

Table of Contents

	<u>Page</u>
23.0 PIG LAUNCHERS AND RECEIVERS	1
23.1 Introduction	1
23.2 Codes and Criteria	1
23.2.1 Codes.....	1
23.2.2 Criteria	1
23.3 Design Procedures.....	2
23.3.1 Launchers and Receivers	2
23.3.2 End Closures	3
23.3.3 Pig Detectors	3
23.3.4 Valves	3
23.4 Location.....	3
23.5 Figures and Tables	3

23.0 PIG LAUNCHERS AND RECEIVERS

23.1 INTRODUCTION

This section contains design criteria applicable to the launchers and receivers for the gas pipeline system to permit on-line pigging. Criteria are presented for the material requirements and the design service conditions.

The design procedures describe the features that will be included in the launcher and receiver facilities to permit pigging operations.

The location of the facilities will be dependent upon the overall operating philosophy that is under development.

23.2 CODES AND CRITERIA

23.2.1 Codes

- Code of Federal Regulations, Title 18 – Conservation of Power and Water Resources
- Code of Federal Regulations, Title 49 - Transportation, Part 192, Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards.
- American Petroleum Institute, “Specification for Pipeline Valves,” API Spec 6D.
- American National Standards Institute, “Steel Pipe Flanges and Flanged Fittings,” ANSI B16.5.
- American Society of Mechanical Engineers, Boilers and Pressure Vessel Code, Section VIII, Pressure Vessels (for end closures).
- Federal Right-of-Way Grant for the Alaska Natural Gas Transportation System Alaska Segment, Serial No. F-24538 (December 1, 1980), as such may be updated and/or amended from time to time.
- Federal Energy Regulatory Commission conditional certificate of public convenience and necessity, issued on December 16, 1977, as such is finalized

23.2.2 Criteria

- Maximum design operating gas pressure and minimum design operating gas temperature in accordance with the project design basis.
- Minimum design ambient temperature of -50°F.
- Design factor for the pig launcher and receiver assemblies will be 0.6.
- An adequate level of fracture toughness will be specified to provide fracture initiation resistance of the base materials and welds at the design temperature. The final

material selected will provide adequate ductility at the design conditions to withstand fracture initiation based on accepted fracture mechanics analysis.

- Maximum field hydrostatic test pressure to correspond to the pressure that produces a hoop stress of 110% specified minimum yield strength (SMYS) of the mainline pipeline.

23.3 DESIGN PROCEDURES

23.3.1 Launchers and Receivers

- Launchers and receivers will be sized to run the largest instrument type pigs available.
- Barrels will have a minimum nominal diameter of 6 inches greater than the mainline size.
- Access for loading and unloading pigs will be through a quick-opening end closure.
- The facility will permit pigs to be run with the initial compressor stations on or off-line without interrupting the operation.
- Facilities will be provided to collect any liquids received in traps.
- For aboveground components, the materials will be suitable for -50°F. Heat tracing may be considered as an alternative, subject to material evaluations.
- Trap isolation valves may be buried or aboveground. Aboveground valves will be subject to material requirements being met.
- A shelter may be provided to cover the area between the launcher and receiver enclosing the ends of the traps. In this event, overhead lifting facilities lighting and equipment access will be provided. This facility will serve mainly as a shelter and will not necessarily require permanent heating.
- Facilities will be suitable for commissioning of the mainline.
- High strength material may be specified for trap barrels in order to keep barrel wall thickness to a minimum.
- Barrel outlet connections 2-inch and larger, such as the gas outlet, kicker line, drains and blow-offs, will be extruded.
- Instrument connections will be of the “Weld-O-Let” type.
- Supports will be designed to evenly distribute the load of the trap assembly and the end closure.
- A purge system will be provided for removing gas from launcher/receiver assemblies prior to closure opening. Venting from launcher/receiver assemblies will be provided.
- The pressure rating of fittings will equal or exceed that of the matching pipe.

- Fittings manufactured and tested in accordance with the final purchase specification will meet or exceed the requirements of MSS SP-75-1998. Fittings smaller than 16 inches will conform to the design and dimensional requirements of ANSI B16.9.

23.3.2 End Closures

End closures will be designed to meet the requirements of ASME Section VIII. They may be motorized with alternate provisions for one-man manual operation. As a safety feature, the end closures will be specified to ensure that the closure cannot be opened if the barrels are under pressure.

23.3.3 Pig Detectors

Where specified, pig detectors will be of the mechanical trigger or plunger type, unidirectional, for local and remote indication. Pig detectors will be located to indicate successful receipt and launching of pigs. Pig detectors mounted on the buried mainline will be supplied with an extension to maintain the signal mechanism a minimum of 2 feet above finished grade. The signal mechanism will be capable of interfacing with the station control logic to initiate station-operating sequences necessary for the receipt of launching of pigs.

23.3.4 Valves

Isolation valves at receivers and launchers will be 48-inch ball valves with full bore to match the inside diameter of 48-inch OD steel pipe. Bypass and kicker line valves will be 16-inch. Details will be included in the purchase specification.

23.4 LOCATION

The pipeline system will contain a launcher assembly at the Prudhoe Bay metering station and a launcher/receiver assembly at each compressor station and at the Canadian border metering station. Additional launchers and receivers may be installed at other sites dependent upon the overall philosophy requirements. Launchers and receivers will be located within a separately fenced area adjacent to the compressor station yard. Routine access will be via the station yard.

23.5 FIGURES AND TABLES

See Section 31 for Compressor and Metering Station design.