H2S – 004

GENERAL CORRESPONDENCE

2017 - Present

Chavez, Carl J, EMNRD

From: Kelley_Montgomery@oxy.com
Sent: Tuesday, March 27, 2018 2:24 PM
To: Chavez, Carl J, EMNRD
Cc: John_Choquette@oxy.com; Raymond_Aguilar@oxy.com; Griswold, Jim, EMNRD; Yu, Olivia, EMNRD
Subject: RE: Oxy - H2S Contingency Plan - Hobbs Area Operations
Attachments: Oxy's Hobbs ROE-PHAST Approval Request Cover Letter.pdf; Oxy's Hobbs ROE-PHAST Documentation .pdf; H2S Contingency Plan Approval Letter NMOCD 2013.pdf; Letter from Hobbs Fire Chief Gomez.pdf

Mr. Chavez,

Thank you for taking time to talk today about the Hobbs CP review process. As we discussed, in lieu of meeting in person next week, we'll first provide information to you in order to work through the ROE questions concerning PHAST and Pasquill-Gifford. Once that is resolved, we'll begin working through the checklist. I worked with the NMOCD in 2013 to approve our current CP and am familiar with discussions that we had at that time. For your review, I have attached the following items to this email:

1. Feb. 6, 2013 Letter requesting PHAST approval
2. PHAST ROE Documentation of assumptions and model outputs
3. May 3, 2013 NMOCD approval of the Hobbs CP
4. Letter from Hobbs Fired Department (I understand that the CP must be approved by the NMOCD, this letter was just to show that we are working closely with the Fire Department)

I do not currently have maps generated that show PHAST ROEs vs. PG ROEs, but we can work to get this done. In the PHAST ROE Documentation document, there is a table that compares the different ROEs for a quick comparison.

I look forward to continuing the discussion on the Hobbs CP as we work toward approval.

Please feel free to contact me with any questions or comments.

Regards,
Kelley Montgomery, PE
Regulatory Manager
Occidental Oil and Gas
Office - 713.366.5716
Cell: 832.454.8137
kelley_montgomery@oxy.com

-----Original Message-----
From: Chavez, Carl J, EMNRD [mailto:CarlJ.Chavez@state.nm.us]
Sent: Tuesday, March 27, 2018 1:13 PM
To: Montgomery, Kelley A <Kelley_Montgomery@oxy.com>

Cc: Choquette, Garret <John_Choquette@oxy.com>; Aguilar, Raymond A <Raymond_Aguilar@oxy.com>; Griswold, Jim, EMNRD <Jim.Griswold@state.nm.us>; Yu, Olivia, EMNRD <Olivia.Yu@state.nm.us>
Subject: [EXTERNAL] RE: Oxy - H2S Contingency Plan - Hobbs Area Operations

Kelley, et al.:

The New Mexico Oil Conservation Division (OCD) issued preliminary comments on Oxy's H2S Contingency Plan (CP). Based on the preliminary or cursory review, there appeared to be a significant issue surrounding the deviation from Pasquill-Gifford (PG) to Phast V. 6.7 for ROE modeling. OCD provided some comments that it quickly observed in the CP, but the process for review and acceptance is the checklist, which. OCD would use to communicate with Oxy on acceptance of a final version of the CP.

OCD recommends that Oxy come to the meeting with the USGS Map(s) to Scale (7.5 Minute Quadrangle Map) with PG vs Phast ROEs superimposed on the map per the instructions. I would be glad to communicate with you to help Oxy complete this task before the meeting. The maps are emphasized for the "path forward", and once resolved, OCD can proceed to review and complete comments on the H2S Contingency Plan for Oxy to respond to.

Based on the above, OCD thinks a meeting may be premature with the major issue being the comparison of modeling for ROE determinations in the CP.

What do you think? Please contact me at (505) 476-3490. Thank you.

-----Original Message-----
From: Kelley_Montgomery@oxy.com <Kelley_Montgomery@oxy.com>
Sent: Tuesday, March 27, 2018 10:53 AM
To: Chavez, Carl J, EMNRD <CarlJ.Chavez@state.nm.us>
Cc: John_Choquette@oxy.com; Raymond_Aguilar@oxy.com; Griswold, Jim, EMNRD <Jim.Griswold@state.nm.us>; Yu, Olivia, EMNRD <Olivia.Yu@state.nm.us>
Subject: RE: Oxy - H2S Contingency Plan - Hobbs Area Operations

Mr. Chavez,

Thank you for your response. If it is still available, we would like to meet Tuesday just after lunch at 1? That would allow us travel time to get to Santa Fe then travel back that evening.

The purpose of the meeting is to discuss our Hobbs Contingency Plan and the letter/checklist that you sent to Oxy. We thought it would be better to discuss in person instead of just replying to your letter. We went through an extensive approval process for the contingency plan in 2013 and wanted to talk through that with you as well.

A proposed agenda is:

1. Current Hobbs CP and Approval Process in 2013 2. Hobbs Operations 3. Phast v. PG 4. Work with the Fire Department/Drills/Reverse 911, etc.
5. Understand comments/issues in checklist sent to Oxy 6. Path forward to gain approval for the CP

Thank you and looking forward to talking with you.

Regards,
Kelley Montgomery, PE
Regulatory Manager
Occidental Oil and Gas
Office - 713.366.5716
Cell: 832.454.8137
kelley_montgomery@oxy.com

-----Original Message-----
From: Chavez, Carl J, EMNRD [mailto:CarlJ.Chavez@state.nm.us]
Sent: Tuesday, March 27, 2018 10:55 AM
To: Montgomery, Kelley A <Kelley_Montgomery@oxy.com>
Cc: Choquette, Garret <John_Choquette@oxy.com>; Aguilar, Raymond A <Raymond_Aguilar@oxy.com>; Griswold, Jim, EMNRD <Jim.Griswold@state.nm.us>; Yu, Olivia, EMNRD <Olivia.Yu@state.nm.us>
Subject: [EXTERNAL] RE: Oxy - H2S Contingency Plan - Hobbs Area Operations

Ms. Montgomery:

Good morning. Could you please forward an agenda for the meeting and I will send out a meeting notice with draft agenda items for preparation.

Currently, OCD meeting timeframes are:

Mon. 4/2: All Day
Tues 4/3: After 11 am
Wed. 4/4: Morning Only
Thu 4/5: Afternoon Only
Fri 4/6: All Day

Let us know which work for you and I will coordinate with the Hobbs District Office.

Thank you.

-----Original Message-----
From: Kelley_Montgomery@oxy.com <Kelley_Montgomery@oxy.com>
Sent: Thursday, March 22, 2018 1:17 PM
To: Chavez, Carl J, EMNRD <CarlJ.Chavez@state.nm.us>
Cc: John_Choquette@oxy.com; Raymond_Aguilar@oxy.com
Subject: Oxy - H2S Contingency Plan - Hobbs Area Operations

Hi Mr. Chavez,

This email is a follow up to my voicemail in regards to your March 13, 2018 letter concerning our Hobbs Area Contingency Plan. We would like the opportunity to meet you and discuss our plan with you in person. In addition, we want to ensure that we understand your questions so that we may address them adequately and timely.

We are available between April 1st -4th and were hoping to schedule a time to meet with you in Santa Fe. Is there a day/time that works for your schedule?

Thank you and I look forward to meeting you.

Regards,
Kelley Montgomery, PE
Regulatory Manager
Occidental Oil and Gas
Office - 713.366.5716
Cell: 832.454.8137
kelley_montgomery@oxy.com

State of New Mexico
Energy, Minerals and Natural Resources Department

Susana Martinez
Governor

David Martin
Cabinet Secretary-Designate

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

Jami Bailey, Division Director
Oil Conservation Division

MAY 3, 2013

Ms. Kelley Albrecht Montgomery, PE
Regulatory Consultant
Occidental Permian Ltd.
P.O. Box 4294
Houston, TX 77210

The Oil Conservation Division (OCD) has completed its review of the Oxy Permian-Central Operating Area Hobbs Operations Hydrogen Sulfide (H2S) Contingency Plan (Revision 04/15/2013) and has determined it to be adequate because it complies with the Hydrogen Sulfide Gas Rule (19.15.11 NMAC). Oxy shall implement its approved H2S Contingency Plan immediately and provide copies of the plan to all appropriate parties.

OCD thanks you for your cooperation with the review of this hydrogen sulfide contingency plan. If you have any questions, please contact me at (505) 476-3488 or at glenn.vongonten@state.nm.us.

Sincerely,

Glenn von Gonten
Senior Hydrologist

Hobbs Unit ROE Calculations

PHAST Documentation

Introduction

Occidental Permian Ltd. (Oxy) operates the Hobbs Field located in the city of Hobbs, New Mexico and the surrounding area. Sweet CO_2 and produced CO_2 with entrained natural gas and H_2S is injected into the Hobbs Grayburg-San Andres pool to recover residual oil. To comply with NMAC 19.15.11.8(C)(1), Oxy calculated radii of exposure (ROEs) for H_2S concentrations of 100 ppm and 500 ppm. Oxy has been working with the city of Hobbs and Lea County Emergency Management to revalidate the response methodology which includes working with our internal dispersion modeling experts to revise and update the radius of exposure (ROE) calculations pursuant to NMOCD Order 6199-B.

All of Oxy's operations in the Hobbs area are covered by an H_2S contingency plan. The focus of the ROE calculations is to model each potential release with conservative inputs and to provide the most accurate information to the emergency responders.

Det Norske Veritas (DNV) PHAST model version 6.7 was used for the analysis.

Pasquill-Gifford vs. PHAST

The Pasquill-Gifford (PG) equation predicts an ROE based on the H_2S concentration and release rate. The PG equation incorporates several conservative assumptions to make the tool simple and easy to use including:

- Steady state release
- Zero discharge velocity
- Gas phase release only

For a release in a facility under pressure, however, the PG assumptions do not take into account the dynamics of the potential release and can produce unrealistically conservative results. Modeling releases from facilities under pressure is more complex as the pressure decreases away from the release point over time and so the flow rate decreases with time. To achieve more accurate results, therefore, software tools are used for discharge modeling. DNV's PHAST version 6.7, one of the most widely-used commercial consequence modeling software, was used to model the potential release cases. The International Association of Oil and Gas Producers Consequence Modeling Report No. 434-7, March 2010 recommends PHAST as a general purpose consequence modeling software.

PHAST is a robust consequence modeling software which utilizes techniques on thermodynamic and mass transportation simulation. As a result, PHAST normally achieves better accuracy and more realistic results. These techniques include:

- Process blowdown calculation (leads to higher release rate)
- Discharge velocity calculation (leads to stronger jet mixing effect)
- Multi-phase release (more appropriate for a CO2 flood)

Because PHAST incorporates more advanced techniques and scientific theories, its results are closer to realistic and more reliable compared with PG. In addition, PHAST version 6.7 has been validated with actual CO_2 release data.

ROE Analysis

The ROE analysis was performed using PHAST to determine the distance to the 100ppm and 500ppm H_2S concentrations from a line rupture or leak release scenario for each sour gas pipeline segment type, facility, injector and producer wellbores The following parameters were input into the model to ensure a conservative approach.

- **Discharge Rate:** The ROE scenarios were based on a discharge rate that occurs at the tenth minute of the release (as determined by PHAST discharge modeling) from the fully pressurized line. This time frame was chosen as it corresponds to the conditions present during the typical emergency response time. The discharge rate is equal to or greater than the maximum inflow rate in the line/facility or absolute open flow rate of the wellbore.

- **Fluid Mixture:** The hydrogen sulfide concentration in the mixture is determined by testing a sample in accordance with applicable ASTM or GMA standards.

- **Pressure:** The maximum anticipated line operating pressure for each individual line was used.

- **Orientation of Release**: All releases are assumed horizontal for the most conservative ROE.

- **Weather condition**: 1.5m/s wind speed and F stability class

PHAST models the release and therefore, can provide the release rate and the dynamic H_2S ROE as a function of time. Figure 1 shows the release rate in mcfd on the left axis and the ROE in feet on the right axis. The time from the beginning of the potential release is on the x axis. Because PHAST can model a release under pressure, the initial release rate is high and decreases to the maximum flowrate in the system in a matter of seconds. The ROE is calculated as a function of time. The ROE begins at 0 feet at time zero, extends to the maximum distance within minutes or less, then rapidly decreases due to a decreasing release rate and dispersion. The ROE reaches a constant level which corresponds to the maximum flowrate in the system or absolute open flow of a wellbore.

Figure 1. Example of PHAST dispersion model results for a 340 psig pipeline rupture.

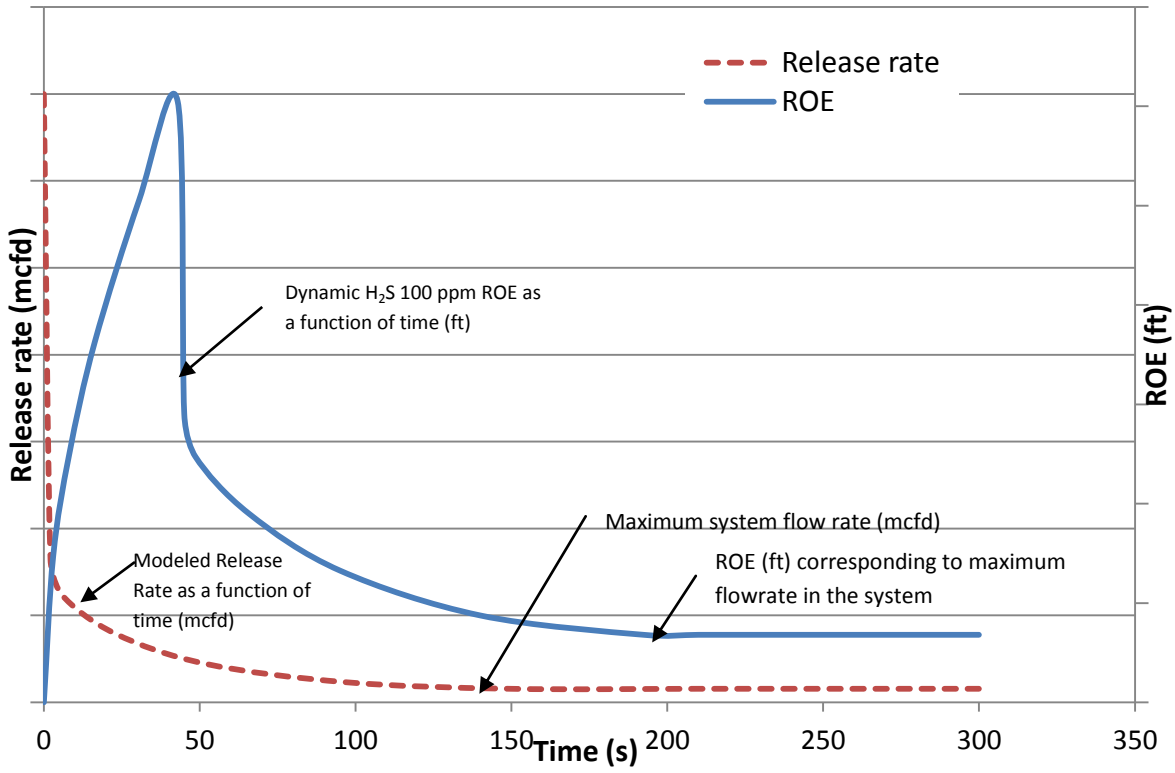
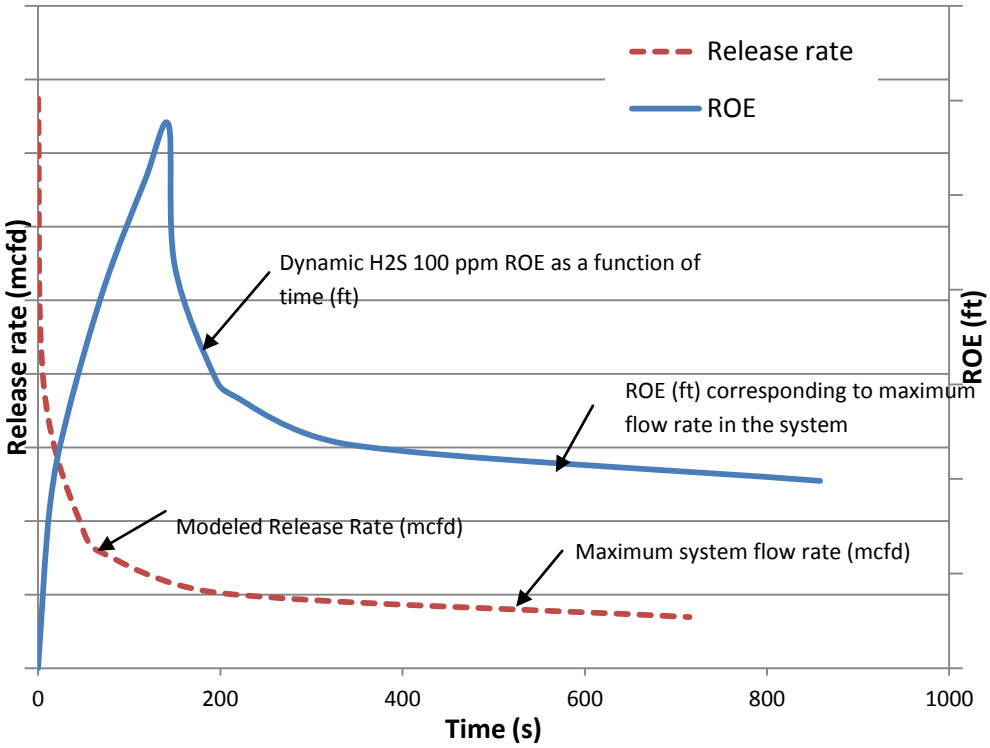


Figure 2. Example of PHAST dispersion model results for a 1700 psig pipeline rupture.



Based on discussions with the Hobbs Fire Department, Oxy is able to provide an H_2S ROE that corresponds to the release rate at the 10th minute of the release when the escape rate is at the maximum flowrate in the system. Because the Hobbs Fire Department will have a 15 to 20 minute typical response time, the ROE estimated using 10th minute release rate will provide the most relevant and useful information to the emergency responders and was the ROE requested by the Hobbs Fire Department. A more accurate ROE will allow the emergency responders react more effectively to the release.

Table 1 shows a comparison of ROEs calculated by PHAST and Pasquill-Gifford. The different scenarios are representative of Oxy's Hobbs Unit operations at different line pressures, maximum system flowrates and H_2S concentrations for comparison.

Table 1. Comparison of PHAST ROE and Pasquill-Gifford

Facility	Max. Pressure (psig)	Max. Flowrate (mmcfd)	H_2S (%)	PHAST – 10 min		Pasquill-Gifford	
				100ppm (ft)	500ppm (ft)	100ppm (ft)	500ppm (ft)
CTB	25	0.16	11.98	410	95	640	292
Satellite	30	0.4	4.3	250	85	579	265
Production Line	340	2	0.94	215	31	632	289
Injection Battery	340	3.5	1.98	463	100	1430	654
Satellite	340	14	0.7	216	28	1776	811
Injection Line	1700	6	0.97	315	35	1287	588
Recompression Facility	1700	120	0.97	773	110	8387	3833

Table 2 contains the calculated 100ppm and 500ppm ROEs for the proposed South Hobbs Unit CO_2 project facilities and wells. The ROEs for the South Hobbs Project are calculated using the same conservative estimates and maximum system parameters as were used in the North Hobbs Unit ROEs as described in this document and represented in the Hobbs H2S Contingency Plan. The ROEs will be updated as design changes are made to the project.

Table 2. Calculated ROEs for South Hobbs CO2 Project

Facility	Max. Operating Pressure (psig)	Max. Flowrate (mmcfd)	H2S (%)	PHAST 10-min ROE	
				100 ppm (ft)	500 ppm (ft)
Satellite 1c	340	30	1.2	505	66
Satellite 2c	340	28.5	1.2	495	65
Satellite 3c	340	16.5	1.2	420	54
Satellite 4c	340	10.5	1.2	420	50
Central Tank Battery	330	21.2	1.2	610	80
Recompression Facility	1700	75	1.2	750	105
Production Well	500	4.2	1.2	397	48
Injection Well	1700	28.4	1.2	325	44

Occidental Permian Ltd.
A subsidiary of Occidental Petroleum Corporation

5 Greenway Plaza, Suite 110, Houston, Texas 77046-0521
P.O. Box 27570, Houston, Texas 77227-7570
Phone 713.215.7000

February 26, 2013

Mr. Glenn Von Gonten
State of New Mexico Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, NM 87505

RE: PHAST H_2S Radius of Exposure (ROE) Methodology Approval Request

Mr. Von Gonten,

Thank you for your input at our last meeting on our Hobbs H_2S Contingency Plan for the North Hobbs Unit.

At our last meeting, we discussed the PHAST dispersion model. Oxy is currently approved to use the PHAST model in the North Hobbs Unit CO_2 flood pursuant to NMOCD Order 6199-B. We are now requesting approval from the NMOCD to use the PHAST model instead of the Pasquill-Gifford equation for all ROE calculations at Oxy's operations in the Hobbs area governed by NMOCD rules for Hydrogen Sulfide Gas in NMAC 19.15.11. This includes all current operations in the Hobbs, as well as the future South Hobbs Unit CO2 Flood Project.

All of Oxy's operations in the Hobbs area are covered by the H_2S contingency plan. The focus of the ROE calculations is to model each potential release with conservative inputs and to provide the most accurate information to the emergency responders. Oxy is working with the City of Hobbs as they implement a reverse 911 notification system to alert any affected public via phone in the event of an emergency (fire, weather, release, etc). The ROEs in the H_2S contingency plan can be an integral part of this system. Therefore, the Hobbs Fire Department was very involved in helping Oxy redraft the Hobbs H_2S Contingency Plan and they are satisfied with the methodology described and the ROE calculations.

Attached is documentation on the PHAST dispersion model as well as Oxy's input parameters to the model. Oxy's internal dispersion modeling experts have been working with our operations and facilities groups as well as the city of Hobbs and Lea County to develop the ROEs. Please feel free to contact me as you review the document with any questions you might have.

Sincerely,

Kelley Albrecht Montgomery, P. E.
Regulatory Consultant
Office: 713.366.5716
Cell: 832.454.8137

.cc Rick Foppiano
Scott Dawson, Deputy Director, NMOCD
Richard Ezeanyim, Chief Engineer, NMOCD
NMOCD Hobbs District Office

Hobbs Fire Department

SUPPRESSION
EMERGENCY MEDICAL SERVICES
301 E. White
Hobbs, NM 88240
Phone (575) 397-9308
FAX (575) 397-9331

FIRE MARSHALS OFFICE
200 E. Broadway
Hobbs, NM 88240
Phone (575) 391-8158
FAX (575) 391-3061

November 20, 2012

State of New Mexico Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, NM 87505

Re: Occidental Petroleum's Hobbs Unit - H_2S Contingency Plan

To whom it may concern:

This letter is to advise NMOCD of the collaboration between the Hobbs Fire Department and Occidental Petroleum (Oxy) regarding the Hobbs H_2S Contingency Plan. HFD's staff has met with Oxy on several occasions and reviewed the plan in detail including the action levels and the use of dispersion modeling (radius of exposure) to estimate areas potentially affected by an accidental release.

In my experience, Oxy has a comprehensive plan which allows for a safe and efficient response both for responders and citizens. Going forward, the City of Hobbs Fire Department is in agreement with this methodology and will continue to work with Oxy to support periodic drills, conduct training exercises specific to oil and gas operations and to maintain a robust emergency response plan.

Sincerely,

Manuel Gomez
City of Hobbs Fire Department
Fire Chief

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Tuesday, March 13, 2018 2:00 PM
To: 'Raymond_Aguilar@oxy.com'; John_Choquette@oxy.com
Cc: Griswold, Jim, EMNRD; Brown, Maxey G, EMNRD; Yu, Olivia, EMNRD
Subject: H2S CONTINGENCY PLAN (REACTION-PROCESS CONTINGENCY PLAN FOR A HYDROGEN SULFIDE (H2S) GAS EMERGENCY INVOLVING THE OXY PERMIAN-CENTRAL OPERATING AREA HOBBS OPERATIONS- Revision 12-26-17
Attachments: Oxy H2S CP Review 3-13-2018.pdf; Oxy H2S CP Checklist Review 3-13-2018.pdf

Messrs. Aguilar and Choquette,

The New Mexico Oil Conservation Division (OCD) has completed its preliminary review of the above subject H2S Contingency Plan (CP). OCD Santa Fe is the lead for the review and will be in communication and conferring with OCD Hobbs during the formal review process.

Please find attached OCD's preliminary review of the most recently submitted CP and "checklist" comments on the above subject CP. OCD placed a hardcopy in the U.S. Mail this afternoon. In order for OCD to complete its review, the attached letter with deadline is the "path forward." Please copy Olivia Yu on all correspondence sent to OCD Santa Fe.

Please contact me if you have questions. Thank you in advance for your cooperation in this matter.

Sincerely,

Mr. Carl J. Chavez, CHMM (#13099)
New Mexico Oil Conservation Division
Energy Minerals and Natural Resources Department
1220 South St Francis Drive
Santa Fe, New Mexico 87505
Ph. (505) 476-3490
E-mail: CarlJ.Chavez@state.nm.us
"Why not prevent pollution, minimize waste to reduce operating costs, reuse or recycle, and move forward with the rest of the Nation?" (To see how, go to: http://www.emnrd.state.nm.us/OCD **and see "Publications")**

State of New Mexico
Energy, Minerals and Natural Resources Department

Susana Martinez
Governor

Ken McQueen
Cabinet Secretary

Matthias Sayer
Deputy Cabinet Secretary

Heather Riley, Division Director
Oil Conservation Division

MARCH 13, 2018

Raymond (Tony) Aguilar
HES OPS ADVISOR, HOBBS EOR
OCCIDENTAL PERMIAN LTD.
1017 W. Stanolind
Hobbs, New Mexico 88240

Garret Choquette
HES Emergency Manager
OCCIDENTAL PERMIAN LTD.
5 Greenway Plaza, Suite 110
Houston, Texas 77046

Re: H2S CONTINGENCY PLAN (REACTION-PROCESS CONTINGENCY PLAN FOR A HYDROGEN SULFIDE (H2S) GAS EMERGENCY INVOLVING THE OXY PERMIAN-CENTRAL OPERATING AREA HOBBS OPERATIONS- Revision 12-26-17)
OCCIDENTAL PERMIAN LTD. (OXY)

Messrs. Aguilar and Choquette,

The New Mexico Oil Conservation Division (OCD) has completed its review of the Occidental Petroleum (OXY) Hydrogen Sulfide Contingency Plan (CP) Revision dated December 26, 2017.

OCD notices that Oxy modelled the radius of exposure (ROE) utilizing the PHAST Version 6.7 (Phast) Model, instead of the Pasquill-Gifford (PG) Model required under 19.15.11.7(K) NMAC. However, OCD has not formally approved the use of the Phast Model for ROE determinations. Consequently, OCD is hereby allowing OXY the options of: 1) revising and resubmitting its current CP utilizing the PG Model for ROE determinations at point sources of H2S > 100 ppm, or 2) to submit a formal request to utilize the Phast Model for ROE determinations, etc. for an OCD formal review approval or rejection.

If OXY chooses option No. 2 above, OCD requires the following information:

1) Verify that the Phast Model is applicable to H2S and SO2;
2) Provide the Phast Model Algorithms with assumptions similar to 19.15.11(K)1 NMAC, 19.15.11(K)2 NMAC, and for the ROE_{1000}.
3) Provide ROE_{100}, ROE_{500}, and ROE_{1000} utilizing both PG and Phast for at least two of Oxy's conservative situations (i.e., high flow rates and concentrations). The models must incorporate

similar conservative assumptions, i.e., weather conditions, low wind speed, etc., for a worst-case release scenario.

4) ROE_{1000}: The purpose of modelling the ROE_{1000} utilizing the PG and Phast Models is to determine under actual worst-case scenarios whether an ROE_{1000} air dispersion plume would occur. And, if not, to model the minimum flow rate and H2S required to generate a plume using similar modeling assumptions under PG and Phast.
5) The PG and Phast Modelled ROE_{100}, ROE_{500}, and ROE_{1000} shall be transposed onto a single USGS Topographic 7.5 Minute Quadrangle Map for comparison purposes.

Please find attached OCD's "checklist" review comments on Oxy's current CP where Oxy implemented the Phast Model for ROE determinations in the event it may assist in developing a revised CP that meets OCD Regulatory Requirements and may be accepted by OCD.

Please reply to this letter no later than April 13, 2018 with the option and requested date of CP resubmittal to OCD.

If you have any questions, please contact Carl Chavez at (505) 476-3490 or by email at Carl J.Chavez@state.nm.us.

Sincerely,

Jim Griswold
Environmental Bureau Chief

JG/cc

Attachment: OCD Current H2S CP Checklist

OIL CONSERVATION DIVISION
H2S CONTINGENCY PLAN
REQUIRED BY OCD RULE
19.15.11 NMAC

OXY North Hobbs Unit (H2S-4)
2/1216/2018

Contingency Plan Requirements Checklist					Oxy Comments/Actions
19.15.11.9.B NMAC Requirement	**Included?**	**Page in Document?**		**OCD Review Notes**	
Emergency Procedures					
Responsibilities & duties of personnel during emergency	Y	Pgs. 16-19		Sec. III	
Immediate action plan	Y	Pg. 10		Sec. II	
Evacuation and shelter in place plans	N	Pg. 9		"Shelter in place" is referenced in one sentence only; thus, there is no "shelter in place" plan nor evacuation plan..	
Telephone numbers of emergency responders	Y/N	Sec. V		Modify ChemTrec note on Pg. 54 & 56 (see line 55 note below).	
Telephone numbers of public agencies	Y	Sec. V			
Telephone numbers of local government	Y	Sec. V			
Telephone numbers of appropriate public authorities	Y	Sec. V			
Location of potentially affected public areas Also see 19.15.11.12.B & D	Y/N	Map Section		Header pages with subsection descriptors for various maps/diagrams would help with organization of maps.	
Location of potentially affected public roads	N	PHAST V. 6.7 Model without assumptions on H2S concentration and flow rate were not devulged.		USGS 7.5 Minute Quad. Topographic Map with ROEs needed relative to public roads.	
Proposed evacuation routes, with locations of road blocks	N	PHAST Model without assumptions on H2S concentration and flow rate were not devulged.		No text or map visual and descriptions of evacuation route(s) for facility(s).	
Procedures for notifying the public	Y/N	Pg. 3 of 58 Flow Chart. References to RPs 49, 55 and 68 do not substitute for actual emergency actions to educate, train and implement shelter in-place in the event of CP activation. Pg. 12 states, "Oxy will provide annual training of residents as required on the protective measures to be taken in the event of a release of H2S."		No procedure(s) for notifying public of release activating H2S CP. Per Pg. 3 of 58, the flow chart calls 911. Seems to be relying on FD/State Police to implement H2S CP, i.e., road baracades….etc….This should not be the case. RP-55 does not list action steps with public to ensure the "shelter in place" process is good. No discussion on briefing of public officials on issues such as evacuation or shelter-in-place20 plans per AP-55. Briefing of public officials on issues such as vacuation or shelter-in-place20 plans. No public training in CP.	
Availability and location of safety equipment and supplies Also see 19.15.11.12.C	N	Pg. 8 Hydrogen Sulfide Precautions during Operations		No map(s) with locations of PPE, monitors, wind socks, signs, etc. needed to verify OXY has H2S CP first responders that mobilize to investigate, fix, and implement activation of the H2S CP to protect public safety.	
Characteristics of hydrogen sulfide and sulfur dioxide					
Discussion of characteristics	Y/N	Referred to as physical properties on Pgs. 12 - 15.		Revise from "properties'" to "characteristics."	
Maps and Drawings					
Area of exposure	N	Pasquill-Gifford Model required under Regs. PHAST V. 6.7 Model does not model H2S or SO2 without assumptions *i.e., flow rate and concentration per point source, on H2S concentration were not devulged.		Regs. require Pasquill-Gifford Model. Used PHAST Model and no assumptions (Pg. 5 of 58) were provided to verify the calculated ROEs are accurate. Also, OCD did not approve the PHAST Model. OCD needs the model assumptions, algorithms, etc. for ROE 100, 500 and 1000 in order to evaluate and determine the feasibility of its continued use. The H2S CP requires a similar write-up as in the regulations with algorithms and assumptions made for ROE 100, 500 and 1000 ppm H2S to compare with Pasquil-Gifford relative to population centers.	
Public areas within area of exposure	N	"		Model assumptions (see Section I A Pg. 5 of 58) used in maps provided were not disclosed. Used PHAST Model instead of Pasquil-Gifford. Will need to request permission to use PHAST and provide information for OCD to evaluate PHAST.	

Contingency Plan Requirements Checklist					Oxy Comments/Actions
19.15.11.9.B NMAC Requirement	**Included?**	**Page in Document?**		**OCD Review Notes**	
Public roads within area of exposure	N	"		Some maps display inftastructure, but need USGS 7.5 Minute Quadrangle Topographic Maps to scale to assess public roads based on H2S concentration and flow rate.. OCD has not formally approved PHAST Model; thus, ROE relative to infrasturture remains unknown..	
Training and Drills					
Training of personnel to include responsibilities, duties, hazards, detection, personal protection and contingency procedure	Y/N	Sec. III Pg. 16 - 17		Defers to civil authorities, i.e., "The civil authorities responding to the emergency will assume the position of OSC and they will establish a Unified Command of which the OXY OSC will be a key member." This is not acceptable. Org. Chart with actual names and phone numbers identifying key response staff acting in event of H2S CP Activation is needed. Currently, it appears that OXY relies on FD/State Police to implement the H2S CP. Does not include nearby population.	
Periodic drills or exercises that simulate a release	Y/N	Pg. 11 Training and Drills. Pg. 12 states, "Oxy will provide annual training of residents as required on the protective measures to be taken in the event of a release of H2S."		Mentions "all OXY personnel and long term contractors shall be trained on the emergency action plan annually", but this plan should be a part of the actual CP activation response acctions or action measures or steps, which are not stated anywhere in the CP.	
Documentation of training, drills, & attendance	Y	Pg. 11			
Training of residents on protective measures	N				
Briefing of public officials on evacuation or shelter-in-place plans	Y/N	Pg. 16			
Coordination with state emergency plans					
How emergency response actions will coordinate with OCD and the state police response plans	Y	Pgs. 3, 8 and 18			
Activation Levels					
Activation Levels and description of events which may lead to a release in excess of activation level	Y/N	Pg. 11		Relying on PHAST Model for ROEs. OCD needs will specify the conditions for evaluating PHAST against Pasquill-Gifford for ROEs. Pasquill has always be most conservative and there is significant populations and infra-structure related to this CP.	
Plan Activation					
Commitment to activate contingency plan whenever H2S concentration of more that 100 ppm in a public area or 500 ppm at a public road	N	Pg. 11		Operator states, "It is the responsibility of the Oxy OSC to ensure activation of the H2S contingency plan, and if necessary to coordinate these efforts in unified command with any state or local emergency responders."	
Commitment to activate contingency plan whenever H2S concentration of more that 100 ppm 3000 feet from the site of release	N	Pg. 11		Operator states, "It is the responsibility of the Oxy OSC to ensure activation of the H2S contingency plan, and if necessary to coordinate these efforts in unified command with any state or local emergency responders."	
Injection Well Information					
Well name, API#, legal description, map location, figures and/or construction diagrams	Y/N	Appendices		Need confirmation the appendice lists include all of OXY's wells and facilities or solely OXY's wells and facilities.	
Compliance w/ OCD "Well" Regulations: 19.15.11.7K(3) NMAC; 19.15.11.9B(2)&H NMAC; 19.15.11.10 NMAC; 19.15.11.11 NMAC. 19.15.11.12 NMAC & 19.15.11.16 NMAC	Y/N	19.15.11.7K(3) = Y Pg. 7; 19.15.11.9B(2) and H = N; 19.15.11.10 = N; 19.15.11.11 = Y Pg. 8; 19.15.11.12 = Y/N (only addresses 12B only) Pg. 6; 19.15.11.16 = Y Pg. 11.		19.15.11.11 RP-49 H2S CP submitted w application to DO; 19.15.11.12A: RP-55 Paragraph 7.6 Immediate Action Plan does not appear to be adequately addresssed). 19.15.11.12C Wind Indicators are mentioned, and must be present near point sources w/ greater than 100 ppm H2S. 19.15.11.12D2 Control Equipment secondary means of immed. well control is not mentioned, while ESDs are mentioned to address 12D1. 19.15.11.12E Pg. 6 is stated incorrectly with "chain or sign" to prevent entry/access. A sign option is not allowed under Regs. 19.15.11.16 is addressed on Pg. 11.	

Contingency Plan Requirements Checklist					Oxy Comments/Actions
19.15.11.9.B NMAC Requirement	**Included?**	**Page in Document?**		**OCD Review Notes**	
Compliance w/ applicable standards, i.e., API RP49, API RP68 and NACE Standards for Sour Gas Wells	Y/N	RP-49 = N Pg. 8; RP-68 = Y (withdrawn); and NACE = Y Pgs. 5 and 7.		RP-49 = N H2S CP submitted with application to District Office per Pg. 8 (Is this a different CP than the one reviewed?), but provisions of RP-49 is not addresssed writing in this H2S CP; RP-68 = Y (withdrawn); NACE = Y Pg. 5.	
Adequate H2S Detection Monitoring 19.15.11.11B	Y/N	Appendix A Pg. 24 All maps PHAST 6.7 based. Pgs. 6, 7 .		OCD needs to evaluate the PHAST 6.7 Model with algorithms and assumptions with modeling "apples to apples" on flow rates vs concentrations ROE100, ROE500 and ROE1000 (OCD needs to know the flow rate and concentration of H2S that would generate a plume at a major Oxy facility using PHAST vs Pasquill-Gifford). Based on the results and scenarios where Oxy's facilities are near population centers, OCD would need to make a risk-based decision on whether to allow the PHAST Model for implementation in Oxy H2S CP in New Mexico.	
Notification CP implementation w/ C-141 Full Report submitted to the OCD within 15-days of release (19.15.11.16 NMAC)	N			No reference to C-141 or deadlines for notification to OCD of activation of H2S CP.	
Miscellaneous					
Table of Contents	Pg. 2			Spell out acronyms, i.e., RCF, SCBA….?	
PHAST version 6.7 in lieu of Pasquill-Gifford Model. The regulations require Pasquill-Gifford. If another model is proposed, OCD needs the calculations and actual ROE assumptions ([H2S] along with ROE comparison between PHAST vs Pasquill-Gifford Modeling for 100, 500 and 1000 (at what concentration and flow rate will 1000 ppm plume appear at site?) ROEs ppm H2S for evalatuion.	N			OCD did not approve the use of the PHAST Model; therefore, OCD needs information about the model, algorithms, assumptions, and $ROE_{100,\ 500\ \&\ 1000}$ generation on maps to scale in comparison to Pasquill-Gifford. ROE_{1000} is modeled to determine the flow rate, concentration, similar assumptions used to establish an ROE_{1000} plume. ROE maps for Appdx. E?	
Maps and Drawings	Y/N			Should ROEs exist for all facilities, wells, point sources > 100 ppm [H2S]. Maps and Drawings should exist for all Oxy facilities with > 100 ppm H2S, and have a header or identifier for reference. Need ROE maps for all Appendix D List.	
Location(s)	Y/N			Are all facilities and wells and/or point sources with > 100 ppm [H2S] represented in H2S CP? Appendices D and E?	
Pipeline(s)	Y			Satelite 3 and other aerial photo maps missing H2S Monitors, windsocks, ESD, etc. Othe aerial maps lack wind socks, etc.	
Flare Stack	Y/N			State that flare stacks comply with 19.15.11.11(D) Flare System regulatory requirements. Maps do not depict flare stack locations.	
Signs	Y/N			Maps do not depict sign locations that should be legible from roadway, etc. as per 19.15.11.10 and be "readily readable".	
ChemTrec	N	Pg. 54		The Note: "Call CHEMTREC for questions concerning response or chemical hazards in the even of a chemical spill" is of concern because the operator is supposed to know in advance what the chemicals of concern (COC) are in the event of release, but this suggests the operator relies on a phone call to ChemTrec to determine how to proceed. The note may be changed to "follow-up" questions associated with spill/release response, but not reliance on ChemTrec to advise operator on how to response to a chemical release, which is how it reads. Concern ChemTrec only entity under Emergency List with note, "**Must be notified to assist in providing site security for all major emergencies and spills or response for any bomb threats or terrorist activities." There is NO OXY personnel listed with this code! Why? Is OXY relying on everybody else to respond to its H2S Emergencies?	