OCD Comments to be submitted to the OCC concerning the Hydrogen Sulfide (H_2S) draft rule (8/30/02). Hearing to be held September 20, 2002. Case # 12897.

Subsection B Applicability

OPENING SENTENCE

This Subsection should clearly state that this rule applies to all facilities regulated by OCD that have hydrogen sulfide in concentrations of 100 ppm or greater, notwithstanding that some specific provisions are subject to additional applicability requirements. Both the BLM and other states (*e.g.*, Texas), as well as OCD's existing Rule 118, put this language up front.

OCD accordingly recommends that the original opening sentence of this subsection, deleted in the present draft, be restored.

PIPELINES

The commission raised the issue of applicability of the proposed rule to pipelines. OCD's intent was to cover any facility that is regulated by OCD if that facility has hydrogen sulfide in concentrations of 100 ppm or greater. This would be consistent with OCD responding to leaks and spills from both gathering, intermediate and main line pipelines. Most mainline pipelines have sweet gas and therefore would not be subject to the regulations. However, there are high volume and pressure sour gas pipelines that are prevalent in the oil field. These lines should be covered under this rule.

OCD believes that the present draft unambiguously covers pipelines. The second sentence of Subsection B states that the Rule applies to "any . . . facility engaged in . . . transporting, . . . crude oil, natural gas or carbon dioxide." The only specific provisions that apply to pipelines, however, are the requirement to compute Radius of Exposure and, if applicable, to prepare a Contingency Plan, and a specific signage requirement in Subsection F. OCD believes that other provisions applicable to downstream facilities properly should not apply to pipelines.

WASTE DISPOSAL (RULE 711) FACILITIES

Public comments have addressed the issue of applicability of the proposed rules to waste treatment and waste disposal facilities regulated by OCD pursuant to Rule 711. OCD practice, under the general authority of Rule 711, has been to address H2S monitoring and control requirements for such facilities on a site-specific basis through the permitting process. There are cogent reasons for treating such facilities as an exception to the general standards of the proposed rule.

Waste management facilities generate H2S as wastes decompose. Since the composition of the waste mixture and the conditions of its decomposition may change rapidly with resulting unpredictable changes in H2S emissions, the regulatory scheme of the present rule, premised on an historically ascertained volume and concentration of H2s that is presumed to be essentially constant, is not adequate to address safety concerns at these facilities.

Although OCD previously recommended that these facilities be exempted altogether from the proposed rule, we accept the language of the present draft making clear that more stringent requirements in permits, existing or subsequently issued under Rule 711, will govern.

Subsection E. Hydrogen Sulfide Contingency Plan.

OCD concurs with comments filed by others to the effect that the following language in Paragraph E.2 is confusing:

> "whenever a potentially hazardous volume of hydrogen sulfide is present or may reasonably expected to be present."

OCD believes that this language is intended to apply to a new well if a PHV is reasonably expected by reason of experience of wells in the vicinity or pursuant to the provision (C.14.c) regarding wildcat wells, and to a producing well or facility if a PHV is present in the gas stream or mixture, as determined by the prescribed testing procedures. It is suggested that the referenced language be amended to read as follows:

"whenever a potentially hazardous volume of hydrogen sulfide is present *or (in the case of a well being drilled, deepened or re-entered)*, may *be* reasonably expected to be present. . . ."

Subsection F Signage.

The present draft added a new Subsection F , which includes only signage requirements applicable to all OCD regulated facilities with H_2S concentrations of 100 ppm or greater in the gas stream or mixture. With a minor exception concerning pipelines, discussed below, OCD takes no exception to the proposed signage rules.

However, requirements for wind indicators and other operational equipment that, in previous drafts, would have been required wherever a 100-ppm concentration was present now appear in Subsections G and H, and would now apply only in circumstances where a PHV is present. Commission counsel, in a cover letter to the Division, explained that there was a concern about imposing operational requirements upon wells located in remote areas where a PHV was not present. OCD firmly believes that the 100 ppm trigger for training and certain equipment requirements, in addition to signage, should be restored. Our reasons are discussed below in our comments on particular requirements of Subsections G and H.

OCD believes that the signage requirement applicable to pipelines (the last sentence of Paragraph F.2) should be amended by adding the words "or other pipeline", following the words "flow line or gathering line." This language was intended to cover pipelines that might be expected to contain H2s. However, the Division believes there may be some local transportation lines that contain H2S that would arguably not fall within the description "flow lines or gathering lines," and such lines should be subject to the same signage requirements as flow lines and gathering lines.

Subsection G. Protection from Hydrogen Sulfide During Drilling, Completion, Work over and Well Servicing Operations:

TRIGGER LEVEL (100 PPM vs. PHV)

The present draft provides that the stipulations of Paragraph 1 (API Standards) and 2 (Minimum Standards) will be applicable only if a "PHV may reasonably be expected to be encountered." The draft presented to the Commission by the Division and the workgroup's final draft provided for the requirements now embodied in Paragraphs G.1 and G.2 (with the exception of the remote well control equipment [G.2.h]) to be applicable to all systems and operations containing 100 ppm or greater of H_2S in the gas stream or mixture, not just in PHV areas.

The Division believes that the requirements for conformance to API standard (G.1.), H2S training of personnel (G.2.a.), maintenance of an emergency egress route (G.2.b.), detection and monitoring equipment (G.2.c.), wind indicators (G.2.d.), flare systems (G.2.e) and an H2S appropriate mud program (G.2.g) should apply wherever H2S concentrations of 100 ppm are present, regardless of the existence or not of a PHV.

As noted, it was the consensus of the work group, including industry representatives, that the 100-ppm trigger should apply to these requirements. In addition, OCD believes the following considerations militate in favor of the 100-ppm trigger:

API STANDARDS [G.1]. The API documents are designed to be used in operations that contain lesser volumes of H_2S as well as PHV conditions. These standards were formulated by an industry association with extensive expertise, and are designed to establish an industry standard. In private litigation, courts routinely consider such industry standards as evidence of negligence on the part of operators who do not comply. OCD believes that we should not, on an important safety issue, countenance less than industry standards. Furthermore, observance of API standards for drilling in conditions of H2S concentrations of 100 ppm or more is required by present Rule 118.C.

H2S Training [G.2.a]; Detection and Monitoring Equipment [G.2.a and c]; Egress Route [G.2.b]. OCD urges that all of these requirements should be triggered by the presence of 100 ppm of H2S in the gas stream

regardless of the existence of a PHV. Wells that, due to their remote location, are not expected to produce a PHV nevertheless present a hazard to persons who may be in the vicinity for whatever reason (*i.e.* outdoor recreation, such as hunting or camping, or pursuit of outdoor occupations such as agriculture or attending to wells of other oil and gas operators). The hazard that members of the public may be affected by a release increases substantially if the release is not properly detected and corrected. Requirements for training, detection and monitoring equipment and an egress route are designed to insure that on-site personnel will (1) know when they are experiencing a release, (2) know what to do, and (3) survive to do it. In the absence of these precautions the presence of an H2S leak may go undetected and unaddressed until a casualty occurs.

This specific reasoning has led other states to address what are arguably OSHA concerns in state H_2S regulations. The following is a quote from the Texas Rule 36 Introduction:

> "Rule 36 is designed for the protection of the General Public from the hazards of hydrogen sulfide gas in oil and gas operations and does not pertain to industrial safety as such. The Commission, however believes that education and safety training are the best defense against the hazards of hydrogen sulfide, and **that industry workers must be able to protect themselves if they are to help the general public."** [Emphasis added.]

Finally, training at least is specifically required where H2S is present in concentrations of 100ppm or more by existing Rule 118.B.

Wind Indicators [G.2.d.] OCD believes that wind indicators and red warning flags should be required on all locations where H2S in the gas stream exceeds 100 ppm. These are not expensive devices, and they are extremely relevant to survival in an emergency situation. Wind indicators are arguably required in 100-ppm or greater conditions by existing Rule 118.B. In this connection, OCD would further point out that it makes little sense to require (as Subsection F.1 of the present draft rule does) that a location have a sign admonishing persons not to approach if a red flag is flying if there is no red flag to fly.

Flare Systems [G.2.e]. OCD believes flare systems should be required on all locations where there is 100 ppm or more H2S in the gas stream. Flaring is the most efficient method of preventing the continued release of H2S into the environment until the source of a release can be

corrected. Since the risk that people will be affected increases the longer unimpeded release of H2S continues, requiring that the location have a means to promptly put a stop to the release is prudent. Furthermore flaring prevents unavoidable releases of H2S during normal operations from becoming a hazard. API standards require that escaping H2S be flared.

Mud Program [G.2.g.] OCD believes all wells with 100 ppm or more in the gas stream should be required to have a mud program capable of handling hydrogen sulfide conditions.

Consensus was achieved in the work group on the 100-ppm trigger for each of the above requirements.

OCD urges the Commission to re-evaluate this issue. The present draft substantially changes the proposed rule. In many instances, as noted above, it would actually be less stringent than the current rule 118 and less protective of public safety.

WELL CONTROL EQUIPMENT [G.2.f.]

Trigger. In the present draft the requirement for a remote-controlled choke and related equipment is triggered by the presence of a PHV. This is a *more stringent* requirement than was recommended by OCD based on the consensus of the work group. In the work group and OCD drafts this equipment would be required ONLY if the 100-ppm radius of exposure included a public area. In other words such equipment would not be required where a PHV was present only because of the presence of a public road in the 500-ppm radius of exposure. The workgroup and OCD felt that the dangers to persons traveling public roads during the time required to get appropriately protected personnel and equipment into the site to achieve control could be adequately addressed by traffic diversion pursuant to a Contingency Plan. Accordingly, requiring this high-cost equipment on the many locations that are remote from human habitation but proximate to roads was not justified. For these reasons, OCD believes that the less stringent provision (requiring remote well control equipment only if the radius of exposure includes a "public area") should be restored.

Specific Equipment Requirements. OCD has re-evaluated the specific equipment requirements of this section, and now recommends that the following language be substituted:

> f. Use of Well Control Equipment.
>
> i. Drilling. A remote controlled well control system shall be installed and operational at all times beginning when drilling is within 500 feet of the formation believed to contain hydrogen sulfide and continuously thereafter during drilling. The control system must 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 API-16C and API-RP 53 or other specifications approved by the division. The blowout preventer stack shall have at least one spool, or integral BOP spool for the kill and choke lines, one dual BOP with one pipe and one blind ram, one annular device and a rotating head. Operators may be required to have available float valves, internal BOP's, stabbing valves, drill stem valves, etc. and other additional equipment in order to provide for public safety. Mud-gas separators shall also be used. These systems shall be tested and maintained pursuant to the specifications referenced, according to the requirements of this part, or otherwise as approved by the division.
>
> ii. Completion, Workover and Well Servicing.
>
> A remote controlled pressure and hydrogen sulfide rated well control system that meets or exceeds API specifications or other specifications approved by the division shall be installed and operational at all times before commencing work.

Industry has brought to OCD's attention the fact that they have safe practices in place already with respect to well-control equipment. According to many industry sources, virtually all drilling rigs operating in the Permian Basin are designed to utilize a dual-ram, annular and rotating head configuration for 3M and 5M rated working pressure stacks. Virtually all integral BOP stacks include choke and kill line outlets, thereby eliminating the need for a separate spool. Requiring an additional spool and blind ram is redundant and would force drilling contractors to increase the height of the rotary beams by an additional three feet to accommodate the extra BOP equipment normally reserved for 10M and 15M rated working pressure stacks. Industry has also found that use of a blind ram can cause insurmountable problems. An additional blind ram would serve little purpose in well control. With an informal cost benefit analysis, the cost of an additional ram is an unwarranted expense for minimal safety benefits.

Previous wording in Section G.2.f.ii "if feasible" is inappropriate since a drilling B.O.P stack arrangement is not appropriate in completion/workover operations.

Paragraph G.2.c. and G.2.c.iv.

REFERENCES TO "SAFETY EQUIPMENT"

The present draft omits all references to "safety equipment" in these paragraphs. The cover letter from commission counsel indicates that these references were deleted because no particular safety equipment was specified.

OCD recommends that these references be re-inserted. The workgroup spent quite a bit of time on this issue. While they did not want to list all of the required equipment in the rule (both because such a list would rapidly become obsolete and because different specific equipment might be indicated, depending on circumstances), they did agree that generic language should be incorporated as a requirement. Furthermore, there was a concern that since OSHA already requires safety equipment on site, an OCD specification of particular equipment might introduce conflicting requirements. The workgroup agreed that including this generic language in the rule would give flexibility to both the OCD and Industry.

OCD believes these considerations are cogent. In response to the concern articulated by commission counsel about the wholly generic language in the previous draft, OCD recommends that the words "safety equipment required by industry standards and good operating practice" be inserted at appropriate locations in Subparagraphs G.2.a and G.2.c.

Texas Rule 36 and BLM's On-Shore Order #6 has similar safety and equipment language.

Sub-Paragraph G.2.c.i

DETECTION EQUIPMENT ACTIVATION LEVEL

The activation level of 20 ppm for detection and monitoring systems was agreed upon by the work group. However, some operators choose to set more stringent standards to abide by their own in-house regulations and certain federal regulations. Thus, the rule should not be interpreted to preclude activation at a lower lever where appropriate. OCD accordingly recommends that the commission consider inserting the following language:

i. Each drilling and completion site shall have a hydrogen sulfide detection and monitoring system that automatically activates visible and audible alarms when the ambient air concentration of hydrogen sulfide reaches a predetermined value set by the operator, not to exceed a maximum of 20 ppm. There shall be a sensing point located 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.

Subsection H. Protection from Hydrogen Sulfide at Crude -Oil Pump Stations, Producing Wells, Tank Batteries, and Associated Production Facilities, Refineries, Gas Plants and Compressor Stations.

TRIGGER LEVEL (100 PPM vs. PHV)

The present draft provides that all of Paragraph 1 (API Standards) and Paragraph 2 (Minimum Standards) apply only at facilities "containing a potentially hazardous volume" of H2S. OCD believes that many of these requirements should be triggered by the presence of 100ppm or greater concentration of H2S in the gaseous mixture. Once again, this lower trigger for the specific requirements discussed below is in accordance with the consensus reached by the work group.

API Standards [H.1.]. See discussion of this issue with respect to Paragraph G.1 above.

Fencing [H.2.a.]. The intention of OCD and the work group was to require fencing of all facilities containing 100 ppm concentration or more of H2S that are located within 1/4 mile of a public area. The present draft would require fencing only if a PHV was present and, significantly, *would effective eliminate any fencing requirement for tank batteries,* which normally would not contain a sufficient volume to constitute a PHV. OCD believes that the fencing requirement of previous drafts should be restored. Unattended oil and gas facilities, such as tank batteries, in proximity to populated areas present a danger to intruders, particularly children who might find them attractive places to play. A dangerous or fatal concentration of H2S might occasionally be present at such facilities even if the total volume present were not sufficient to constitute a PHV.

Wind Direction Indicators [H.2.b.]. See discussion of this issue with respect to Paragraph G.2.d. above.

OCD urges the commission to re-evaluate this issue. The present draft substantially changes the proposed rule. In some instances it would be less stringent than the current Rule 118 and less protective of public safety.

CONTROL EQUIPMENT [H.2.c and d.]. *Trigger Level.* See discussion of this issue with respect to Paragraph G.2.f. above.

Paragraph H.2.d. Automatic Safety Valve or Shutdown

APPLICATION TO DOWNSTREAM FACILITIES

As written, this subparagraph would apply only to wells. It should apply to all downstream to which Subsection H applies. According OCD recommends that the first sentence be changed to read:

> "Any well or facility shall possess an automatic safety valve or shutdown at the facility or wellheald or other appropriat shut-in control."

Subsection L. Release:

CONTINGENCY PLAN ACTIVATION [L.1.]

The present draft has removed the 50-ppm contingency plan activation level. OCD recommends the re-insertion of this provision in the following language:

> In addition, any facility that is required to maintain a contingency plan ~~for a public area~~ shall activate the plan if there is a measured release of hydrogen sulfide gas on-site in a concentration of 50 ppm for a period of ten minutes, or if the on-site personnel are required to don personal protection equipment i.e. life-support systems in order to remain on-site.

The workgroup reached consensus on this entire issue after considering the following:

50 ppm for 10 minutes is the level at which OSHA requires workers to wear respiratory protection equipment, if this level is present, since it has been scientifically determined that this level is harmful to human beings.

Members of the public would be more vulnerable than workers at the site in question. On-site workers have medical surveillance to which the general public cannot avail themselves. Nor is the general public trained in H_2S awareness, protection and escape procedures. The 50-ppm activation level will provide emergency response authorities additional time to respond and provide safety measures for the public before dangerous levels are encountered in public areas.

In addition, *and perhaps most significantly,* there must be some trigger level to perform activation; otherwise personnel at the site may be unsure as to when activation is necessary. Recall that the existence of a PHV is determined theoretically based on the volume and concentration of H2S in the gas stream. This theoretical computation is based on a worst-case scenario. A release, except in the event of a blowout, would necessarily be of a volume less than that assumed in determining the existence of a PHV. Thus, to know whether activation is indicated under the present rule, on-site personnel would have to first ascertain the actual volume and concentration of the release. Procrastination and confusion as to requirements in implementing emergency actions may prove to be disastrous. For this reason, The American Petroleum Association recommends readily ascertainable activation levels.

Industry concerns during the hearing of 7/19/02 were that activation of plans would be required, in remote areas, when there was no obvious threat to the public. OCD's intent is to require this predetermined activation level only in areas in proximity areas where the public might be exposed. It should be recalled that if, due to remoteness from public areas or public roads, the well or facility does not have a PHV, it will not have a contingency plan to activate.

Conclusion

OCD respectfully urges that the commission carefully consider the foregoing observations before adopting its final rule.

RESPECTFULLY SUBMITTED,

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