

Appendix B: Detailed Engineering Application Requirements for Gas Plants

The following checklists highlight details of submissions required to assist in the review of gas plant applications submitted to the Commission. As part of an application for a gas plant, applicants must submit two paper copies of the following materials to the Commission's Kelowna office, in addition to completing an application in the Application Management System.

Summaries and Descriptions

- Dehydrator Engineering & Operations Sheet (DEOS).
- Description of the plant (i.e. DBM) and the proposed processes, including total processing capacity and design flow rates (inlet, recovered products, fuel gas, emissions).
- A plant material balance at design conditions.
- A gas processing plant proliferation review that includes the rationale for constructing the newly proposed plant after consideration of existing active plants and pipeline infrastructure feeding into active plants within a 50 km radius.
- If acid gas is to be discharged to a subsurface formation, a brief description of that proposal must be supplied along with a copy of the reservoir approval issued by the Commission.
- Summary of site surface run-off water management.
- Summary of inlet separator/slug catcher capacity considerations including maximum slug volume and level controls and shutdowns.
- Summary of prime mover starter systems and associated pump drives, and if natural gas is utilized, confirm that the vented gas is connected to the flare system or is conserved.
- Summary of why pressure relief devices (i.e.: PSV's) are not connected to the plant flare system, if applicable.
- Description of the provisions for facility security and fire prevention and protection.
- List of hazardous materials that will be stored and a description of the storage method.
- Total kilowatt rating of all compressor prime movers powered with natural gas.
- Total amount of H₂S and CO₂ emissions from all sources at the facility in tonnes per day.
- Description of how the plant has been designed to process gas from in-line testing of wells with potential liquid slugs and CO₂ spikes.

- Summary of plant supervision model including operator response time if not manned 24 hours per day.
- Noise Impact Assessment (NIA). Refer to the BC Noise Control Best Practices Guideline. Attach NIA Report to application.
- Summary of how light pollution has been identified, considered and mitigated.
- Plant blowdown philosophy and how consideration has been made to ensure that high pressure gas is not trapped in the facility during an emergency.
- Summary of the facility shutdown philosophy.

If the proposal includes a sulphur processing facility, include a written submission that:

- Describes the proposed control measures to limit the release of sulphur dust and entrained gases.
- Describes the proposed method to degasify produced liquid sulphur and to dispose of sulphur compounds and other vapours associated with such processes.
- Describes how sulphur volumes will be measured and reported.

Drawings, Diagrams and Maps

- Plot plan drawing.
- Complete plant piping and instrumentation drawings (P&ID's).
- Process flow diagram (PFD) of the plant and set of plant PFDs.
- Map(s) showing:
 1. Facility being applied for.
 2. All other existing plants and sulphur handling facilities at the site or in the area (within 50 km).
 3. All occupied dwellings and surface improvements in the area (within 10 km).
 4. All lakes, streams, and other surface bodies of water in the area (within 10 km).
 5. All settlements in the area (within 20 km).
 6. General land use (forested, farming, other) in the area (within 10 km).
- Metering block diagram (i.e.: metering schematic) detailing:
 1. All meters in the plant (production accounting and non-production accounting).
 2. Meter types (i.e. orifice, turbine, ultrasonic, coriolis).
 3. All production accounting meters in the plan on a list or table on the metering schematic. This will typically be a subset of all of the plant meters. This list should be cross referenced to the meters shown on the metering schematic by meter number and/or meter description. Also, types of

measuring devices used to determine levels and/or volumes in tanks or production vessels for production accounting purposes should be included, (e.g. level gauge, level transmitter, pressure transmitter inlet piping header to plant inlet separators).

4. All stream (plant and inlet header) block valves and normal operational state (normally open or normally closed), that can cause a change in fluid flow that will impact the production accounting model.
 5. Fuel gas lines (plant and/or field).
 6. Pilot gas and dilution gas streams to plant flare stacks. Include tie in points in the plant.
 7. All plant piping that can impact the production accounting model.
 8. Fluid injection streams. E.g. water, acid gas.
 9. All delivery streams.
 10. Flare stacks and incinerator stacks.
- Gathering block diagram (i.e.: gathering system schematic) detailing:
 1. Type of primary well production (oil or gas).
 2. Wellsite locations, indicated by the legal surface location.
 3. Wellsite configuration (three phase separation, two phase separation, wet meter). This may be typical if all wellsites are the same.
 4. All field meters and types. E.g. orifice meter, turbine, etc.
 5. Types of measuring devices used to determine levels and/or volumes in tanks or production vessels for production accounting purposes.
 6. All field fuel gas streams and meters. If no meter is installed, indicate how volume is determined for reporting purposes for a given stream.
 7. Field flare streams. If no meter is installed, indicate how volume is determined for reporting purposes for a given stream.
 8. All field process equipment. E.g. compressors, separators, tanks, etc.
 9. Gathering system offload streams that permit volumes to deliver to processing that is different from the plant applied for.
 10. Gathering system onload streams that permit volumes to be received from other reporting facilities, gas plants or gathering systems.
 11. Return fuel gas streams from a plant, facility or other processing equipment.
 12. Gathering system block valves and piping that may impact the production accounting model.

13. All piping streams block valves and normal operational state (Normally Open or Normally Closed) that can cause a change in fluid flow that will impact the production accounting model.
14. A composite analysis of the inlet gas under normal operating conditions and the maximum H₂S content of the raw inlet gas in moles per kilomole.

Plans

- Fracture sand management plan. Include the strategies incorporated to capture and monitor for fracture sand returns and associated erosion from the well to the plant sales.
- Fugitive Emissions Management Plan for the proposed plant.
- Air monitoring plan. This may include passive or real time plant/perimeter detection for H₂S and/or SO₂, wind speed and direction monitoring.
- Storage tank secondary containment plans (production and non-production storage). Include location of truck loading lines.
- Emergency Response Plan or summary of progress to date, with a timeline for ERP submission.

Flare/incinerator/vent stack data submission. This submission must include:

- Stack height and diameter.
- Predicted normal and maximum emissions of SO₂ /hr.
- Rate and calculated volume of potential H₂S releases.
- Results of gas/vapour dispersion modeling for lit and unlit conditions.
- Maximum expected rates for continuous flaring, and volumes/compositions of flared streams.
- Maximum stream velocity in metres per second at the flare metering point.
- Description of the flare metering configuration proposed to measure both.
- Purge gas within the meter range and accuracy lower limit.
- Blowdown situation, within the upper limit of the manufacturers specifications and required published Commission uncertainties.
- Description of how plant processing will conserve gas volumes by avoiding tie-in to the flare and/or incinerator stack (vapor recovery considerations).
- Description of how plant ESD procedures will limit emissions.
- Description of the flame-out detection system configuration for the flare stack/incinerator equipment, and if it is set up to alarm and/or shutdown process.

- Appropriate isopleths for the various levels of H₂S and SO₂.
- Description of the design to prevent flashback of flame back into process (e.g.: positive pressure system, flame arrestor).
- Description of how the facility complies to API Standard 521, if applicable