

## Acid Gas Progress Report Requirements

Operating, Backup and Suspended acid gas disposal wells require the permit holder to submit Progress Reports to the BC Energy Regulator (Regulator or BCER). Active and backup wells require a Report filed within 60 days after the end of each 6-month period. Suspended wells require an annual report.

The progress report summarizes well operations over the reporting period, highlighting any anomalies or trends of significance for awareness of both the operator and the regulator, and provides information to demonstrate that the conditions of the approval are being met. The Report may include data submitted to the Regulator through other reporting, but is still required to provide a single record all relevant analyses and source data.

### ACTIVE DISPOSAL WELL REPORT

#### Mid-Year Report

Due by August 30<sup>th</sup> each year, the mid-year report will contain data to the end of June of the operating year and must contain at least the following:

1. Details of any workover or treatment program done on the well with reasons for the workover, workover daily reports and results of the workover.
2. A summary table of monthly data for all pertinent operating conditions, from the start of disposal. See example Table 1.
3. Plot(s) of monthly injection volume and average tubing, casing and, if possible, bottom hole pressure versus time on an ongoing basis
4. A plot showing average daily rate, pressure and wellhead temperature.

#### Year-End Report

Due by March 1<sup>st</sup> of the following year, the year-end report will contain data to the end of December and must contain the following:

1. Details of any workover or treatment program done on the well with reasons for the workover, workover daily reports and results of the workover,
2. A discussion of any changes in injection equipment and operations,
3. A general review of the operation of the project including identification of problems, remedial action taken and results of the remedial action on project performance,
4. A copy of the results of annual packer isolation tests, both the disposal and any wells deemed observation well as a condition of the approval.
5. A copy of the results of annual SCVF tests – disposal and observation wells,

6. A copy of any gas analyses gathered as a condition of the approval. If the nearest wells do not belong to the acid gas well operator, it may be necessary to request the wells be sampled and the analysis shared with the acid gas operator. The Regulator expects that best efforts will be made by the acid gas operator and all producers in the vicinity to sample the wells as necessary to ensure safety for all, to submit the samples analyses to the BCER and to have the data publicly available. The progress report should summarize all publicly available data going forward.
7. A summary table of monthly data for all pertinent operating conditions, from the start of disposal. See example Table 1.
8. Plot(s) of monthly injection volume and average tubing, casing and, if possible, bottom hole pressure versus time on an ongoing basis,
9. A plot showing average daily rate, pressure and wellhead temperature.
10. A plot of current year daily casing pressure values and disposal rates, with an appropriate scale to show variation in pressures.
11. A phase envelope diagram for the maximum and minimum H<sub>2</sub>S and CO<sub>2</sub> range, indicating the average injection pressure and temperature operating conditions as wells as a tubing performance curve and hydrate line (as shown below)
12. A summary table of safety valve testing results with comparison to previous tests (a valve operational track record).
13. A summary table of ESD function testing results with comparison to previous tests (an ESD track record). Yearly calibration testing and records are sufficient.
14. A summary of accelerometer data for events that have been identified. If no events have occurred, note this on the report.
15. An evaluation of all monitoring done during the reporting period including corrosion protection, logs and any other data collected, all data collected from monitoring wells
16. A summary of any reservoir pressure tests conducted
17. A reservoir simulation indicating expected plume extent currently and at end of project. The simulation should, as much as possible, represent the reservoir acid gas plume size; extent of H<sub>2</sub>S, CO<sub>2</sub> and pressure influence. A reservoir simulation model such as those created through [Computer Modeling Group's GEM software](#), or similar, would be ideal. However, a simplified plume model taking into [consideration rock volume, porosity, hydrocarbon fluid properties and making use of planimetrics](#) will be sufficient.

Modelling can start with plume to-date, and projected to end of disposal project. If there have been samples collected at offset wells, the model can incorporate observed data and knowledge of the reservoir into the plume contours; then projected to end of disposal project. Identifying the disposal fluid movement is paramount to containment certainty.

1. A discussion of the overall performance of the project,
2. Remaining reservoir storage capacity/life calculation,
3. Any other reporting that is required as a condition of the approval.

Failure to provide a Progress Report by the required date, or omission of information detailed above, are grounds for suspension or termination of a disposal approval Order.

### **BACKUP DISPOSAL WELL REPORT REQUIREMENTS (Semi-Annual)**

1. Details of any workover or treatment program done on the well with reasons for the workover, workover daily reports and results of the workover,
2. A summary of any reservoir pressure test or fluid sample analysis conducted.
3. A copy of the results of annual SCVF tests,
4. A copy of the annual Packer Isolation Test
5. If a Subsurface Safety Valve or check valve (SSSV) is present, a copy of the annual function and leak testing results.
6. If continuous tubing and casing monitoring is operations, include a plot of current year daily casing and tubing pressure values with an appropriate scale to show variation in pressures.

### **SUSPENDED WELL REPORT REQUIREMENTS (Annual)**

1. Details of any workover or treatment program done on the well with reasons for the workover, workover daily reports and results of the workover,
2. A summary of quarterly suspended well inspection results.
3. A summary of H2S calibration dates.
4. A record of any H2S alarm activations – including any false alarms. This will establish the reliability of the alarm.

Sample Table 1

COMPANY NAME					APPROVAL NUMBER																
					Well Name															Monitoring Well	
Date	Vol Inject	Cum Vol	FVF	Vol Inject	Avg Wellhead Pr	Max Wellhead Pr	Max Casing Pressure	Calculated BHP	Inj Hours	Avg Daily Rate	Max Daily Rate	Wellhead Temp	%H2S	%CO2	%c1	Sulphur Inj	Cum Sulphur	CO2 Inj	Cum CO2 Inj	SICP	SITP
	103m3	106m3	Rm3/Sm3	103Rm3	kPa	kPa	kPa	kPa		e3m3/d	e3m3/d	C				Tonne	Tonne	Tonne	Tonne		
1/1/2015																					
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Disposal Summary this Report																					
Total																					
Average																					
Maximum																					
Disposal Summary to Date																					
Total																					
Average																					
Maximum																					

Sample Phase Diagram with Tubing Performance Curve and Hydrate Line

