

6.0 EXPORT PIPELINE SYSTEM

The Point Thomson Export Pipeline will be designed and, built according to proven North Slope design criteria, and operated as a common carrier system. The export system will consist of a 12-inch carbon steel pipeline approximately 22 mi long to transport condensate from the CPF to a connection point with the existing Badami pipeline. The pipeline will have a maximum allowable operating pressure (MAOP) of approximately 2,060 psi gauge (psig). Pig launchers and receivers will be included on this pipeline. From the tie-in point, the existing 12-in. Badami pipeline extends another 25 mi to tie in with the Endicott pipeline, which extends another 10 mi before connecting to TAPS Pump Station No. 1 at Prudhoe Bay.

The proposed Point Thomson Export Pipeline will be supported on VSMs complete with “Z” type offsets to allow for thermal effects. The VSMs will be designed and installed to provide minimum separation of 5 ft between the bottom of pipe, including any wind-induced vibration suppressors if required, and the tundra surface. Design and installation of the VSMs will be completed using standard ExxonMobil and North Slope pipeline specifications and procedures. The VSM design will be performed during the pipeline detailed design. Table 6-1 provides the engineering data as developed to date for the export pipeline.

6.1 ROUTE SELECTION AND ROUTE

The pipeline route was optimized to:

- Minimize pipeline encroachment into high-value vegetation areas,
- Minimize pipeline encroachment over small ponds and standing water,
- Minimize pipeline stream crossing by selecting those portions of the stream that are relatively narrow,
- Minimize pipeline bends, and
- Share the same VSMs as the gathering pipeline between the CPF and the West Well Pad.

The route, as shown in Figure 6-2, starts at the CPF Pad in Section 3, T9N, R23E, and Section 34, T10N, R23E and ends at the point of connection with the existing Badami sales oil pipeline in Section 8, T9N, R20E.

TABLE 6-1
ENGINEERING DATA SUMMARY FOR THE POINT THOMSON EXPORT PIPELINE

CATEGORY	DATA
Transported Substance	Liquid hydrocarbon (condensate)
Substance Specific Gravity (at standard conditions)	0.7 to 0.9 (water = 1.0)
Maximum Allowable Operating Pressure (MAOP)	2,060 psig
Pipeline Outside Diameter	12.750 inches
Pipeline Wall Thickness	Mainline: 0.281 inch Station piping & valve and trap sites: 0.375 inch
Pipe Material Grade	API 5L X65
Design Hoop Stress Factor	Mainline: 0.72 Station piping & valve and trap sites: 0.60
External Coating	Mainline: Polyurethane foam (PUF) insulation with galvanized metal outer jacket Buried Road Crossings: Fusion bonded epoxy and PUF insulation with galvanized metal outer jacket
Cathodic Protection	None
Minimum Hydrostatic Test Pressure & Duration	4 hr at minimum pressure of 125% MAOP and 4 hr at minimum pressure of 110% MAOP in accordance with U.S. Department of Transportation regulations (49 CFR, Part 195).
In-line Inspection Capability	Yes
Valves (To be determined)	Mainline: Actuated isolation valves at the inlet and outlet of the pipeline Check: None
Other Facilities Badami Meter Badami Line Heater Pigging Facilities Pumps Point Thomson Meter	Meter at Badami CPU on or adjacent to existing pad Heater at Badami CPU on or adjacent to existing pad Pig launcher facility at Point Thomson CPF and pig receiver at Badami CPU on or adjacent to existing pad. Pumps at the Point Thomson CPF Meter at the Point Thomson CPF
Pipeline Design Maximum Throughput	100,000 bbl/day
Pipeline Design Temperatures	Maximum: 200°F Minimum: -50°F
Pipeline Construction Mode(s)	Mainline: VSMs, minimum 5-ft clearance between bottom of pipe and tundra surface Road Crossings: In casings through road bed gravel (see Figure 6-1) Creek and Water Crossings: VSMs
Design Code/Regulation	49 CFR, Part 195
Minimum Operational Life	30 years

The entire length of the pipeline right-of-way (ROW) will cross lands owned by the State of Alaska. Figure 6-2 shows the approximate centerline alignment of the proposed route. The width and depth of stream or water body crossings will be determined and provided after field survey; however, all stream and water body crossings from Point Thomson CPF to the Badami tie-in will be constructed above-grade using VSMs. No below-grade river or stream crossings are planned, nor are they necessary because the streams traversed by the pipeline are small.

6.2 PIPELINE MATERIAL

As shown on Table 6-1, API 5L X65 pipe material will be used for the pipeline.

6.3 PIPELINE CAPACITY

As shown on Table 6-1, the pipeline is designed for a maximum throughput of 100,000 bbl/day.

6.4 PIPELINE INTEGRITY MONITORING SYSTEM

The proposed pipeline design will include a computational leak detection system in accordance with federal and state requirements. The system will perform real-time monitoring for pipeline leakage and will likely rely on operating data such as liquid hydrocarbon flow and pressure meter data. Meters will be provided on each end of the export pipeline (i.e., one at the CPF and one at the tie-in to the Badami pipeline). This information will be used to compute mass-balance calculations that will be able to detect a leak volume less than 1% of the daily throughput. The operating data will be continually updated, gathered from field instruments, and compiled in the host computer via the supervisory control and data acquisition system. Specific hardware and software options for the leak detection system will be evaluated and selected later in project design.

Mainline valves will be installed at the pipeline inlet and outlet in accordance with the requirements of 49 Code of Federal Regulations (CFR), Part 195. Shutdown procedures will be developed to meet regulatory and industry standards. Pig launchers and receivers will be installed, and pipeline operations will include periodic in-line inspections using intelligent pigging tools to collect baseline and subsequent data sets for monitoring the condition of the pipeline over its operating life.

As discussed in Section 12, the Point Thomson Oil Discharge Prevention and Contingency Plan (ODPCP) will be developed and implemented in accordance with Alaska Department of Environmental Conservation (ADEC) regulations (18 AAC 75), which include plans for prevention of and response to any spills of oil, fuel or other substances. The ODPCP will provide specific spill containment and prevention measures, equipment needs, and response strategies. This ODPCP will address oil spill prevention and response to protect public health and safety during pipeline operation. Measures to protect public health and safety during pipeline operation include an ongoing inspection and maintenance program.

6.5 CORROSION MANAGEMENT

An internal protective coating is not necessary for the pipeline because condensate transported in the line will have low water and sulfur contents and thus would not cause corrosion of the inside wall of the pipelines. The addition of corrosion inhibitors to the fluid streams may be considered if required by the ultimate fluid properties and operating conditions. Corrosion coating of the export line to address external corrosion is being considered; however, it should be noted that cathodic protection for external corrosion control is not applicable for aboveground pipelines.