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33.0 COMMUNICATIONS

33.1 INTRODUCTION

This section contains considerations applicable to the development of scalable, long-term communications solutions. These solutions involve the use of network products that include fiber optics, microwave, satellite, two-way radio, local and wide area networks, process control and the Supervisory Control and Data Acquisition System (SCADA) interfaces, air navigational aids, and where available, existing commercial services. For critical systems, fully redundant route diversity is emphasized to ensure safe, continuous communications operation.

33.2 CODES AND CRITERIA

33.2.1 Codes

- Code of Federal Regulations, Title 18 – Conservation of Power and Water Resources
 - Code of Federal Regulations, Title 49, Transportation, Part 191, Transportation of Natural and Other Gas by Pipeline; Annual Reports, Incident Reports, and Safety-Related Condition Reports
 - Code of Federal Regulations, Title 49, Transportation, Part 192, Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards
 - 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

33.3 DESIGN APPROACH

The project communication needs will vary as the project progresses to start-up and then transitions to operations. The communications requirements and general approach of the three distinct phases of the project are addressed in the sections:

- Phase I – Pre-construction – Section 33.3.1
- Phase II – Construction – Section 33.3.2
- Phase III – Operations – Section 33.3.3

Telecommunications system design will be phased so that equipment purchased and systems deployed for the engineering and construction phases of the project can be redeployed into the permanent telecommunications infrastructure for operations. Additional equipment or system needs for pre-operations can provide system redundancy or operational spares.

33.3.1 Phase 1 – Pre-Construction

Service locations would include Alaska, Canada, the Contiguous 48 States and worldwide.

Voice services will include traditional telephone with voice messaging, cellular, and personal paging.

Video services will be considered between project locations to improve engineering collaboration and facilitate project progress and review meetings. Integrated Services Digital Network (ISDN) and Local Area Network (LAN) technology can provide this connectivity. Availability and performance will determine which method is selected.

Data support for access to the internet, email, drawing/documentation, and material management will be provided to each project location via a network firewall at the project office. All project data will be secured behind this firewall and access will be permitted as needed. A suite of core desktop applications, common to the project participants, will be identified to improve interoperability. Vendor-specific applications will be supported as determined by the Project Team. The LAN will be Transmission Control Protocol / Internet Protocol (TCP/IP) Ethernet while the Wide Area Network (WAN) may use frame relay, Asynchronous Transfer Mode (ATM) or point-to-point synchronous bandwidth.

Required equipment will be provided and on site technical support will be available for maintenance of these systems and services.

Pipeline reconnaissance activity (e.g., geotechnical verification) will require the ability to communicate both locally (1 to 10 miles) and to the project design offices (10 to 200 miles or more). Radios would be installed in vehicles; hand-held equipment would be supplied to reconnaissance crew management and key personnel.

33.3.2 Phase 2 – Construction

Project fabrication sites required in Alaska for final inspection, assembly and construction support will be supplied with the same voice, video and data services, and support as the project office. Telecommunications infrastructure may be inadequate or nonexistent at the site, requiring additional equipment to meet the needs of the project. In some cases private infrastructure may need to be installed at locations where public telecommunications infrastructure does not exist.

Land Mobile Radio (LMR), known as “two-way,” will be required at the fabrication sites to mobilize manpower and materials efficiently. Radios would be installed in vehicles; offices and hand-held equipment would be supplied to site management and key personnel.

Other systems/activities such as process control, functional checkout, quality assurance/control, and document control have special network requirements that will be supported at the site during construction.

Field construction sites will require all of the services described for the project fabrication sites. Additionally, construction offices will require connectivity to the project office and fabrication sites to support Project Management, Project Control, engineering staff, Quality Assurance/Quality Control (QA/QC), Health, Safety, and Environmental (HS&E), maintenance, and document control. It is anticipated that onsite camps and other project

lodging will be equipped with telephone service and television receive-only (TVRO), known as “satellite TV”.

Emergency medical care personnel will be supplied special services as requested.

Other construction/construction support activities that will require communications services include road and pad construction, support aircraft, remote airfields, and security.

Pipeline construction crews will require the ability to communicate both in the work span (1 to 10 miles) and between spans (10 to 200 miles or more). The permanent two-way infrastructure, discussed in “Phase 3”, may be placed in service at this time to support this requirement as well as serve future operational requirements. Required material will be provided and onsite technical support will be available for maintenance of these systems and services.

33.3.3 Phase 3 – Operations

The permanent telecommunications network will carry all of the services described above over a fault-tolerant, end-to-end backbone network comprised of private and public services. Technologies implemented may include optical fiber, microwave radio, satellite, and two-way radio.

Process control and emergency shutdown (ESD) service will be locally controlled and will continue to be active in the event of communication failure.

Critical data will be backed up at the control center on a regular basis.

Engineering and Operations and Maintenance (O&M) support will be available at the control centers 7 × 24 to assist field technicians. System spares will be warehoused at the control centers for expedited shipment to the field facilitated by the communications system.

Airports that are essential to ongoing operation and maintenance of the facilities will be equipped with weather observation, air-to-ground communications, lighting, and navigational aids to permit aircraft operations in inclement weather.