



February 15, 2002

INFORMATIONAL NOTICE 02-1

INTERIM GUIDELINES FOR IMPLEMENTING REGULATORY CHANGES RELATING TO THE PERMITTING AND OPERATION OF BATTERIES

This informational notice provides guidelines for implementation of amendments to the Drilling and Production Regulation (“the regulation”) dealing with batteries. The regulatory changes and these guidelines were developed in consultation with industry and the public over the past 24 months. The focus of the changes is on solution gas management at batteries to protect workers, the public and the environment from emissions of hydrogen sulphide (H₂S) and sulphur dioxide (SO₂). Key changes to the regulations include:

- Branch notification of odour and emissions complaints
- Adoption of Manitoba Ambient Air Quality Objectives and Guidelines for H₂S and SO₂
- Enhanced public consultation and notification for new and existing batteries
- New application requirements for battery operating permits with a focus on solution gas management
- Introduction of a program to evaluate flaring and venting at existing batteries
- Requirements for air dispersion modelling to demonstrate compliance with Manitoba Ambient Air Quality Objectives and Guidelines for H₂S and SO₂
- New flare design and operation standards
- New H₂S safety requirements for batteries

As operators begin evaluation of flaring and venting at their batteries we expect they will require additional clarification regarding the regulatory requirements. The Branch will issue an update to these guidelines in early April 2002, if necessary, to provide further clarification and answers to frequently asked questions.

1.0 Manitoba Ambient Air Quality Objectives and Guidelines

Manitoba Conservation publishes a list of ambient air quality objectives and guidelines for various contaminants. A copy of the provincial ambient air quality objectives and guidelines is available on the Manitoba Conservation website at www.gov.mb.ca/environ/prgareas/air.html.

The ambient air quality objectives and guidelines for H₂S and SO₂, the principal contaminants in emissions from batteries that flare or vent sour gas, have been adopted in the regulation. Schedule G of the regulation sets out the 1-hour and 24-hour average maximum acceptable concentration for H₂S and SO₂ that must not be exceeded by emissions from wells and batteries.

	<u>Maximum Acceptable Level</u>	
	<u>1-hour Average Concentration</u>	<u>24-hour Average Concentration</u>
H ₂ S	15 µg/m ³ (11 ppb)	5 µg/m ³ (4 ppb)
SO ₂	900 µg /m ³ (0.34 ppm)	300 µg/m ³ (0.11 ppm)

Subsection 85.2(1) of the regulation requires that venting or flaring of gas at a well or battery must not result in the concentration of H₂S and SO₂, beyond the well or battery site, exceeding ambient air quality objectives and guidelines.

1.0 Application Requirements for New Batteries

The regulatory changes introduce a number of new requirements for companies applying for a battery operating permit under subsection 75(1) of the regulation. The new application requirements include expanded consultation with landowners and occupants, additional information on gas composition, production rate and disposition, details of proposed flare and vapour recovery systems, criteria that must be satisfied if venting is proposed and submission of air dispersion model results that demonstrate battery emissions comply with subsection 85.2(1).

2.1 Public Consultation and Notice of Application

The regulatory changes extend the distance for notification of an application for a battery operating permit from 1 km to 1.5 km and introduce a requirement that the applicant consult with landowners and occupants regarding construction of the proposed battery. The applicant is required to submit the names and addresses of all landowners and occupants within 1.5 km of the proposed battery, a description of the consultation process, a summary of any concerns raised during the consultation process, and all actions taken or proposed to be taken to address the concerns. Applicants should attempt to resolve any concerns raised by landowners and occupants during the consultation process. If after reasonable efforts the applicant cannot resolve the concerns, the applicant should direct the landowner or occupant to contact the Branch in writing outlining their concerns.

The Branch is prepared to participate in further discussions between the parties to clarify regulatory requirements and provide additional information with the objective of resolving the concerns. If the concerns are not resolved, the Branch will review the application and will not issue approval until it is satisfied all issues have been addressed.

As part of the consultation process, applicants are encouraged to provide an information package containing a description of the proposed battery and other information to landowners and occupants. The Branch believes that effective communication between the public, local governments, industry and regulators has benefits for all parties and contributes to increased public confidence in the industry.

In order to ensure all parties who may be affected by the construction of a new battery are given an opportunity to review and comment on the applicant's proposal, we will publish notice of the application in the local newspaper. In order to accommodate the notification period, the time required for the Branch to issue an approval to construct a battery will increase from 3 weeks to 4-6 weeks from receipt of a complete application. Incomplete applications will result in further delays.

2.2 Solution Gas Management at Batteries

An application for a battery operating permit must be accompanied by an accurate estimate of battery production rates of oil, water and gas. Applicants are required to account for the disposition of produced gas and provide an estimate of the volume of gas to be flared, vented or used for fuel. Applicants are also required to submit a copy of a representative gas analysis for the proposed battery.

Gas production, disposition and analysis information are required as inputs to the air dispersion model. This information must be representative of future battery operations in order for the modelling results to accurately predict battery emissions of H₂S and SO₂. Gas production should be based on GOR data from PVT analysis, well test data or GOR tests. The method of estimating the volume of gas to be used for fuel, flared or vented must be documented, supported by sound engineering judgement and acceptable to the Branch. Once a new battery begins operations the Branch expects operators to confirm the accuracy of the previous estimates of gas production and disposition.

Applicants are required to submit details of the flare and vapour recovery systems. The details should include the manufacturer's specifications for the flare system, a schematic of the gas process flow required under clause 75(1)(i) of the regulation, and the information necessary to show the flare system meets the design and operation requirements of section 84 of the regulation (see Section 5.0 - New Flare System Design and Operation Requirements).

2.3 Venting

One of the objectives of the regulatory changes is to reduce, and where practical, eliminate venting at batteries. The Branch recognizes that venting cannot be completely eliminated because of the small volume of gas produced at many batteries in the province. Where it is not practical to collect and flare all solution gas at a battery, venting of small volumes of gas may be permitted. Where it is proposed to

vent gas containing H₂S, the applicant must provide reasons why the gas cannot be flared, specific actions to be taken to minimize the volume of gas vented, and the method of controlling off-lease odours.

The Branch will consider the following criteria when determining whether venting will be allowed at a battery:

- (1) If continuous vent volumes are sufficient to support combustion, the gas should be collected and burned as fuel or in a flare.
- (2) Venting will not be allowed where it constitutes an unacceptable fire or explosion hazard.
- (3) Venting of gas containing H₂S must not result in H₂S concentrations in excess of the occupational exposure limits on the battery site or the levels set out in Schedule G beyond the battery site.
- (4) Continuous venting of gas containing H₂S should not result in significant off-lease odours and public complaints.
- (5) Proposed battery venting control measures must be appropriate for the concentration of H₂S in the vented gas, the proximity of residences and adjacent land use.

2.4 Air Dispersion Modelling of Battery Emissions

Where it is proposed to flare or vent sour gas the applicant must demonstrate, using air dispersion modelling, that emissions of H₂S and SO₂ from the battery comply with subsection 85.2(1). Air dispersion models provide a conservative estimate of average ground level concentrations of H₂S and SO₂ under a range of meteorological conditions.

Applicants are responsible for modelling all sources of emissions from the battery including the treater stack, where gas containing H₂S is used for fuel, the flare system and any sources of continuous or routine venting including stock tank vapours. The Branch may also request applicants model emissions from non-routine events such as battery upsets, turnarounds, repairs and maintenance where the events may have a significant impact on air quality. The air dispersion modelling results and a summary report are to be filed with the application.

The Branch recommends applicants use the U.S. Environmental Protection Agency (USEPA) SCREEN3 air dispersion model. SCREEN3 can be downloaded free of charge from the USEPA website www.epa.gov/ttn/scram.

To help operators understand and run the SCREEN3 air dispersion model, the Branch in conjunction with RWDI West Inc., has prepared a companion document to these guidelines entitled “Dispersion Model Guidelines for Oil Batteries in the Province of Manitoba”. Operators should review the air

dispersion modelling guidelines to ensure the appropriate input parameters are used to run the model, the model limitations are understood, and the model results are properly interpreted.

There has been some concern expressed by operators regarding the conservatism of SCREEN3 model predictions and that batteries operating in compliance with subsection 85.2(1) may be forced to make unnecessary modifications based solely on the SCREEN3 model results.

In response to these concerns the Branch will adopt a risk-based approach to evaluating battery emissions of H₂S and SO₂, which includes not only air dispersion modelling results but also the battery's operating and odour complaint history, the proximity of residences, adjacent land use and any other relevant factors.

For batteries where the SCREEN3 model predicts H₂S or SO₂ concentrations in excess of the levels set out in Schedule G, operators can apply a 0.55 adjusting factor to the model results. If the 0.55 adjusting factor reduces the predicted concentrations of H₂S or SO₂ below the levels set out in Schedule G, the operator **may not** be required to make battery modifications. The use of the adjusting factor with SCREEN3 provides operators with an alternative to using more sophisticated air dispersion models. The factor also attempts to better correlate model results with actual battery emission problems and the results of extensive air quality monitoring carried out by Manitoba Conservation and the Branch in Tilston, Virden, Pierson, Waskada and Deloraine.

In each case where an operator has used the adjusting factor, the Branch will do a risk assessment to determine the appropriateness of using the adjusting factor for that battery. This risk-based approach will assess the probability of emissions exceeding the levels set out in Schedule G and the potential consequences of such exceedance.

3.0 Evaluation of Flaring and Venting at Existing Batteries

The regulatory changes require permittees of existing batteries, permitted before June 30, 2000, to make application for approval to continue flaring or venting at the battery. The purpose of this program is to evaluate H₂S and SO₂ emissions from existing batteries to determine if the emissions comply with subsection 85.2(1). Permittees have until April 30, 2002 to make application and until October 31, 2002 to make any modifications to the battery to ensure H₂S and SO₂ emissions meet the levels set out in Schedule G. **Failure to meet either of these deadlines will result in cancellation of the existing battery operating permit and operations at the battery being shut down.**

As part of the application, permittees are required to provide landowners and occupants within 0.5 km of the battery, and other nearby landowners or occupants who have previously expressed concerns about operation of the battery, an opportunity to comment on current battery operations. The consultation process will help identify any concerns with flaring and venting at the battery. The applicant should deal with any concerns raised in the manner outlined in Section 2.1 – Public Consultation and Notice of Application.

Permittees are required to submit current oil and water production rates, an accurate estimate of gas production and disposition, and a copy of a representative gas analysis for the battery. The Branch recognizes that at many batteries gas production is not measured. Permittees are encouraged to conduct one-time battery gas measurement, GOR tests, or use PVT data to get an accurate estimate of the producing GOR. The Branch has PVT analyses available for a number of Manitoba oil pools.

Permittees are encouraged to contact the Branch to discuss procedures for estimating battery gas production and the volume of gas used for fuel, flared or vented. The Branch has done some preliminary work to assess battery gas production volumes in order to classify batteries for H₂S safety requirements. Each operator should have already received a letter from the Branch providing a preliminary estimate of gas production and H₂S concentration for all its batteries (see Section 6.0 – H₂S Safety Requirements for Batteries).

Permittees are required to submit details of the flaring and venting systems currently in operation at the battery. For flare systems, the details should include the information necessary to show the existing flare system meets the new design and operation requirements of section 84 of the regulation (see Section 5.0 – New Flare System Design and Operation Requirements). If the flare system does not meet the new design and operation requirements, the permittee must make the necessary modifications.

During the review of existing battery operations, permittees should consider opportunities to eliminate or reduce vented volumes. When reviewing applications, the Branch will apply the criteria for continued venting outlined in Section 2.3 - Venting to determine if the permittee should evaluate other options.

Where gas production at the battery contains H₂S, the permittee is required to conduct air dispersion modelling of all sources of emissions from the battery including the treater stack, where gas containing H₂S is used for fuel, the flare system and any sources of continuous or routine venting including stock tank vapours. A copy of the modelling results and a summary report are to be submitted with the application. The requirements of Section 2.4 - Air Dispersion Modelling of Battery Emissions apply to applications for approval to continue flaring or venting.

If the air dispersion modelling results indicate emissions from the battery do not comply with subsection 85.2(1), the battery must be modified to bring emissions into compliance. In the application the permittee must outline the proposed battery modifications including specific actions to be taken to reduce, treat or eliminate vented gas, control off-lease odours, enhance the flare system, or other measures required to bring emissions into compliance with subsection 85.2(1). Permittees are encouraged to review the feasibility of alternatives to conventional flare systems such as incinerators, microturbines or other technologies to improve combustion efficiency, enhance dispersion and/or reduce emissions. Revised air dispersion modelling results that demonstrate compliance with subsection 85.1(2) must be submitted in support of the proposed modifications.

4.0 Major Battery Modifications

Under section 76(1) of the regulation, permittees are required to apply for approval to make major modifications at a battery. Section 76(1) does not apply to modifications carried out as part of an application for approval to continue flaring and venting under section 76.1. Major modifications include installing, replacing or removing any process vessel, tank, meter or other equipment designed for environmental protection. For clarification of what constitutes a major versus minor battery modification, permittees should contact the Virden or Waskada District Office. The permittee shall not commence major battery modifications without the approval of a Petroleum Inspector.

In cases where the proposed battery modifications will have an impact on solution gas management at the battery or where the modifications are required as a result of a significant increase in battery production, the permittee must submit a copy of revised air dispersion modelling results that demonstrate compliance with subsection 85.2(1).

The Branch will review each application for major battery modifications and determine if the nature of the proposed modifications or other extenuating circumstances are such that landowner notification must be given before the Branch will process the application. Notification of adjacent landowners and occupants gives them an opportunity to comment on current battery operations, express any concerns and also serves to keep landowners and occupants informed of the permittee's activities.

In cases where the proposed modifications will have an impact on emissions from the battery, permittees must notify adjacent landowners and occupants (within 0.5 km) of proposed major battery modifications.

The Branch recognizes that the majority of major battery modifications are designed to improve operations at a battery and the Branch will streamline its approval process so that modifications are not unnecessarily delayed. In most cases the Branch will approve the battery modifications within 5 days of receipt of a complete application. When the battery modifications have been completed the permittee shall notify the Branch and the battery will be inspected.

5.0 New Flare System Design and Operation Requirements

Section 84 of the regulation introduces new flare system design and operation requirements to ensure flare pits and flare stacks achieve sufficient atmospheric dispersion so emissions of H₂S and SO₂ comply with subsection 85.2(1).

The flare system installed at a battery must provide stable and efficient combustion of any gas directed to it. In order to accomplish this a flame must be present whenever solution gas is directed to the flare system. In most cases this will require a reliable pilot and automatic ignition device. Other factors such as the heating value of the gas, stack diameter, stack exit velocity and local wind conditions should be reviewed to ensure the flare system can provide stable and efficient combustion of any gas directed to it.

One of the key factors contributing to poor flare combustion efficiency is the presence of entrained liquids in the flare gas stream. One indication of the presence of liquids is a smoking flare. The

regulatory changes require permittees install a knockout drum or flare separator to remove any liquid hydrocarbons or other liquids from the flare gas stream and minimize, to the greatest extent practical, the amount of smoke from flares. The Branch will continue to require permittees to respond to complaints from the public regarding smoke from flares.

Other regulatory changes include an increase in the setback distance for flares from surface improvements, except a road allowance, from 75 m to 100 m and a requirement that vapour recovery systems and all lines from tanks that are directed to a flare system must have flame arrestors or other approved safety devices.

6.0 H₂S Safety Requirements for Batteries

In the past 5 years there have been 8 accidents in Manitoba involving H₂S. The regulatory changes introduce H₂S safety requirements that require any worker at a battery handling sour gas to have H₂S Alive or equivalent certification and a personal H₂S monitor. Section 85.1 of the regulation also requires H₂S warning signs be posted at the entrance to the battery. For batteries where there is a greater hazard because of the concentration of H₂S in the produced gas or the volume of gas produced, H₂S monitors must be installed in buildings and other areas on the battery site to alert workers to the accidental release of H₂S.

The Branch has developed a battery classification system based on the potential H₂S release rate for a battery. The following equation¹ has been used to determine a radius of exposure for a H₂S concentration of 100 ppm, the concentration that represents an immediate danger to life and health.

$$R = .3048 * \{ 56.11 * [H_2S] * Q \}^{0.6258}$$

Where:

- R = Radius of exposure for a 100 ppm concentration of H₂S, (metres)
[H₂S] = Concentration of H₂S in the produced gas, (fraction)
Q = Battery daily gas production volume, (m³/d)

Based on the radius of exposure, the Branch has created 3 classes of batteries:

- Class 1 Sour – radius of exposure is less than 10 m, localized hazard
- Class 2 Sour – radius of exposure between 10 – 20 m, limited means of safe egress
- Class 3 Sour – radius of exposure is more than 20 m, hazard extends over the entire battery site

Appendix 1 lists the work safe procedures, personal protective equipment and battery equipment requirements for each class of battery. Also included are special site-specific requirements, which the

¹ Texas Railroad Commission Rule 36

Branch may apply under certain conditions, and instructions on how to determine the radius of exposure. The Branch has completed an initial estimate of the radius of exposure for all batteries in the province and provided permittees with a preliminary battery classification for each of their batteries.

When permittees make application for approval to continue flaring and venting at a battery, the Branch will advise the permittee of any change in the battery's classification. Permittees must meet the safety requirements outlined in Appendix 1 by October 31, 2002 or such sooner date as may be required by the Branch to ensure worker safety is not compromised.

7.0 Compliance and Enforcement

The regulatory changes require operators to notify the appropriate Branch field office within 24 hours of receiving a formal complaint regarding odours or emissions from a battery. The Branch views odours as a warning of possible problems at a battery and expects operators to be responsive to public complaints. The notification is to include the source and cause of the odour or emissions where they have been identified, and actions taken or proposed to be taken by the operator to remedy any problem and prevent future occurrences.

The Branch places a high priority on public complaints regarding odours or emissions from wells and batteries. When the Branch receives a complaint regarding odours or emissions directly from the public, an odour/emissions complaint form will be completed and forwarded to the operator whose well or battery is believed to be the source of the complaint. The operator is expected to carry out an investigation and advise the Branch and the complainant (if the complainant indicates he or she wants to be contacted directly by the operator) of the source and cause of the odour/emissions and the corrective action taken or proposed to be taken. The operator is to complete and return a copy of the complaint form to the Branch.

Under section 85.3 of the regulation, the Director may require an operator to treat or flare vented gas, or take such other steps as are required to eliminate or reduce off-lease odours. The Branch may also require air quality monitoring be conducted to demonstrate compliance with subsection 85.2(1). The Branch will employ all appropriate enforcement action including shut down, where non-compliance results in continuing odours or emissions from a well or battery that have an unacceptable impact on the public or the environment.

In the past the Branch has received complaints regarding odours and emissions that, upon investigation, resulted from non-routine operations at a battery such as process upsets, repairs and maintenance or scheduled turnarounds. When non-routine operations are carried out at a battery, the permittee should ensure, where practical, that there are favourable atmospheric conditions and make all reasonable efforts to reduce the amount of gas vented in conjunction with such operations and. The Branch also suggests permittees notify nearby landowners and occupants, interested individuals and the Virden or Waskada District Office of any planned operations at a battery which may result in abnormal battery emissions as part of a "good neighbour" notification program.

Permittees of existing batteries are reminded that failure to meet the April 30, 2002 deadline for making application to continue flaring and venting at a battery or the October 31, 2002 deadline for completing battery modification to ensure the battery emissions comply with subsection 85.2(1), will result in automatic cancellation of the battery operating permit and shut down of the battery.

If you have any questions regarding the information contained in this notice please contact John N. Fox, Chief Petroleum Engineer at (204) 945-6574 or the Virden or Waskada District Office at (204) 748-4260 and (204) 673-2472, respectively.

L. R. Dubreuil
Director

APPENDIX 1

H₂S Safety Guidelines for Battery Construction and Operation

H₂S SAFETY GUIDELINES FOR BATTERY CONSTRUCTION AND OPERATION

USER GUIDE

Definitions

“IDLH Radius of Exposure”:	Determining factor in identifying the appropriate classification. Measured in IDLH H ₂ S radius of exposure as determined by the dispersion model equation.
“IDLH”:	Immediate Danger to Life and Health (IDLH) = 100 ppm H ₂ S (NIOSH)
“Classification”:	Category in which a facility will be included for identification purposes, Class 1 Sour being least hazardous and Class 3 Sour being most hazardous.
“Requirements”:	A list of required safety precautions, equipment, etc. associated with each classification (Table 1).
“Site Specific Criteria”:	One or more determining factors pertaining to all classifications that trigger the applicable “Potential Additional Requirements”.(Table 2)
“Potential Additional Requirements”:	Additional items identified as required by “Site Specific Criteria” (Table 2).
“Raw Gas Emissions”:	Requirement on the height of raw gas emissions to exclude minor emissions such as pig traps, dumps, and instrument vents.

Other Information

- ↳ 100 ppm = .01%
- ↳ *H₂S concentrations are determined by analyzing a purged produced gas sample off the treater gas leg or a method approved by an inspector.*
- ↳ *Total gas production is the product of the GOR and the daily oil production from that facility. The GOR’s are available for each field or may be submitted by the company if the data is available. Test method for determining the proper GOR must be approved by an inspector.*
- ↳ *Formula for 100 ppm H₂S radius of exposure: distance (m) = [0.3048] x [(56.11)(H₂S concentration in decimal equivalent)(gas volume released; m³/day)]^(0.6258)*

- Class 1 Sour – Less than 10 meters IDLH radius of exposure (localized hazard)
- Class 2 Sour – Greater than 10 meters IDLH radius of exposure (limited means of safe egress)
- Class 3 Sour – Greater than 20 meters IDLH radius of exposure (hazard extends over entire lease)

How to Use the Guide

- ↳ With the calculation of the H₂S radius of exposure completed, determine the classification of the battery as outlined in the “IDLH RADIUS OF EXPOSURE” column (Table 1).
- ↳ Follow the appropriate classification immediately right to the “Requirements” column indicating a minimum set of requirements necessary for that classification of battery.
- ↳ Proceed to the “Checklist for Additional Requirements” (Table 2) and determine if one or more “Site Specific Criteria” applies to the battery (pertains to all classifications of batteries). If so, a “Potential Additional Requirement” (to the immediate right) may apply.
- ↳ The IDLH radius of exposure for batteries that exist in Manitoba has been determined by applying the dispersion model formula to existing data. This information may at any time be updated by submitting the approved test results for a battery’s GOR/produced gas volume and/or H₂S concentrations to the Petroleum Branch. Batteries that experience increased production, increased H₂S concentration or battery consolidation may be subject to re-classification.

This H₂S Safety Guideline is designed to outline minimum safety requirements covering the construction and operation of all batteries permitted under the Oil and Gas Act.

Example

ABC et al 16-25 Battery: 124.91 m³ daily oil production x 44.0 gas oil ratio = 5496.04 m³ daily gas production
0.0021 H₂S content (2100 ppm or 0.21%)

$$\text{IDLH radius of exposure in meters} = (.3048) \times ((56.11)(.0021)(5496.04))^{.6258}$$

$$m = (.3048) \times (647.6)^{.6258}$$

$$m = (.3048) \times 57.45$$

m = 18

? ABC et al 16-25 Battery is **Class 2 Sour** (11 to 20 IDLH radius of exposure)

H₂S SAFETY GUIDELINES FOR BATTERY CONSTRUCTION &

OPERATION

IDLH RADIUS OF EXPOSURE (ROE)	CLASSIFICATION	REQUIREMENTS
<ul style="list-style-type: none"> ➤ 0 < ROE < 10 m 	<ul style="list-style-type: none"> ➤ Class 1 Sour 	<ul style="list-style-type: none"> ➤ Basic Safety Program: <ul style="list-style-type: none"> Approved safe work procedures. Work alone policy. Employee Orientation. Emergency Contingency plan including potential off lease IDLH (if applicable). ➤ Personal H₂S monitors. ➤ Two means of access and egress on all buildings. ➤ H₂S Signage. ➤ H₂S Training certification. ➤ Zero raw gas emissions below 6 meters. ➤ All minor raw gas emissions to be vented in accordance with regulations.
<ul style="list-style-type: none"> ➤ 10 m < ROE < 20 m 	<ul style="list-style-type: none"> ➤ Class 2 Sour 	<ul style="list-style-type: none"> ➤ Class 2 Sour includes all requirements listed in Class 1 Sour plus the following additions. ➤ H₂S monitor system in enclosed areas with potential H₂S hazards. ➤ External gauges on all tankage.
<ul style="list-style-type: none"> ➤ ROE < 20 m 	<ul style="list-style-type: none"> ➤ Class 3 Sour 	<ul style="list-style-type: none"> ➤ Class 3 Sour includes all requirements listed in Class 1&2 Sour plus the following additions. ➤ Additional H₂S monitor sensors in hazardous areas. ➤ Restricted access. ➤ All stock tank vapours treated or flared. ➤ Notification to Branch of all accidental raw gas emissions within 12 hours of discovery. ➤ Advance notification of all controlled raw gas emissions.

Table 1

CHECKLIST FOR ADDITIONAL REQUIREMENTS

SITE SPECIFIC CRITERIA (pertains to all classifications)	POTENTIAL ADDITIONAL REQUIREMENTS (site specific)
<ul style="list-style-type: none"> ➤ Environmental or land use concerns. ➤ Verified odour complaint. <p>THEN GO TO ?</p>	<ul style="list-style-type: none"> ➤ Vapor recovery system as requested by inspector (class 1&2). ➤ Daily logs on file recording weather, odour, trucking schedule and system anomalies.
<ul style="list-style-type: none"> ➤ Access route exposes personnel to potential H₂S hazard. 	<ul style="list-style-type: none"> ➤ Change access route. ➤ Positioning of H₂S monitors/sensors to warn personnel entering site.
<ul style="list-style-type: none"> ➤ Battery involves trucking station. 	<ul style="list-style-type: none"> ➤ Safe truck loading/unloading procedures including: Documented annual safety meeting between trucking firm and producer. ➤ Recorded unit numbers and loading schedules (Complaint tracking). ➤ Daylight trucking operations only. ➤ Tank truck vapour recovery while loading. ➤ Valves on truck vents.
<ul style="list-style-type: none"> ➤ Potential IDLH extends off lease. 	<ul style="list-style-type: none"> ➤ Site specific precautions may be necessary.

Table 2