PUMP STATION 1: THE GATEWAY TO TAPS

Alyeska Pipeline Service Company’s Pump Station 1 facility marks the beginning of the Trans Alaska Pipeline System (TAPS). All North Slope oil production is funneled to Pump Station 1 through numerous smaller pipelines. Once the oil arrives at Pump Station 1, the volume and quality of the oil is tested and metered. Alyeska personnel conduct this measurement on behalf of the North Slope oil producers to ascertain how much oil Alyeska is moving through TAPS for each producer.

Approximately 80 people work at Pump Station 1. These individuals are divided into two shifts that are usually two weeks long. Most station personnel are Alyeska employees with roles such as security officers, oil spill responders, and technicians. Various others -- engineers, baseline contractors, cooks, couriers and more -- are on site too.

Pump Station 1 came online June 20, 1977 at 10:26 a.m. when oil first flowed down the trans-Alaska pipeline. More than 17 billion barrels of oil have been safely and reliably transported through TAPS. Each barrel of oil transits Pump Station 1 before making the long haul south to Valdez, 800 miles away. North Slope production peaked in 1988 when more than 2 million barrels of oil moved daily. In 2016, TAPS averaged about 517,868 barrels per day.

MAJOR UPGRADES

Pump Station 1 has received a major overhaul and today, looks very different from the original station that started up in 1977. The station now moves oil with smaller, scalable pumping equipment that uses variable frequency drive (VFD) motors. With the new Electrification and Automation (E&A) upgrade, Pump Station 1 is better positioned to move the lower throughputs that are currently projected. Though configured for lower throughputs, the E&A pumping equipment has the capacity to move more than 1 million barrels per day. The E&A upgrade is currently in the final stages of project completion at Pump Station 1, the final station to be overhauled. All of Alyeska’s other active pump station -- stations 3, 4 and 9 -- now operate on E&A equipment.

At left, Alyeska mechanical technicians Ezequiel Cervantes and Danny Ingraham open the 36-inch discharge valve at Pump Station 1, marking the final step in forward flow through the pump station’s new E&A mainline units.
FACTS: PUMP STATION 1

QUICK FACTS

STATION PERSONNEL
- Approximately 80 people
- Two shifts, typically two weeks on/off
- Most are Alyeska employees

TAPS PRODUCTION
- 17+ billion barrels moved through TAPS
- 1988 peak flow: 2 million barrels per day
- Highest daily throughput: 2,145,297 barrels
- 2016 daily average: 517,868 barrels per day

STATION STORAGE CAPACITY
- 420,000 barrels
- Two tanks, 210,000 barrels each

NEW PUMPING EQUIPMENT
- E&A forward flow of new pumps, October 2015
- All Alyeska active pump stations now have new E&A pumps

METERING SYSTEM AND LEAK DETECTION
- Five custody transfer metering systems at Pump Station 1 for five connections: Kuparuk, Endicott, Northstar, Sadlerochit, Lisburne
- Performs volumetric quantification to serve as commercial basis for collection of tariffs by TAPS Owners
- Two metering systems function as production measurement for state of Alaska, basis of state royalties
- Metering systems designed and operated according to American Petroleum Institute recommended practices
- Each system contains meter bank, a prover, sampling system and online monitors, verified daily by lab analysis
- Most systems are operating at extremely low range of design
- Five metering systems serve as major contributors to determine baseline for Alyeska’s pipeline leak detection system