

# **Energy Development Applications**

**Procedures and Schedules** 

March 2020

## **Alberta Energy Regulator**

Manual 012: Energy Development Applications; Procedures and Schedules

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## **Abbreviations**

**ABSA** Alberta Boiler Safety Association

**AEP** Alberta Environment and Parks

AOF absolute open flow

**ASME** American Society of Mechanical Engineers

AUC Alberta Utilities Commission

BA business associate

**BGWP** base of groundwater protection

**CBM** coalbed methane

CSA Canadian Standards Association

**DST** drillstem test

**EAS** Electronic Application Submission System

EIA environmental impact assessment

**EPEA** Environmental Protection and Enhancement Act

**EPZ** emergency planning zone

**ERP** emergency response plan

**ESD** emergency shutdown

FC facility

**FWKO** free-water knockout

**HVP** high vapour pressure

**IRP** industry recommended practice

JT Joules-Thomson

MOP maximum operating pressure

**OGCR** Oil and Gas Conservation Rules

**PSL** permissible sound level

SIR supplemental information request

#### 1 Introduction

This manual provides information on how to file a licence application under *Directive 056* to construct or operate any energy development in Alberta that includes facilities, pipelines, or wells.

To use this manual, you are expected to have an understanding of *Directive 056*, AER digital data information systems (OneStop for pipeline and pipeline installation applications, Electronic Application System for wells and facilities, DDS, etc.), and all rules and acts relating to facilities, pipelines, or wells. You should also be familiar with the application resources available on the AER's website.

#### 2 Participant Involvement Procedural

The consultation and notification requirements for each activity are listed in table 1, 3 and 5 in <u>Directive 056</u>. The category type of a well, pipeline or facility is dependent on one or more of the following: H<sub>2</sub>S content, sulphur content, size, type, release rate, or proximity of urban centre.

#### 2.1 Personal Consultation and Confirmation of Nonobjection

Personal consultation is intended to inform parties of the nature and extent of the proposed application. Questions raised during the discussion of the proposed energy development should alert the applicant to potential concerns or objections. Through discussions, the applicant may be able to confirm nonobjection, if not, the applicant must file a nonroutine application.

The refusal of an information package does not require a nonroutine application to be submitted.

#### 2.2 Notification

If the applicant is aware that an information package was not received by a required party, the applicant must file a nonroutine application and demonstrate its efforts to contact the party.

#### 2.3 Compensation

Matters of compensation are not within the AER's jurisdiction. If a surface rights agreement is unobtainable from the landowner solely due to compensation issues, the applicant may request that the AER issue the licence to allow the applicant to apply to the Surface Rights Board for a right-of-entry order.

The applicant may file a routine licence application if the landowner confirms in writing that compensation is the only issue and there are no concerns or objections to the AER issuing a licence, so that the parties may proceed to the Surface Rights Board.

If landowner confirmation as described above cannot be obtained, the applicant must file a nonroutine application.

The applicant must file a nonroutine application if there are unresolved compensation issues identified by participants other than the surface landowner.

## 2.4 Licence Extensions

See <u>Frequently Asked Questions Directive 056 – Licence Extension</u> for further information on licence extensions.

#### 3 **Energy Development Licence Applications Procedural**

#### 3.1 Prelicensing Approvals/Waivers

When filing an application that has a prelicensing approval or waiver for surface casing, the applicant must file a nonroutine application and include a copy of the approval or waiver issued.

#### 3.2 Submission Procedures

Facility, pipeline, and well audit submissions must be submitted by email to the AER at Directive056AuditSubmissions@aer.ca.

#### 3.3 **Incomplete Licence Applications**

In the case of significant deficiencies, the AER will notify the applicant that the application is being closed and the reason for the closure.

Significant deficiencies include situations where the applicant

- has not included supplementary information to support a nonroutine submission,
- has not answered an applicable question on a schedule,
- fails to respond to an AER request for additional information within the specified time,
- has submitted its application on vendor forms that do not match AER format and content,
- failed to submit all required schedules or attachments,
- has recorded three or more errors on a schedule, or
- has filed an application for an invalid category type.

#### 4 **Audit Procedural**

#### 4.1 Documentation

Tables 1, 2, and 3 summarize the documents required for prelicensing and postlicencing review or audit for facilities, pipelines, and wells. The AER reserves the right to request the submission of additional information not listed below if it would assist in the review of an application. If an application is proceeding to a hearing, the AER may require that the applicant submit the entire audit package for review

Table 1. Facility application audit checklist

Section No.	Υ	N	N/A	Audit Documents		
Facility Licence Application						
5.10.2	Parti	cipar	t Invol	vement Requirements		
5.10.2.1	Parti	cipar	t Invol	vement Map Requirements		
				Мар		
5.10.2.2	Indu	stry N	lotifica	tion Requirements		
				Record of contact with other industry parties, including name, address, telephone number		
				Copies of all correspondence between parties		
				Minutes of meetings held, including		
				Date of meeting		
				Meeting notice and/or invitation    Meeting notice and/or invitation   Meeting notice   Meeting notice		
				<ul> <li>Invitation list</li> <li>Name, address, and phone number of all meeting participants</li> </ul>		
				Copies of the project information presented at meetings or otherwise distributed		
5 10 2 2	Porc	onal (	Consu	Itation and Notification Requirements		
5.10.2.3	Ters	liai	Consu	Participant Involvement Summary		
E 40 2 4	Conf	: o.1	ion of	•		
5.10.2.4	Com	Irmat	ion or	Nonobjection		
				Freehold lease agreement		
				Crown disposition		
				Signed information document		
				Documented verbal nonobjection		
	<u> </u>			Written agreement to proceed to Surface Rights Board		
5.10.2.5	Infor	matic	n Pac			
				Applicant's project-specific information package		
				List of all documents provided to participants		
				Documented refusal of information packages		
5.10.2.6	Resc	lved	Conce	rns and Objections		
				A record and explanation of any concerns/objections received that were resolved		
				Documentation demonstrating resolution of the concerns/objections received		

Section No.	Υ	N	N/A	Audit Documents				
	5.10.2.7 Sour Gas Planning and Proliferation							
				For cases where there are residents located within the EPZ of the facility, the applicant must submit the assessment of existing infrastructure required by <u>Directive 056</u> , section 8.3.2				
				The additional project-specific information package details identified in <u>Directive 056</u> , section 8.3.2				
5.10.3	Emer	genc	y Resp	ponse Planning				
				Statement confirming that a corporate or specific plan will be in place prior to operation				
5.10.4	Туре	of Ap	plicat	ion				
				For category B facilities, a representative gas analysis				
5.10.5	Facil	ity De	sign C	Criteria Criteria				
				Written description of the proposed process scheme at the facility				
				Process flow diagram				
				For custom treating facilities, an inlet analysis for oil, water, and solids				
				Breakdown of the sources of NO <sub>x</sub> and CO <sub>2</sub> emissions				
				Manufacturer specifications to confirm NO <sub>x</sub> and CO <sub>2</sub> emissions				
				Diagrams to demonstrate that stack height requirements have been met				
				List of all sources of continuous flaring, incineration, and venting				
				The results of the ground-level radiant heat intensity calculation for the flare/incinerator				
5.10.6	Tech	nical	Inform	ation				
5.10.6.1	Equi	omen	t Spac	ing				
				Site-specific plot plan				
				Indication of whether ESD valves are automated or manual control				
				For facilities handling heavy oil, a representative oil analysis				
5.10.6.3	Gas (	Cons	ervatio	n				
				Economic evaluation of gas conservation and decision tree analysis or an explanation of why the evaluation cannot be completed until the well test is complete, and a description of the plans to complete the evaluation after well testing				
				For gas processing plants with continuous flaring/incineration, documentation to confirm that the gas conservation requirements of <u>Directive 060</u> , section 5.1, have been met				
5.10.6.4	Noise	e Gui	delines	3				
				A copy of the noise impact assessment				
5.10.6.5	Stora	ige R	equire	ments				
				List of material stored and size and type of storage tanks proposed				
				Description of design and construction, leak detection, secondary containment, and weather protection for each tank proposed				
5.10.6.7	Prod	uctio	n Meas	surement Requirements				
				A list and location of each meter proposed				
				Documentation to confirm that the measurement/estimation procedures for flared, incinerated, and vented volumes meet the requirements of <u>Directive 060</u>				

Section No.	Υ	N	N/A	Audit Documents			
5.10.6.8	10.6.8 NO <sub>x</sub> Emissions						
				For facilities where the $NO_x$ emissions are less than 16 kg/h, documentation or a schematic diagram for each source stack demonstrating that the stack height is 1.2 times the peak building height			
				If modelling was conducted, documents that clearly show that dispersion modelling was conducted in accordance with the Alberta <u>Air Quality Model Guideline</u>			
				<ul> <li>the source parameters, locations, elevations, and NO<sub>x</sub> emission rates for all sources</li> <li>predicted normal and maximum ground-level NO<sub>x</sub> concentrations</li> <li>the name of the dispersion model used</li> <li>a description of meteorological data used</li> </ul>			
				- a terrain map of the study area			
5.10.6.9	Albe	rta En	vironr	nent Approval/Registration			
				A copy of the AEP approval or registration number if available			
				If approval or registration is not completed, - documents that clearly show that dispersion modelling was conducted in accordance with the Alberta Air Quality Model Guideline			
				<ul> <li>the source parameters, locations, elevations, and NO<sub>x</sub> emission rates for all sources</li> <li>predicted normal and maximum ground-level NO<sub>x</sub> concentrations</li> <li>the name of the dispersion model used</li> <li>a description of meteorological data used</li> </ul>			
				- a terrain map of the study area			
5.10.6.11	Hist	orical	Reso	urces Act (Freehold land only)			
				Alberta Culture and Community Spirit approval dated prior to application			
5.10.6.12	AER	Envi	ronme	ntal Requirements			
				All documentation outlined in <u>/L 93-09</u> , if applicable.			
5.11 Gas	Plan	ıts	<u> </u>				
5.11.2	Total	Reco	overed	Products			
				A plant material balance			
				An explanation of any differences between design rates applied for and those from the material balance			
5.11.3	Tech	nical	Inform	ation			
				For new category C, D, and E plants, the results of the feasibility evaluation of existing plants that was conducted			
5.12 H₂S	Infor	matic	n				
5.12.2	Gas	Treati	ng and	d Processing Information			
				Description of the H <sub>2</sub> S scavenger system proposed, nature of spent chemical, and its disposition			
				Wellhead or inlet gas analysis representative of facility inlet			
				Breakdown of all sources that contribute to the continuous sulphur emissions			
				Explanation of how the facility meets the current sulphur recovery requirements			
5.12.3	Tech	nical	Inform	ation			
5.12.3.1	Setba	ack R	equire	ments			
				Input parameters used to calculate the potential H <sub>2</sub> S release volume of the highest level of pipeline associated with the facility			
				Pipeline map showing ESD and check valve locations			
			l	Tipolino map onewing 200 and eneck valve locations			

Section No.	Υ	N	N/A	Audit Documents
5.12.3.2	Vapo	ur Re	cover	у
				For facilities with H <sub>2</sub> S >10 mol/kmol, a description of the method proposed to handle stock tank vapours so that proper combustion occurs
				For facilities with H <sub>2</sub> S >0.01 mol/kmol, a description of how off-lease odours will be controlled during the transfer and transport of fluids containing H <sub>2</sub> S
5.12.3.3	SO <sub>2</sub> E	Emiss	sions a	nd Stack Design
				Schematic diagram or description of the flare/incinerator
				Documentation that demonstrates the Alberta ambient air quality objectives will be met for SO <sub>2</sub> emissions from continuous sources and from nonroutine events. The documentation must clearly show that dispersion modelling was conducted as per the Alberta <u>Air Quality Model Guideline</u> and <u>Directive 060</u>
				The source parameters, locations, elevations, and SO <sub>2</sub> emission rates for all sources
				Predicted maximum ground-level SO <sub>2</sub> concentrations
				Name of the dispersion model used
				Description of meteorological data used
				Terrain map of the study area
				For incinerators, the residence time and exit temperature
				For facilities with less than 10 mol/kmol H <sub>2</sub> S, the heating value of the gas stream for the flare/incinerator
5.13 Cor	npres	sors	/Pump	s
5.13.2	Com	press	ors an	d Pumps
				Manufacturer specifications to confirm emission ratings, type of driver, and size of compressor/pump

#### Table 2. Pipeline application audit checklist

Section No.	Υ	N	N/A	Audit Documents				
6.8 Pipeline Licence Application								
6.8.1 Part	icipa	ant li	nvolve	ment Requirements				
				vement Map Requirements				
				Мар				
6.8.1.2 Inc	6.8.1.2 Industry Notification Requirements							
				Record of contact with other parties, including name, address, telephone number				
				Copies of all correspondence between parties				
				Minutes of meetings held, including				
				Date of meeting				
				<ul><li>Meeting notice or invitation</li><li>Invitation list</li></ul>				
				Name, address, and phone number of all meeting participants				
				Copies of the project information presented at meetings or otherwise distributed				
6.8.1.3 Pe	rsor	nal C	onsul	tation and Notification Requirements				
				Participant Involvement Summary				
6.8.1.4 Cc	nfir	mati	on of N	Nonobjection				
				Freehold lease agreement				
				Crown disposition				
				Signed information document				
				Documented verbal nonobjection				
				Written agreement to proceed to Surface Rights Board				
6.8.1.5 Inf	form	atio	n Pack	ages				
				Applicant's project-specific information package				
				List of all documents provided to participants				
				Documented refusal of information packages				
6.8.1.6 Re	sol	ed (	Concer	ns and Objections				
				A record and explanation of any concerns/objections received				
				Documentation demonstrating resolution of the concerns/objections received				
6.8.1.7 Sc	ur G	as F	Plannir	ng and Proliferation				
				The assessment of existing infrastructure required in <u>Directive 056</u> , section 8.3.2 if there are residents located within the EPZ of the pipeline				
				The additional project-specific information package details identified in <u>Directive 056</u> , section 8.3.2				
6.8.2 Eme	erge	ncy I	Respo	nse Planning				
				Statement confirming that a corporate or specific plan will be in place prior to operation				
6.8.3 Tran	spo	rtati	on/Util	ity Corridor				
				Documentation confirming that ministerial consent from Alberta Infrastructure has been obtained				
6.8.4 AER	Env	viron	menta	Il Requirements				
				All documentation outlined in <u>IL 93-09</u> , if applicable.				
6.8.5 Pipe	line	Tec	hnical	Information				

Section No.	v	N	N/A	Audit Documents			
	6.8.5.1 H₂S Content Requirements						
0.0.0.1 112	II			A gas analysis			
6.8.5.2 <u>C</u>	   S A   7	662		A gas analysis			
0.0.3.2	II	002		Description of the methodology or process used to ensure CSA standards are met			
				List of the licensed substance and MOP of the pipelines into which the proposed			
				pipeline is tied			
				Description of overpressure protection			
				Mill certificates or other documentation to confirm that the pipe is suitable for the product being transported			
				Specifications for the valves, flanges, and fittings			
				Documentation of a quality assurance program to ensure that material is suitable for sour service			
				Description or map showing valve locations and spacing			
				Material Testing Reports if maximum operating pressure is greater than 14000 kPa and substance is crude oil			
				Material Testing Reports if non-CSA manufactured pipe in sour service			
6.8.5.3 C	orros	sion					
				Evaluation performed to assess the corrosivity of the pipeline and the need for mitigation			
				If a corrosion mitigation plan has been deemed necessary,			
				a detailed summary of the corrosion mitigation plan that outlines the scheduled actions that will be conducted,			
				a detailed summary of the monitoring plan that outlines the scheduled actions that will be conducted, and			
				a description of the scheduled actions that will be conducted to review the monitoring results and assess mitigation plan performance			
6.8.5.4 Le	ak [	Detec	ction				
				A detailed description of procedures for leak detection, including frequency of right-of- way inspections, material balance parameters, and confirmation that employees have or will have training			
6.8.5.5 St	eam	Pipe	elines				
				Documentation verifying that the pipeline design was registered with ABSA			
6.8.5.6 Pr	odu	ctior	Strea	m Blending			
				Detailed description of two independent techniques to ensure that the licensed H <sub>2</sub> S content in the receiving pipeline is not exceeded, including			
				a detailed description of the design for flow ratio control with or without			
				<ul> <li>automatic shutdown, and</li> <li>a detailed description of H<sub>2</sub>S monitoring (or flow ratio control) with automatic shutdown</li> </ul>			
6.8.5.7 H	S R	eleas	se Volu	Ime and Level Designations			
3.3.3.7	<u> </u>			Input parameters used to calculate the potential H <sub>2</sub> S release volume			
	$\parallel$			Representative tie-in schematics of ESD valves			
	$\parallel$			A system map showing ESD and check valve locations			
	H		1	7. 3 3 5 cm map showing Lob and check valve locations			

Section							
No.	Υ	N	N/A	Audit Documents			
6.8.5.8							
				Input parameters used to calculate the potential release volume of all affected segments			
				A representative tie-in schematic of ESD valves			
				A system map showing ESD and check valve locations			
				Map showing			
				<ul> <li>the levels for the pipeline system and the segments that are being revised, and</li> <li>all residences and other developments within the notification distances</li> </ul>			
				Documentation verifying that personal consultation, nonobjection, and notification requirements have been met for all affected pipeline segments and that a revised ERP, if required, has been submitted			
6.8.5.9 Sc	our N	latui	ral Gas	Injection			
				An explanation as to the impact the scheme operation will have on the pipeline material and operating parameters			
6.8.5.10 8	Subs	tanc	e Char	nge			
				Documentation that confirms that the pipe valves, flanges, and fittings are suitable for the new substance			
				Documentation that confirms that the depth of cover is sufficient (HVP pipelines only)			
				Documentation that demonstrates the integrity and suitability of the pipeline for the proposed change and the proposed procedure for implementing the change			
6.8.5.11 N	ЮР	Cha	nge/H <sub>2</sub>	S Change			
				Documentation verifying that the pipe, valves, flanges, and fittings are suitable for the new MOP			
				A detailed evaluation of the integrity and suitability of the pipeline for the proposed change and the proposed procedure for implementing the change			
				Pressure test charts			
6.8.5.12 L	iner	Inst	allatio	n			
				Liner specifications and pressure test charts			
6.8.5.13 F	Pipel	ine F	Remov	als			
				Removal: documentation confirming that the entire line, including water, rail, and road crossings, is being removed			
6.8.5.14 F	Pipel	ine F	Resum	ption			
				Pressure test charts			
				Documentation to verify the depth of cover (HVP only)			
				A record of cathodic protection (cathodic protection survey)			
				A record of medium left in pipeline			
				Pipeline external coating integrity results			
				Documentation to ensure that sour service requirements are met			
				A detailed evaluation of the integrity and suitability of the pipeline for the proposed change and the proposed procedure for implementing the change			
6.8.5.15 F	Pipel	ine [	Discon	tinuation			
				A description of the method used to discontinue the pipeline			
				A record of the medium to be left in the pipeline			
				Documentation to confirm that cathodic protection will be maintained			

Section No.	Υ	N	N/A	Audit Documents
6.8.5.16 I	Pipel	ine /	Abando	onment
				A description of the method used to abandon the pipeline
				A record of the medium to be left in the pipeline
6.8.6 Pip	eline	Inst	allatio	n Technical Information
				Wellhead or inlet gas analysis
				Process flow diagram (PFD)
				Site-specific plot plan
				List of each type of meter proposed for each measurement point and their location
				For facilities where the NO <sub>x</sub> emissions are less than 16 kg/h, the licensee must submit documentation or a schematic diagram for each source stacks, demonstrating the stack height is 1.2 times the peak building height.
				If modelling was conducted, the licensee must submit
				documents that clearly show that dispersion modelling was conducted in accordance with the Alberta <u>Air Quality Model Guideline</u> ;
				<ul> <li>the source parameters, locations, elevations and NO<sub>x</sub> emission rates for all sources;</li> <li>predicted normal and maximum ground-level NO<sub>x</sub> concentrations;</li> </ul>
				the name of the dispersion model that was used;
				description of meteorological data used; and
				terrain map of the study area.
				Manufacturer specifications for the proposed unit that confirm emission ratings, unit size, and driver type
				A noise impact assessment
				A breakdown and total of all sources of NO <sub>x</sub> emissions
				Documentation that storage requirements are met
				Documentation that the line heater is designed to <u>Safety Codes Act</u> requirements

Table 3. Well application audit checklist

Castian			<u> </u>	dit differiist			
Section no.	Υ	N	N/A	Audit documents			
7.12.2 Part	7.12.2 Participant Involvement Requirements						
7.12.2.1 Pa	articipa	nt Invo	lvemer	nt Map Requirements			
				Мар			
7.12.2.2 Pe	ersonal	Consu	ıltation	and Notification Requirements			
				Participant Involvement Summary			
7.12.2.3 Cd	onfirma	tion of	Nonok	pjection			
				Freehold lease agreement			
				Crown disposition			
				Signed information document			
				Documented verbal nonobjection			
				Written agreement to proceed to Surface Rights Board			
7.12.2.4 In	formati	on Pac	kages				
				Applicant's project-specific information package			
				List of all documents provided to participants			
				Documented refusal of information packages			
7.12.2.5 Re	esolved	Conc	erns an	d Objections			
				A record and explanation of any concerns/objections received that were resolved			
				Documentation demonstrating resolution of the concerns/objections received			
7.12.2.6 Sc	our Gas	Plann	ing and	d Proliferation			
				For cases where there are residents located within the EPZ of the facility, the applicant must submit the assessment of existing infrastructure required by <a href="Directive 056">Directive 056</a> , section 8.3.2			
				The additional project-specific information package details identified in <u>Directive 056</u> , section 8.3.2			
7.12.3 Eme	ergency	/ Resp	onse P	lanning			
				Statement confirming that a corporate plan exists or a site-specific plan will be approved prior to operation			
7.12.5 W	ell Pur	pose					
				For category B wells, a representative gas analysis for each prospective horizon			
7.12.6 Re-entry/Resumption/Deepening of a Well							
7.12.6.3 Ri	ghts to	the ex	isting v	wellbore			
				Documentation to confirm that the rights to the existing wellbore have been acquired			
7.12.6.4 Mi	inimum	casin	g testin	g requirements			
				Confirmation and/or documentation that all applicable minimum requirements in <u>Directive 056</u> , section 7.8.4 have been met			
		_		A copy of the inspection log waiver if one has been granted			

Section no.	Υ	N	N/A	Audit documents
7.12.7 We	II Detai	I	•	
				Survey plan
				For CBM wells completed above the base of groundwater protection, survey plan or map that meets the requirements of appendix 6
7.12.7.2 S	urface	casing	require	ements
				Completed <u>Directive 008</u> Surface Casing Depth Calculation form, pressure survey, and gradient documentation
				Supporting information for the surface casing reduction type selected
				Supporting information confirming that the applicable criteria will be met for Deep surface casing or surface casing exemptions
				Documentation showing the base of groundwater from DDS
				Description of the method proposed to protect the groundwater
				Copy of waiver granted by the AER
	П	<u> </u>		
7.40.034		:6:4: -		
7.12.8 We	II Class	Sificatio	n	0 (1) (1) (1)
7.40.0 Min	<u> </u>			Copy of drill cutting waiver granted by the AER
7.12.9 Mir		II !	4	
7.12.9.1 R	ignts to	or all in	tenaea	purposes
				Mineral rights lease number (Crown minerals)
				Documentation that authorization has been obtained from the mineral rights owner or lessee for injection or water source wells
				Documentation that authorization has been obtained for leased Crown minerals
	<u> </u>			Documentation that authorization has been obtained for Freehold minerals
7.12.9.2 R	ights fo	or the c	omplet	e drill spacing unit
				Mineral rights lease numbers for leases covering the entire drill spacing unit (Crown minerals)
				Documentation that demonstrates Freehold minerals have been acquired for the entire drill spacing unit
7.12.11 St	urface I	mpact		
7.12.11.1	Water b	ody se	tback	requirements
				Documentation outlining the steps that will be taken to ensure that the water body is protected and that all AER requirements are met
				Alberta Environment <u>Water Act</u> approval
7.12.11.2	Other s	etback	require	ements
				Documentation confirming that consent from the surface improvement owner was received prior to application
				Supporting information confirming that the applicable criteria will be met for coal mines
7.12.11.3	Enviror	nmenta	l requir	ements
				Documentation outlining steps that will be taken to ensure the protection of the environment and that all AER requirements are met. All documentation outlined in <u>/L 93-09</u> , if applicable. For CBM wells completed above the base of groundwater protection, the additional audit documents indicated in appendix 6

- ·			1					
Section no.	Υ	N	N/A	Audit documents				
	The state of the s							
7.12.11.4 <u>F</u>	7.12.11.4 <u>Historical Resources Act</u>							
				Alberta Culture and Community Spirit approval dated prior to application				
7.13 Audit	Docum	nentati	on Req	uirements – Well H <sub>2</sub> S Information				
7.13.1 H <sub>2</sub> S	7.13.1 H <sub>2</sub> S Release Rate							
				Map showing size and location of the search area				
				A geological well prognosis and comprehensive geological discussion for all formations/zones				
				Geological mapping for primary and secondary targets that may contain H <sub>2</sub> S gas				
				An engineering discussion for each potentially productive zone that may contain H <sub>2</sub> S gas				
				Tabulated data that provides the results of H <sub>2</sub> S concentration and AOF rate reviews				
				If an H <sub>2</sub> S release rate assessment presubmission was made, a letter issued by the AER				
7.13.2 Cun	nulative	H <sub>2</sub> S F	Release	Rate				
7.13.2.1 In	termed	iate Ca	sing					
				Depth to which intermediate casing will be set				
				Copy of casing waiver (if applicable)				
7.13.4 Crit	ical We	II	•					
7.13.4.1 Dr	illing C	ritical	Wells					
				A detailed drilling plan based on the requirements in <u>Directive 036</u> and <u>IRP Volume 1</u> , including a table of contents				
				Waiver/approval obtained from the AER				

#### **Facility Procedural** 5

#### 5.1 Overview

Depending on the project, the AER requires the submission of one Schedule 1, along with one or more of the following forms:

- Schedule 2: Facility Licence Application
- Schedule 2.1: Working Interest Participants—Facilities
- Schedule 2.2: Gas Plants—Facilities
- Schedule 2.3: H<sub>2</sub>S Information—Facilities
- Schedule 2.4: Compressors/Pumps—Facilities

#### 5.2 Licence Expiry

Applicants can file a licence amendment application to extend the expiry date of a facility licence or a temporary facility licence for up to six additional months.

## 5.2.1 Licence Extensions

The AER typically issues a licence for a term of one year. An applicant may make a request to extend the expiry date of an applied-for licence at the time of application. Requests for extensions will be considered on a case-by-case basis, but the date of expiry will normally not extend beyond two years from the date the licence was issued.

The AER may extend the expiry date of a licence that has already been issued upon request of the licensee. However, a licence that was originally issued with a term greater than one year will not be extended.

See Frequently Asked Questions Directive 056 - Licence Extension for further information on licence extensions.

#### 5.3 **Exemptions**

#### 5.3.1 Oil Sands Processing Plants

Surface facilities associated with approved in situ schemes require a *Directive 056* facility licence. Applications for in situ oil sands central processing units should be applied for using the category type "multiwell bitumen batteries."

#### 5.3.1.1 Oilfield Waste Management Facilities

Oilfield waste management facilities are not licensed under *Directive 056*. See the AER website for information on approvals to construct and operate new facilities, modify existing facilities, and notifications of minor modifications to existing facilities.

If a facility currently licensed under *Directive 056* becomes a waste management facility, a *Directive 058* approval is required, and the previously issued <u>Directive 056</u> licence will be cancelled. Operators are reminded that the receipt of oilfield waste from outside of a facility's production system for consolidation and transfer or for on-site storage or management is not permitted unless the facility is approved as an oilfield waste management facility.

#### 5.4 Licence Amendments

Only facilities that have an existing AER facility licence number can be amended. Licensees may use the licence amendment applications process based on the criteria in table 4.

Applicants may apply for multiple types of licence amendments on one Schedule 2; however, note that licence amendment types 10 and 11 cannot be done in combination with any other amendment type. Not all types of licence amendments are available for all category types (see table 5).

Table 4. Licence amendment types

i abie 4.	Licence amendment types
Reference	Schedule 2 licence amendment type
LA1	Change category or type of facility
LA 2	Install and/or remove compression at existing licensed facilities (except standalone injection/disposal facilities)
LA 3	Change the maximum licensed inlet rates (design rates) of existing licensed facilities
LA 4	Change the licensed H <sub>2</sub> S content of raw inlet gas at any existing licensed category C, D, or E facility
LA 5	Install and/or remove injection/disposal pumps at an existing licensed facility
LA 6	Change the types of products recovered and/or the rates of recovery at an existing licensed gas processing plant
LA 7	Add regenerative sweetening equipment to an existing licensed gas processing plant
LA 8	Add nonregenerative sweetening process to an existing licensed category C, D, or E facility
LA 9	Change the maximum continuous sulphur emissions rate at an existing licensed category C, D, or E facility satellites)
LA 10	Extend the expiry date of a temporary facility or permanent facility for up to an additional six months
LA 11	Change the status of a temporary facility to a permanent operation
LA 12	Add a new flare/incinerator stack (a new source of emissions) at an existing licensed facility
LA 13	Increase the sulphur recovery efficiency at an existing licensed sulphur recovery plant or acid gas injection facility
LA 14	Decrease the sulphur recovery efficiency at an existing licensed sulphur recovery plant or acid gas injection facility
LA 15	Change the method of acid gas disposal at an existing licensed category C, D, or E gas processing plant
LA 16	Degrandfather an existing licensed sulphur recovery plant in accordance with the sulphur recovery requirements of <u>ID 2001-03</u>

Licence amendment type 2 3 4 11 12 13 14 15 5 16 6 8 10 7 B010 Х Х Х Х Х Х Х Х Х B011 Х Х Х Х Х Х Х Х Х B020 Х Х Х Х Х Х Х B030 Х Х Х Х Χ Х Х B031 Х Х Х Х Х B040 Χ Χ Х Х Х Х Х B070 B071 Χ Х Х Х Х Х B080 Х Х Χ Х Х B090 Χ Х Χ Х Χ Х B091 B200 Χ Χ Χ Х Χ Х Х Х Χ C300 Χ Χ Χ Х Χ Х Χ Х Х Х Х Х C301 Χ Х Χ Χ Х Х Χ Χ Х Х Х Х Х C302 Х Х Х Χ Х Х Х Х Х Х Х Χ Х Category type C310 Х Χ Х Χ Х Х Χ Χ Χ Χ C311 Х Χ Х Χ Х Х Х Х Χ Х C320 Χ Χ Χ Χ Χ Х Χ Х Х Х C321 Х Х Χ Х Х Х Х Х Х Х C330 Χ Х Х Х Х Х Χ Х Χ Х C331 Х Х Х Х Х Χ Х Х Х Х C340 Х Х Х Х Х Χ Х Х Χ Х C350 Х Х Х Х Х Χ Х Х Χ Х C351 Х Х Х Χ Х Х Х Х Х Х D400 Х Х Х Х Х Х Х Х Х Х Х Х х X Х D401 Х Χ Х Х Х Х Χ Х Х Χ Χ Х D410 Х Х Х Х Х Х Х Х Χ Х D411 Х Х Χ Х Х Χ Х Χ Х D420 Χ Х Χ Х Χ Х Χ Х Х Х D421 Х Х Х Χ Х Х Χ Х Х Х D430 Χ Х Χ Χ Χ Х Χ Х Х Х D431 Χ Х Χ Χ Х Х Χ Х Х Х

Table 5. Energy development category type amendment combinations\*

\* Only certain licence amendment types are acceptable based on the category type of the facility. Acceptable licence amendment types are indicated with an "x" in this table.

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#### 5.5 **Technical Requirements**

Χ

Х

Х

Х

Χ

Х

Х

Х

Χ

Χ

Χ

Χ

Χ

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Χ

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Х

#### 5.5.1 Licensee Liability Rating

Licensees of abandoned facilities can change the facility status to "abandoned" through the designated information submission system. This change is not made through *Directive 056*.

## 5.5.2 Sulphur Recovery

D440

D450

D451

E600

If the applicant believes a variance to the minimum sulphur recovery levels of <u>ID 2001-03</u> is warranted, the applicant must file a nonroutine application.

## 5.5.3 Total Continuous Emissions

Directive 039: Revised Program to Reduce Benzene Emissions from Glycol Dehydrators sets out requirements for the reduction of benzene emissions from glycol dehydrators. In the directive, licensees are required to submit to the AER an annual dehydrator benzene inventory list. This must be done using an Alternate Reference on Schedule 1 under the Applicant's Reference section for all new and amended facilities that include glycol dehydrators in the design. Applicants are expected to fill out this reference with the code of GDEHY for all facility applications that include glycol dehydrators.

## 5.5.4 Plot Plans and Spacing Requirements

If the applicant cannot meet the AER's spacing requirements it must file a nonroutine application.

## 5.5.5 Vapour Recovery and Odour Control

The applicant must file a nonroutine application and include an explanation of the proposed method of vapour control when the maximum inlet H<sub>2</sub>S content of the gas is greater than 10 mol/kmol and a vapour recovery unit will not be installed.

## 5.5.6 Noise Requirements

If the noise impact assessment indicates that the permissible sound level will be exceeded, and if mitigative measures are not practical, the applicant must file a nonroutine licence application and explain why mitigative measures are not practical.

## 5.5.7 Alberta Culture and Tourism

For proposed new facility licences or licence amendments that require a lease expansion on Freehold lands, the applicant must consult Alberta Culture and Community Spirit's Listing of Significant Historical Sites and Areas to determine whether the proposed facility site will require Alberta Historical Resources *Act* clearance prior to filing a licence application.

If Alberta Culture and Community Spirit has not granted clearance submit a nonroutine licence application

## 5.5.8 Working Interest Participants

It is not necessary to identify working interest participants for licence amendment applications. Once licensed, working interest participants are updated through the AER.

Table 6 provides a summary of documents required for nonroutine application submission by step and question.

Table 6. Facility application nonroutine checklist

Sectio n No.	Υ	N	N/A	Nonroutine Submissions
Facility I	icence	Appl	ication	
Participa	nt Invo	lveme	ent Red	quirements
				irmation of nonobjection, and notification requirements have been met: Public
1 0100114				The participant involvement summary of all personal consultation and notification
				that have been completed
				Name, address, telephone number, and legal land description of participants for which personal consultation and notification requirements have not been completed
				Detailed explanation of why all personal consultation and nonobjection requirements
				cannot be completed  Detailed explanation of why all notification requirements cannot be completed
				An explanation of how you would like the AER to proceed with this application
Industry				7
maasay				Record of contact with industry parties conducted
				Copies of correspondence between parties
				Minutes of meetings held
				Copies of information distributed
				A summary of parties for which industry notification has not occurred
				A detailed explanation of why all industry notification requirements were not
				completed  An explanation of how you want the AER to proceed with your application
Thora ar	o outsta	ndin	a object	ction/concerns related to this application
There are	e outsta		g objec	Name, address, telephone number, and legal land description of participants with
				outstanding concerns or objections  Approximate distance from the project to the land and residence, if applicable, of
				participants with outstanding concerns or objections
				Copy of the written concern or objection (or summary of issues if not available)
				A chronology of the participant involvement program conducted with the party
				A discussion of steps taken to mitigate the outstanding concerns or objections
				Copy of the applicant's project-specific information package
				List of other documents distributed
				Documentation in support of the Battle Lake application requirements ( <u>Directive 056</u> , section 8)
				Explanation of how you want the AER to proceed with your application
				If there are residents within the EPZ, you must also attach
				the assessment of existing infrastructure required by <u>Directive 056</u> , section 8.3.2
				<ul> <li>the updated expanded project-specific information package, as described in <u>Directive 056</u>, section 8.3.2</li> </ul>
				<ul> <li>a copy of an area plan described in <u>Directive 056</u>, section 8.3.3 if it was completed</li> </ul>
Technica	l Inform	natior	1	
Equipme	nt spac	ing r	equirer	ments will be met
				Detailed explanation of what equipment will not meet the requirements and why
				Description of fluids involved and all sources of gaseous vapours
				Topographic map (if terrain is the cause)
				Description of how safety will not be compromised by a relaxation from the requirement, including safety assessment and response time for call out

Sectio						
n No.	Υ	N	N/A	Nonroutine Submissions		
The faci	lity will i	meet	all curi	rent and applicable engineering and safety standards		
				Detailed explanation of nonconformance with engineering and safety standard		
If YES, gas flaring, incinerating, or venting will comply with the requirements of <u>Directive 060</u>						
				Description of exemption being proposed and a detailed explanation of reasons		
				Explanation that includes plans to complete gas conservation evaluation (if not completed prior to application)		
The faci	lity mee	ts AE	R nois	e control requirements ( <u>Directive 038</u> )		
				A copy of the noise impact assessment		
				An explanation of why the noise requirements will not be met		
				Discussion of the mitigative measures proposed or a discussion of why mitigative measures are not practical		
				Map showing proximity of residents		
AER sto	rage rec	quiren	nents v	will be met ( <i>Directive 055</i> )		
				Explanation of why the storage requirements will not be met, and a description of alternative storage methods		
				Discussion of how the environment will not be compromised by a relaxation of the requirements		
AER pro	duction	meas	sureme	ent requirements will be met		
				Explanation of why measurement will not meet the AER's requirements and a discussion of the proposed alternative		
NO <sub>x</sub> air	emissio	ns me	et the	Alberta Ambient Air Quality Objectives		
				Explanation of why the Alberta Ambient Air Quality Objectives will not be met		
				Documents confirming that dispersion modelling was conducted in accordance with the Alberta Air Quality Model Guideline, including		
				- the source parameters, locations, elevations, and $\ensuremath{NO}_x$ emission rates for all sources		
				- predicted normal and maximum ground-level NO <sub>2</sub> concentrations		
				- the name of the dispersion model used		
				<ul><li>- a description of meteorological data used</li><li>- a terrain map of the study area</li></ul>		
Clearan	ra hae h	een a	ranted	for the facility site		
Olearan	l las b	l g	lanted	Explanation as to why Alberta Culture and Tourism has not provided clearance		
The pro	nosad fa	cility	moote	the AER's environmental requirements		
THE PIO		Cility	IIICCIS	A detailed explanation of why the facility does not meet AER environmental		
				requirements and what measures will be in place to ensure the facility will not have a negative impact on the environment		
Gas Pla	nts					
Technic	al Inforn	nation	1			
A sour g	as proli	ferati	on rev	iew has been conducted in accordance with <u>ID 2001-03</u>		
				A detailed explanation as to why the requirements cannot be met		
H₂S Info	rmation					
Gas Tre	ating an	d Pro	cessin	g Information		
Acid gas				-		
				Description of the proposed alternative acid gas disposal process and supporting technical documents/papers discussing the method		
			1	<u> </u>		

Sectio n No.	Υ	N	N/A	Nonroutine Submissions
Sulphur	recove			
				Description of the proposed process, including a supporting process flow diagram and material balance
				Technical documents/papers discussing the process
				Explanation of how the proposed process will meet the sulphur recovery requirements
				Available correspondence from Alberta Environment related to the process
				Results and description of the process in operation at another facility
Techni	cal Info	rmatic	n	
Questi	on 1: Sc	our se	tback ı	requirements have been met
				Detailed explanation of why the setbacks cannot be met
A meth	od to re	ecove	r vapoı	urs will be implemented
				Detailed explanation of why vapour recovery will not be installed
				Discussion of mitigative measures to ensure that off-lease odours do not occur
SO <sub>2</sub> air	emissio	ns me	et the	Alberta Ambient Air Quality Objectives
				Schematic diagram or description of the flare/incinerator
				The source parameters, locations, elevations, and SO <sub>2</sub> emission rates for all sources
				Predicted maximum ground-level SO <sub>2</sub> concentrations
				Name of the dispersion model used
				Description of meteorological data used
				Terrain map of the study area
				For facilities with less than 10 mol/kmol H <sub>2</sub> S, the heating value of the gas stream for the flare/incinerator
				Description of the magnitude and frequency of potential SO <sub>2</sub> exceedance and information on situations leading to SO <sub>2</sub> exceedance (operational scenarios, meteorological conditions)

## Directive 056: Schedule 2 Facility Licence Application



Submission date:	Applicant's reference:
1. Identification	
Applicant name:	Applicant BA code:
2 Participant Involvement Poquiremen	*c
2. Participant Involvement Requiremen	
Personal consultation, confirmation of r requirements have been met.	nonobjection, and notification Public
2. There are outstanding objections or con	ncerns related to this application.
3a. Distance to nearest surface developm	ent (km): 3b. Distance to nearest residence (km):
3. Emergency Response Planning	
The applicant will meet AER requireme	nts for emergency response planning.
2a. The facility requires a new emergency	response plan.
2b. The facility requires an amendment to	an existing emergency response plan.
4. Application Type	
Category type:	Description:
☐ New licence	☐ Licence amendment ☐ Temporary facility
Maximum H <sub>2</sub> S content of inlet gas:	ppm mol/kmol %
Licence amendment (LA) type:	
☐ 1-Change category and/or type	☐ 7-Add regenerative sweetening ☐ 12-Add new flare/incinerator stack
2-Install/remove compression	☐ 8-Add nonregenerative sweetening ☐ 13-Increase sulphur recovery efficiency
3-Change maximum licensed inlet rates	9-Change maximum continuous 14-Decrease sulphur recovery efficiency
☐ 4-Change H <sub>2</sub> S content of inlet gas	☐ 10-Extend expiry date ☐ 15-Change acid gas disposal method
5-Install/remove injection/disposal pumps	☐ 11-Change status to permanent ☐ 16-Degrandfather sulphur recovery facility
6-Change product/product recovery rates	
LSD:	Latitude (NAD 83): Longitude (NAD 83):
Existing facility licence no.:	
Facility expiry:	AER-designated field or strike area:

5. Design Criteria					
	Raw gas	Oil/Bitumen	Condensate	Water	Sulphur
Total inlet rates	10 <sup>3</sup> m <sup>3</sup> /d	m³/d	m³/d	m³/d	t/d
	NO <sub>x</sub>	CO <sub>2</sub>	Flarin	g/Incineration	Venting
Total continuous emissions rates	kg/h		t/d	10 <sup>3</sup> m <sup>3</sup> /d	10 <sup>3</sup> m <sup>3</sup> /d

6. Technical Information						
1.	The proposed facility is part of an experimental, primary, or commercial crude bitumen scheme	☐ Yes	□No			
1a.	If YES, provide scheme approval no.					
2.	Equipment spacing requirements will be met	☐ Yes	□ No			
3.	The facility will meet all current and applicable engineering and safety standards	☐ Yes	□ No			
4.	Gas will be continuously flared, incinerated, or vented	☐ Yes	□ No			
4a.	If YES, the gas flaring, incinerating, or venting will comply with the requirements of Directive 060	☐ Yes	□No			
5.	The facility meets the AER Noise Control requirements ( <i>Directive 038</i> )	☐ Yes	□ No			
6.	AER storage requirements will be met (Directive 055)	☐ Yes	□ No			
7.	AER oilfield waste management requirements will be met (Directive 058)	☐ Yes				
8.	AER production measurement requirements will be met	☐ Yes	□ No			
9.	$NO_{\mbox{\tiny X}}$ air emissions meet the Alberta Ambient Air Quality Objectives	☐ Yes	□ No			
10.	Approval from or registration with Alberta Environment and Parks is required	☐ Yes	□ No			
11.	Alberta Environment and Parks requires an environmental impact assessment	☐ Yes	□ No			
12.	The proposed facility will include compressors (new licence only). If Yes, attach completed Schedule 2.4.	☐ Yes	□ No			
13.	The proposed facility will include pumps (new licence only). If Yes, attach completed Schedule 2.4.	☐ Yes	□ No			
14.	The proposed facility site requires Historical Resources Act clearance (Freehold land only)	☐ Yes	□ No			
14a	. If YES, clearance has been granted for the facility site	☐ Yes	□ No			
15.	The licensee is the only working interest participant. If NO, attach a completed Schedule 2.1	☐ Yes	□ No			
16.	The facility meets the AER environmental requirements	☐ Yes	□No			

#### 5.6 How to Complete Facility Licence Application Schedules

#### 5.6.1 How to Complete Schedule 2: Facility Licence Application

Date Enter the date on which you will submit this schedule (e.g., 15 Jan 2011).

Applicant's Reference Enter your own file reference in the designated area (optional).

## **Step 1: Identification**

Applicant BA Code Enter the four-digit business associate (BA) code issued to your company.

Applicant Name Enter the full corporate name of the applicant assigned the BA code.

## **Step 2: Participant Involvement Requirements**

If you check a **BOLD** response, you must attach supporting information.

Personal consultation, confirmation of nonobjection, and notification requirements have been met:

Public

YES means that all applicable requirements as outlined in the participant involvement requirements of section 3 have been met prior to application submission.

NO means that due to exceptional circumstances, all applicable requirements as cited above have not been met. This includes being unable to contact a party or receive confirmation of nonobjection, as required. If NO, you must attach

- the participant involvement summary of all personal consultation and notification that has been completed;
- the name, address, telephone number, and legal land description of participants for which personal consultation and notification requirements have not been completed;
- a detailed explanation of why all personal consultation and nonobjection requirements cannot be completed;
- a detailed explanation of why all notification requirements cannot be completed; and
- an explanation of how you would like us to proceed with this application.

We will review the circumstances and decide if an exemption is warranted.

## **Industry**

YES means that all operators of similar facilities and all licensees of unconnected wells within your area of investigation have been notified in accordance with the participant involvement requirements of section 3 and the proliferation requirements of *Directive 056*, section 5.9.3 prior to application submission.

NO means that due to exceptional circumstances, all applicable requirements cited above have not been met.

## If NO, you must attach

- a record of contact with industry parties conducted;
- copies of correspondence between parties;
- minutes of meetings held;
- copies of information distributed;
- a summary of parties for which industry notification has not occurred;
- a detailed explanation of why all industry notification requirements were not completed; and
- an explanation of how you would like us to proceed with this application.

We will review the circumstances and decide if an exemption is

2. There are outstanding concerns or objections related to this application. YES means that there are outstanding public or industry concerns or objections.

## If YES, you must attach

- name, address, telephone number, and legal land description of the participant with outstanding concerns or objections;
- approximate distance from the project to the land and residence, if applicable, of the participants with outstanding concerns or objections;
- a copy of written concerns or objections received; if not available, a summary of issues;
- a chronology of the participant involvement program conducted with the party;

- steps taken to mitigate the outstanding concerns or objections;
- a copy of the project-specific information package provided;
- a list of other documents distributed; and
- a discussion of how you would like us to proceed with your application.

If there are residents within the EPZ, you must also attach

- the assessment of existing infrastructure required by <u>Directive 056</u>, section 8.3.2;
- the updated, expanded project-specific information package, as described in *Directive 056*, section 8.3.2; and
- a copy of an area plan described in <u>Directive 056</u>, section 8.3.3 if it was completed.

**YES** also means the proposed facility is located within the Tier 1 area of Battle Lake and the documentation required by *Directive 056*, section 8 is attached.

We will review only the concern or objection identified and decide if an exemption is warranted.

NO means there are no outstanding public or industry concerns or objections.

3a. Distance to nearest surface development

Enter the distance from the edge of the facility lease to the nearest surface development in kilometres (km) to two decimal places.

If there is no surface development within the EPZ, a distance to the nearest town, village, or urban centre may be used. Where there is no EPZ, a search should be done to at least 1.5 km; if there is no surface development within this distance, enter 1.5 km on the schedule.

3b. Distance to nearest residence

Enter the distance from the edge of the facility lease to the nearest residence in kilometres (km) to two decimal places.

If there are no residences within the EPZ, a distance to the nearest town, village, or urban centre may be used. Where there is no EPZ, a search should be done to at least 1.5 km; if there are no residences within this distance, enter 1.5 km on the schedule.

## **Step 3: Emergency Response Planning**

1. The applicant will meet AER requirements for emergency response planning.	YES means that the corporate or specific emergency response plan will meet the requirements of <u>Directive 071</u> .
2a. The facility requires a new emergency response	YES means that a new emergency response plan is required.  NO means that a new emergency response plan is not required.
plan.	Do not complete this question for a category B facility.
2b. The facility requires an amendment to an existing	YES means that supplementary information will be submitted for an existing emergency response plan to include this facility.
emergency response plan.	NO means that an existing emergency response plan will not be amended.
	Do not complete this question for a category B facility.
<b>Step 4: Application Type</b>	
Category Type	For each Schedule 2 attached, enter the applicable category type from table 1 in <i>Directive 056</i> .
Description	Enter the facility description from table 1 in <u>Directive 056</u> .
Temporary Facility	Check this box if you are applying for a facility that will operate for less than one year or if you are filing a licence amendment application to extend the licence expiry date of an existing temporary facility licence for up to an additional six months from the original licensed date.
Maximum H <sub>2</sub> S Content of Inlet Gas	Enter the maximum H <sub>2</sub> S content of the raw inlet gas in parts per million (ppm), moles per kilomole (mol/kmol) to three decimal places, or percentage (%) to four decimal places. For facilities with multiple inlet streams, record the H <sub>2</sub> S value from the stream with the highest H <sub>2</sub> S content. The highest H <sub>2</sub> S content must be based either on pipelines entering the facility or on any well associated with the raw gas inlet.
Licence Amendment (LA) Type	Use this section if you are amending an existing AER-licensed facility. From the following list you may check all that apply; however, only certain amendment combinations will be permitted on one Schedule 2 application. Table 5.3 describes the allowable licence amendment combinations.

For all licence amendments listed below, full participant involvement requirements must be met or the application must be filed as nonroutine. This includes those amendments described as being not mandatory.

Compressors less than 75 kW that were installed previously as an exempt activity should be captured on Schedule 2.4 the next time an amendment application for the facility is required.

1. Change Category and/or Type

Check this box if you are applying to change the category or type of an existing licensed facility as described in table 1 in *Directive 056*. Depending on the amended category/type applied for, you may be required to complete one or more of schedules 2.2, 2.3, and 2.4.

2. Install/Remove Compression

Check this box if you are applying to install or remove compression at an existing licensed facility. The removal of compression is not a mandatory application but will be processed at the applicant's request. You must also complete Schedule 2.4.

Compressors less than 75 kW that were installed previously as an exempt activity should be captured on Schedule 2.4 the next time an amendment application for the facility is required.

3. Change Maximum Licensed Inlet Rates

Check this box if you are applying to change the maximum licensed inlet rates of an existing licensed facility. The reduction of licensed inlet rates is not a mandatory application but will be processed at the applicant's request.

4. Change H<sub>2</sub>S Content of Inlet Gas

Check this box if you are applying to change the maximum H<sub>2</sub>S content of the inlet gas of an existing licensed category C, D, or E facility without a category or type change. You must also complete Schedule 2.3 for all category C, D, and E facilities. The reduction of licensed H<sub>2</sub>S content is not a mandatory application but will be processed at the applicant's request.

5. Install/Remove Injection/Disposal Pumps Check this box if you are applying to install or remove injection/disposal pumps at an existing licensed facility. The removal of injection/disposal pumps is not a mandatory application but will be processed at the applicant's request. You must also complete Schedule 2.4.

6. Change Product/Product
Recovery Rates

Check this box if you are applying to change the product or product recovery rates of an existing licensed gas processing plant. You must also complete Schedule 2.2. The reduction of product recovery rates is not a mandatory application but will be processed at the applicant's request. Also, the increase in product recovery rates at a category B gas plant is not a mandatory application but will be processed at the applicant's request.

# 7. Add Regenerative Sweetening

Check this box if you are applying to add a regenerative sweetening system to an existing licensed gas processing plant where there is no change to category or type. You must also complete Schedule 2.2 for category B, C, D, and E gas processing plants and Schedule 2.3 for category C, D, and E gas processing plants.

# 8. Add Nonregenerative Sweetening

Check this box if you are applying to add a nonregenerative sweetening system to an existing licensed category C, D, or E facility. You must also complete Schedule 2.3.

# 9. Change Maximum Continuous Sulphur Emissions

Check this box if you are applying to change the maximum continuous sulphur emission rate of an existing licensed category C, D, or E facility. You must also complete Schedule 2.3. The reduction in sulphur emissions is not a mandatory application but will be processed at the applicant's request.

### 10. Extend Expiry Date

Check this box if you are applying to extend the expiration date of a temporary facility licence or a permanent facility licence where construction has not commenced. A licence amendment application to extend the expiry date may only be submitted once and may not be combined with other types of licence amendment applications.

## 11. Change Status to Permanent

Check this box if you are applying to change the status of an existing temporary facility licence to become a permanent licensed facility.

12. Add New Flare/Incinerator Stack

Check this box if you are applying to add a new flare/incinerator stack at an existing facility.

13. Increase Sulphur Recovery Efficiency Check this box if you are applying to increase only the sulphur recovery efficiency at an existing sulphur recovery facility or acid gas injection facility. You must also complete Schedule 2.3.

14. Decrease Sulphur Check this box if you are applying to decrease the sulphur recovery efficiency at an existing sulphur recovery facility or acid gas injection Recovery Efficiency facility. You must also complete Schedule 2.3. 15. Change Acid Gas Check this box if you are applying to change the acid gas disposal method at an existing licensed category C, D, or E gas plant. You must also Disposal Method complete Schedule 2.3. 16. Degrandfather Sulphur Check this box if you are applying to degrandfather an existing licensed Recovery Facility sulphur recovery facility to meet the requirements of <u>ID 2001-03</u>: Sulphur Recovery Guidelines for the Province of Alberta. You must also complete Schedule 2.3. Location Enter the surface location of the facility where construction will occur using the Dominion Land Survey system. If this is a licence amendment to a previously approved facility, enter the location exception assigned on the previous licence. Leave it blank for all new facility applications. Latitude (NAD 83) Enter the latitude in decimals of degrees to six decimal places, based on the North American Datum 1983 (NAD 83), for the location of the entrance to the facility. Longitude (NAD 83) Enter the longitude in decimals of degrees to six decimal places, based on NAD 83, for the location of the entrance to the facility. **Existing Facility Licence** Enter the existing AER facility licence number for the facility being No. amended. If you are changing a temporary facility to permanent status, enter the facility licence number issued for the temporary operation. Linking Facility Licence Enter the facility licence number for the facility that receives and reports No. the production from this nonreporting facility. This also applies to temporary nonreporting facilities. Do not indicate a linking facility number if this site is a reporting facility. Direct to Sales Check the "Direct to Sales" box if production from a category B or C compressor station is going directly into a sales gas pipeline.

# Temporary/Extended **Facility Expiry**

Enter the date by which the temporary facility will be decommissioned.

For new licence applications, this date must not be more than one year from the date of application. You may file a licence amendment application to extend the expiry date of a temporary licence or to extend the expiration of a permanent facility licence up to an additional six months.

AER-Designated Field or Strike Area

Enter the AER-designated field or strike area in which the facility is or will be located.

If no field or strike area has been designated, leave this blank.

Field and strike area information may be obtained on the AER website www.aer.ca.

### **Step 5: Design Criteria**

For facility licence amendments, your answers should represent the total design rates associated with all on-site equipment for the location identified and should not represent only that equipment associated with the licence amendment.

**Total Inlet Rates** 

Enter the maximum daily design rates under normal operating conditions for the facility inlet to two decimal places for raw gas and sulphur inlets, and one decimal place for oil/bitumen, condensate, and water inlets. The total sulphur inlet rate entered for category C, D, or E facilities must be greater than 0.00. If an inlet product is not applicable, enter 0.

**Total Continuous Emissions** Rates

Your answers should represent the total design amounts associated with all on-site equipment for the location identified.

 $NO_x$ 

Enter the total amount of NO<sub>x</sub> emissions from all sources at the facility site in kilograms per hour (kg/h) to two decimal places. If less than 0.01 kg/h, enter 0.

This value should include NO<sub>x</sub> from internal combustion reciprocating engines (gas or liquid fueled), gas/liquid fired turbines and combustion heaters, boilers and steam generating units (gas, liquid or solid fueled), and sulphur recovery unit incinerator stacks.

This value should not include NO<sub>x</sub> from flare stacks.

 $CO_2$ 

Enter the total amount of CO<sub>2</sub> emissions from all sources at the facility site in tonnes per day (t/d) to two decimal places. If less than 0.01 t/d, enter 0. For facilities operating a sweetening unit for the purpose of CO<sub>2</sub> removal, record the volume of CO<sub>2</sub> vented from that operation.

This value should not include CO<sub>2</sub> from flare stacks.

Flaring/Incineration

Enter the maximum continuous flaring/incineration rate in thousands of cubic metres per day (10<sup>3</sup> m<sup>3</sup>/d) to two decimal places, including all sources on site where gas is burned in a flare or incinerator. You must enter 0.00 for facilities with no continuous flaring.

This value should include all sources of flash gas or tank vapour streams that are associated with continuous flaring/incineration during normal operations.

This value should not include fuel gas used for header purge, flare combustion management, or pilot fuel, volumes attributed to emergency or maintenance flaring, or volumes associated with sulphur recovery tail gas flaring/incineration.

Venting

Enter the maximum continuous venting rate in 10<sup>3</sup> m<sup>3</sup>/d to two decimal places, including that from all sources on site where gas is vented. You must enter 0.00 for facilities with no continuous venting.

This value should not include volumes attributed to emergency or maintenance venting.

#### **Step 6: Technical Information**

If you check a **BOLD** response, you must attach supporting information.

1. The proposed facility is part of an experimental, primary, or commercial crude bitumen scheme.

YES means that the proposed facility is part of an approved experimental, primary, or commercial crude bitumen scheme.

NO means that the proposed facility is not part of an approved experimental, primary, or commercial crude bitumen scheme.

Surface facilities associated with an experimental, primary, or commercial crude bitumen scheme must have a scheme approval prior to the <u>Directive 056</u> application.

1a. If YES, Scheme Approval No.

2. Equipment spacing requirements will be met. Only complete this question if you answered YES to question 1 above.

If YES, enter the scheme approval number required in the space provided.

YES means that the facility design and construction will meet the equipment spacing requirements detailed in the Oil and Gas Conservation Rules (OGCR), Part 8 (including proximity to a water body), and as required by *Directive 060*.

**NO** means that due to exceptional circumstances, all applicable requirements cited above have not been met in the facility design.

If NO, you must attach

- a detailed explanation of what equipment will not meet the requirements and why;
- a description of fluids involved and all sources of gaseous vapours;
- a topographic map (if terrain is the cause); and
- a description of how safety will not be compromised by a relaxation from the requirement, including a safety assessment and response time for call out.

If **NO** and the spacing issue is facility equipment within 100 m from a water body, you must attach

- a discussion of the preventive measures that will be employed at the facility to minimize the risk of a spill occurring, and in the event of a spill, the preventive measures for ensuring that the spill does not reach the water body;
- a description of the proposed equipment, tanks, and piping that will be located less than 100 m from the water body and the fluids involved;
- a description of the types of automatic controls that will be installed (these devices should also be identified on the process flow diagram required for submission with all facility applications);
- a detailed survey plan that clearly identifies the facility location and the distance to the associated water body; and either
- the licensee's commitment to construct and maintain a berm around the perimeter of the equipment that will prevent any spill from

reaching the water body. This berm should not be confused with the secondary containment requirements set out in *Directive 055*; or

a description of an alternative method or operating condition that would demonstrate how the water body is protected.

Additionally, if the proposed facility site is located within a water body, the licensee must submit documentation confirming that AEP has no concerns about the development of the site

We will review the circumstances and decide if an exemption is warranted.

3. The facility will meet all current and applicable engineering and safety standards.

YES means that the facility is covered by the current engineering and safety standards and it will meet all applicable CSA, ASME, and ABSA requirements.

**NO** means that due to exceptional circumstances, all applicable engineering and safety requirements cited above have not been met in the facility design.

If **NO**, you must attach a detailed explanation of nonconformance with safety and engineering standards.

We will review the circumstances and decide if an exemption is warranted.

4. Gas will be continuously flared, incinerated, or vented.

YES means that gas produced at the facility will be continuously flared, incinerated, or vented under normal operating conditions.

NO means that the gas produced at the facility will be conserved or that this is a category E facility.

4a. If YES, the gas flaring, incinerating, or venting will comply with the requirements of Directive 060.

Only complete this question if you answered YES to question 4 above.

YES means that the applicant intends to comply with performance standards defined in *Directive 060*, sections 7 and 8, and has completed an economic evaluation of conserving the continuous flared, incinerated, or vented gas, as described in section 2 of *Directive 060*.

**NO** means that you are requesting an exemption from <u>Directive 060</u> requirements or have not completed an economic evaluation of gas conservation.

### If NO, you must attach

- a description of the exemption being proposing and a detailed explanation of reasons and,
- if you have not completed an evaluation of gas conservation, an explanation that includes plans to complete the evaluation when sufficient information is available.

We will review the circumstances and decide if an exemption is warranted.

5. The facility meets the AER noise control requirements (Directive 038).

YES means that a noise impact assessment has been conducted and used in site selection and facility design, and it indicates that the facility will operate within the guidelines in *Directive 038* or that there is no significant noise-generating equipment at this facility.

**NO** means that due to exceptional circumstances, all applicable requirements cited above have not been met.

### If NO, you must attach

- the noise impact assessment,
- an explanation of why the noise requirements will not be met,
- a discussion of mitigative measures proposed or a discussion of why mitigative measures are not practical, and
- a map showing proximity of residents.

We will review the circumstances and decide if an exemption is warranted.

6. AER storage requirements will be met (Directive 055).

YES means that the facility design and operation will meet the storage requirements in <u>IL 84-11</u> and <u>Directive 055</u>. This also applies to sulphurforming, storage, and transportation facilities that are part of the facility. YES also means that materials will not be stored at this facility or that the materials stored are exempt from <u>Directive 055</u> requirements.

NO means that due to exceptional circumstances, all applicable requirements cited above have not been met.

### If **NO**, you must attach

- a detailed explanation of why the storage requirements will not be met, a description of alternative storage methods and
- a discussion of how the environment will not be compromised by a relaxation of the requirements.

We will review the circumstances and decide if an exemption is warranted.

7. AER oilfield waste management requirements will be met (*Directive 058*). YES means that an oilfield waste management plan will be developed and implemented to manage any wastes generated as a result of the facility's operations.

On-site waste management (one-time treatment or waste management component) is limited to first-party oilfield wastes generated inside the production system.

Facilities required for the disposal of Class Ia/Ib fluids require approval under Directive 058.

Standalone surface facilities that dispose of Class II fluids only but maintain a Class Ia or Ib disposal scheme approval for the well require approval under *Directive 058*.

An oilfield waste management system requires approval as an oilfield waste management facility pursuant to the application requirements detailed in Directive 058.

The requirements for the management of oilfield wastes are detailed in ID 96-03, Directive 058, ID 2000-04, ID 2000-03, ID 99-04, and IL 98-*02*.

8. AER production measurement requirements will be met.

YES means that the facility design and operation will meet the production measurement standards detailed in *Directive 060* and section 5.6.13 and of Directive 056.

NO means that due to exceptional circumstances, all applicable requirements cited above have not been met.

If **NO**, you must attach a detailed explanation of why measurement will not meet AER requirements and a discussion of the proposed alternative.

We will review the circumstances and decide if an exemption is warranted.

9. NO<sub>x</sub> air emissions meet the Alberta Ambient Air Quality Objectives.

YES means that NO<sub>x</sub> emissions will be within the *Alberta Ambient Air* **Ouality Objectives** issued by AEP or that the facility has been registered with or approved by AEP.

NO means that due to exceptional circumstances, NO<sub>x</sub> emissions will not be within the Alberta Ambient Air Quality Objectives.

If NO, you must attach

- an explanation of why the Alberta Ambient Air Quality Objectives will not be met:
- documentation that confirms dispersion modelling was conducted in accordance with the Air Quality Model Guideline;
- the source parameters, locations, elevations and NO<sub>x</sub> emission rates for all sources;
- predicted maximum ground-level NO2 concentrations;
- the name of the dispersion model that was used;
- description of meteorological data used; and
- terrain map of the study area.

We will review the circumstances and decide if an exemption is warranted.

10. Approval from or registration with AEP is required.

YES means that the facility requires approval from or registration with AEP under the Environmental Protection and Enhancement Act (EPEA) Activities Designation Regulation or the Code of Practice for Compressor and Pumping Stations and Sweet Gas Processing Plants and may require an application to AEP, or the licence amendment application does not require a change to the existing AEP approval or registration of the facility.

NO means that the facility is not regulated under *EPEA*.

11. AEP requires an environmental impact assessment.

YES means that the facility requires an environmental impact assessment (EIA) under *EPEA*.

NO means that the facility does not require an EIA under *EPEA*.

This information will help us coordinate a joint notice, if required.

12. The proposed facility will include compressors (new licence only).

YES means that this application for a new facility licence includes gas compression. You must complete Schedule 2.4.

A response is not required for licence amendment applications.

NO means that this application for a new facility licence does not include gas compression.

13. The proposed facility will include pumps (new licence only).

YES means that this application for a new facility licence includes injection/disposal pumps. You must complete Schedule 2.4.

A response is not required for licence amendment applications.

NO means that this application for a new facility licence does not include injection/disposal pumps.

14. The proposed facility site requires *Historical* Resources Act clearance (Freehold land only).

YES means that the new facility lease or expanded facility lease (in the case of a licence amendment) requires clearance by Alberta Culture and Tourism, in accordance with the *Historical Resources Act*.

NO means that the new facility lease or expanded facility lease (in the case of a licence amendment) does not require clearance by Alberta Culture and Tourism or that the facility is located on Crown land.

14a. If YES, clearance has been granted for the facility site.

Only complete this question if you have answered YES to question 14.

YES means that Alberta Culture and Tourism has granted clearance for the proposed facility site.

NO means that Alberta Culture and Tourism has not granted clearance for the proposed facility site.

If **NO**, you must attach a detailed explanation as to why Alberta Culture and Tourism has not provided clearance.

We will review the circumstance and decide if an exemption is warranted.

15. The licensee is the only working interest participant (new licence only).

YES means that the licensee is the only working interest participant.

A response is not required for licence amendment applications.

NO means that the licensee is not the only working interest participant.

If NO, you must complete Schedule 2.1, providing details on all working interest participants and the percentage ownership of each.

16. The proposed facility meets the AER environmental requirements. YES means the proposed facility meets all applicable AER environmental requirements.

**NO** means the facility does not meet all applicable AER environmental requirements.

If **NO**, you must attach a detailed explanation of why the facility does not meet AER environmental requirements and what measures will be in place to ensure that the facility will not have a negative impact on the environment.

# **Directive 056: Schedule 2.1 Facilities – Working Interest Participants**



Submission date:		Applicant's reference:	
1. Identification			
Applicant name:		Applicant BA code:	
2 Working Intere	st Participants (must total 100%)		
BA code	Company name		Percentage
DA code	Company name		rercentage

### 5.6.2 How to Complete Schedule 2.1: Working Interest Participants – Facilities

Schedule 2.1 must be completed for each new facility licence application submitted when you are not the only interest participant in the proposed facility.

Do not submit a Schedule 2.1 for licence amendment applications.

The applicant must be a working interest participant in the facility to apply for a facility licence.

Date	Enter the date on which you will submit this schedule (e.g., 15 Jan
	2011).
Applicant's Reference	Enter your own file reference in the designated area (optional).

### **Step 1: Identification**

Applicant BA Code	Enter the four-digit BA code issued to your company.
Applicant Name	Enter the full corporate name of the applicant.

### **Step 2: Working Interest Participants**

BA Code	Enter the four-digit BA code issued to the working interest participant for each participating company, if available.
Company Name	Enter the full corporate name of each working interest participant, including the applicant's name.
	We will not accept "Partnerships" as a response. You must determine which company or companies within the partnership should be entered.
Percentage (%)	Enter each participant's percentage of participation in the facility development.
	Working interest participation percentage must total 100%.

# Directive 056: Schedule 2.2 Facilities – Gas Plants



Submission date: _				Applicant's reference	9:			
1. Identification								
Applicant name:				Applicant BA code:				
2. Total Recovere	d Products							
Sales gas:	10 <sup>3</sup> m <sup>3</sup> /d	C <sub>2</sub> :	m³/d	C <sub>3</sub> :	m³/d	C <sub>4</sub> s:		m³/d
C <sub>5</sub> +:	m³/d	C <sub>2</sub> +:	m³/d	LPG mix:	m³/d			
Sulphur:	t/d	CO <sub>2</sub> :	10 <sup>3</sup> m <sup>3</sup> /d	C <sub>2</sub> component of C <sub>2</sub> +	mix:		m³/d	
3. Technical Infor	mation							
1. A sour gas prolit	eration review	has been conduc	ted in accord	dance with <i>ID 2001-03</i>	□ Y	es [	□No	
2. The proposed fa	cility is part of	an approved acid	gas injection	n scheme	□Y	es [	□No	
2a. If YES, provide	scheme appr	oval number						
The proposed fa system	icility will remo	ove CO2 from the i	nlet gas stre	am using a regenerative	<sup>9</sup> □ Y	es [	□No	

### 5.6.3 How to Complete Schedule 2.2: Gas Plants—Facilities

A separate Schedule 2.2 must be completed for each Schedule 2 application for a category B, C, D, or E gas plant.

Date	Enter the date on which you will submit this schedule (e.g., 15 Jan 2011).
Applicant's Reference	Enter your own file reference in the designated area (optional).
Step 1: Identification	
Applicant BA Code	Enter the four-digit BA code issued to your company.
Applicant Name	Enter the full corporate name of the applicant associated with the BA code.
Step 2: Total Recovered Products	Enter the maximum daily design rates for all applicable recovered and sales products to two decimal places.

### **Step 3: Technical Information**

If you are applying for a category C, D, or E gas plant, answer questions 1 and 2.

If you are applying for a category B gas plant, answer question 3.

1. A sour gas proliferation review has been conducted in accordance with <i>ID 2001-03</i> .	YES means that a sour gas proliferation review for a new category C, D, or E gas processing plant that meets the requirements of <u>ID 2001-03</u> was completed or that this is a licence amendment application.  NO means that a sour gas proliferation review was not completed.
	If NO, you must attach a detailed explanation as to why the requirements cannot be met. We will review the circumstances and decide if an exemption is warranted.
2. The proposed facility is part of an approved acid gas injection scheme.	YES means that this facility is a category C, D, or E gas processing plant that recovers an acid gas stream that is disposed to an approved underground formation.
	If YES, enter the scheme approval number required in question 2a.

NO means that this facility is a category C, D, or E gas processing plant

2a. If YES, Scheme Only complete this if you answer Yes to question 2. Approval No. 3. The proposed facility will YES means that a regenerative sweetening process is in place exclusively remove CO<sub>2</sub> from the inlet for the removal of  $CO_2$  from the gas stream. gas stream using a NO means that this facility is not removing CO<sub>2</sub> using a regenerative regenerative system. processing system.

# Directive 056: Schedule 2.3 Facilities – H<sub>2</sub>S Information



Submission date:		Applicant's reference:			
1. Identification					
Applicant name:		Applicant BA code:			
2. Gas Treating and Proces	ssing Information				
Sweetening Process	Regenerative	☐ Nonregenerative	☐ None	☐ Both	
	_ •	_		_	
Acid Gas Disposal Method	<ul><li>☐ Subsurface Injection</li><li>☐ CO₂ Venting</li></ul>	<ul><li>☐ Sulphur Recovery</li><li>☐ Other (specify)</li></ul>	☐ Flaring/Incine	eration	
	☐ CO₂ Veriting	☐ Other (specify)			
Sulphur Recovery Process	☐ Claus	П СВА	☐ Superclaus		
	 ☐ Sulfreen	 ☐ MCRC	 □ scot		
	□FGD	☐ Lo-Cat	☐ Shell-Paques	<b>;</b>	
	☐ Selectox	☐ CrystaSulf	☐ Other (specify	y)	
Acid gas volume:	10 <sup>3</sup> m <sup>3</sup> /d	H₂S content of acid ga	s:	mol/kmol	
Maximum H₂S content of inle	et gas: mol/kn	nol Maximum continuous	sulphur emission rat	te: t/d	
Sulphur recovery efficiency (	(quarterly-calendar): %	6			
3. Technical Information					
Sour setback requirement	s have been met		☐ Yes	□ No	
A method to recover vapours will be implemented			☐ Yes	□ No	
3. SO2 air emissions meet the Alberta Ambient Air Quality Objectives			☐ Yes	□No	
4a. Maximum calculated emergency planning zone				km	
4b. Number of surface developments within the maximum calculated emergency planning zone					

### 5.6.4 How to Complete Schedule 2.3: H<sub>2</sub>S Information—Facilities

A separate Schedule 2.3 must be completed for each Schedule 2 application for a category C, D, or E facility.

Date Enter the date on which you	u will submit this schedule (e.g., 15 Jan
----------------------------------	---

2011).

Applicant's Reference Enter your own file reference in the designated area (optional).

### **Step 1: Identification**

Applicant BA Code Enter the four-digit BA code issued to your company.

Applicant Name Enter the full corporate name of the applicant associated with the BA

code.

### **Step 2: Gas Treating and Processing Information**

If you check a **BOLD** response, you must attach supporting information.

**Sweetening Process** Check the appropriate box for the type of sweetening process used.

Check "None" if you are not treating or processing the inlet gas for

H<sub>2</sub>S removal.

Check "Both" if you are using both regenerative and nonregenerative

sweetening processes at the facility.

If you select "regenerative," you must complete Schedule 2.2.

Acid Gas Disposal Method If the facility uses a regenerative sweetening process, check the

appropriate boxes for all processes used.

If you check "subsurface injection," you must answer questions 2 and

2a on Schedule 2.2.

If you check "other," you must attach a description of the alternative

process and supporting technical documents/papers discussing the

method.

We will review the circumstances and decide if an exemption is

warranted.

### Sulphur Recovery Process

For category E applications, check the appropriate boxes for all processes used.

If you select "Other," you must attach

- a description of the proposed process, including a supporting process flow diagram, and material balance;
- technical documents/papers discussing the process;
- an explanation of how the proposed process will meet the sulphur recovery requirements;
- available correspondence from AEP related to the process; and
- the results/description of the process in operation at another facility.

We will review the circumstances and decide if an exemption is warranted.

If the facility uses a regenerative sweetening process, enter the

Acid Gas Volume

(Regenerative sweetening only)

maximum daily design rate of acid gas (H<sub>2</sub>S and CO<sub>2</sub>) removed from the sour gas inlet stream in thousands of cubic metres per day (10<sup>3</sup>) m<sup>3</sup>/d) to two decimal places.

H<sub>2</sub>S Content of Acid Gas

(Regenerative sweetening only)

If the facility uses a regenerative sweetening process, enter the H<sub>2</sub>S content of the acid gas stream in moles per kilomole (mol/kmol) to two decimal places.

Maximum H<sub>2</sub>S Content of Inlet Gas

For all category C, D, and E facility applications, enter the maximum H<sub>2</sub>S content of the raw inlet gas in mol/kmol to two decimal places.

For facilities with multiple inlet streams, enter the H<sub>2</sub>S value from the inlet stream with the highest H<sub>2</sub>S content. The highest H<sub>2</sub>S content must be based either on pipelines entering the facility or on any well associated with the raw gas inlet.

**Maximum Continuous** Sulphur Emission Rate Enter the maximum continuous sulphur emission rate on a sulphurequivalent basis in tonnes per day (t/d) to two decimal places.

This number should represent the sum of the sulphur content of the tail gas emission from a sulphur recovery process, continuous acid gas

flaring/incineration, emissions from produced water tanks, and continuous or routine flaring/incineration of gas containing H<sub>2</sub>S.

This number does not include sulphur emissions from infrequent emergency or maintenance flaring/incineration.

Sulphur Recovery Efficiency (quarterly-calendar)

For all category E gas processing plants, enter the minimum sulphur recovery efficiency percentage (%) determined on a calendar quarteryear average basis to one decimal place.

For all category D gas processing plants where subsurface injection has been selected in step 2, enter the equivalent sulphur recovery efficiency, consistent with the approved sulphur inlet and table 1 from ID 2001-03.

The sulphur recovery efficiency must meet the requirements of ID 2001-03.

### **Step 3: Technical Information**

1. Sour setback requirements have been met.

YES means that this is a category C, D, or E facility and the setback requirements outlined in table 6 in *Directive 056* have been met.

YES also means that there are no setbacks imposed by pipelines designated as sour level associated with this facility.

**NO** means that the facility is a category C, D, or E facility but, due to exceptional circumstances, it does not meet the setback requirements.

If **NO**, you must attach a detailed explanation as to why the requirements cannot be met.

We will review the circumstances and decide if an exemption is warranted.

2. A method to recover vapours will be implemented. YES means that you will be implementing a method to recover stock tank vapours, as required by the OGCR, section 7.070, and that a method to contain vapours during the transfer and transport of fluids containing more than 0.01 mol/kmol H<sub>2</sub>S will be implemented.

YES may also mean that the facility does not require a vapour recovery system.

For licence amendment applications, YES means that a vapour recovery system already exists.

NO means that due to exceptional circumstances, all applicable requirements cited above have not been met.

If **NO**, you must attach a detailed explanation of why a vapour recovery unit will not be installed and a discussion of mitigative measures to ensure that off-lease odours do not occur.

We will review the circumstances and decide if an exemption is warranted.

3. SO<sub>2</sub> air emissions meet the Alberta Ambient Air Quality Objectives.

YES means that SO<sub>2</sub> emissions will be within the <u>Alberta Ambient Air</u> Quality Objectives issued by AEP, as predicted by dispersion modelling, or that the facility emissions have been approved by AEP.

NO means that due to exceptional circumstances, SO<sub>2</sub> emissions will not be within the Alberta Ambient Air Quality Objectives.

If NO, for SO<sub>2</sub> exceedances you must attach

- a schematic diagram or description of the flare stack;
- the source parameters, locations, elevations, and SO<sub>2</sub> emission rates for all sources;
- predicted maximum ground-level SO<sub>2</sub> concentrations;
- the name of the dispersion model used;
- a description of the meteorological data used;
- a terrain map of the study area;
- for facilities with less than 10 mol/kmol H<sub>2</sub>S, the heating value of the gas stream for the flare/incinerator; and
- a description of the magnitude and frequency of potential SO<sub>2</sub> exceedances, and information on situations leading to SO<sub>2</sub> exceedances (e.g., operational scenarios, meteorological conditions).

We will review the circumstances and decide if an exemption is warranted.

4a. Maximum calculated emergency planning zone Enter the maximum calculated emergency planning zone radius in km to two decimal places, as determined by the requirements of Directive 071.

4b. Number of surface developments within the maximum calculated emergency planning zone Enter the total number of surface developments located within the maximum calculated emergency planning zone.

# Directive 056: Schedule 2.4 Facilities – Compressors/Pumps



Submission date:		_ Applicant's	s reference:	
1. Identification				
Applicant name:		Applicant E	BA code:	
2. Compressors				
Install (I)	Compressor Rating	Compressor Driver Power Source		NO <sub>x</sub> Emission Rating
Remove (R)	-	Gas	Electric	
	kW	П		g/kWh
	kW			g/kWh
	kW			
	kW			g/kWh
3. Pumps	Pump Rating	Pump Drive	r Power Source	No. Emission Rating
3. Pumps Install (I) Remove (R)	Pump Rating	Pump Drive	r Power Source	No <sub>x</sub> Emission Rating
Install (I)	Pump Rating kW	•		No <sub>x</sub> Emission Rating
Install (I)		Gas	Electric	
Install (I)	kW	Gas	Electric	g/kWh
Install (I)	kW	Gas	Electric	g/kWh
Install (I)	kW kW	Gas	Electric	
Install (I)	kW kW kW kW	Gas	Electric	
Install (I)	kW kW kW kW	Gas	Electric	
Install (I) Remove (R)	kW kW kW kW	Gas	Electric	
Install (I) Remove (R)  Total number of g	kW kW kW kW kW	Gas	Electric	
Install (I) Remove (R)  Total number of g		Gas	Electric	
Install (I) Remove (R)  Total number of g. Total on-site pump		Gas	Electric	

### 5.6.5 How to Complete Schedule 2.4: Compressors/Pumps—Facilities

You are not required to complete Schedule 2.4 unless your facility application includes the installation or removal of compressors or pumps. Compressors less than 75 kW that were installed previously as an exempt activity should be captured on Schedule 2.4 the next time an amendment application for the facility is required.

Date	Enter the date on which you will submit this schedule (e.g., 15 Jan 2011).
Applicant's Reference	Enter your own file reference in the designated area (optional).
Step 1: Identification	
Applicant BA Code	Enter the four-digit BA code issued to your company.
Applicant Name	Enter the full corporate name of the applicant associated with the BA code.
St	

### **Step 2: Compressors**

Complete this step if you are installing or removing upstream compression at a new or existing site. The removal of compression is not a mandatory application submission but will be processed at the applicant's request.

Install/Remove	Enter "I" if you are applying to install a compressor.
	Enter "R" if you are applying to remove a compressor.
	Include any compressors less than 75 kW that may have been installed previously as an exempt activity.
Compressor Rating	Enter the kilowatt (kW) rating of each unit proposed for installation or removal at this facility.
Compressor Driver Power Source	Check the appropriate driver source for each unit proposed for installation or removal at this facility.
NO <sub>x</sub> Emission Rating	Enter the manufacturer's rating for $NO_x$ emissions in grams of $NO_x$ per kilowatt hour (g/kWh) for each natural gas compressor unit proposed for installation or removal at this facility.
	Enter 0 for electricity-driven compressors.

Total Number of Gas Compressors on Site	Enter the total number of natural gas—driven compressors located at the facility, including any new units being added by this application.
Total Number of Electric Compressors on Site	Enter the total number of electricity-driven compressors located at the facility, including any new units being added by this application.
Total on-Site Compressor Wattage	Enter the sum of the compressor wattage for the entire facility operations in kilowatts (kW).
	The total must include any new units being added by this application.

## Step 3: Pumps

Complete this step if you are installing or removing upstream disposal/injection pumps at a new or existing site. The removal of injection/disposal pumps is not a mandatory application submission but will be processed at the applicant's request.

be processed at the applicant's request.				
Install/Remove	Enter "I" if you are applying to install an injection/disposal pump.			
	Enter "R" if you are applying to remove an injection/disposal pump.			
Pump Rating	Enter the kilowatt (kW) rating of each unit proposed for installation and/or removal at this facility.			
Pump Driver Power Source	Check the appropriate driver source for each unit proposed for installation or removal at this facility.			
NO <sub>x</sub> Emission Rating	Enter the manufacturer's rating for NO <sub>x</sub> emissions in grams of NO <sub>x</sub> per kilowatt hour (g/kWh) for each natural gas injection/disposal pump proposed for installation or removal at this facility.			
	Enter 0 for electricity-driven pumps.			
Total Number of Gas Pumps on Site	Enter the total number of natural gas—driven injection/disposal pumps located at the facility, including any new units being added by this application.			
Total Number of Electric Pumps on Site	Enter the total number of electricity-driven injection/disposal pumps located at the facility, including any new units being added by this application.			

Total on-Site Pump Wattage

Enter the sum of the pump wattage for the entire facility operations in kilowatts (kW).

The total must include any new units being added by this application.

### **Step 4: Technical Information**

Provide the following information based on the noise impact assessment, required by *Directive 038*, conducted for this facility.

1a. Night-time permissible sound level (PSL) at the nearest or most impacted residence (*Directive 038*)

Enter the night-time permissible sound level (PSL) at the nearest or most impacted residence in decibels absolute (dBa) to two decimal places.

For remote locations, a distance of 1500 m may be used to determine the facility PSL if there are no residences within that radius.

1b. Predicted overall sound level at the nearest or most impacted residence (Directive 038)

Enter the predicted overall sound level at the nearest or most impacted residence in dBa to two decimal places.

This value may be based on distance of 1500 m if there are no residences within that radius.

#### 6 **Pipelines Procedural**

#### 6.1 Overview

Pipeline applications submitted under *Directive 056* must be filed using OneStop. New construction applications and licence amendment applications must be submitted separately.

In this section, a number of tables are provided to assist the applicant with inputting and interpreting pipeline data.

#### 6.2 Participant Involvement

The following are questions that you may be asked, or information that you may be requested to provide, for pipeline or pipeline installation applications.

# There are outstanding concerns related to this application

If members of the public or industry have outstanding concerns or objections, you must attach

- name, address, telephone number, and legal land description of the party that has outstanding concerns or objections;
- approximate distance from the project to the land and residence, if applicable, of the participant with outstanding concerns or objections;
- a copy of written concerns or objections received, if available;
- a chronology of the participant involvement program conducted with the party;
- a discussion of how you would like the AER to proceed with your application;
- steps taken to mitigate the outstanding concerns or objections;
- copy of the project-specific information package provided; and
- a list of other documents distributed.

If there are residents within the EPZ, you must also attach

- the assessment of existing infrastructure required under <u>Directive 056</u>, section 8.3.2;
- the updated expanded project-specific information package described in *Directive 056*, section 8.3.2; and
- a copy of an area plan described in *Directive 056*, section 8.3.3, if it was completed.

#### Participant involvement requirements have been met

If any public participant involvement requirements have not been met, you must attach

- the participant involvement summary of all personal consultation and notification that has been completed;
- the name, address, telephone number, and legal land description of participants for which personal consultation and notification requirements have not been completed;
- a detailed explanation of why all personal consultation and nonobjection requirements cannot be completed;
- a detailed explanation of why all notification requirements cannot be completed; and
- an explanation of how you would like the AER to proceed with this application.

If any industry participant involvement requirements have not been met, you must attach

- a record of contact with industry parties,
- copies of correspondence between parties,
- minutes of meetings held,
- copies of information distributed,
- a summary of parties for which industry notification has not occurred,
- a detailed explanation of why all industry notification requirements were not completed, and
- an explanation of how you would like the AER to proceed with this application.

#### Distance to the nearest residence

The distance from the edge of the pipeline right-of-way for any pipeline being applied for to the nearest residence in kilometres, or the distance from the edge of the pipeline installation lease for any pipeline installation being applied for to the nearest residence in kilometres.

If there are no residences within the emergency planning zone (EPZ), the distance to the nearest town, village, or urban centre may be used. Where there is no EPZ, a search should be done to at least 1.5 km; if there are no residences within this distance, 1.5 km may be entered. For pipeline installations, this distance should not be less than the distance to the nearest surface development.

# Distance to nearest surface development

For pipeline installations, the distance from the edge of the pipeline installation lease to the nearest surface development in km.

If there is no surface development within the EPZ, a distance to the nearest town, village, or urban centre may be used. Where there is no EPZ, a search should be done to at least 1.5 km; if there is no surface development within this distance, 1.5 km may be entered.

#### 6.3 Spatial Data

#### 6.3.1 **Shapefiles**

A shapefile is required for all

- new pipeline construction applications,
- unlicensed existing pipeline applications,
- new pipeline installation construction applications, and
- unlicensed pipeline installation applications.

For amendment applications, a shapefile is also required if any of the following are true:

- the spatial data has changed
- the application is for a line split, a route change, or for some reinstatements
- the application is for a change to the mapping of a pipeline installation

## 6.3.2 Right-of-Way Plan

A pipeline right-of-way plan must show the route of the pipeline in its entirety, and the pipeline's rightof-way must be distinguishable from other pipeline rights-of-way on the plan. Licence numbers of any pipelines that are adjacent to or are being crossed by the proposed pipeline should be indicated on the right-of-way plan. These plans can be represented as either individual ownership plans or as a plan of the entire route. Use of a scale smaller than 1:25 000 might not adequately represent topographic or watercourse crossing details in certain circumstances.

#### 6.3.3 Pipeline Location PDF

A pipeline location PDF is a PDF version of the spatial information included in a shapefile. The pipelines should be clearly discernible, and the appropriate Dominion Land Survey grid and labels must be included to allow the reader to understand the location of the pipeline.

#### Pipeline Installation Location PDF 6.3.4

A pipeline installation location PDF is a PDF version of the spatial information included in a shapefile. The pipeline installation should be clearly discernible, and the appropriate Dominion Land Survey grid and labels must be included to allow the reader to understand the location of the pipeline installation.

#### 6.4 Pipeline Applications

#### 6.4.1 Pipeline Status

For new pipeline construction licences, the pipeline status automatically changes from "permitted" to "operating" typically one year from the date the licence was issued, except where an extended licence expiry was requested at the time of application.

# 6.4.2 Pipeline Licences

Multiple licences can be applied for in a single application, and each licence will be displayed as a separate activity.

#### 6.4.3 Unlicensed Pipelines

If you select "Unlicensed pipeline: addition to existing licence number," you are applying to license an existing unlicensed pipeline under an existing licence number. The unlicensed pipeline must transport the same substance, have the same licensed H<sub>2</sub>S content, and be part of the same system as the licence it is being added to.

**OR**, you are applying to reinstate a line that was deleted in error before June 26, 2010.

For lines deleted after June 26, 2010, submit a licence amendment application to reinstate the line.

## 6.4.4 Temporary Surface Pipelines

You may apply for a temporary surface pipeline in continuous use for more than 21 days. Temporary pipeline licences expire after one year. At that time you must either remove the pipeline or submit a new application for a buried pipeline.

#### 6.4.5 Licence Details

A licence can have up to three substances associated with it; however, the substances selected must be transported by all pipelines on the licence being applied for. The following table lists the substances given in OneStop and their associated codes.

Substance	Substance category	Code	Priority code
Natural gas with >10 mol/kmol of H <sub>2</sub> S content	Sour natural gas	SG	1
Butane, ethylene, propane, pentanes, liquid ethane	HVP products	HV	2
Condensate, diesel fuel, gasoline, heating oil, hydrocarbon diluents, kerosene, solvents	LVP products	LV	3
Blended crude bitumen, crude oil, synthetic crude oil	Crude oil	CO	4
Multiphase fluids	Oil well effluent	OE	5
Methane, natural gas with ≤10 mol/kmol of H <sub>2</sub> S content	Natural gas	NG	6
Fuel gas	Fuel gas	FG	7
Produced water	Salt water	SW	8
Ammonia, caustic, glycol, methanol, polymer, sulphur, carbon dioxide	Miscellaneous liquids	ML	9

Substance	Substance category	Code	Priority code
Air, ammonia, carbon dioxide, ethane, helium, hydrogen,	Miscellaneous		
nitrogen, steam	gases	MG	10
Potable water, surface water	Fresh water	FW	11

The H<sub>2</sub>S content is the maximum H<sub>2</sub>S content, in moles per kilomole (mol/kmol), at the pipeline's licensed maximum operating pressure (MOP) for pipelines that contain gas, or at the bubble point pressure for pipelines that contain liquids.

# 6.4.6 Pipe Specification

**OD:** The outside diameter of the pipeline in millimetres (mm) to one decimal place.

WT: The pipe nominal wall thickness in mm to two decimal places.

Material: The following table lists the materials given in OneStop. The "code" is what appeared in older systems and is given here for reference.

Code	Pipe material
Α	Aluminum
F	Fibreglass
G	Composite
1	Stainless Steel
Р	Polyethylene
S	Steel
V	Polyvinyl chloride

Type, Grade, Liner Type, and Liner Grade: The following table gives examples of common materials and their associated type and grade codes. If the combination of material, type, and grade you need is not accepted by the OneStop system, please contact the Customer Contact Centre for further direction.

Material	Type	Grade
Aluminum (If cladded, add "C" at the end of grade code)		
6063 T1A	6063	T1A
6063 T1B	6063	T1B
Composite		
FlexPipe Linepipe ANSI 300	FPLP	301
FlexPipe Linepipe ANSI 600	FPLP	601
FlexCord Linepipe ANSI 900	FCLP	901
FlexPipe Linepipe High Temperature ANSI 600	FPHT	601
FlexFlow Linepipe ANSI 300	FFLP	301
FlexSteel Pipe 600 ASME B16.5 Flange Class	WSLP	600
FlexSteel Pipe 1500 ASME B16.5 Flange Class	WSLP	1500
Fiberspar Line Pipe Series 750	FSLP	750
Fiberspar Line Pipe Series 2250	FSLP	2250

Material	Туре	Grade
Fiberspar 28 Series 750	FS28	750
Fiberspar 29 Series1500	FS29	1500
Fiberspar 30 Series1500	FS30	1500
Fiberspar 32 Series1500	FS32	1500
Fiberspar 32 Series 2250	FS32	2250
Fibreglass		
Hanwei Energy API (Amine) 1500	HEAA	1500
Hanwei Energy API (Anhydride) 1500	HEAP	1500
Hanwei Energy API (Anhydride) 2000	HEAP	2000
Hanwei Energy Rex-Bond (Amine) 290	HERB	290
Hanwei Energy Rex-Lock (Anhydride) 725	HERL	725
Star Fibreglass 1000	STAR	1000
Centron 1500	CEN	1500
YellowBox 1250 API	YBAPI	1250
YellowBox 3500 STD	YBSTD	3500
Polyethylene		
PE 2406 SDR 11	2406	11
PE 3408 SDR 9	3408	9
PE 3608 SDR 7.3	3608	7.3
PE 4710 SDR 9	4710	9
P100	P100	6.3
Steel		
API 5L Grade A	5L	Α
API 5L Grade B	5L	В
API 5L Grade X42	5L	X42
API 5L Grade X60	5L	X60
ASTM A53 Grade B	A53	В
ASTM A106 Grade B	A106	В
ASTM A333 Grade 6	A333	6
CSA Z245.1 Grade 241 Category I	Z245.1	2411
CSA Z245.1 Grade 290 Category I	Z245.1	2901
CSA Z245.1 Grade 290 Category II	Z245.1	2902
CSA Z245.1 Grade 359 Category II	Z245.1	3592
CSA Z245.1 Grade 359 Category III	Z245.1	3593
CSA Z245.1 Grade 448 Category II	Z245.1	4482

<sup>\*</sup> If cladded aluminum, add "C" at the end of Grade code (e.g., T1AC).

Maximum Operating Pressure (MOP): The MOP of the pipeline rounded to the nearest 10 kilopascals (kPa).

Stress Level: The stress in the wall of the pipe that is produced by the pressure of the fluids in the pipeline and calculated as a percentage. Auto-calculated for steel, polyethylene, and aluminum pipelines.

Joints: The following table lists the joint types given in OneStop. The "code" is what appeared in older systems and is given here for reference.

Codo	Joint
Code	
Α	Thru-Kote Welded
В	Butt Fusion
С	Bonded
Е	Twin Lock
F	Flanged
G	Solvent Welded
Н	High Energy Welded
K	Crimp Kote
L	Sure Lok
M	Mechanical Coupling
Р	Pronto Lock
R	Triple Seal
S	Socket Fusion
T	Threaded
W	Welded
Υ	Electrofusion
Z	Zap-Lok

Internal Protection (IP): The following table lists the internal protection types given in OneStop. The "code" is what appeared in older systems and is given here for reference.

Code	Internal Protection
С	Cement
E	Expanded Polyethylene
L	Free Standing
T	Thin Film
U	Uncoated

**External Coating (EC):** The following table lists the external coating types given in OneStop.

Fusion Bonded Epoxy Polyethylene Polyurethane Foam Insulation Other Unknown None

Partial Pressure: OneStop will calculate the H<sub>2</sub>S partial pressure for pipelines containing a gas phase. If you are using an effective partial pressure for oil effluent or crude oil, the calculated H<sub>2</sub>S partial pressure can be overwritten. For any other substances, partial pressure or effective partial pressure is not calculated by OneStop.

## 6.4.7 Pipe Location and Status

From Location FC and To Location FC: The following table lists the facility types given in OneStop. The "code" is what appeared in older systems and is given here for reference.

Code	Facility (FC)
В	Battery
BE	Blind End
CK	Creek
CO	Consumer
CP	Chemical Plant
CS	Compressor Station
ES	Experimental Station
GP	Gas Processing Plant
ΙP	Injection/Disposal Facility
LA	Lake
LH	Line Heater
LR	Oil Loading and Unloading Terminal
MR	Meter/Regulation Station
MS	Meter Station
PL	Pipeline
PP	Petrochemical Plant
PS	Pump Station
PT	Pipeline Terminal
RE	Reservoir
RF	Refinery
RI	River
RS	Regulator Station
S	Satellite
SC	Storage Cavern
ST	Storage Tank
TF	Tank Farm
WE	Well
	Emergency Shutdown Valve

Length (km): The pipeline length in kilometres to two decimal places.

Status: If this is new construction the status must be "To Be Constructed (Permitted)." The following table lists the pipeline statuses given in OneStop. The "code" is what appeared in older systems and is given here for reference.

Code	Pipeline Status
Α	Abandoned
D	Discontinued
N	Not Constructed
0	Operating
Р	To Be Constructed (Permitted)
R	Removed

Envr: The pipeline crosses a creek, lake, or river that appears on the current 1:1 000 000 provincial base map. The following table lists the crossing types given in OneStop. The "code" is what appeared in older systems and is given here for reference.

Code	Crossing
CC	Creek
LC	Lake
RC	River

HDD/Bored: The pipeline crosses a watercourse that appears on the OneStop map viewer, and construction at that watercourse crossing will use horizontal directional drilling or boring methods.

H<sub>2</sub>S Rel Vol: The H<sub>2</sub>S release volume in cubic metres (m<sup>3</sup>) for gas or oil effluent pipeline segments that are licensed for greater than 10 mol/kmol H<sub>2</sub>S and are in permitted, operating, or discontinued status.

Level: The following table lists the levels given in OneStop and the volumes associated with them.

Level	H <sub>2</sub> S Release Volume (m <sup>3</sup> )
Level 1	<300
Level 2	>300 to <2000
Level 3	>2000 to <6000
Level 4	>6000

**CSA Class Loc:** The following table lists the location classes given in OneStop.

Class Location	
Class 1	
Class 2	
Class 3	
Class 4	

**BD** (Bi-directional): The pipeline will be permanently operated with bidirectional flow.

**Surface Line:** The pipeline will be aboveground. The following table lists the options given in OneStop. The "code" is what appeared in older systems and is given here for reference.

Code	Surface line
OC	Overhead
SC	Surface

## 6.4.8 Pipeline Amendments

Multiple amendment types can be applied for in a single activity with the exception of "H<sub>2</sub>S/Substance Change – Select Lines," which must be applied for as a separate application and not in combination with any other licence amendment type.

H<sub>2</sub>S/Substance Change – Entire Licence: You are applying to change the substance or H<sub>2</sub>S content of an entire licence.

H<sub>2</sub>S/Substance Change – Select Lines: This box will be auto-selected by OneStop if you are applying to change the substance or H<sub>2</sub>S content on specific lines. No other amendment option can be selected.

**Abandonment:** You are advising the AER that a pipeline has been abandoned.

**Bidirectional Flow:** You are applying for permanent bidirectional flow of a pipeline.

Discontinuation: You are advising the AER that operation of a pipeline has been discontinued

Facility Change: You are applying to change the facility type at the starting point or the end point of a pipeline.

Flow Reversal: You are applying to reverse the flow of a pipeline.

Line Split: You are applying to split a line segment into multiple line segments. A shapefile is required. For information on shapefiles and attaching a shapefile in OneStop, see the AER's webpage.

**Liner Installation:** You are applying to install a freestanding liner or expanded polyethylene liner in a pipeline.

If a freestanding liner is being installed, you must indicate the liner type and liner grade. The outside diameter, wall thickness, material, type, grade, and joining method will be that of the conduit pipe; the MOP will be that of the liner; and the Stress Level will be blank.

**MOP Decrease:** You are applying to decrease the maximum operating pressure of a pipeline.

**MOP Increase:** You are applying to increase the maximum operating pressure of a pipeline.

**Not Constructed:** You are advising the AER that a pipeline will not be constructed.

**Other:** You are applying to correct any of the following data on AER records:

- Location of a pipeline or pipeline installation licensed before OneStop (June 26, 2017); if a location change results in the locations not matching AER spatial records, you will be prompted to submit a route change amendment instead
- Length of pipeline

- Environment code
- HDD/Bored indicator
- H<sub>2</sub>S release volume
- H<sub>2</sub>S release volume level
- CSA class location
- Surface line indicator
- Partial pressure

Reinstatement: You are applying to add a pipeline with a status of "Removed," "Not Constructed," or "Deleted" that was deleted in error after June 26, 2010.

You may be asked to provide additional information, such as the following:

- a shapefile
- a pipeline right-of-way plan
- a pipeline location PDF

For lines deleted in error before June 26, 2010, submit an application for an unlicensed pipeline rather than a reinstatement.

Removal: You are applying to remove an entire pipeline, including crossings of roads, railways, and water courses. Or you are applying to remove only part of a pipeline (you must also apply for a line split to show portions being removed and portions remaining in place).

Resumption: You are applying to resume operation of a pipeline or part of a pipeline that has been discontinued or abandoned or that has not been in active flowing service within the last 12 months.

Route Change: You are applying to correct the AER's records regarding the mapping of an existing pipeline.

You are applying to change the routing of a permitted pipeline.

You are applying for a location change on a pipeline that was licensed using the OneStop system (licensed after June 26, 2017).

A shapefile is required, and you may be asked for additional information, such as a pipeline right-of-way plan or a pipeline location PDF.

**Specification Change:** You are applying to correct the AER's records regarding the outside diameter, wall thickness, material, type, grade, joining method, or external coating type of an existing pipeline.

You are applying to change the outside diameter, wall thickness, material, type, grade, joining method, or external coating type of a permitted pipeline.

You are applying to correct or change the internal protection type of a permitted or existing pipeline. If you are installing a freestanding or expanded polyethylene liner, you must apply for a liner installation amendment.

#### 6.4.9 Technical Considerations

The following are questions that you may be asked, or information that you may be requested to provide, depending on the type of pipeline application being submitted.

#### The pipeline meets all current applicable CSA Z662 standards

If the pipelines in this activity do not meet the material, design, or operational CSA Z662 standards or are not covered by the CSA Z662 standards, you must attach

- a detailed explanation of what CSA Z662 standards are not being met and why and
- if appropriate, a supporting technical assessment that demonstrates how public safety and environmental concerns have been addressed.

# The pipeline meets the requirements of a sour service pipeline as defined in the current edition of **CSA Z662**

If the proposed pipeline will meet sour service requirements, regardless of the proposed service, you may indicate that.

# The design of this pipeline is registered with ABSA

The applicant should answer yes to this statement if the pipeline design will be registered where it is mandatory or it is being voluntarily registered as a high temperature design.

If the pipeline must be registered with ABSA but has not been, you will be asked for an explanation through an SIR.

## Production streams with different H<sub>2</sub>S contents will be blended

The applicant should answer yes if they intend to combine production streams for the purpose of maintaining a lower H<sub>2</sub>S content in the final blended stream so that it may be transported within the licensed service conditions of the receiving pipeline. The application will be audited.

# This application will change the level designation of this pipeline or a connecting pipeline

If the level designation is increasing, the application will be audited.

#### The pipeline will inject natural gas containing H<sub>2</sub>S into a producing reservoir

If the pipeline will be used to inject natural gas containing greater than 10 mol/kmol H<sub>2</sub>S into a producing oil or gas reservoir, you must provide the enhanced recovery scheme approval number.

## Provide the licence and line number of any connecting pipelines not included in this application

If one or more facility codes in OneStop's Pipeline Location and Status section is "pipeline," then the licence and line number of the pipelines being tied into may be provided.

If tie ins are incompatible, you must attach a detailed explanation regarding the controls that will be in place to mitigate an incompatible MOP, H<sub>2</sub>S content, substance, or pipeline status.

# The proposed pipeline or pipeline installation is located within the Calgary or Edmonton **Transportation/Utility Corridor**

If the proposed pipeline or pipeline installation is located within the Calgary or Edmonton Transportation/Utility Corridor and ministerial consent has not been obtained from Alberta Infrastructure, you will be required to provide an explanation as to why consent has not been received. This will requested through an SIR.

# Maximum calculated emergency planning zone (EPZ)

Enter the maximum calculated EPZ radius in kilometres as determined by the requirements of Directive 071.

The maximum calculated EPZ should represent the largest EPZ of any portion of the pipeline included in the activity. If there are numerous line segments included in an activity, the largest EPZ of any of those segments should be indicated. If there is no EPZ associated with any of the segments, enter 0.

#### Number of surface developments in the emergency planning zone

Enter the total number of surface developments located within the maximum calculated EPZ.

The number of surface developments in the EPZ should represent the surface developments for all line segments being applied for.

If there is no EPZ associated with any of the segments, enter 0.

## This application triggers the need to meet sour service requirements as defined in CSA Z662

If the introduction or increase of H<sub>2</sub>S, or an increase in MOP, causes the H<sub>2</sub>S partial pressure to increase, resulting in the need to meet CSA Z662 sour service requirements, you must attach evidence that the pipeline will comply with those requirements. This may include

- details of any required material testing or documentation confirming material and component suitability for sour service,
- evidence that weld procedures are suitable for service conditions,
- evidence that weld testing requirements have been satisfied,
- evidence that hydrostatic testing requirements have been satisfied,
- a detailed explanation of the compatibility with connecting pipelines, and
- an engineering assessment demonstrating compliance with the sour service requirements of <u>CSA</u> Z662.

If the H<sub>2</sub>S increases to more than 10 mol/kmol and the substance is natural gas, you must meet additional requirements under the *Pipeline Rules*. You must answer this question as YES and you must attach

- an engineering assessment that follows the additional criteria for sour service conversions involving gas with an H<sub>2</sub>S content greater than 10 mol/kmol and that demonstrates pipeline integrity,
- evidence demonstrating that hydrostatic testing requirements have been satisfied, and
- a detailed explanation of the compatibility with connecting pipelines.

## The pipeline was abandoned in accordance with the *Pipeline Rules*

If the pipeline was not abandoned in accordance with the <u>Pipeline Rules</u> for any reason other than the pipeline not being abandoned within 12 months of being in active flowing service, you must attach an explanation of why the pipeline was not abandoned in accordance with the Pipeline Rules and must submit a field abandonment report.

#### The pipeline was discontinued in accordance with the *Pipeline Rules*

If the pipeline was not discontinued in accordance with the *Pipeline Rules* for any reason other than the pipeline not being discontinued within 12 months of being in active flowing service, you must attach an explanation of why the pipeline was not discontinued in accordance with the *Pipeline Rules* and must submit a field discontinuation report.

If the pipeline was not discontinued within 12 months, documentation is not required with the application submission. However, upon resumption, an engineering assessment will be required.

## The pipeline that is being resumed was discontinued in accordance with the *Pipeline Rules*

If the pipeline being resumed was not discontinued in accordance with the *Pipeline Rules* for any reason other than the pipeline not being isolated, you must attach a comprehensive engineering assessment demonstrating that the pipeline is fit for service.

If the pipeline being resumed was not isolated at the time of discontinuation, documentation is not required with the application submission.

#### The integrity of the pipeline has been verified

If the integrity of the pipeline that is being resumed has not been verified, you must attach an explanation of why the necessary work to verify the integrity of the pipeline has not been undertaken.

## The MOP decrease is the result of a change in CSA class location

If you are applying for an MOP decrease to comply with the changed CSA class location requirements, you must attach a detailed explanation to support compliance with the changed CSA class location requirements.

#### Higher risk substances

If the pipeline will transport any of the following, you must attach documentation confirming the pipeline meets CSA Z662 design requirements:

- carbon dioxide:
- any substance not in the Substance drop-down list; or
- any combination of substances other than HVP products, LVP products, and crude oil.

If the pipeline will transport carbon dioxide you must also attach

- the specific operating pressure ranges and pressure drops to avoid unnecessary phase change,
- corrosion mitigation and monitoring issues due to water content and other impurities,
- specific material considerations to minimize risk of fracture propagation,
- ERP and dispersion modelling considerations, and
- safety precautions to be taken during pipeline operation and repair.

If the application is to change the substance to HVP products, you must attach an engineering assessment that provides evidence of

- conformance with the requirements for HVP pipeline design, operation, and change of service as contained in CSA Z662, the Pipeline Act, and the Pipeline Rules and
- pipeline integrity verification.

## Increase in CSA Z662 class location

If the amendment type "Other" has been selected to increase the CSA class location designation, you must attach evidence that demonstrates that the pipeline meets the higher CSA Z662 class location requirements.

#### **Bidirectional suitability**

If you are applying for permanent bidirectional flow of an existing pipeline with an outside diameter of 168.3 mm or more, you must attach a description of

- the pipeline design and configuration,
- the internal and external condition.
- the suitability of the pipeline for the difference in pressure gradient to operate in both directions, and
- the suitability of the corrosion control for the bidirectional flow operation.

#### Fit for service

If the application is for the resumption of an abandoned or discontinued pipeline where the service conditions of the licence have been changed during the period of time the pipeline was discontinued or abandoned, you must attach comprehensive engineering assessment demonstrating the pipeline is fit for service taking into consideration the change in fluid.

## **Administrative oversight**

If the application is for the reinstatement of a pipeline, or for certain administrative changes or corrections to the operating status of a pipeline, you must attach an explanation of the proposed amendment.

#### Watercourse crossings

If the application is for a new oil effluent, salt water, or crude oil pipeline with an outside diameter of 168.3 mm or more that crosses a watercourse, and open-cut construction methods are used, further information will be requested through an SIR.

If the application is an amendment to an existing oil effluent, salt water, or crude oil pipeline with an outside diameter of 168.3 mm or more, you may be required to submit confirmation through an SIR that depth of cover requirements are being met.

#### **AER** areas of focus

If the application is for a new pipeline located within the Battle Lake Tier 1 Area, you will be asked to provide documentation required by section 8.2 of *Directive 056* through an SIR.

If the application is for a new pipeline, or for an amendment to a pipeline, located within the Sage Grouse Federal Emergency Protection Order prohibition area or the Brazeau Dam Buffer Area, further information may be requested through an SIR.

#### **ALSA** compliance

If the application is for a new pipeline located within the Lower Athabasca or South Saskatchewan Regional Plan boundary and located within a

- designated conservation area,
- provincial park,
- provincial recreation area, or
- public lands area for recreation and tourism,

you will be asked to provide the documentation outlined in Bulletin 2016-27: Application Requirements for Activities within the Boundary of a Regional Plan through an SIR.

#### Pipe specifications

Certain combinations of material, substance, H<sub>2</sub>S content, or MOP are restricted by CSA Z662 or the Pipeline Rules. Further information may be requested through an SIR if the pipeline being applied for contains such combinations.

## **Resumption of operation from Abandoned status**

An approval may be granted for the resumption of an abandoned pipeline, but only in rare and exceptional circumstances. You will be asked to provide a comprehensive engineering assessment demonstrating the pipeline is fit for service through an SIR.

#### 6.5 Pipeline Installation Applications

#### 6.5.1 Pipeline Installation Status

For new pipeline installation construction licences, the pipeline installation status automatically changes from "permitted" to "operating" typically one year from the date the licence was issued, except where an extended licence expiry was requested at the time of application.

#### 6.5.2 Pipeline Installation Licences

Multiple licences can be applied for in a single application and each licence will be displayed as a separate activity.

## 6.5.3 Unlicensed Pipeline Installations

If you select "Unlicensed pipeline installation: addition to existing licence number," you are applying to license an existing unlicensed pipeline installation under an existing licence. The unlicensed installation must handle the same substance, have the same licensed H<sub>2</sub>S content, and be part of the same system as the licence it is being added to.

Or you are applying to reinstate a pipeline installation that was deleted in error before June 26, 2010.

For pipeline installations deleted after June 26, 2010, submit a licence amendment application to reinstate the installation.

## 6.5.4 Licensing – Line/Installation Detail

A licence can have up to three substances associated with it; however, the substances selected must be common to all pipeline installations on the licence being applied for.

#### 6.5.5 Installation Specification

**Inst Type:** The following table lists the installation types given in OneStop. The "code" is what appeared in older systems and is given here for reference.

Code	Installation Types
CS	Compressor Station
LH	Line Heater
LR	Oil Loading and Unloading Terminal
PS	Pump Station
TF	Tank Farm

# Comp/Pump Rating (kW): The kilowatt (kW) rating.

Power source: The following table lists the power sources given in OneStop. The "code" is what appeared in older systems and is given here for reference.

Code	Power Source
Е	Electric
N	Natural Gas
	None

Status: If this is new construction, the status must be "To Be Constructed (Permitted)." The following table lists the installation statuses given in OneStop. The "code" is what appeared in older systems and is given here for reference.

Code	Installation Status
Α	Abandoned
D	Discontinued
N	Not constructed
0	Operating
Р	To Be Constructed (Permitted)
R	Removed

#### 6.5.6 Technical Diagrams

## **Process flow diagrams**

Process flow diagrams must meet the requirements of <u>Directive 056</u>.

## Plot plans

Plot plans must meet the requirements of <u>Directive 056</u>.

## 6.5.7 Pipeline Installation Amendments

Changes to an installation's location, installation type, compressor/pump rating, power source, and status can be made through a pipeline installation amendment application. Multiple amendment types can be applied for in a single activity.

If you are applying to change the substance or H<sub>2</sub>S content of only specific installations on a licence, you must apply in a separate application and not in combination with any other licence amendment type.

If you are applying to change the substance or H<sub>2</sub>S content of an entire licence and the licence also includes pipeline segments, this change must be made through a pipeline amendment application.

#### 6.5.8 Technical Considerations

The following are questions that you may be asked, or information that you may be requested to provide, depending on the type of pipeline installation application being submitted.

#### The pipeline installation meets all applicable noise requirements

If the applicable noise requirements of *Directive 038* have not been met, you must attach

- a list of noise requirements not being met and why and
- a noise impact assessment.

If the applicable noise requirements of *Directive 038* have not been met and this is an amendment application, you must also attach a site-specific plot plan and a process flow diagram.

## The pipeline installation meets all applicable storage requirements

If all applicable storage requirements as defined in <u>Directive 055</u> have not been met, you must list what storage requirements are not being met and explain why.

If all applicable storage requirements as defined in *Directive 055* have not been met and this is an amendment application, you must also attach a site-specific plot plan and a process flow diagram.

## The pipeline installation meets all applicable spacing requirements

If all applicable spacing requirements as defined in section 8 of the OGCR have not been met and this is an amendment application you must attach a site-specific plot plan and a process flow diagram.

If all applicable spacing requirements related to a waterbody, you must also attach

- a mitigation letter which includes a discussion of the preventive measure that will be employed to minimize the risk of a spill occurring and, in the event of a spill, the preventive measures for ensuring that the spill does not reach the water body;
- a description of the automatic controls that will be installed; and
- a statement committing to constructing and maintaining a berm around the perimeter of the equipment that will prevent any spill from reaching the water body.

If NO and the spacing issue is not related to a water body, you must also attach

- a mitigation letter which includes a description of the fluids involved and all sources of gaseous vapours and
- a description of how safety will not be compromised by a relaxation of the spacing requirements, including a safety assessment and response time for call out.

## Total NO<sub>x</sub> emissions will be less than 16 kg/hr

If NO<sub>x</sub> emissions will be equal to or greater than 16 kg/hr, you must attach a statement confirming that the applicant will register with AEP prior to operation.

# The proposed pipeline or pipeline installation is located within the Calgary or Edmonton Transportation/Utility Corridor.

If YES, ministerial consent from Alberta Infrastructure is required.

If you do not have ministerial consent, you will be asked to explain.

#### Maximum calculated emergency planning zone (EPZ)

Enter the maximum calculated EPZ radius in kilometres as determined by the requirements of Directive 071.

The maximum calculated EPZ should represent the largest EPZ of any pipeline entering or leaving the installation measured outward in all directions from the installation lease boundary. If there are numerous installations included in an activity, the largest EPZ of any of those installations should be indicated. If there is no EPZ associated with any of the installations, enter 0.

## Number of surface developments in the emergency planning zone

Enter the total number of surface developments located within the maximum calculated emergency planning zone.

The number of surface developments in the EPZ should represent the surface developments for all installations being applied for.

If there is no EPZ associated with any of the installations, enter 0.

#### AER areas of focus

If the application is for a new pipeline installation located within the Battle Lake Tier 1 Area, you will be asked to provide documentation required by section 8.2.3 of *Directive 056* through an SIR.

If the pipeline installation is located within the Sage Grouse Federal Emergency Protection Order prohibition area or the Brazeau Dam Buffer Area, further information may be requested through an SIR.

#### **ALSA** compliance

If the application is for a new pipeline installation located within the Lower Athabasca or South Saskatchewan Regional Plan boundary and located within a

- designated conservation area,
- provincial park,
- provincial recreation area, or
- public lands area for recreation and tourism,

you will be asked to provide the documentation outlined in Bulletin 2016-27: Application Requirements for Activities within the Boundary of a Regional Plan through an SIR.

#### 7 Wells Procedural

#### 7.1 Overview

Depending on the project, the applicant must submit one Schedule 1 along with one or more of the following forms:

- Schedule 4: Well Licence Application
- Schedule 4.1: Working Interest Participants—Wells
- Schedule 4.2: Multiwell Pad Location
- Schedule 4.3: Well H<sub>2</sub>S Information

#### 7.2 Licence Expiry

#### 7.2.1 Licence Extensions

The AER may extend the expiry date of a licence that has already been issued with a one-year term upon request of the licensee. However, a licence that was originally issued with a term greater than one year will not be extended.

See Frequently Asked Questions Directive 056 - Licence Extension for further information on licence extensions.

#### 7.3 Cavern Scheme Wells

If outstanding concerns or objections are received in response to consultation or notification, a nonroutine well licence application must be filed.

The intended purpose of the well may affect <u>Directive 056</u> participant involvement requirements.

Questions regarding consultation and notification may be directed to the AER.

#### 7.3.1 Survey Plans

The applicant must attach the original survey plan in PDF format.

#### 7.3.2 Emergency Response Planning

For category E wells, the AER may review the well licence application and ERP concurrently so that the well licence and the ERP approval are issued together.

#### 7.3.3 Critical Well

If the proposed well is deemed to be category E, the applicant must file a nonroutine application.

#### Minimum Casing Testing Requirements – Re-entry and Resumption of Drilling

To request a waiver from the required casing inspection logs for a re-entry or resumption of a well, the licensee must submit the well licence application as nonroutine. Provide confirmation that the well:

- is not a category E well,
- is not expected to encounter any new pools,
- will not be deepened or drilled as a whipstock or directional well,
- is not located within or in proximity to enhanced recovery schemes,
- has not been re-entered or undergone resumption of drilling operations before,
- has surface casing or production/intermediate casing that is cemented and isolated to the base of groundwater protection and there are no known hydrocarbons remaining open in any uncemented intervals,
- does not have a surface casing vent flow or have gas migration problems,
- is not located in an area that has high incidents of casing corrosion, and
- was not originally drilled as a directional or horizontal well.

#### 7.3.5 Groundwater Protection

The Base of Groundwater Protection (BGWP) Query Tool is available on the AER website. For questions relating to the BGWP, contact the AER.

#### 7.3.6 Right to Produce or Operate

There are two types of mineral ownership in Alberta: Freehold and Alberta Crown. It is the applicant's responsibility to ensure that it has reviewed the mineral ownership for the entire drill spacing unit and acquired the necessary mineral rights prior to application. For the purpose of well licence applications, Federal Crown minerals are treated as Freehold.

Water source and injection/disposal wells do not require the acquisition of a complete drill spacing unit. A letter from the mineral rights owner or lessee authorizing the activity, or a valid Crown authorization from the Alberta Department of Energy, is sufficient to operate the well.

Licensees must ensure that they maintain the right to produce or operate the well for its intended purpose from application through to the commencement of drilling and ultimately throughout the life of the well. Depending on the situation, loss of mineral rights, consent, or Crown authorization at any point after application submission and prior to the commencement of drilling may result in licence cancellation.

The issuance of a well licence or the results of an AER audit are not to be relied upon by the licensee or third parties as a legal determination or confirmation of mineral entitlement or of the right to produce hydrocarbons or to conduct other activities on lands covered by the licence.

#### 7.3.6.1 Wellbore Rights for Abandoned Wells

The applicant must file a nonroutine application if it is unable to acquire an agreement from the licensee of record.

#### 7.3.6.2 Water Bodies

If the applicant cannot meet the requirements in *Directive 056* section 7.8.12.1 or propose alternative mitigative measures, the applicant must submit a nonroutine application.

To submit a nonroutine application, the applicant must attach information outlining the measures in place to protect the water body from contamination during drilling and future production operations and to mitigate the consequences of a spill.

If there is potentially a water body on or near the proposed well's lease, the routine well application may be referred for further investigation. Subsequently, the applicant may need to demonstrate the efforts it has taken to determine the presence of any water body and to delineate the extent of any identified.

#### 7.3.6.3 Surface Improvements

Other than for a railway, pipeline, gas co-op, canal, or other right-of-way, if the surface improvement owner consents to relaxation of the 100 m setback requirement, the applicant must file a nonroutine application.

If consent from the surface improvement owner cannot be acquired, the applicant must file a nonroutine application

#### Surveyed Road or Road Allowance 7.3.6.4

To apply for a relaxation from the 40 m setback requirement, the applicant must

- file a nonroutine application;
- attach supporting documentation, including proof of owner/administrator consent, and
- submit geographic or topographic information and any proposed mitigative measures.

#### 7.3.6.5 Coal Mines

Sections 6.140 to 6.190 of the OGCR detail the requirements if a well is proposed within 3 km of a subsurface mine, either working or abandoned.

If the applicant proposes to drill a well within 3 km of a working mine or within 400 m of an abandoned mine, a routine well licence application may be filed if the requirements of sections 6.140 to 6.190 of the OGCR will be met.

The applicant must file a nonroutine application if the proposed well

- will not meet the requirements of sections 6.140 to 6.190 of the OGCR or
- will be within 15 m of a coal mine shaft.

# 7.3.7 AER Environmental Requirements

The applicant must submit a nonroutine application if it cannot meet the requirements in *Directive 056*, section 7.8.13 or if it proposes alternative mitigative measures.

To submit a nonroutine application, the applicant must attach information outlining why the application is nonroutine and the alternative mitigative measures the applicant proposes to have in place to protect the environment

#### 7.3.8 Alberta Culture and Tourism

Submit a well licence application as nonroutine if Alberta Culture and Tourism has not granted clearance, and include a detailed explanation.

#### 7.3.9 H<sub>2</sub>S Release Rate Assessments

An applicant may file an H<sub>2</sub>S release rate assessment with the AER before submitting a well licence application. The AER strongly encourages companies to file "presubmission" H<sub>2</sub>S release rate assessment packages. This presubmission allows the applicant to

- obtain feedback on methodology and H<sub>2</sub>S release rate assessments,
- verify personal consultation and notification radiuses applicable to the well project, and
- minimize the well licence application processing time.

After reviewing an applicant's presubmission, we will identify any deficiencies and advise the applicant. We may close and return the presubmission if the H<sub>2</sub>S release rate assessment does not conform to the requirements in *Directive 056*.

Table 7 provides a summary of documents required for nonroutine application submission by step and question.

Table 7. Well application nonroutine checklist

Table 7.		i ppii out	1	nroutine checklist					
Question No.	Υ	N	N/A	Nonroutine Submission Documents					
Step 2: Pa	rticipaı	ticipant Involvement Requirements							
Question 1 met	l: Pers	onal co	nsulta	tion, confirmation of nonobjection, and notification requirements have been					
				The participant involvement summary of all personal consultation and notification that have been completed					
				Name, address, telephone number, and legal land description of participants for which personal consultation and notification requirements have not been completed					
				Detailed explanation of why all personal consultation and nonobjection requirements cannot be completed					
				Detailed explanation of why all notification requirements cannot be completed					
				An explanation of how you would like us to proceed with your application					
Question 2	2: Ther	e are o	utstand	ling objection/concerns related to this application					
				Name, address, telephone number, and legal land description of all participants with outstanding concerns or objections					
				Approximate distance from the project to the land and residence, if applicable, of participants with outstanding concerns or objections.					
				Copy of the written concern or objection (or summary of issues if not available)					
				A chronology of the participant involvement program conducted with the party					
				A discussion of steps taken to mitigate the outstanding concerns or objections					
				Copy of the applicant's project-specific information package					
				List of other documents distributed					
				Documentation in support of the Battle Lake application requirements ( <u>Directive 056</u> , section 8)					
				Explanation of how you would like us to proceed with your application					
				If there are residents within the EPZ, you must also attach					
				the assessment of existing infrastructure required by <u>Directive 056</u> , section 8.3.2					
				the updated expanded project-specific information package, as described in <u>Directive 056</u> , section 8.3.2					
				a copy of an area plan as described in <u>Directive 056</u> , section 8.3.3 if it was completed					
Step 6: Re	-entry/	Resum	ption/E	Deepening of a Well					
Question 3	3: The a	applica	nt has	the rights to the existing wellbore					
				Detailed explanation as to why you do not have the rights to the existing wellbore					
Question 4	: Casi	ng will	meet th	ne minimum casing testing requirements					
				Detailed explanation and confirmation with regard to items 33(a) through (i) in section 7.8.4					

No. Step 7: We Question 1		N ii	N/A	Nonroutine Submission Documents
-			-	Nomodine Submission Documents
Question 1				
1	: Surta	ice cas	ing me	ets the requirements of <u>Directive 008</u>
				Detailed explanation, including a copy of surface casing approval/waiver (if already issued)
				Geological data
				Operations data within 3 km
				Area map
Question 2	: A dir	ection	survey	will be run if the well deviates from vertical
				Explanation of why a directional survey will not be run when well deviates from vertical
Step 8: We	II Clas	sificati	on	
Question 1	a: If Y	ES, dril	l cuttin	g samples will be collected and submitted as required
				Copy of drill cuttings approval/waiver (if available)
				AER classification
				Well location, terminating formation, and total depth
				List of control wells with sample coverage over producing interval
				Detailed reason for a waiver
Step 9: Mir	nerals	•	•	
Question 1	: The a	applica	nt has	the rights for all intended purposes of the proposed well
				Detailed explanation of why mineral rights have not been obtained
Question 2	: The a	applica	nt has	the rights to a complete drilling spacing unit
				Detailed explanation of why mineral rights have not been obtained for the entire drilling spacing unit
Step 11: St	urface	Impact		
Question 1	: The A	AER wa	ter bo	dy setback requirements have been met
				Detailed explanation of why water body setback requirements cannot be met
				Description of methods to protect the water body
Question 1	a: All d	other A	ER set	back requirements have been met
				Detailed explanation and, if required, consent of the surface improvement owner and/or the approval from the Freehold lessee/owner
				Landowner confirmation of nonobjection with regard to setbacks
Question 2	: The p	ropos	ed well	site and/or access road will meet AER environmental requirements
				Detailed explanation as to why environmental requirements cannot be met
				Explanation of the mitigative measures to be in place during drilling and production operations to protect the environment
Question 3	a: If Y	ES, cle	arance	has been granted for the well site (Freehold land only)
				Detailed explanation as to why Alberta Culture and Tourism has not provided clearance

# Directive 056: Schedule 4 Well Licence Application



If you check a  $\ensuremath{\mathbf{BOLD}}$  response, you must attach supporting information.

Submission date: _		AER application	on number:	A	pplicant's referenc	ce:	
1. Identification							
Applicant name:			Applicar	it BA code:			
	ation: New	☐ Re-entry/Res	• • • • • • • • • • • • • • • • • • • •	☐ Deepening	ı 🗆 Licen	ce Amendment	
- Press Ph		, .	- · · · · · · · · · · · · · · · · · · ·		,		
2. Participant Invo	olvement Requirement	ts					
1. Personal consultation, confirmation of nonobjection, and notification requirements have been met.  Public Yes No Industry Yes No						=	
2. There are outsta	anding objections or con	cerns related to	this application.	☐ Yes	☐ No		
3a. Distance to nea	arest surface developm	ent (km):	3b. Dista	ance to nearest	residence (km): _		
2 Emergency Dec	nance Planning						
Emergency Res     The applicant with the second secon	III meet AER requiremen	ata for amargan	ny roonana nian	ning	☐ Yes		
1. The applicant wi	III IIIeet AER requiremen	its for emergent	Ly response plan				
4. Licence Amend	lment Only						
Check all that apply: Surface location Ground elevation Mineral rights Surface coordinates Total depth Surface rights Bottomhole location Terminating formation Schedule 4.3							
Change of purpose	e: Regulation se	ection	l type Original	licence number	:		
5. Well Purpose							
•		OGCR section	n: 2.020	□ 2.030	□ 2.040		
Well type	Substance i	name	Formation code		Formation na	ame	
The proposed w scheme	L ell is part of an experim	ental, primary o	r commercial cru	de bitumen	☐ Yes	□ No	
If YES, provide sch	neme approval number:	Expiry date:			(experimental schemes only)		
6 Po ontry Positi	mption, or Deepening	of a Woll					
Original licence number:  1. The applicant is the licensee of the well					□ v <sub>00</sub>	□No	
The applicant is     The well is curre					☐ Yes ☐ Yes	□ No	
	•						
	as the rights to the exist	· ·			☐ Yes	□No	
4. Casing will meet	t the minimum casing te	sting requireme	nts		☐ Yes	□ No	

7. Well Detail	7. Well Detail											
If you are filing a mu	ıltiwell pad	application,	attach a	complet	ed Sched	ule 4.2.						
								Surface C	oord	inates		
Bottomhole Location	Type of Drilling Operation			Surface Location		/S N/S ance Designation		E/W Distance			E/W ignation	
Well Name:												
Surface Casing D	Depth (m)	Projected Depth		True	Vertical	Depth (	m)	Gro Elevati		n)	Mineral	Rights
Terminating Code	Те	rminating F	ormation	n Name		Su	rface (NAD	Latitude 9 83)		Sur	face Lon (NAD 8	
								-				
4. Overface acceptance			-f Disc -40							V		
Surface casing m										Yes	□ No	□ N/A
2. A directional surv	ey will be r	un if the wel	l deviates	from ve	ertical				L	Yes	□ No	
8. Well Classificati	on											
AER Classification	1											
Confidential Status	 S											
Drill cutting sample	oles are rec	uired to be	taken							Yes	☐ No	
1a. If YES, drill cutti	ng samples	s will be colle	ected and	d submit	mitted as required					Yes	□No	
1b. If required to be	collected a	and submitte	ed. drill cu	tting sar	nples will	be provi	ided a	s follows:				
	rmation Nar		Depth (		Code			tion Name	/Cas	ina	Depth	(m)
				,		1				<u>.</u>		()
9. Mineral Rights												
1. The applicant has	the rights	for all intend	ded purpo	ses of the	he propos	ed well				Yes	□ No	
2. The applicant has	s the rights	to a comple	te drilling	spacing	unit					Yes	☐ No	
10. Surface Rights												
1. The surface owner	eris ∏ A	Alberta Crow	/n [	Freeh	old							
11. Surface Impact	İ											
1. The AER water b	ody setbac	ck requireme	ents have	been m	et					Yes	☐ No	
1a. All other AER se	etback requ	irements ha	ıve been ı	met						Yes	□ No	
2. The proposed we	ell site and/	or access ro	oad will m	eet the	AER envir	onment	al req	uirements		Yes	□ No	
3. The proposed we	ell site requ	ires <i>Historic</i>	al Resou	rces Act	clearance	e (Freeh	old la	nd only)		Yes	☐ No	
3a. If YES, clearance has been granted for the well site (Freehold land only) ☐ Yes						□No						

12. Working Interest Participants		
The licensee is the only working participant. (If NO, attach a completed Schedule 4.1)	☐ Yes	□No
13. Operational Disclosure		
Underbalanced drilling operations will be conducted	☐ Yes	□ No
2. The well will encounter reservoirs that will be subject to enhanced recovery or acid gas injection schemes, or CO <sub>2</sub> greater than 1 per cent in the producing formation	☐ Yes	□ No

#### 7.4 How to Complete Well Licence Application Schedules

#### 7.4.1 How to Complete Schedule 4: Well Licence Application

Date Enter the date on which you will submit this schedule (e.g., 15 Jan

2011).

Applicant's Reference Enter your own file reference in the designated area (optional).

## **Step 1: Identification**

Company Name	Enter the full corporate name of the applicant.
Applicant BA Code	Enter the four-digit BA code issued to your company.
Purpose of Application	Select the appropriate box to indicate whether this application is for a

of an existing well licence. If your application is for a multiwell pad location or a scheme of

observation wells, you must complete and submit Schedule 4.2 with your application.

If your application is for a category C, D, or E well or multiwell pad, you must complete and submit Schedule 4.3 with your well licence application.

To change an oil sands evaluation well (within 30 days of drilling) to a conventional producing well, select the Licence Amendment option; see Step 5: Well Purpose – Regulation Section.

New Select this box if you are applying for a new well.

Re-entry/Resumption Select this box if you are not the current licensee of record and are

applying to re-enter a well or you are the licensee of the well and plan to

resume drilling after original rig release. See Step 6: Re-Entry/

Resumption/Deepening of a Well.

Deepening Select this box if you are applying to deepen a well while the rig is on

> hole, resulting in an increase in the well category (e.g., from B to C, or C to D; see table 5 in *Directive 056*). For other deepenings, also see

Step 6: Re-Entry/ Resumption/Deepening of a Well.

Licence Amendment

Select this box if you are amending a previously issued well licence prior to spud or rig release. See Step 4: Licence Amendment Only.

## **Step 2: Participant Involvement Requirements**

If you check a **BOLD** response, you must attach supporting information.

1. Personal consultation, confirmation of nonobjection, and notification requirements have been met: Public

YES means all applicable requirements as outlined in table 5 in <u>Directive 056</u> and the participant involvement requirements of section 3 have been met prior to application submission.

**NO** means that due to exceptional circumstances, all applicable requirements as cited above have not been met. This includes being unable to contact a party or receive confirmation of nonobjection, as required.

If NO, you must attach

- the participant involvement summary of all personal consultation and notification that has been completed;
- the name, address, telephone number, and legal land description of participants for which personal consultation and notification requirements have not been completed;
- a detailed explanation of why all personal consultation and nonobjection requirements cannot be completed;
- a detailed explanation of why all notification requirements cannot be completed;
- an explanation of how you would like us to proceed with this application.

We will review the circumstances and decide if an exemption is warranted.

2. There are outstanding concerns or objections related to this application.

YES means there are outstanding concerns or objections. You must then attach

- the name, address, telephone number, and legal land description of the party with outstanding concerns or objections;
- approximate distance from the project to the land and residence, if applicable, of the participants with outstanding concerns or objections;

- a copy of written concerns or objections received, if available;
- a chronology of the participant involvement program conducted with the party;
- a discussion of steps taken to mitigate the outstanding concerns or objections;
- a copy of the project-specific information package provided;
- a list of other documents distributed; and
- an explanation of how you would like us to proceed with your application.

If there are residents within the EPZ, you must also attach

- the assessment of existing infrastructure required by *Directive 056*, section 8.3.2;
- the updated expanded project-specific information package, as described in *Directive 056*, section 8.3.2; and
- a copy of an area plan, as described in *Directive 056*, section 8.3.3, if it was completed.

**YES** also means the proposed well is located within the Tier 1 area of Battle Lake and the documentation required by *Directive 056*, section 8.2 is attached.

We will review the circumstances and decide if an exemption is warranted.

NO means there are no outstanding concerns or objections.

3. Distance to nearest surface development

Enter the distance from the well centre to the nearest surface development in kilometres (km) to two decimal places.

If there is no surface development within the EPZ, a distance to the nearest town, village, or urban centre may be used. Where there is no EPZ, a search should be done to at least 1.5 km; if there is no surface development within this distance, enter 1.5 km on the schedule.

## **Step 3: Emergency Response Planning**

1. The applicant will meet	YES means the corporate or specific ERP will meet the requirements of
AER requirements for	Directive 071.
emergency response planning.	

## **Step 4: Licence Amendment Only**

Refer to Step 6 if you are resuming drilling operations after rig release, re-entering an abandoned well, or deepening a well while on hole, which results in a change in category type (e.g., B140 to C280).

## Before construction or spud date:

If the category type is changing before the well is spudded, request that we cancel the original licence and reapply for a new well licence. Note that applicant's consultation/notification must be completed for a new category type.

Any other revisions to the licence may be done by completing a licence amendment application and completing this step.

#### While on hole:

When you are applying for a deepening of the well greater than 150 m or any deepening resulting in a change to the terminating formation, and there are no changes to the category type, file a licence amendment application and complete this step.

Check all that apply	Check all the boxes that apply to your well licence amendment application.
Surface Location	Check this box to indicate a change in surface location of the well within the same drilling spacing unit. Enter the new surface location, surface location coordinates, surface latitude, and surface longitude in Step 7: Well Detail.
	You must submit a revised survey plan with your amendment application.
Surface Coordinates	Check this box to indicate a change in the surface coordinates of the well. Enter the new surface coordinates, latitude, and longitude in Step 7: Well Detail.
	You must submit a revised survey plan with your amendment application.

Bottomhole Location Check this box to indicate a change in bottomhole location of the well.

Enter the new bottomhole location in Step 7: Well Detail.

You must submit a revised survey plan with your amendment

application.

**Ground Elevation** Check this box to indicate a change in ground elevation. Enter the new

ground elevation for the well in Step 7: Well Detail.

You must submit a revised survey plan with your amendment

application.

Total Depth Check this box to indicate an increase in total depth for the well. Enter

the new projected total depth in Step 7: Well Detail. If the well is not a

vertical well, also enter the projected true vertical depth.

**Terminating Formation** Check this box to indicate a change in terminating formation for the

well. Enter the new terminating formation in Step 7: Well Detail. You

must also identify that you have the mineral rights to the new

terminating formation in Step 9: Mineral Rights.

Mineral Rights Check this box to indicate a change to the mineral ownership record for

the well.

Enter the identity of the mineral rights owner (head lessor) in Step 7:

Well Detail.

Surface Rights Check this box to indicate a change to the Crown or Freehold surface

ownership and enter the surface right owner for the well in Step 10:

Surface Rights.

Schedule 4.3 Check the box to indicate a change to data initially recorded on

Schedule 4.3.

Change of Purpose Check the appropriate box to indicate a change of purpose for the well.

Enter the new well purpose in Step 5: Well Purpose.

You must change an oil sands evaluation well within 30 days from the drilling of the well licence. This also requires a regulation change in

Step 5: Well Purpose.

OGCR Section	Check this box to indicate a change in the section of the <u>OGCR</u> for the well purpose.
	Enter the new section in Step 5: Well Purpose.
Well Type	Check this box to indicate a change in the well type.
	Enter the new well type in Step 5: Well Purpose.
Original Licence Number	Enter the previously issued well licence number; include all zeros in the seven-digit well licence number. You must record the original licence number when filing a relicense application.

## **Step 5: Well Purpose**

Category Type	Enter the category type of the well from table 5 in <u>Directive 056</u> . If you have selected a category C, D, or E well, you must complete and attach Schedule 4.3 to your application.
	For category E wells, you must submit a nonroutine well licence application and all applicable audit documentation.
Regulation Section	Using table 8, check the appropriate box to indicate the section of the <u>OGCR</u> that this application is being submitted under.
Section 2.020	Select this box if you are submitting the well licence application under section 2.020 of the <u>OGCR</u> for a conventional well (see table 8).
Section 2.030	Select this box if you are submitting the well licence application under section 2.030 of the <u>OGCR</u> for an oil sands evaluation well, test hole, or an experimental well (see table 8).
Section 2.040	Select this box if you are submitting the well licence application under section 2.040 of the <u>OGCR</u> for a well that will be drilled greater than 150 m to supply water for any purpose (see table 8).
Well Type	Enter the name for the well type from table 8.
Substance Name	Enter the substance name from table 8. Enter "none" if there is no substance involved.
Formation Code	Enter the formation code. Formation codes are available on our website, <a href="https://www.aer.ca">www.aer.ca</a> .

Formation Name	Enter the corresponding formation name. Formation names are available on our website, <a href="www.aer.ca">www.aer.ca</a> .
1. The proposed well is part of an experimental, primary, or commercial crude bitumen scheme.	YES means the proposed well is part of an approved experimental, primary, or commercial crude bitumen scheme.  NO means the proposed well is not part of an approved experimental, primary, or commercial crude bitumen scheme.
If YES, Scheme Approval Number	If the proposed well is part of an approved scheme, enter the scheme approval number.
Expiry Date (experimental schemes only)	If the proposed well is part of an approved scheme, enter the expiry date (e.g., 15 Jan 2011).

## Step 6: Re-Entry/Resumption/Deepening of a Well

Complete this step only if you are resuming drilling operations after rig release, re-entering an abandoned well, or deepening a well while on hole, which results in a change in category type (e.g., B140 to C280).

## While on hole:

When you are applying for a deepening of the well and there is a change to the category type, file a deepening application and complete this step.

For any other deepening greater than 150m where the category type does not change, you must file a licence amendment application and complete Step 4.

## After rig release or re-entry of an abandoned well:

File an application for a re-entry/resumption and complete this step.

Original Licence Number	Enter the previously issued seven-digit well licence number.
1. The applicant is the licensee of the well.	YES means you are the current licensee of the well.
	NO means you are not the current licensee of the well.
2. The well is currently	YES means the well is currently abandoned according to AER records.
abandoned.	NO means the well is not abandoned according to AER records.
3. The applicant has the rights to the existing wellbore.	YES means you have the rights to the existing wellbore.

**NO** means you do not have the rights to the existing wellbore.

If NO, you must attach a detailed explanation as to why you do not have the wellbore rights. We will review the circumstances and decide if an exemption is warranted.

4. Casing will be pressure tested to meet the minimum requirements.

YES means that, prior to commencing re-entry or resumption of drilling operations, the casing will be tested to ensure that it meets the minimum requirements as described for the category and type of well.

**NO** means the existing casing will be pressure tested to meet the minimum requirements and a casing inspection log waiver is being requested.

If **NO**, you must attach a detailed explanation and provide confirmation with regard to items listed in 4.4.3 above. We will review the circumstances and decide if an exemption is warranted.

## Step 7: Well Detail

If you are filing a multiwell pad application, attach a completed Schedule 4.2.

If you check a **BOLD** response, you must attach supporting information.

**Bottomhole Location** Enter the bottomhole location of the wellbore using the Dominion Land

Survey system.

Type of Drilling Operation Enter the type of drilling operation being conducted (i.e., vertical,

directional, horizontal, slant, or natural drift).

Surface Location Enter the surface location of the wellbore as surveyed using the

Dominion Land Survey system.

Surface Coordinates

N/S Distance Enter the north/south coordinates for the surface location measured

from the well to the outside boundaries of the section containing the

well and rounded to the nearest 0.1 m.

Enter "N" or "S," as appropriate, to designate the direction of N/S Designation

measurement from the well to the section boundary.

Enter the east/west coordinates for the surface location measured from E/W Distance

the well to the outside boundaries of the section containing the well and

rounded to the nearest 0.1 m.

E/W Designation Enter "E" or "W," as appropriate, to designate the direction of

measurement from the well to section boundary.

Well Name Well names are created by Electronic Application Submission System

> (EAS) to be consistent with section 13.020 of the <u>OGCR</u>. Applicants should not change the well name created by EAS and only indicate or add the optional particulars required to distinguish the proposed well to

a maximum of 36 characters,

Surface Casing Depth Enter the total depth of the surface casing to the nearest metre.

Enter the projected total depth to the nearest metre. Projected Total Depth

This depth must include the 15 m overhole interval.

Enter the true vertical depth to the nearest metre if the well is expected True Vertical Depth

to deviate from vertical.

This depth must include the 15 m overhole interval.

Ground Elevation Enter the surveyed ground elevation rounded to the nearest 0.1 m.

Enter "Alberta Crown," "Freehold," or "Both," as appropriate. For the Mineral Rights

purpose of the application, the AER considers "Federal Crown"

minerals as "Freehold."

**Terminating Code** Enter the code of the deepest formation in which the well will terminate

and where you are entitled to the right to produce.

**Terminating Formation Name** Enter the name of the deepest formation in which the well will

> terminate and where you are entitled to the right to produce Do not record any formation within the 15 m overhole interval as the terminating formation unless you hold the mineral rights to it.

Surface Latitude Enter the latitude in decimals of degrees to six decimal places based on

the North American Datum 1983 (NAD 83) for the surface location of

the well.

Surface Longitude	Enter the longitude in decimals of degrees to six decimal places based on NAD 83 for the surface location of the well.
1. Surface casing meets the requirements of <u>Directive 008</u> .	YES means the proposed surface casing meets the requirements of <u>Directive 008</u> .
	<b>NO</b> means either the proposed surface casing will not meet the requirements of <u>Directive 008</u> or we have issued a waiver.
	If <b>NO</b> , you must attach a copy of the waiver or provide a detailed explanation as to why the <u>Directive 008</u> requirements will not be met, including geological data, operations data, and an area map. We will review the circumstances and decide if an exemption is warranted.
	N/A means there is no <u>Directive 008</u> requirement (e.g., the well licence application is to re-enter an existing wellbore).
2. A directional survey will be run if the well deviates from	YES means a directional survey will be run if the well deviates from vertical.
vertical.	<b>NO</b> means a directional survey will not be run if the well deviates from vertical.
	If <b>NO</b> , you must attach a detailed explanation. We will review the circumstances and decide if an exemption is warranted.
Step 8: Well Classification	
AER Classification	Enter the appropriate AER classification for the proposed well, using table 9.
If AER classification is confidential	Enter the confidential status of the proposed well, using table 10.
1. Drill cutting samples are required to be taken.	YES, means drill cutting samples are required to be taken, as outlined in section 7.8.8 of <u>Directive 056</u> and section 11.010 of the <u>OGCR</u> .
	NO means drill cutting samples are not required to be taken.
1a. If YES, drill cutting samples will be collected and submitted as required.	YES means drill cutting samples will be collected and submitted as required.
	<b>NO</b> means drill cutting samples will not be collected and submitted as required.

If **NO**, you must attach a detailed explanation that includes

- AER classification.
- well location,
- terminating formation,
- total depth of well,
- a list of control wells with sample coverage over the producing interval, and
- the reason for a drill cuttings sample waiver.

We will review the circumstances and decide if an exemption is warranted.

1b. If required to be collected and submitted, drill cutting samples will be provided as follows:

If drill cutting sample collection and submission are ended and then resumed deeper in the well, repeat the following procedure for the next, deeper interval in the second row provided.

Code

Enter the code of the formation or the casing type 30 m above which submission of drill cutting samples begins. Formation codes are available on our website.

From Formation Name/Casing

Enter the name of the formation or the casing depth 30 m above which submission of drill cutting samples begins. Formation names are available on our website.

Depth

Enter the proposed depth to the nearest metre at which drill cutting sample collection submission begins.

Code

Enter the code of the formation 30 m below which sample collection and submission ends, or enter total depth, if that is where sample collection ends. Formation codes are available on our website.

To Formation Name/Casing

Enter the name of the formation or the casing depth 30 m below which sample collection and submission ends, or enter total depth, if that is where sample collection ends. Formation names are available on our website.

Depth

Enter the proposed depth to the nearest metre where drill cutting sample collection and submission end.

## **Step 9: Mineral Rights**

If you check a **BOLD** response, you must attach supporting information.

1. The applicant has the rights for all intended purposes of the proposed well.

YES means you have acquired the right to produce from the intended formations or the right to drill and operate the well, as stated in the well purpose for the complete drilling spacing unit and as required for Freehold lands by the Alberta Department of Energy Mines and Minerals Act, sections 53 and 54.

**NO** means that due to exceptional circumstances, all applicable requirements as cited above have not been met.

If **NO**, you must attach a detailed explanation of why you do not have the mineral rights. We will review the circumstances and decide if an exemption is warranted.

2. The applicant has the rights to a complete drilling spacing unit.

YES means that you have secured the rights to a complete drilling spacing unit. Yes also means that for injection/disposal wells, observation wells, and water source wells, you have authorization from the mineral rights owner or lessee for the stated purpose.

**NO** means that you have not secured the rights to a complete drilling spacing unit.

If NO, you must attach a detailed explanation of the reason you do not have the entire drilling spacing unit. We will review the circumstances and decide if an exemption is warranted.

If you do not have all mineral rights for the entire drilling spacing unit and you are awaiting other AER approvals (e.g., reduced spacing application), your application may be premature. In these instances, you should not submit your well licence application unless you can meet current spacing requirements.

## **Step 10: Surface Rights**

1. The surface owner is

Check the appropriate box to indicate whether the surface owner is Crown or Freehold.

Freehold also includes federal lands and the land administered by the provincial Special Areas Board.

## **Step 11: Surface Impact**

If you check a **BOLD** response, you must attach supporting information.

1. The AER water body setback requirements have been met.

YES means that the well will meet the applicable water body setback requirements stated in section 7.8.12.1 or that there is no water body located less than 100 m from a well centre.

**NO** means that due to exceptional circumstances, all applicable requirements as cited above have not been met.

If **NO**, you must attach an explanation as to why you cannot meet the water body setback requirements and include the methods to protect the water body. We will review the circumstances and decide if an exemption is warranted.

1a. All other AER setback requirements have been met. YES means the proposed well will meet all applicable surface improvement setback requirements outlined in sections 7.8.12.2 to 7.8.12.5.

## NO means

- that due to exceptional circumstances, all applicable requirements as cited above have not been met; or
- the surface improvement is not a pipeline/utility right-of-way, gas co-op right-or-way, or a private access; or
- you are not able to acquire the consent of the surface improvement owner.

If **NO**, you must attach a detailed explanation and, if required, include consent of the surface improvement owner or the approval from the Freehold lessee/owner. We will review the circumstances and decide if an exemption is warranted.

2. The proposed well site or access road will meet AER environmental requirements. YES means the proposed well site or access road will meet all applicable environmental requirements stated in section 7.8.13.

**NO** means that due to exceptional circumstances, all applicable requirements as cited above have not been met.

If **NO**, you must attach a detailed explanation as to why you cannot meet the requirements described in section 7.8.13 and what mitigative measures will be in place. We will review the circumstances and decide if an exemption is warranted.

3. The proposed well site requires *Historical Resources* Act clearance (Freehold land only).

YES means the proposed well site requires clearance by Alberta Culture and Tourism, in accordance with the *Historical Resources Act*.

NO means that the proposed well site does not require clearance by Alberta Culture and Tourism.

3a. If YES, clearance has been granted for the well site (Freehold land only).

YES means Alberta Culture and Tourism has granted clearance for the proposed well site.

NO means Alberta Culture and Tourism has not granted clearance for the proposed well site.

If **NO**, you must attach a detailed explanation as to why Alberta Culture and Tourism has not provided clearance. We will review the circumstances and decide if an exemption is warranted.

## **Step 12: Working Interest Participants**

1. The licensee is the only working participant.

YES means that at the time of application you are the only working interest participant in the proposed well.

NO means that at the time of application you are not the only working interest participant in the proposed well. You must fill out Schedule 4.1, identifying all of the working interest participants and their percentage interest in the proposed well, totalling 100 per cent, and attach a completed Schedule 4.1.

## **Step 13: Operational Disclosure**

1. Underbalanced drilling operations will be conducted. (*ID 94-03*)

YES means that underbalanced drilling operations will be conducted and you will meet the requirements described in *Directive 010*, as well as in <u>IRP Volume 6</u> if category E well.

NO means that underbalanced drilling operations will not be conducted.

2. The well will encounter reservoirs that will be subject to enhanced recovery or acid gas injection schemes or to CO<sub>2</sub> greater than 1 per cent in the producing formation.

YES means that the well will encounter at least one reservoir subject to

- an enhanced recovery scheme,
- an acid gas injection or disposal scheme,
- an unusual or atypical reservoir scenario that may impact the H<sub>2</sub>S release rate assessment for the well, or
- CO<sub>2</sub> gas present in a volume greater that 1 per cent in the producing formation.

NO means that the well will not encounter a reservoir as described above.

Table 8. Rule, well type, and substance used during well licensing

OGCR, section 2.020					
Well type	Code	Substance name	Code	Classification options	Confidential options
Evaluation	02	Miscellaneous	98	OTH	NC
		None		OTH	NC
Injection	04	Gas	02	DSW	C, NC
-		Water	06	DSW	C, NC
		LPG	16	DSW	C, NC
		Coalbed methane	22	DSW	C, NC
Disposal	12	Water	06	OTH	NC
		Brine	07	OTH	NC
		Waste	08	OTH	NC
Observation	05	Crude oil	01	DSW	C, NC
		Gas	02	DSW	C, NC
		None		DSW	C, NC
5	0.7	o:	2.4	XPL	С
Production	07	Crude oil	01	DEV	C, NC
				XPL	C
	Gas	02	DEV	C, NC	
		Brine	07	OTH	NC
		Crude bitumen	17	DEV	NC
		Coolbod mothers	22	XPL	С
		Coalbed methane	22	DEV	C, NC
Production (Scheme)	08	Crude bitumen	17	DEV	NC
Storage	09	Gas	02	OTH	NC
		LPG	16	OTH	NC
Training	11	None		OTH	NC
OGCR, section 2.030			1		
				Classification	
Well type	Code	Substance name	Code	options	Confidential options
Experimental	03	None		EX	С
Oil Sands Evaluation	06	Crude bitumen	17	OV	С
Test	10	None		TH	С
OGCR, section 2.040		ı	1		1
	Code	Substance name	Code	Classification options	Confidential options
Well type	0040				
Well type  Domestic	01	Water	06	OTH	NC
		Water Water	06 06	OTH OTH	NC NC

Table 9. **AER** classification

Code	Туре	Code	Туре
00	Development	40	Exploratory
01	Development Service Well	03	Re-entry
09	Other	10	Experimental
11	Oil Sands Evaluation	12	Test Hole

Table 10. Confidential status applied at time of licensing

Code	Status
C	Confidential
NC	Nonconfidential

# Directive 056: Schedule 4.1 Wells – Working Interest Participants



Submission date:		AER application number:	Applicant's reference:	
1. Identification				
Applicant name:		Applicant BA code:		
O Warding laters	-4 D41-14 (4-4	-4-14000()		
2. Working intere	st Participants (must t	otal 100%)		Devenue
BA code	Company name			Percentage

# 7.4.2 How to Complete Schedule 4.1: Working Interest Participants – Wells

You must provide working interest participant information when you are not the only interest participant in the proposed well. The applicant must be a working interest participant in the well in order to apply for a well licence.

Date	Enter the date on which you will submit this schedule (e.g., 15 Jan 2011).	
Applicant's Reference	Enter your own file reference in the designated area (optional).	
Step 1: Identification		
Company Name	Enter the full corporate name of the applicant.	
Applicant BA Code	Enter the four-digit BA code issued to your company.	
Step 2: Working Interest Participants		

Step 2. Working Interest	1 articipants
Company Name	Enter the full corporate name of all working interest participants, including your company name, in the table provided.
	We will not accept an entry of "Partnership." You must determine which company or companies within the partnership should be entered as working interest participants.
Percentage	Enter each participant's percentage of participation in the well.
	Working interest participation must total 100 per cent.

# Directive 056: Schedule 4.2 Multiwell Pad Location



Submission date:	AER application number:	Applicant's reference:
oubiliission date.	ALIX application number.	Applicant 3 reference.

Well Name	Bottomhole Location	Drilling Operation	Surface Location (if different)	Surface Coordinates	N/S E/W	Surface Casing Depth (m)	Projected Total Depth (m)	True Vertical Depth (m)	Ground Elevation (m)	Mineral Rights	Surface Latitude Surface Longitude (NAD 83)

## 7.4.3 How to Complete Schedule 4.2: Multiwell Pad Location

If you are submitting an application for a multiwell pad through the AER's EAS system, multiwell information is collected and displayed in Section 7: Well Detail of Schedule 4.

You must complete and submit Schedule 4.2 to provide specific data elements for the second and subsequent wells to be drilled from a multiwell pad location, provided the following applies to all wells that are to be drilled:

- The surface location of all wells will be the same legal subdivision or adjoining legal subdivision.
- All wells are the same well type (e.g., injection, production).
- The wells are to be licensed under the same section of the <u>OGCR</u>.

You must complete and submit Schedule 4.2 to provide specific data elements for oil and oil sands evaluation wells to be licensed under section 2.030 of the OGCR, provided that

- they are part of the same project and
- the producing and terminating formations are the same for all wells applied for.

Date	Enter the date on which you will submit this schedule (e	.g.,15 Jan

2011).

Applicant's Reference Enter your own file reference in the designated area (optional).

Well Name Well names are created by EAS to be consistent with section 13.020 of

> the <u>OGCR</u>. Applicants should not change the well name created by EAS and only indicate or add the optional particulars required to distinguish the proposed well to a maximum of 36 characters,

**Bottomhole Location** Enter the bottomhole location of the wellbore if different from surface

location using the Dominion Land Survey system.

**Drilling Operation** Enter the type of drilling operation being conducted (i.e., vertical,

directional, horizontal, slant, or natural drift).

Surface Location Enter the surface location of each well on the pad, if different from the

location supplied in Schedule 4: Step 7, as surveyed using the

Dominion Land Survey system.

Surface Coordinates Enter the north/south and east/west coordinates for the surface location

measured from the well to the outside boundaries of the section

containing the well and rounded to the nearest 0.1 m.

Surface Longitude

N/S E/W Enter "N" or "S," "E" or "W," as appropriate, to designate the

direction of measurement from the well to the section boundary.

Surface Casing Depth Enter the surface casing depth rounded to the nearest 0.1 m.

Projected Total Depth Enter the projected total depth to the nearest metre.

Enter the true vertical depth to the nearest metre if the well is expected True Vertical Depth

to deviate from vertical.

Ground Elevation Enter the surveyed ground elevation rounded to the nearest 0.1 m.

Enter "Alberta Crown," "Freehold," or "Both," as appropriate. Mineral Rights

Surface Latitude Enter the surface location latitude and longitude in decimals of degrees

to six decimal places based on the North American Datum 1983

(NAD 83).

# Directive 056: Schedule 4.3 Wells – H<sub>2</sub>S Information



Submission date:		AER application numl	ber:	Applicant's	Applicant's reference:				
1. H <sub>2</sub> S Release Rate Well Prognosis by Potential H <sub>2</sub> S Horizon									
Formation Code	Formation Name	Drilling Case* (m³/s)	Completion/Servi Case (m³/s)	icing S	Suspended/Producing Case (m³/s)				
* Include formation enco	untered at total depth whe	en completing drilling case	<u> </u> e.						
2. Cumulative H <sub>2</sub> S F	Release Rate (RR)								
Drilling Case:	m³/s Co	mpletion/Servicing Ca	se: m³/s	Suspended/P	roducing Case: _	m <sup>3</sup> /s			
1. Intermediate casin	g to be set				Yes 🗌 No				
2. Maximum H2S cor	ncentration encountere	d in well: ppr	m mo	l/kmol	%				
3. Calculated Emerg	gency Planning Zone	(EPZ)							
1. Distance to neares	st surface development					km			
2. Distance to neares	st urban centre					km			
3. A site-specific ERP is required									
3a. If YES, the ERP I		Yes 🗌 No							
4. Critical Wells Only									
All equipment and of IRP Volume 1	practices for the drilling	g of this well will meet	or exceed the requir	rements	Yes 🗌 No				

## 7.4.4 How to Complete Schedule 4.3: Well H<sub>2</sub>S Information

You must complete a separate Schedule 4.3 for each category C, D, and E well or well pad licence application.

For well pad licence applications, you must choose the maximum cumulative H<sub>2</sub>S release rate assessment values for the entire pad. You may choose to file separate well or well pad licence applications if you do not wish to accept the maximum cumulative H<sub>2</sub>S release assessment rate value for the entire pad.

Date Enter the date on which you will submit this schedule (e.g., 15 Jan

Applicant's Reference Enter your own file reference in the designated area (optional).

## Step 1: H<sub>2</sub>S Release Rate Well Prognosis by Potential H<sub>2</sub>S Horizon (Section 7.8.15)

You must address the H<sub>2</sub>S potential of all formations encountered by the well. If your analysis has determined that there is no potential to encounter H<sub>2</sub>S in a formation, you must demonstrate that the formation has been considered in your evaluation by recording zero for the release rate information.

For the purpose of the H<sub>2</sub>S evaluation, you must consider the formation encountered at total depth when completing the drilling case (i.e., evaluate all formations included in the 15 m overhole interval).

Formation Code Enter the formation code for each formation considered in your H<sub>2</sub>S

evaluation. Formation codes are available on our website.

Formation Name Enter the formation name for each formation considered in your H<sub>2</sub>S

evaluation. Formation names are available on our website.

Enter the drilling case H<sub>2</sub>S release rate in cubic metres per second **Drilling Case** 

> (m<sup>3</sup>/s) to four decimal places for each formation considered in your H<sub>2</sub>S evaluation. Include formation encountered at total depth when

completing drilling case.

Enter zero if you determine there is no potential to encounter H<sub>2</sub>S in

the formation.

Completion/Servicing Case Enter the completion/service case H<sub>2</sub>S release rate in m<sup>3</sup>/s to four

decimal places for each formation considered in your H<sub>2</sub>S

evaluation.

Enter zero if you determine there is no potential to encounter H<sub>2</sub>S in

the formation or the formation is not targeted for completion.

Suspended/Producing Case

Enter the suspended/production case H<sub>2</sub>S release rate in m<sup>3</sup>/s to four decimal places for each formation you plan to produce that was considered in your H<sub>2</sub>S evaluation.

Enter zero if you determine there is no potential to encounter H<sub>2</sub>S in the formation.

## Step 2: Cumulative H<sub>2</sub>S Release Rate (RR)

Drilling Case	Enter the maximum drilling case cumulative $H_2S$ release rate in $m^3/s$ to four decimal places, as determined by your $H_2S$ release rate assessment.
Completion/Servicing Case	Enter the maximum completion/servicing cumulative $H_2S$ release rate in $m^3/s$ to four decimal places, as determined by your $H_2S$ release rate assessment for the completion/servicing formations.
Suspended/Producing Case	Enter the maximum suspended/producing H <sub>2</sub> S release rate in m <sup>3</sup> /s to four decimal places, as determined by your cumulative H <sub>2</sub> S release rate assessment for the producing formations.

Enter the maximum cumulative H<sub>2</sub>S release rate values in the table provided.

1. Intermediate casing to be set YES means that intermediate casing will be set in the well.

> NO means that intermediate casing will not be set; therefore, the maximum cumulative H<sub>2</sub>S release rate should reflect the total potential flow from the well.

2. Maximum H<sub>2</sub>S concentration encountered in the well

Enter the maximum potential H<sub>2</sub>S concentration that you anticipate to encounter in the well in parts per million (ppm), moles per kilomole (mol/kmol), or percentage (%).

3. Anticipated suspended/ producing level

Check the level classification, based on the anticipated producing level of the well.

N/A means that in accordance with table 12 in *Directive 056*, the producing horizon suspended/producing H<sub>2</sub>S release rate is less than  $0.01 \text{ m}^3/\text{s}$ .

## **Step 3: Calculated Emergency Planning Zone (EPZ)**

Enter the maximum calculated EPZ for each release rate scenario (section 7.8.2):

**Drilling Case** Enter the maximum calculated EPZ for the drilling case in

kilometres rounded to the nearest 0.01 km.

Completion/Servicing Case Enter the maximum calculated EPZ for the completion/servicing

case in kilometres rounded to the nearest 0.01 km.

Suspended/Producing Case Enter the maximum calculated EPZ for the suspended/producing

case in kilometres rounded to the nearest 0.01 km.

Enter the number of occupied dwellings, public facilities, and places of business inside the calculated EPZ for each release rate scenario:

**Drilling Case** Enter the number of occupied dwellings, public facilities, and places

of business inside the calculated EPZ for the drilling case.

Completion/Servicing Case Enter the number of occupied dwellings, public facilities, and places

of business inside the calculated EPZ for the completion/servicing

case.

Suspended/Producing Case Enter the number of occupied dwellings, public facilities, and places

of business inside the calculated EPZ for the suspended/producing

case.

1. Distance to nearest

surface development

Enter the distance, in kilometres to two decimal places, from the

well centre to the nearest surface development.

If there is no surface development within the EPZ, a distance to the nearest town, village, or urban centre may be used. Where there is no EPZ, a search should be done to at least 1.5 km; if there is no

surface development within this distance, enter 1.5 km.

2. Distance to nearest urban

centre

Enter the distance, in kilometres to two decimal places, to the

nearest urban centre.

3. A site-specific ERP is

required.

YES means that a site-specific ERP is required.

NO means that a site-specific ERP is not required.

3a. If YES, the ERP has been submitted to the AER.

YES means that a site-specific ERP is required and has been submitted to the AER.

NO means that a site-specific ERP is required but has not been submitted to the AER.

## **Step 4: Critical Well Only**

1. All equipment and practices for the drilling of this well will meet or exceed the requirements of *Directive 036*, and IRP Volume 1.

YES means that for category E wells all equipment and practices for the drilling of the well will meet or exceed the requirements of Directive 036, and the current IRP Volume 1.

NO means that all equipment and practices for the drilling of this well will not meet or exceed the requirements of *Directive 036*, and the current IRP Volume 1 or we have issued a waiver.

If NO, you must attach a copy of the waiver, a statement that a waiver application has been made and approval is pending, or the waiver request to your application. We will review the circumstances and decide if an exemption is warranted.

#### **Additional Application Requirements Procedural** 8

#### 8.1 Background

Licence applications for oil and gas facilities located in the designated Tier 1 area will be considered through the *Directive 056* nonroutine application licensing process.

#### 8.2 Addressing Concerns/Objections

If there are residents located in the calculated EPZ and unresolved concerns or objections exist, the applicant must submit a nonroutine-participant involvement application that includes documentation to demonstrate that the requirements of section 8.3.2 in *Directive 056* were met.

#### 8.3 Application Requirements for the Peace River Area

Enter zero on Schedule 2 to confirm that there is no total continuous venting.

Record details on Schedule 2.4 on any compressor associated with the vapour recovery unit regardless of its size.

#### Appendix 1 **Sample Participant Involvement Summary Form**

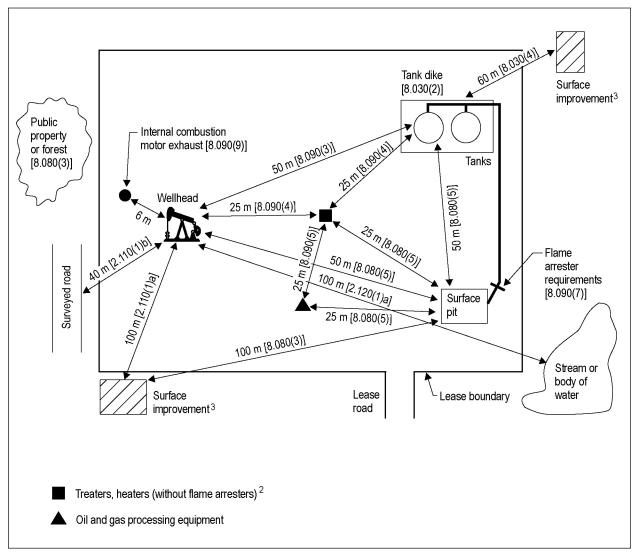
for (C350) Oil satellite @ 13-4-51-16W6M

(Enter type of application here)

Land location (Qtr-Section-Township-Range- Meridian)	Land interest (e.g., landowner, occupant, resident, local authority)	Name	Date of personal consultation	Date of confirmation of nonobjection	Consultation by phone or meeting	Notification by fax or registered or regular mail	Documents distributed and date of distribution	Date additional EnerFAQs distributed	Comments (see note)
NW 1/4- 4-51- 16W6M	Landowner	John Doe	Jan. 1, 2011	Jan. 17, 2011	Meeting		AER letter; project description Jan. 1, 2011	None requested	Declined copies of EnerFAQs No. 7 and AER brochure
NW 1/4- 4-51- 16W6M	Crown Disposition Holder TPA #0000	Trapper	Jan. 1, 2011		Phone	mail	AER letter; project description; EnerFAQs No. 7; AER brochure	None requested	Wait a min. of 14 days prior to submitting application

Note: The comments contained in the participant involvement summary submitted to the AER with respect to an application must not contain any information gathered for purposes other than the submission of the application. The comments should assist AER staff to verify compliance with participant involvement requirements and to determine where unresolved issues exist. Inclusion of information such as an individual's health issues, opinions of others, and personal information gathered to assist in emergency evacuation should not be included, since this document may become part of the public record.

#### Appendix 2 **Spacing Diagram**



- 1 The spacing requirements illustrated here are as specified in the OGCR sections indicated within square brackets alongside or underneath each measurement. "No person shall smoke within 25 m of a well, separator, oil storage tank or other unprotected source of ignitable vapour or on a rig or derrick at a well site" [section 8.120(1)].
- No flame type equipment shall be placed or operated within 25 metres of any process vessels unless, where such is applicable, the flame type equipment is fitted with an adequate flame arrester [8.090(5)]. No flame type equipment shall be located in the same building as any process vessel or other source of ignitable vapour, unless (a) the air intakes and flues of all burners are located outside the building, (b) relief valves, safety heads, and other sources of ignitable vapours are vented outside the building and discharged above roof level, and (c) the building is adequately cross ventilated [8.090(6)a,b,c].
- "Surface improvement" means a railway, pipeline, or other right-of-way, road allowance, surveyed roadway, dwelling, industrial plant, aircraft runway or taxiway, building used for military purposes, permanent farm building, school or church [1.020(1)28].

Compressors (electrically or engine driven) that are permanent and housed in a building must be located 25 m from wells, oil storage tanks, or unprotected sources of ignitable vapours. Compressors that are nonpermanent (on wheels or skid mounted) must be placed such that the air intakes and exhaust must be no closer than 6 m from a well. Nonpermanent electrically driven compressors must comply with the current edition of Code for Electrical Installations at Oil and Gas Facilities, Safety Codes Council (Alberta).

#### Appendix 3 Generic H<sub>2</sub>S Release Rate Assessment (Case Study)

The following example does not represent a specific location, but is presented to clarify the requirements.

## **Geological Discussion**

## **Proposed Well**

A well prognosis must be provided, but is omitted for the purposes of this generic example. The proposed exploratory well will be drilled to test a Leduc Formation anomaly in the Edmonton area. The well is located on a Paleozoic high with 10 metres (m) of structural relief relative to the surrounding wells. The applicant believes the well will have secondary Ellerslie member potential and expects both zones will contain oil.

As the proposed well will penetrate intervals deeper than the top of the Mannville Group and will terminate in the Leduc Formation, a comprehensive geological discussion of all intervals deeper than the top of the Mannville Group to the Leduc Formation is required (*Directive 056*, section 7.8.15.1). In this example, a discussion of reservoir and hydrocarbon potential would be required for the Ellerslie member and the Wabamun, Nisku, and Leduc Formations.

In this example, the release rate will be based on the potential of encountering 10 m of gas in the Ellerslie member, gas in the Nisku Formation, and 20 m of gas cap gas in the Leduc Formation. The formation thicknesses of the Ellerslie and Leduc have been determined from the data presented below and meet the requirement to adjust the H<sub>2</sub>S release rate to reflect the maximum potential thickness encountered.

# Geological Impact on the Release Rate

## Ellerslie Member

The Ellerslie member is a mixed sequence of sand and shale with potential for encountering hydrocarbon. The well in the adjoining section contains 20 m of wet sands. Since the well is anticipated to encounter the Ellerslie 10 m structurally higher, there is potential for encountering 10 m of hydrocarbon. The oil pools in the area have associated gas caps.

## Wabamun Formation

Based on the available information (production, well logs, perforation recoveries, and drillstem tests), the Wabamun Formation is a productive gas reservoir 3 km updip of the proposed well location. Recovery information from intervening wells updip and downdip of the proposed location indicate that the Wabamun Formation is wet. Therefore, it would be reasonable to conclude that this interval would be wet.

## Nisku Formation

The applicant does not identify the Nisku on Schedule 4: Well Purpose. Within 5 km of the proposed well there are two Leduc Formation producers in the area that are overlain by the Nisku intervals that tested gas. Therefore, Nisku Formation potential must be considered. To obtain five reliable data points, the search area required expansion to 10 km.

## Leduc Formation

Existing Leduc Formation production in the area indicates that some oil pools have associated gas caps. The potential for encountering a gas-bearing interval must be considered. Based on available well structure information, the maximum anticipated gas cap thickness is 20 m.

## Geological Mapping

As per the requirements detailed in <u>Directive 056</u> (section 7.8.15.2), a geological map must be provided for all formations that the applicant has identified or will identify on Schedule 4: Well Purpose, as its primary and secondary zones that may contain H<sub>2</sub>S gas. Maps are not provided in this case study. The following map descriptions are intended to illustrate examples of the annotated maps and are not intended to be inclusive. An applicant may provide any additional information considered appropriate to substantiate its interpretation. In this example the annotated maps must illustrate the following:

## For the Ellerslie Member

- productive Ellerslie pools in the area relative to the proposed well location
- the geological interpretation of the expected reservoir thickness at this location and the interpreted thickness of the reservoir within productive pools
- reservoir thickness of the offset well used as an analogue containing the 20 m of wet sandstone
- structure elevation of the proposed location illustrating the 10 m relative difference in elevation between the offset well and proposed location

## For the Leduc Formation

productive Leduc pools in the area relative to the proposed well location; the map should illustrate the geological interpretation of the expected reservoir thickness at this location and the interpreted thickness of the reservoir within productive pools

# **Engineering Discussion**

## Ellerslie Member

The Ellerslie produces both gas and oil from pools with concentrations of  $H_2S$  ranging from 0.0 to 2.0%. Some wells located within the pools have encountered associated gas caps that range from 2 to 6 m in

thickness. Engineering information indicates that AOFs range from 10 to 30 10<sup>3</sup> m<sup>3</sup>/day. The maximum AOF was measured at a well with 5 m of net pay. The AOFs are extrapolated from drillstem tests (DSTs) conducted over the gas portion of the pool. Adjusting the highest AOF for the anticipated pay in the proposed well results in an AOF of 60 10<sup>3</sup> m<sup>3</sup>/d. The highest H<sub>2</sub>S concentrations were reviewed and determined to be from wells that were oil producers when sampled and were, therefore, discounted. The next highest H<sub>2</sub>S concentration is 0.07 %. This was sampled from an oil well that has a DST over the gas zone. The H<sub>2</sub>S concentration of 0.07% was used, along with the AOF of 60 10<sup>3</sup> m<sup>3</sup>/d to arrive at a release rate of  $0.005 \text{ m}^3/\text{s}$ .

### Nisku Formation

The Nisku tested gas in some wells that are producing from the Leduc pools. Engineering information indicates that the H<sub>2</sub>S concentration ranges from 5 to 6.5% and that the AOFs range from 10 to 50 10<sup>3</sup> m<sup>3</sup>/d. An AOF of 50 10<sup>3</sup> m<sup>3</sup>/d and an H<sub>2</sub>S concentration of 6.5% were used to estimate a release rate of 0.04 m<sup>3</sup>/s. Although the analogue well was stimulated prior to testing, a skin of 0.0 was reported and therefore no correction for skin was required.

#### Leduc Formation

Producing Leduc pools have encountered associated gas caps containing H<sub>2</sub>S. Total reservoir thickness of the Leduc ranges from 10 to 20 m. Engineering information indicates that the H<sub>2</sub>S concentration ranges from 8 to 10% and that AOFs range from 70 to 170 10<sup>3</sup> m<sup>3</sup>/d. The maximum AOF was measured at a well with 15 m of net pay. Adjusting the AOF of 170 10<sup>3</sup> m<sup>3</sup>/d from 15 m of pay to 20 m of pay resulted in an AOF of 227 10<sup>3</sup> m<sup>3</sup>/d. The highest H<sub>2</sub>S concentration was from a gas sample listed with a sample point of "other." A review of the hard copy indicates that the sample point was a metre run; therefore, it will be used. Combining the AOF and the H<sub>2</sub>S concentration results in an H<sub>2</sub>S release rate of 0.26 m<sup>3</sup>/s. Since the analogue well used was stimulated (fractured) prior to testing, the AOF test data were reviewed to determine the reported skin. Using the skin of -4 resulted in a prestimulation AOF and an H<sub>2</sub>S release rate of 126 10<sup>3</sup> m<sup>3</sup>/d and 0.15 m<sup>3</sup>/s respectively.

### Cumulative Release Rate

Based on the review done for each formation, the drilling release rate for the well is 0.20 m<sup>3</sup>/s and the completion/servicing release rate is 0.26 m<sup>3</sup>/s. In this case, it is assumed that the correction for flow to surface up tubing is minimal and the suspended/producing release rate is 0.26 m<sup>3</sup>/s. In some cases an applicant may choose to make a correction for flow to surface up tubing. If the adjustment for stimulation was not done for the Leduc Formation, the drilling, completion/servicing, and suspended/producing release rates would have been reported as 0.31 m<sup>3</sup>/s.

# **Tabulated Data**

Tabulated data must be submitted to the AER with the complete documentation package prepared for each well licence application but are not shown here.

#### Appendix 4 Stepped-Approach to Licensing Gas Batteries

# **Gas Battery Licensing Matrix**

The table on the next page provides scenarios to assist companies in determining if the equipment proposed for installation requires the submission of a *Directive 056* facility licence application. When using this table, please note the following:

- Production scenarios are applicable to gas production facilities only.
- Single-well scenarios are defined as one wellbore with a single producing zone or multiple zones producing commingled within one wellbore.
- Multiwell scenarios will continue to be based on the production scenarios outlined in *Directive 056*:
  - multiple zones are producing from one wellbore, but the production remains segregated (i.e., not commingled in the wellbore);
  - production from a second well is pipelined to an existing single-well facility; or
  - multiple single-well facilities are operating within one lease.
- Scenarios for which a *Directive 056* application is not required must meet all measurement, accounting, and reporting requirements set out in the Oil and Gas Conservation Act and Rules and all applicable guides and directives published by the AER.
- All applications will continue to be required for compressors regardless of kW rating if the H<sub>2</sub>S content of the inlet gas is >10 ppm.

Case	Surface equipment	Single gas well H <sub>2</sub> S content <0.01 mol/kmol	Single gas well H <sub>2</sub> S content >0.01 mol/kmol	Multiwell gas H <sub>2</sub> S content <0.01 mol/kmol	Multiwell gas H₂S content >0.01 mol/kmol
1	Any combination of  ESD  Measurement  Emergency flare system  Line heater  H <sub>2</sub> S scavenger  Chemical injection  Separation  Dehydration	No requirement for a facility licence application	No requirement for a facility licence application	No requirement for a facility licence application	No requirement for a facility licence application
2	Any combination of  ESD  Measurement  Emergency flare system  Line heater  H <sub>2</sub> S scavenger  Chemical injection  Separation  Dehydration  AND  Compressor <75 kW	No requirement for a facility licence application	Directive 056 facility licence required for C340 (compressor station <1t/d sulphur inlet) or D440 (compressor station >1 t/d sulphur inlet)	No requirement for a facility licence application	Directive 056 facility licence required for C340 (compressor station <1t/d sulphur inlet) or D440 (compressor station >1 t/d sulphur inlet)

		Single gas well H <sub>2</sub> S content	Single gas well H <sub>2</sub> S content	Multiwell gas H₂S content	Multiwell gas H₂S content
Case	Surface equipment	<0.01 mol/kmol	>0.01 mol/kmol	<0.01 mol/kmol	>0.01 mol/kmol
3	Any combination of  ESD  Measurement  Emergency flare system  Line heater  H <sub>2</sub> S scavenger  Chemical injection  Separation  Dehydration  AND  Compressor >75 kW	Directive 056 facility licence required for B040 (compressor station <0.01 mol/kmol H <sub>2</sub> S)	Directive 056 facility licence required for C340 (compressor station <1t/d sulphur inlet) or D440 (compressor station >1 t/d sulphur inlet)	Directive 056 facility licence required for B040 (compressor station <0.01 mol/kmol H <sub>2</sub> S)	Directive 056 facility licence required for C340 (compressor station <1t/d sulphur inlet) or D440 (compressor station >1 t/d sulphur inlet)
4	Any combination of  ESD  Measurement  Emergency flare system  Line heater  H <sub>2</sub> S scavenger  Chemical injection  Separation  Dehydration  Compressor  75 kW  AND  Liquid hydrocarbon or produced water tanks	No requirement for a facility licence application	Directive 056 facility licence required for C310 (single well <1 t/d sulphur inlet) or D410 (single well >1 t/d sulphur inlet)	Directive 056 facility licence required for B020 (multiwell <0.01 mol/kmol H <sub>2</sub> S)	Directive 056 facility licence required for C311 (multiwell <1 t/d sulphur inlet) or D411 (multiwell >1 t/d sulphur inlet)
5	Any combination of  ESD  Measurement  Emergency flare system  Line heater  H <sub>2</sub> S scavenger  Chemical injection  Separation  Dehydration  Compressor  75 kW  AND  Liquid hydrocarbon or produced water tanks	Directive 056 facility licence required for B040 (compressor station <0.01 mol/kmol H <sub>2</sub> S) when compressor >75 kW is included	Directive 056 facility licence required for C310 (single well <1 t/d sulphur inlet) or D410 (single well >1 t/d sulphur inlet)	Directive 056 facility licence required for B020 (multiwell <0.01 mol/kmol H <sub>2</sub> S)	Directive 056 facility licence required for C311 (multiwell <1 t/d sulphur inlet) or D411 (multiwell >1 t/d sulphur inlet)

#### Appendix 5 **Surface Equipment Scenarios**

On-site surface equipment determines facility licence requirements. To assist applicants in determining when an application is required, surface equipment scenarios are given below.

#### Case 1

A new facility will comprise a free-water knockout, a separator, and a water disposal well. The inlet feed consists of oil (731 m<sup>3</sup>/d), water (1169 m<sup>3</sup>/d), and gas (66 10<sup>3</sup>m<sup>3</sup>/d), and the H<sub>2</sub>S content of the gas stream is 25 mol/kmol. Oil and gas are recombined and pipelined to another battery, while the water is measured and disposed of at the facility site.

Action: Application is required for a licence as a sour satellite with an injection/disposal component. The primary purpose of the facility is to handle oil production and test individual well production; the process description (recombining after measurement and pipelined elsewhere) matches as the current definition of a satellite, and it is operationally acceptable to have a water disposal component associated with a satellite.

#### Case 2

An existing licensed compressor station with 0.0 mol/kmol H<sub>2</sub>S is experiencing hydrocarbon dew point problems. A desiccant system is needed to produce pipeline spec gas. Condensate recovery will be less than 2 m<sup>3</sup>/d. No other changes will occur (e.g., emissions, category, or type).

Action: No application is required to install the dew point control system. It will remain a compressor station. The dew point control system is not recovering condensate volumes greater than 2 m<sup>3</sup>/d (threshold volume as per the "Gas Processing Plant" definition in *Directive 056*, so no change to the current category type will occur).

### Case 3

A Joules-Thomson (JT) unit is being installed for hydrocarbon dew point control.

Action: Provided the liquids recovery remains less than 2 m<sup>3</sup>/d and no additional emissions sources are generated, the facility would not be licensed as a processing plant. This applies to all desiccant and JT units.

#### Case 4

A new 50 kW compressor is added to an existing licensed facility with greater than 0.01 mol/kmol H<sub>2</sub>S.

Action: No application is required for the installation of one compressor less than 75 kW provided that the landowner has been notified and the facility continues to meet all applicable requirements.

Alberta Energy Regulator

Case 5

Production from a single gas well (with 20 mol/kmol of H<sub>2</sub>S) is routed through an inlet separator where gas and liquids are measured. The gas enters the gathering system, while the liquids are stored in a tank

until trucked out. Tank vapours are tied to a flare system.

Action: A single-well gas battery (category C or D) application is required. An application is not required

if the H<sub>2</sub>S content is less than 0.01 mol/kmol.

Case 6

An existing tank farm requires reconfiguration where one tank will be discontinued, a liner will be

installed in the dike area, and the tank farm perimeter will be decreased.

Action: No application is required; however, the facility must continue to meet the storage requirements

of Directive 055.

Case 7

A water/EOR injection/disposal component is being added to an existing licensed facility or well site.

Action: An application is required. If added to an existing licensed facility, its original category and type

are retained. If operating as a standalone process at a well site, it should be licensed as an

injection/disposal facility.

Case 8

Dehydration is being installed at an "exempt activity" facility where the H2S content is less than

0.01 mol/kmol and no compression or gas processing is occurring.

**Action:** No application is required.

Case 9

A new facility with 0 mol/kmol of H<sub>2</sub>S is being constructed and will include the installation of an amine

unit for CO<sub>2</sub> removal.

**Action:** Application required for category B gas processing plant.

Case 10

New flare or incinerator points are being added to an existing category C, D, or E facility.

**Action:** Application required to amend an existing facility.

### Case 11

Replacing existing flare or incinerator points with stacks of equal or greater height (or dispersion characteristics).

**Action:** No application required since there will be no change to the category type or no increase in emissions.

### Case 12

Surface equipment includes ESD, meter run, and line heater where the inlet gas H<sub>2</sub>S is less than 0.01 mol/kmol (10 ppm).

**Action:** No application required.

### Case 13

A line heater is added to an existing category C facility, and as a result, the total NO<sub>x</sub> emissions increase but the category type remains the same.

**Action:** Licence amendment application required.

### Case 14

A temporary electric compressor is required while the gas unit is under repair.

**Action:** No application required provided that the landowner has been notified and has no concerns.

#### Case 15

A single oil well battery with 0.0 mol/kmol of H<sub>2</sub>S is being modified to accommodate the increase in the H<sub>2</sub>S content to 1.0 mol/kmol, and a flare system will be added.

**Action:** Application required for a category C or D single oil well battery.

### Case 16

An existing single-stage compressor is reconfigured to two-stage compression.

**Action:** No application required. The company must advise the local AER field centre of the activity.

#### Case 17

An applicant intends to test an oil well (where the H<sub>2</sub>S content of the solution gas is 25 mol/kmol) for a three-month period.

Action: Application for a temporary category C or D facility is required, and a licence must be obtained before well testing may commence (see *Directive 060*).

### Case 18

An additional glycol pump is required at an existing category C facility.

**Action:** No application required to install process pumps; only the installation of injection/disposal pumps will require licensing.

#### Case 19

A free-water knockout (FWKO) is required at a satellite location.

Action: No application required to install the FWKO; however, if there is an injection/disposal component associated with the FWKO, an application is required.

#### Case 20

The solution gas volumes at a category C oil battery warrant conservation at this time. The operator proposes to conserve the solution gas by using it to generate electric power for the oil battery operations.

**Action:** The operator must receive approval from the Alberta Utilities Commission (AUC) for the installation of the equipment for the power generation portion of the project. The remaining equipment remains licensed under *Directive 056*, and the licence should include emissions from all sources on site, including power generation equipment. If selected for audit review, a copy of the AUC approval will be required.

#### Case 21

The solution gas volumes at an existing licensed oil facility warrant conservation at this time. The licensee proposes to conserve the solution gas by processing the solution gas stream and recovering liquids.

Action: The primary purpose of the facility is to handle oil production; it is the increase in solution gas volumes that warrants the addition of gas processing equipment. The licensee must amend its existing oil battery licence to reflect that conservation is now occurring and file a separate application (new) for the gas processing portion of the operation. In rare instances such as these, the AER will issue two separate licences for one surface location.

#### Case 22

A 56 kW water injection pump and water tank are being added to an existing facility.

Action: Application required to add the injection component.

#### Case 23

An applicant intends to construct a new multiwell oil battery that will require a nonregenerative sweetening process. The facility inlet is less than 0.1 t/d of sulphur.

**Action:** An application is required for a category C multiwell oil battery.

#### Case 24

A long-term flare test (more than 21 days) is being conducted on a CBM well (H<sub>2</sub>S content is 0.0 mol/kmol). Temporary facilities at the well site include a separator, measurement equipment, water storage tanks, and a flare or incinerator. Typical of CBM gas, there is no measurable H<sub>2</sub>S content.

Action: No application is required. However, the licensee should disclose its intention to conduct longerterm testing as part of the well application consultation process. It must complete public notification as described in *Directive 060*, section 3, prior to test flaring. If any concerns/objections to the longer-term test or test facilities are received, the AER may require an application.

#### Case 25

An operator intends to install a nonregenerative sweetening process at an upstream oil or gas facility to treat gas with less than 0.1 t/d sulphur inlet. Additional equipment includes storage tanks and separators.

**Action:** The surface equipment as described requires a licence as a category C oil or gas battery.

### Case 26

A single well is producing oil (<0.01 mol/kmol H<sub>2</sub>S) from one formation and is completed for dry gas (<0.01 mol/kmol H<sub>2</sub>S) from another formation. Production for the oil zone comes to surface segregated from the gas where there is equipment for separation and measurement, including a storage tank. The gas zone is effluent measured (no separation) and combined with the solution gas from the oil well.

Action: This facility should be licensed as a multiwell oil battery (B030). If there were more significant gas production equipment (e.g., compression, dehydration), the site could be licensed as a multiwell gas battery (B020).

#### Case 27

A series of gas gathering lines (<0.01 mol/kmol H<sub>2</sub>S) are brought to a single lease where gas is combined into a header system and into a 400 kW compressor. In the compressor design, there are suction scrubbers located ahead of the inlet to each stage of compression. The scrubbers drain into a drain tank on lease.

Action: This facility should be licensed as a compressor station (B040). The scrubbers take out any residual water of condensation that may form in the upstream pipeline before compression. If a separator were to be located upstream of the compressor, the facility would need to be licensed as a gas battery –

multiwell. If the only inlet to the compressor were an on-site single-well gas battery (<0.01 mol/kmol H<sub>2</sub>S) that included storage of produced water, the facility would still be a compressor station, as the single-well battery would be exempt from licensing.

#### Case 28

A new sweet single-well gas battery is being added to the same site as an existing sour single-well oil battery.

**Action**: The existing sour single-well oil battery should have a facility licence already. If the same licensee is adding a sweet single-well gas battery to the same lease, it should amend the existing sour single-well oil battery licence to include the gas well by filing a licence amendment application for a multiwell sour oil battery.

#### Case 29

An effluent meter for a sweet gas well at location A is being added to the inlet of an existing exempt gas battery (no licence required) at location B. Gas from well A will be tied into an existing pipeline at location B and no surface equipment will be located at A.

**Action**: Site B should be licensed as a sweet multiwell gas battery since it will be receiving and treating the production from two wells (A and B).

#### Case 30

A flare stack for emergency maintenance flaring is being added to an existing well site where the on-site equipment does not require a facility licence.

**Action**: No application is required. However, if the site is an existing licensed facility, the installation of a new flare stack would require an amendment to the existing facility licence.

### Case 31

An existing licensed compressor is being replaced with a compressor that has the same wattage and compressor drive power source.

**Action**: No application is required if the compressor is being replaced with a similar or smaller unit and the total NO<sub>x</sub> emissions will not increase. However, if the existing compressor is being replaced by more than one compressor with the combined total wattage remaining the same, an application is required due to the potential change in overall noise levels.

#### Case 32

A single-well battery with separation and water storage is being installed at a gas well with greater than 10 ppm H<sub>2</sub>S. A chemical that bonds with the H<sub>2</sub>S molecules will be injected into the gas stream in the

wellbore and captured in the water tank after separation. The water with the chemical will be disposed of in an approved disposal well.

Action: A facility licence for a single-well category C or D gas battery is required based on the H<sub>2</sub>S content of the raw gas as determined by a gas analysis. The use of an "add and capture" process to remove the H<sub>2</sub>S from the gas stream prior to disposition into a sweet natural gas pipeline does not change the categorization of the facility. Although the H<sub>2</sub>S will be entrained with the chemical, the product will still be received by the facility and needs to be appropriately managed.

#### Appendix 6 **Baseline Water Well Testing Requirements for Coalbed** Methane Wells Completed Above the Base of Groundwater Protection

Baseline testing of water wells is mandatory for companies wanting to drill or recomplete a well to produce coalbed methane (CBM) above the base of groundwater protection (BGWP). The testing will gather background information on the water well's production capability and water quality.

# **Overview of Application Process**

Directive 056 sets out the application, participant involvement, and technical requirements that must be met when applying for a new well licence. In addition, applications for a new licence for a CBM well to be completed above the BGWP require that

- the application be filed as a category B application (B140), with a code 22 for CBM;
- the Applicant File Number/Applicant Reference on Schedule 1 include the text "CBMABGW";
- applicants submit a cover letter confirming that the application as submitted is to drill and complete a CBM well above the BGWP and that, before applying, the offer to test all active water wells and observation wells was made for any wells within a 600 metre (m) radius of the proposed CBM well or the nearest water well within a 600 to 800 m radius if none is identified within 600 m;
- applicants identify all the active water wells and observation wells, taking into consideration all sources of information, including
  - government data/information,
  - ground truthing, and
  - contacting landowners/occupants; and
- applicants submit a survey plan or a map with the application that shows the location of all of these wells within the radius referred to above.

Latitude and longitude coordinates (NAD 83) of active water wells and observation wells are required on survey plans or maps.

Applications must include a cover letter and one of the following documents or be subject to closure:

- routine survey plan, including CBM water well information;
- separate survey plan with CBM water well information only; or
- map (GPS) with CBM water well information.

# Survey Plans/Maps for CBM Wells

In addition to the survey plan requirements indicated in *Directive 056*, applicants must indicate on the survey or attach survey plans or maps that show

- any active water well or water observation well within a 600 m radius of the proposed well or, if none is identified within a 600 m radius, the nearest water well or observation well within a 600 to 800 m radius and
- latitude and longitude coordinates (NAD 83) of active water wells and observation wells on survey plans or maps.

### **Environmental Requirements**

In addition to the requirements indicated in <u>Directive 056</u>, applicants must

- submit a cover letter as described above and
- identify and document the following for auditing purposes:
  - offers to test water and observation wells made prior to application, identifying the landowner or occupant and the date of offers;
  - the corresponding acceptances and refusals;
  - in lieu of testing, any water well test result provided by the landowner that complies with the AEP standard: and
  - if a landowner or occupant refuses to have their water well tested, written confirmation from the landowner that testing is not required; if unable to obtain written confirmation, the applicant must diarize the refusal, provide them with a copy of a notice describing this protocol, and retain a copy.

If the water well has been tested within two years and the landowner or occupant provides a copy of the test showing that it conformed to the protocols of the AEP standard, testing is not required unless requested by the landowner.

If an applicant cannot meet these environmental requirements, it must answer "No" to Schedule 4, Section 11: Surface Impact, question 2, and submit a nonroutine application.

### Water Well and Observation Well Testing

When conducting water well testing, applicants must

- test water and observation wells in accordance with the AEP standard before drilling the well and
- if the wells haven't been tested in the past two months, confirm that the water well testing data and analysis have been submitted to AEP and the landowner or occupant. If delays occur, confirm that the

applicant provided an explanation to AEP and the landowner or occupant and give the revised timeline for testing the water wells that the applicant has committed to.

## Audit Documentation—Additional Requirements

In addition to the requirements indicated in *Directive 056*, applicants must meet the following requirement:

If CBM above BGWP information is not on the survey plan, the applicant must submit a separate survey plan or map showing the locations of all the active water wells and observation wells within the radius referred to above. Latitude and longitude coordinates (NAD 83) of active water wells and observation wells are required on maps.

In addition to the requirements indicated in *Directive 056*, applicants must

submit documentation demonstrating that all the requirements for the implementation of the AEP standard have been completed prior to application. If water well testing was completed before applying, provide information confirming that those tests were completed in accordance with the AEP standard and that results were submitted accordingly.

## Compliance Assurance

In order to ensure that applications are correctly submitted, the AER will close any *Directive 056* CBM well licence applications that target completions above the BGWP that do not meet these new requirements. Additionally, audits will be conducted to ensure that applicants have met the requirements of both *Directive 056* and *Directive 035* and the AEP standard.