

PIPELINE RECONFIGURATION PROJECT OVERVIEW



TAPS Pump Station Upgrades Approved Most Significant Investment Since Construction

Alyeska Pipeline Service Company has received approval from the Owners of the trans Alaska Pipeline System (TAPS) to invest over \$250 million in a project to upgrade the pipeline's pump stations. The project, called Pipeline Reconfiguration, is one of the most significant investments since the construction of TAPS and involves installing electrically driven crude oil pumps at four critical pump stations combined with increased automation and upgraded control systems.

The four pump stations to be upgraded will be required for pipeline operations at any flow rate. Included is a dramatic reduction of utility systems and associated facility infrastructure that allows electrified stations to be operated remotely without on-site staff. Electrified pump stations will be manufactured, modular units that are designed to be scalable for changes in pipeline throughput. Pump capacity can be modified in about two years to accommodate significant throughput increases – long before new fields can be developed.



The 800-mile trans-Alaska pipeline currently transports nearly 1 million barrels per day of crude oil across the Alaskan wilderness to the port town of Valdez. Total throughput to date is over 14 billion barrels.

The new pipeline control systems and automation and electrification technology are used in the pipeline industry all over the world, including cold weather climates similar to Alaska. This project will create a simplified, fit-for-purpose pipeline system that is less expensive to operate.

Changes will allow work and costs to be removed from the transportation system. The project is expected to reduce overall operating costs by approximately 10 percent annually and eliminate maintenance costs for equipment and facilities that will no longer be required. At least 75 buildings can be placed in non-operational status, simplifying operations and eliminating required maintenance. In addition, maintenance requirements for the new equipment will be much less than that required for the current equipment. There will be job reductions associated with the project that will be phased in over the two- to three-year life of the project.

The current high standards for safety, operational integrity and environmental performance will be maintained. The use of modular, self-contained pump stations reduces the risk of small spills (i.e., turbine fuel, diesel, and hydraulic fluid), and there will be a significant reduction in air pollutants and solid waste.

The new equipment is much more efficient and uses modern pollution control technology. Additional environmental improvements will come from reduced domestic and industrial waste generation and reduced potable water usage.

The goal of the project is to extend the economic life of the pipeline through increased efficiencies, while maintaining the highest safety, integrity and environmental standards. The use of modern technology and automation will maintain current pipeline reliability at a lower cost while allowing more flexibility for future increases or decreases in throughput. A more cost efficient transportation system will better position Alaska to compete for investment capital in a global oil market.

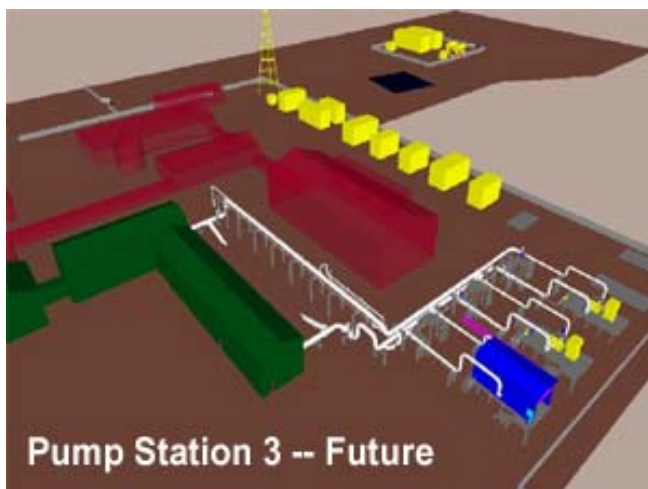
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Project History and Scope

TAPS was originally designed for twice the current throughput and has been operated for more than 25 years using personnel to monitor pipeline station operations. Alyeska has been engaged in numerous engineering studies to identify ways to improve operational efficiency through technology upgrades, increased use of automation and reduction of infrastructure.

The “strategic reconfiguration” pipeline study was formalized when an Alyeska and a TAPS Owners planning team jointly examined eleven proposed alternatives. That initiative was complete in 2002 with a recommendation to further evaluate the installation of electrically driven crude oil pumps combined with increased automation and upgraded control systems. The conceptual study verified the viability of the proposed concept and paved the way for preliminary engineering in 2003. The parameters for preliminary engineering included satisfying the following objectives:

- Maintain safety and operation integrity.
- Improve operational efficiency and environmental performance.
- Establish scalability to efficiently meet future throughput requirements, whether higher or lower than current flow rates.
- Maintain required reliability through use of technology.
- Use proven technology currently in use in the industry.



This illustrates the impacts to process equipment at Pump Station 3. Modular pumping units can be added for changes in pipeline throughput.

Pipeline Reconfiguration is now moving into the detailed engineering and implementation phase, planned for 2004 and 2005. The scope of work includes:

- Power generation upgrades, electrification and automation of Pump Stations 1, 3, 4 & 9.
- Power generation upgrades, injection pump upgrades and automation of Pump Station 5.
- Complete communication and control system work at non-operational Pump Stations 2, 6, 8, 10 & 12.

FUTURE PROJECT MILESTONES

2004

- Select equipment and vendors for electrified stations.
- Begin modifications to control and fire & gas systems.
- Complete Pump Station 4 & 9 concrete footing/piles.
- Award contracts for electrified station module fabrication, site construction and commissioning.
- Complete detailed engineering and SCADA upgrades.
- Complete Risk Assessment and Fate and Transport Study.
- Revise Drill and Exercise Plan.
- Plan implementation of contingency site enhancements and complete up to 40 percent of field work.
- Develop draft Management of Change for all regions.

2005

- Arrival of electrified station modules at sites.
- Complete containment site enhancements and training on new Oil Spill Contingency Response Plan.
- Implement revised Drill and Exercise Plan.
- Complete communications module installation and pump station control systems upgrades.
- Finalize Management of Change for all regions.
- Commissioning and startup of electrified pump stations.

Regional Maintenance and Spill Response Centers

Pump station electrification, automation, and remote monitoring and control of pipeline operations requires a change in Alyeska's approach to operations, maintenance and spill response.

Pump station operation technician functions will be eliminated and field-based support groups will be reduced. To accommodate these changes, five regional response centers will be established for maintenance and spill response.

This approach creates efficient use of personnel while supporting needs for emergency, oil spill response, and ongoing maintenance for the pipeline. Field staff will be working from maintenance and response centers – physically separate from operating facilities – located at Prudhoe Bay (adjacent to PS1), Galbraith (adjacent to PS4), Prospect (adjacent to PS5), Fairbanks and Glennallen. In addition, field staff will be located at two field offices at the Yukon River (near PS6) and in Delta Junction.

Spill Prevention

Any reference to spill response is not complete without stressing the importance Alyeska workers place on preventing a spill in the first place. This is accomplished through a variety of programs such as an aggressive corrosion monitoring and prevention program (Alyeska's integrity management system is widely recognized as a model for the industry), regularly scheduled maintenance throughout the system, and surveillance of the pipeline.



Important part of spill response is drills. Here a helicopter prepares to move equipment during the Minton Creek Exercise in 2000.

Oil Spill Contingency Plan Amendments

Oil Spill Contingency Plan (OSCP) amendments for pipeline reconfiguration have been reviewed by pipeline corridor stakeholders and the public, and were approved by State and Federal regulators at the end of December 2003. The amendments accommodate unstaffing of remote facilities while maintaining and/or improving response capabilities using the regional response base approach and additional pre-deployed equipment. Although the total number of staff in the field will be reduced, the number of initial responders will not change. There will be enhancements to areas where initial response time increases, and equipment will be pre-staged at locations where it will help initial responders. Pre-determined containment sites will be enhanced to minimize spill control setup time, and longer-range helicopters that can carry larger payloads will be used for initial response. Alyeska is working with regulators to increase emphasis on drills and training, and to ensure that all response requirements will be met prior to project conclusion.

OSCP AMENDMENT HIGHLIGHTS

- No reduction in initial responders – 67 today; 67 after project implementation.
- Evaluated 222 containment sites line wide for impact of proposed changes.

Where response times increased, the following steps will be implemented:

- Replace current helicopter fleet with faster helicopters with more load carrying capability.
- Pre-stage equipment and improve river containment sites where response times may be affected by changes.
- Perform additional risk studies to identify any other issues related to the project.

TAPS Regional Maintenance and Spill Response Centers

