NORTH SLOPE TELECOM, INC.

Remote Communications: Engineered for Alaska and Beyond

90,000 BBL / Day Oilfield Telecommunication Systems

NSTI was selected as the primary telecommunications contractor to design and construct all of the permanent telecommunication facilities at the Alpine oil field on the North Slope of Alaska. NSTI worked closely with the customer's telecommunication engineers to develop the necessary systems needed to meet the operational requirements. NSTI then prepared detailed design and installation documents, submitted equipment bills of materials to purchasing, and received and staged all telecommunications materials in NSTI's Anchorage warehouse.

Location:

North Slope of Alaska

NSTI's Role:

- Site survey
- System design
- Materials acquisition and warehousing
- Install, commission, and maintain all systems
- Prepare turnover documentation

Systems:

- DC power distribution
- Fixed microwave
- Land mobile radio
- Radio digital paging system
- Ground-air radio
- Oil spill radio
- FCC licensing
- Frequency plan
- Dispatch radio consoles
- 1,000 line PABX
- Cable TV
- Surveillance video
- Public address
- Automation REIMs
- Inside plant wiring

As individual facilities were completed, NSTI shipped material packages and sent installation crews to the site to install and commission the appropriate telecommunication systems. In select cases, NSTI coordinated the work of individual vendors to commission and place their systems online. Detailed as-built documentation was then prepared and submitted to the project as part of a formal turnover process. The turnover package consisted of 15 volumes of vendor documentation and inventories and 15 sets of technical drawings totaling more than 600 drawings.

NSTI designed an extensive two-way radio system to support the Alpine production facility. Because the Alpine pad facilitates a large workforce across a very limited area served by a single 115 foot communication tower, special attention was paid to radio interference mitigation measures. The hundreds of hand held and mobile radios that operate on sixteen repeater and simplex radio channels required extensive interference analysis calculations and careful frequency selection.

NSTI designed and installed a unique cable TV system for the Alpine camp that derives its programming sources from other customer facilities, 30 miles east of Alpine at Kuparuk. The Kuparuk head end system is multiplexed onto spare fiber optic lines running to Alpine, eliminating the need for separate satellite antennas and receivers at Alpine. Custom messages and local weather conditions, including temperature and wind chill are distributed on a separate cable channel to improve employee awareness of weather related work hazards.

NSTI designed, constructed, and obtained UL certification for a single cabinet "Remote Electronics and Instrumentation Module" prototype. The prototype contained a common set of all telephone, paging, network, and instrumentation equipment and interconnections needed by any Alpine process control module. The prototype was then mass-produced, UL certified, and installed in 13 Alpine production modules, eliminating the need for individual designs, certifications, and documentation.

A 115-ft communications tower was designed and erected at Alpine to support a variety of two-way radio and microwave system antennas. The tower vendor supplied special-order, cold weather steel for all highly stressed tower parts.

Other systems engineered and installed by NSTI include:

- 1,000 line PABX telephone system
- Radio control consoles for use by plant operators and security
- Surveillance video cameras that provide the operator with remote control views of essential facilities such as the flare pit and fuel loading docks
- Public address audio paging system
- Radio digital paging system capable of collecting plant alarms and directly paging the responsible maintenance staff
- Corporate networking infrastructure for both business unit and automation/process control use
- Digital microwave links connecting Alpine with the Kuparuk field and the village of Nuiqsut
- A special digital microwave link was installed between the Alpine communications center and the drilling rig, which had to move hundreds of yards up and down the well row, and to other offsite drill pads. Telephone and network distribution umbilical cables were installed to allow rig movements and prevent damage to the flexible connections.

As each system was placed in service over the four-year project, NSTI performed all necessary preventive and routine maintenance. During the final months of the project, NSTI trained customer employees on Alpine systems and then turned maintenance responsibilities over to the existing Kuparuk telecom maintenance staff.

North Slope Telecom, Inc.

(907) 751-8200

info@nstiak.com

www.nstiak.com