Where submitted. The person shall submit the hydrogen sulfide contingency plan to the division.

(2) When submitted. The person shall submit a hydrogen sulfide contingency plan for a new well, facility or operation before operations commence. The hydrogen sulfide contingency plan for a drilling, completion, workover or well servicing operation shall be on file with the division before operations commence and may be submitted separately or along with the APD or may be on file from a previous submission. A person shall submit a hydrogen sulfide contingency plan within 180 days after the person becomes aware or should have become aware that a public area or public road is established that creates a potentially hazardous volume where none previously existed.

(3) Electronic submission. A filer who operates more than 100 wells or who operates an oil pump station, compressor station, refinery or gas plant shall submit each hydrogen sulfide contingency plan in electronic format. The file may submit the hydrogen sulfide contingency plan through electronic mail, through an Internet filing or by delivering electronic media to the division, so long as the electronic submission is compatible with the division's systems.

E. Failure to submit plan. A person's failure to submit a hydrogen sulfide contingency plan when required may result in denial of an application for permit to drill, cancellation of an allowable for the subject well or other enforcement action appropriate to the well, facility or operation.

F. Review, amendment. The person shall review the hydrogen sulfide contingency plan any time a subject addressed in the plan materially changes and make appropriate amendments. If the division determines that a hydrogen sulfide contingency plan is inadequate to protect public

safety, the division may require the person to add provisions to the plan or amend the plan as necessary to protect public safety.

G. Retention and inspection. The hydrogen sulfide contingency plan shall be reasonably accessible in the event of a release, maintained on file at all times and available for division inspection.

H. Annual inventory of contingency plans. On an annual basis, each person required to prepare one or more hydrogen sulfide contingency plans pursuant to 19.15.11 NMAC shall file with the appropriate local emergency planning committee and the state emergency response commission an inventory of the wells, facilities and operations for which plans are on file with the division and the name, address and telephone number of a point of contact.

I. Plans required by other jurisdictions. The person may submit a hydrogen sulfide contingency plan to the BLM or other jurisdiction require that meets the requirements of 19.15.11.9 NMAC to the division in satisfaction of 19.15.11.9 NMAC.
[19.15.11.9 NMAC - Rp, 19.15.3.118 NMAC, 12/1/08]

19.15.11.10 SIGNS, MARKERS: For each well, facility or operation involving a hydrogen sulfide concentration of 100 ppm or greater, the person shall install and maintain signs or markers that conform with the current ANSI standard Z535.1-2002 (Safety Color Code), or some other division-approved standard. The sign or marker shall be readily readable, and shall contain the words "poison gas" and other information sufficient to warn the public that a potential danger exists. The person shall prominently post signs or markers at locations, including entrance points and road crossings, sufficient to alert the public that a potential danger exists.
[19.15.11.10 NMAC - Rp, 19.15.3.118 NMAC, 12/1/08]

19.15.11.11 PROTECTION FROM HYDROGEN SULFIDE DURING DRILLING, COMPLETION, WORKOVER AND WELL SERVICING OPERATIONS:

A. API standards. The person shall conduct drilling, completion, workover and well servicing operations involving a hydrogen sulfide concentration of 100 ppm or greater with due consideration to the guidelines in the API publications Recommended Practice for Oil and Gas Well Servicing and Workover Operations Involving Hydrogen Sulfide, RP-68, and Recommended Practices for Drilling and Well Servicing Operations Involving Hydrogen Sulfide, RP-49, most recent editions, or some other division-approved standard.

B. Detection and monitoring equipment. Drilling, completion, workover and well servicing operations involving a hydrogen sulfide 19.15.11 NMAC http://www.nmcpr.state.nm.us/nmac/parts/title19/19.015.0011.htm[1/16/2009 4:18:08 PM] concentration of 100 ppm or greater shall include hydrogen sulfide detection and monitoring equipment as follows.

(1) Each drilling and completion site shall have an accurate and precise hydrogen sulfide detection and monitoring system that automatically activates visible and audible alarms when the hydrogen sulfide's ambient air concentration reaches a predetermined value the operator sets, not to exceed 20 ppm. The operator shall locate a sensing point at the shale shaker, rig floor and bell nipple for a drilling site and the cellar, rig floor and circulating tanks or shale shaker for a completion site.

(2) For workover and well servicing operations, the person shall locate one operational sensing point as close to the well bore as practical. Additional sensing points may be necessary for large or long-term operations.

(3) The operator shall provide and maintain as operational hydrogen sulfide detection and monitoring equipment during drilling when

drilling is within 500 feet of a zone anticipated to contain hydrogen sulfide and continuously thereafter through all subsequent drilling.

C. Wind indicators. Drilling, completion, workover and well servicing operations involving a hydrogen sulfide concentration of 100 ppm or greater shall include wind indicators. The person shall have equipment to indicate wind direction present and visible at all times. The person shall install at least two devices to indicate wind direction at separate elevations that visible from all principal working areas at all times. When a sustained hydrogen sulfide concentration is detected in excess of 20 ppm at a detection point, the person shall display red flags.

D. Flare system. For drilling and completion operations in an area where it is reasonably expected that a potentially hazardous hydrogen sulfide volume will be encountered, the person shall install a flare system to safely gather and burn hydrogen-sulfide-bearing gas. The person shall locate flare outlets at least 150 feet from the well bore. Flare lines shall be as straight as practical. The person shall equip the flare system with a suitable and safe means of ignition. Where oncombustible gas is to be flared, the system shall provide supplemental fuel to maintain ignition.

E. Well control equipment. When the 100 ppm radius of exposure includes a public area, the following well control equipment is required.

(1) Drilling. The person shall install a remote-controlled well control system that is operational at all times beginning when drilling is within 500 vertical feet of the formation believed to contain hydrogen sulfide and continuously thereafter during drilling. The well control system shall include, at a minimum, a pressure and hydrogen-sulfide-rated well control choke and kill system including manifold and blowout preventer that meets or exceeds the specifications in API publications Choke and Kill Systems, 16C and Blowout Prevention Equipment Systems for Drilling Wells, RP 53 or other division-approved specifications. The person shall use mud-gas separators. The person

shall test and maintain these systems pursuant to the specifications referenced, according to the requirements of 19.15.11 NMAC, or as the division otherwise approves.

(2) Completion, workover and well servicing. The person shall install a remote controlled pressure and hydrogen-sulfide-rated well control system that meets or exceeds API specifications or other division-approved specifications that is operational at all times during a well's completion, workover and servicing.

F. Mud program. Drilling, completion, workover and well servicing operations involving a hydrogen sulfide concentration of 100 ppm or greater shall use a hydrogen sulfide mud program capable of handling hydrogen sulfide conditions and well control, including de-gassing.

G. Well testing. except with prior division approval, a person shall conduct drill-stem testing of a zone that contains hydrogen sulfide in a concentration of 100 ppm or greater only during daylight hours and not permit formation fluids to flow to the surface.

H. If hydrogen sulfide encountered during operations. If hydrogen sulfide was not anticipated at the time the division issued a permit to drill but is encountered during drilling in a concentration of 100 ppm or greater, the operator shall satisfy the requirements of 19.15.11 NMAC before continuing drilling operations. The operator shall notify the division of the event and the mitigating steps that the operator has or is taking as soon as possible, but no later than 24 hours following discovery. The division may grant verbal approval to continue drilling operations pending preparation of a required hydrogen sulfide contingency plan. [19.15.11.11 NMAC - Rp, 19.15.3.118 NMAC, 12/1/08]

19.15.11.12 PROTECTION FROM HYDROGEN SULFIDE AT OIL PUMP STATIONS, PRODUCING WELLS, TANK

BATTERIES AND ASSOCIATED PRODUCTION FACILITIES, PIPELINES, REFINERIES, GAS PLANTS AND COMPRESSOR STATIONS:

A. API standards. A person shall conduct operations at oil pump stations and producing wells, tank batteries and associated production facilities, refineries, gas plants and compressor stations involving a hydrogen sulfide concentration of 100 ppm or greater with due consideration to the guidelines in the API publication Recommended Practices for Oil and Gas Producing and Gas Processing Plant Operations Involving Hydrogen Sulfide, RP-55, latest edition or some other division-approved standard.

B. Security. A person shall protect well sites and other unattended, fixed surface facilities involving a hydrogen sulfide concentration of 100 ppm or greater from public access by fencing with locking gates when the location is within 1/4 mile of a public area. For the purposes of Subsection B of 19.15.11.12 NMAC, a surface pipeline is not considered a fixed surface facility.

C. Wind direction indicators. Oil pump stations, producing wells, tank batteries and associated production facilities, pipelines, refineries, gas plants and compressor stations involving a hydrogen sulfide concentration of 100 ppm or greater shall have equipment to indicate wind direction. The person shall install wind direction equipment that is visible from all principal working areas at all times.

D. Control equipment. When the 100 ppm radius of exposure includes a public area, the following additional measures are required.

(1) The person shall install and maintain in good operating condition safety devices, such as automatic shut-down devices, to prevent hydrogen sulfide's escape. Alternatively, the person shall establish safety procedures to achieve the same purpose.

(2) A well shall possess a secondary means of immediate well control through the use of an appropriate christmas tree or downhole completion equipment. The equipment shall allow downhole accessibility (reentry) under pressure for permanent well control.

E. Tanks or vessels. The person shall chain each stair or ladder leading to the top of a tank or vessel containing 300 ppm or more 19.15.11 NMAC
http://www.nmcpr.state.nm.us/nmac/parts/title19/19.015.0011.htm[1/16/2009 4:18:08 PM] of hydrogen sulfide in the gaseous mixture or mark it to restrict entry. [19.15.11.12 NMAC - Rp, 19.15.3.118 NMAC, 12/1/08]

19.15.11.13 PERSONNEL PROTECTION AND TRAINING: The person shall provide persons responsible for implementing a hydrogen sulfide contingency plan training in hydrogen sulfide hazards, detection, personal protection and contingency procedures.
[19.15.11.13 NMAC - Rp, 19.15.3.118 NMAC, 12/1/08]

19.15.11.14 STANDARDS FOR EQUIPMENT THAT MAY BE EXPOSED TO HYDROGEN SULFIDE: Whenever a well, facility or operation involves a potentially hazardous hydrogen sulfide volume, the person shall select equipment with consideration for both the hydrogen sulfide working environment and anticipated stresses and shall use NACE Standard MR0175 (latest edition) or some other division-approved standard for selection of metallic equipment or, if applicable, use adequate protection by chemical inhibition or other methods that control or limit hydrogen sulfide's corrosive effects.
[19.15.11.14 NMAC - Rp, 19.15.3.118 NMAC, 12/1/08]

19.15.11.15 EXEMPTIONS: A person may petition the director or the director's designee for an exemption to a requirement of 19.15.11 NMAC. A petition shall provide specific information as to the circumstances that warrant approval of the exemption requested and how the person will protect public safety. The director or the director's

designee, after considering all relevant factors, may approve an exemption if the circumstances warrant and so long as the person protects public safety.
[19.15.11.15 NMAC - Rp, 19.15.3.118 NMAC, 12/1/08]

19.15.11.16 NOTIFICATION OF THE DIVISION: The person shall notify the division upon a release of hydrogen sulfide requiring activation of the hydrogen sulfide contingency plan as soon as possible, but no more than four hours after plan activation, recognizing that a prompt response should supersede notification. The person shall submit a full report of the incident to the division on form C-141 no later than 15 days following the release.
[19.15.11.16 NMAC - Rp, 19.15.3.118 NMAC, 12/1/08]

HISTORY of 19.15.11 NMAC:
History of Repealed Material: 19.15.3 NMAC, Drilling (filed 10/29/2001) repealed 12/1/08.
NMAC History:
That applicable portion of 19.15.3 NMAC, Drilling (Section 118) (filed 10/29/2001) was replaced by 19.15.11 NMAC, Hydrogen Sulfide Gas, effective 12/1/08.

TITLE 19 NATURAL RESOURCES AND WILDLIFE CHAPTER 15 OIL& GAS **PART 11 HYDROGEN SULFIDE GAS** **19.15.11.7 DEFINITIONS:**	
A. "ANSI" means the American national standards institute.	
B. "Area of exposure" means the area within a circle constructed with a point of escape at its center and the radius of exposure as its radius.	
C. "Dispersion technique" is a mathematical representation of the physical and chemical transportation characteristics, dilution characteristics and transformation characteristics of hydrogen sulfide gas in the atmosphere.	
D. "Escape rate" means the maximum volume (Q) that is used to designate the possible rate of escape of a gaseous mixture containing hydrogen sulfide, as set forth in 19.15.11 NMAC.	
(1) For existing gas facilities or operations, the escape rate is calculated using the maximum daily rate of the gaseous mixture produced or handled or the best estimate thereof. For an existing gas well, the escape rate is calculated using the current daily absolute open flow rate against atmospheric pressure or the best estimate of that rate.	
(2) For new gas operations or facilities, the escape rate is calculated as the maximum anticipated flow rate through the system. For a new gas well, the escape rate is calculated using the maximum open-flow rate of offset wells in the pool or reservoir, or the pool or reservoir average of maximum open-flow rates.	
(3) For existing oil wells, the escape rate is calculated by multiplying the producing gas/oil ratio by the maximum daily production rate or the best estimate of the maximum daily production rate.	
(4) For new oil wells, the escape rate is calculated by multiplying the producing gas/oil ratio by the maximum daily production rate of offset wells in the pool or reservoir, or the pool or reservoir average of the producing gas/oil ratio multiplied by the maximum daily production rate.	
(5) For facilities or operations not mentioned, the escape rate is calculated using the actual flow of the gaseous mixture through the system or the best estimate of the actual flow of the gaseous mixture through the system.	
E. "GPA" means the gas processors association.	
F. "LEPC" means the local emergency planning committee established pursuant to the Emergency Planning and Community Right-To-Know Act, 42 U.S.C. section 11001.	
G. "NACE" means the national association of corrosion engineers.	
H. "Potentially hazardous volume" means the volume of hydrogen sulfide gas of such concentration that:	
(1) the 100-ppm radius of exposure includes a public area;	
(2) the 500-ppm radius of exposure includes a public road; or	
(3) the 100-ppm radius of exposure exceeds 3000 feet.	
I. "Public area" means a building or structure that is not associated with the well, facility or operation for which the radius of exposure is being calculated and that is used as a dwelling, office, place of business, church, school, hospital or government building, or a portion of a park, city, town, village or designated	

school bus stop or other similar area where members of the public may reasonably be expected to be present.	
J. "Public road" means a federal, state, municipal or county road or highway.	
K. "Radius of exposure" means the radius constructed with the point of escape as its starting point and its length calculated using the following Pasquill-Gifford derived equation, or by such other method as the division may approve:	
(1) for determining the 100-ppm radius of exposure: $X = [(1.589)(\text{hydrogen sulfide concentration})(Q)](0.6258)$, where "X" is the radius of exposure in feet, the "hydrogen sulfide concentration" is the decimal equivalent of the mole or volume fraction of hydrogen sulfide in the gaseous mixture and "Q" is the escape rate expressed in cubic feet per day (corrected for standard conditions of 14.73 psi absolute and 60 degrees fahrenheit);	
(2) for determining the 500-ppm radius of exposure: $X = [(0.4546)(\text{hydrogen sulfide concentration})(Q)](0.6258)$, where "X" is the radius of exposure in feet, the "hydrogen sulfide concentration" is the decimal equivalent of the mole or volume fraction of hydrogen sulfide in the gaseous mixture and "Q" is the escape rate expressed in cubic feet per day (corrected for standard conditions of 14.73 psi absolute and 60 degrees fahrenheit);	
(3) for a well being drilled, completed, recompleted, worked over or serviced in an area where insufficient data exists to calculate a radius of exposure but where hydrogen sulfide could reasonably be expected to be present in concentrations in excess of 100 ppm in the gaseous mixture, a 100-ppm radius of exposure equal to 3000 feet is assumed.	
19.15.11.8 REGULATORY THRESHOLD:	
A. Determination of hydrogen sulfide concentration.	
(1) Each person shall determine the hydrogen sulfide concentration in the gaseous mixture by testing a sample from each well, facility or operation; testing a representative sample; or using process knowledge in lieu of testing.	
(2) The person shall conduct the tests in accordance with applicable ASTM or GPA standards or by another division-approved method.	
(3) If the person conducted a test prior to January 31, 2003 that otherwise meets the requirements of Paragraphs (1) and (2) of Subsection A of 19.15.11.8 NMAC, new testing is not required.	
(4) If a change or alteration occurs operators shall make a new determination	
B. Concentrations determined to be below 100 ppm. If less than 100 ppm, the person is not required to take further actions pursuant to 19.15.11 NMAC.	
C. Concentrations determined to be above 100 ppm.	
(1) If the person determines the hydrogen sulfide concentration in a given well, facility or operation is 100 ppm or greater, then the person shall calculate the radius of exposure and comply with applicable requirements of 19.15.11 NMAC.	
(2) If calculation of the radius of exposure reveals that a potentially hazardous volume is present, the person shall provide results of the hydrogen sulfide concentration determination and the calculation of	

the radius of exposure to the division. For a well, facility or operation, the person shall accomplish the determination, calculation and submission 19.15.11.8 NMAC requires before operations begin.	
D. Recalculation. The person shall calculate the radius of exposure if the hydrogen sulfide concentration in a well, facility or operation increases to 100 ppm or greater. The person shall also recalculate the radius of exposure if the actual volume fraction of hydrogen sulfide increases by a factor of 25 percent in a well, facility or operation that previously had a hydrogen sulfide concentration of 100 ppm or greater. If calculation or recalculation of the radius of exposure reveals that a potentially hazardous volume is present, the person shall provide the results to the division within 60 days.	
19.15.11.9 HYDROGEN SULFIDE CONTINGENCY PLAN:	
A. When required. If a well, facility or operation involves a potentially hazardous volume of hydrogen sulfide, the person shall develop a hydrogen sulfide contingency plan that the person will use to alert and protect the public in accordance with the Subsections B through I of 19.15.11.9 NMAC. B. Plan contents.	
(1) API guidelines. The person shall develop the hydrogen sulfide contingency plan with due consideration of paragraph 7.6 of the guidelines in the API publication Recommended Practices for Oil and Gas Producing and Gas Processing Plant Operations Involving Hydrogen Sulfide, RP-55, most recent edition, or with due consideration to another division-approved standard.	
(2) Required contents. The hydrogen sulfide contingency plan shall contain information on the following subjects, as appropriate to the well, facility or operation to which it applies.	
(a) Emergency procedures. The hydrogen sulfide contingency plan shall contain information on emergency procedures the person will follow in the event of a release and shall include, at a minimum, information concerning the responsibilities and duties of personnel during the emergency, an immediate action plan as described in the API document referenced in Paragraph (1) of Subsection B of 19.15.11.9 NMAC, and telephone numbers of emergency responders, public agencies, local government and other appropriate public authorities. The plan shall also include the locations of potentially affected public areas and public roads and shall describe proposed evacuation routes, locations of road blocks and procedures for notifying the public, either through direct telephone notification using telephone number lists or by means of mass notification and reaction plans. The plan shall include information on the availability and location of necessary safety equipment and supplies.	
(b) Characteristics of hydrogen sulfide and sulfur dioxide. The hydrogen sulfide contingency plan shall include a discussion of the characteristics of hydrogen sulfide and sulfur dioxide.	
(c) Maps and drawings. The hydrogen sulfide contingency plan shall include maps and drawings that depict the area of exposure and public areas and public roads within the area of exposure.	
(d) Training and drills. The hydrogen sulfide contingency plan shall provide for training and drills, including training in the responsibilities and duties of essential personnel and periodic on-site or classroom drills or exercises that simulate a release, and shall describe how the person will document the training, drills and attendance. The hydrogen sulfide contingency plan shall also provide for training of residents as appropriate on the proper protective measures to be taken in the event of a release, and shall provide for briefing of public officials on issues such as evacuation or shelter-in-place plans.	

(e) Coordination with state emergency plans. The hydrogen sulfide contingency plan shall describe how the person will coordinate emergency response actions under the plan with the division and the New Mexico state police consistent with the New Mexico hazardous materials emergency response plan.	
(f) Activation levels. The hydrogen sulfide contingency plan shall include the activation level and a description of events that could lead to a release of hydrogen sulfide sufficient to create a concentration in excess of the activation level.	
C. Plan activation. The person shall activate the hydrogen sulfide contingency plan when a release creates a hydrogen sulfide concentration greater than the activation level set forth in the hydrogen sulfide contingency plan. At a minimum, the person shall activate the plan whenever a release may create a hydrogen sulfide concentration of more than 100 ppm in a public area, 500 ppm at a public road or 100 ppm 3000 feet from the site of release.	
D. Submission.	
(1) Where submitted. The person shall submit the hydrogen sulfide contingency plan to the division.	
(2) When submitted. The person shall submit a hydrogen sulfide contingency plan for a new well, facility or operation before operations commence. The hydrogen sulfide contingency plan for a drilling, completion, workover or well servicing operation shall be on file with the division before operations commence and may be submitted separately or along with the APD or may be on file from a previous submission. A person shall submit a hydrogen sulfide contingency plan within 180 days after the person becomes aware or should have become aware that a public area or public road is established that creates a potentially hazardous volume where none previously existed.	
(3) Electronic submission. A filer who operates more than 100 wells or who operates an oil pump station, compressor station, refinery or gas plant shall submit each hydrogen sulfide contingency plan in electronic format. The file may submit the hydrogen sulfide contingency plan through electronic mail, through an Internet filing or by delivering electronic media to the division, so long as the electronic submission is compatible with the division's systems.	
E. Failure to submit plan. A person's failure to submit a hydrogen sulfide contingency plan when required may result in denial of an application for permit to drill, cancellation of an allowable for the subject well or other enforcement action appropriate to the well, facility or operation.	
F. Review, amendment. The person shall review the hydrogen sulfide contingency plan any time a subject addressed in the plan materially changes and make appropriate amendments. If the division determines that a hydrogen sulfide contingency plan is inadequate to protect public safety, the division may require the person to add provisions to the plan or amend the plan as necessary to protect public safety.	
G. Retention and inspection. The hydrogen sulfide contingency plan shall be reasonably accessible in the event of a release, maintained on file at all times and available for division inspection.	
H. Annual inventory of contingency plans. On an annual basis, each person required to prepare one or more hydrogen sulfide contingency plans pursuant to 19.15.11 NMAC shall file with the appropriate local emergency planning committee and the state emergency response commission an inventory of the wells, facilities and operations for which plans are on file with the division and the name, address and	

telephone number of a point of contact.	
I. Plans required by other jurisdictions. The person may submit a hydrogen sulfide contingency plan the BLM or other jurisdiction require that meets the requirements of 19.15.11.9 NMAC to the division in satisfaction of 19.15.11.9 NMAC.	
19.15.11.10 SIGNS, MARKERS:	
For each well, facility or operation involving a hydrogen sulfide concentration of 100 ppm or greater, the person shall install and maintain signs or markers that conform with the current ANSI standard Z535.1-2002 (Safety Color Code), or some other division-approved standard. The sign or marker shall be readily readable, and shall contain the words "poison gas" and other information sufficient to warn the public that a potential danger exists. The person shall prominently post signs or markers at locations, including entrance points and road crossings, sufficient to alert the public that a potential danger exists.	
19.15.11.11 PROTECTION FROM HYDROGEN SULFIDE DURING DRILLING; COMPLETION, WORKOVER AND WELL SERVICING OPERATIONS:	
A. API standards. The person shall conduct drilling, completion, workover and well servicing operations involving a hydrogen sulfide concentration of 100 ppm or greater with due consideration to the guidelines in the API publications Recommended Practice for Oil and Gas Well Servicing and Workover Operations Involving Hydrogen Sulfide, RP-68, and Recommended Practices for Drilling and Well Servicing Operations Involving Hydrogen Sulfide, RP-49, most recent editions, or some other division-approved standard.	
B. Detection and monitoring equipment. Drilling, completion, workover and well servicing operations involving a hydrogen sulfide concentration of 100 ppm or greater shall include hydrogen sulfide detection and monitoring equipment as follows.	
(1) Each drilling and completion site shall have an accurate and precise hydrogen sulfide detection and monitoring system that automatically activates visible and audible alarms when the hydrogen sulfide's ambient air concentration reaches a predetermined value the operator sets, not to exceed 20 ppm. The operator shall locate a sensing point at the shale shaker, rig floor and bell nipple for a drilling site and the cellar, rig floor and circulating tanks or shale shaker for a completion site.	
(2) For workover and well servicing operations, the person shall locate one operational sensing point as close to the well bore as practical. Additional sensing points may be necessary for large or long-term operations.	
(3) The operator shall provide and maintain as operational hydrogen sulfide detection and monitoring equipment during drilling when drilling is within 500 feet of a zone anticipated to contain hydrogen sulfide and continuously thereafter through all subsequent drilling.	
C. Wind indicators. Drilling, completion, workover and well servicing operations involving a hydrogen sulfide concentration of 100 ppm or greater shall include wind indicators. The person shall have equipment to indicate wind direction present and visible at all times. The person shall install at least two devices to indicate wind direction at separate elevations that visible from all principal working areas at all times. When a sustained hydrogen sulfide concentration is detected in excess of 20 ppm at a	

detection point, the person shall display red flags.	
D. Flare system. For drilling and completion operations in an area where it is reasonably expected that a potentially hazardous hydrogen sulfide volume will be encountered, the person shall install a flare system to safely gather and burn hydrogen-sulfide-bearing gas. The person shall locate flare outlets at least 150 feet from the well bore. Flare lines shall be as straight as practical. The person shall equip the flare system with a suitable and safe means of ignition. Where noncombustible gas is to be flared, the system shall provide supplemental fuel to maintain ignition.	
E. Well control equipment. When the 100 ppm radius of exposure includes a public area, the following well control equipment is required.	
(1) Drilling. The person shall install a remote-controlled well control system that is operational at all times beginning when drilling is within 500 vertical feet of the formation believed to contain hydrogen sulfide and continuously thereafter during drilling. The well control system shall include, at a minimum, a pressure and hydrogen-sulfide-rated well control choke and kill system including manifold and blowout preventer that meets or exceeds the specifications in API publications Choke and Kill Systems, 16C and Blowout Prevention Equipment Systems for Drilling Wells, RP 53 or other division-approved specifications. The person shall use mud-gas separators. The person shall test and maintain these systems pursuant to the specifications referenced, according to the requirements of 19.15.11 NMAC, or as the division otherwise approves.	
(2) Completion, workover and well servicing. The person shall install a remote controlled pressure and hydrogen-sulfide-rated well control system that meets or exceeds API specifications or other division-approved specifications that is operational at all times during a well's completion, workover and servicing.	
F. Mud program. Drilling, completion, workover and well servicing operations involving a hydrogen sulfide concentration of 100 ppm or greater shall use a hydrogen sulfide mud program capable of handling hydrogen sulfide conditions and well control, including de-gassing.	
G. Well testing. Except with prior division approval, a person shall conduct drill-stem testing of a zone that contains hydrogen sulfide in a concentration of 100 ppm or greater only during daylight hours and not permit formation fluids to flow to the surface.	
H. If hydrogen sulfide encountered during operations. If hydrogen sulfide was not anticipated at the time the division issued a permit to drill but is encountered during drilling in a concentration of 100 ppm or greater, the operator shall satisfy the requirements of 19.15.11 NMAC before continuing drilling operations. The operator shall notify the division of the event and the mitigating steps that the operator has or is taking as soon as possible, but no later than 24 hours following discovery. The division may grant verbal approval to continue drilling operations pending preparation of a required hydrogen sulfide contingency plan.	
19.15.11.12 PROTECTION FROM HYDROGEN SULFIDE AT OIL PUMP STATIONS, PRODUCING WELLS, TANK BATTERIES AND ASSOCIATED PRODUCTION FACILITIES, PIPELINES, REFINERIES, GAS PLANTS AND COMPRESSOR STATIONS:	
A. API standards. A person shall conduct operations at oil pump stations and producing wells, tank	

batteries and associated production facilities, refineries, gas plants and compressor stations involving a hydrogen sulfide concentration of 100 ppm or greater with due consideration to the guidelines in the API publication Recommended Practices for Oil and Gas Producing and Gas Processing Plant Operations Involving Hydrogen Sulfide, RP-55, latest edition or some other division-approved standard.	
B. Security. A person shall protect well sites and other unattended, fixed surface facilities involving a hydrogen sulfide concentration of 100 ppm or greater from public access by fencing with locking gates when the location is within 1/4 mile of a public area. For the purposes of Subsection B of 19.15.11.12 NMAC, a surface pipeline is not considered a fixed surface facility.	
C. Wind direction indicators. Oil pump stations, producing wells, tank batteries and associated production facilities, pipelines, refineries, gas plants and compressor stations involving a hydrogen sulfide concentration of 100 ppm or greater shall have equipment to indicate wind direction. The person shall install wind direction equipment that is visible from all principal working areas at all times.	
D. Control equipment. When the 100 ppm radius of exposure includes a public area, the following additional measures are required.	
(1) The person shall install and maintain in good operating condition safety devices, such as automatic shut-down devices, to prevent hydrogen sulfide's escape. Alternatively, the person shall establish safety procedures to achieve the same purpose.	
(2) A well shall possess a secondary means of immediate well control through the use of an appropriate Christmas tree or down hole completion equipment. The equipment shall allow downhole accessibility (reentry) under pressure for permanent well control. E. Tanks or vessels. The person shall chain each stair or ladder leading to the top of a tank or vessel containing 300 ppm or more of hydrogen sulfide in the gaseous mixture or mark it to restrict entry.	
19.15.11.13 PERSONNEL PROTECTION AND TRAINING:	
The person shall provide persons responsible for implementing a hydrogen sulfide contingency plan training in hydrogen sulfide hazards, detection, personal protection and contingency procedures.	
19.15.11.14 STANDARDS FOR EQUIPMENT THAT MAY BE EXPOSED TO HYDROGEN SULFIDE:	
Whenever a well, facility or operation involves a potentially hazardous hydrogen sulfide volume, the person shall select equipment with consideration for both the hydrogen sulfide working environment and anticipated stresses and shall use NACE Standard MR0175 (latest edition) or some other division-approved standard for selection of metallic equipment or, if applicable, use adequate protection by chemical inhibition or other methods that control or limit hydrogen sulfide's corrosive effects.	
19.15.11.15 EXEMPTIONS:	
A person may petition the director or the director's designee for an exemption to a requirement of 19.15.11 NMAC. A petition shall provide specific information as to the circumstances that warrant approval of the exemption requested and how the person will protect public safety. The director or the director's designee, after considering all relevant factors, may approve an exemption if the circumstances	

warrant and so long as the person protects public safety.	
19.15.11.16 NOTIFICATION OF THE DIVISION:	
The person shall notify the division upon a release of hydrogen sulfide requiring activation of the hydrogen sulfide contingency plan as soon as possible, but no more than four hours after plan activation, recognizing that a prompt response should supersede notification. The person shall submit a full report of the incident to the division on form C-141 no later than 15 days following the release.	
C-108 REQUIREMENTS	
XIV. PROOF OF NOTICE All applicants must furnish proof that a copy of the application has been furnished, by certified or registered mail, to the owner of the surface of the land on which the well is to be located and to each leasehold operator within one-half mile of the well location. Where an application is subject to administrative approval, a proof of publication must be submitted. Such proof shall consist of a copy of the legal advertisement which was published in the county in which the well is located.	
OTHER ISSUES - GW033	
OTHER ISSUES - BHP COAL MINE	