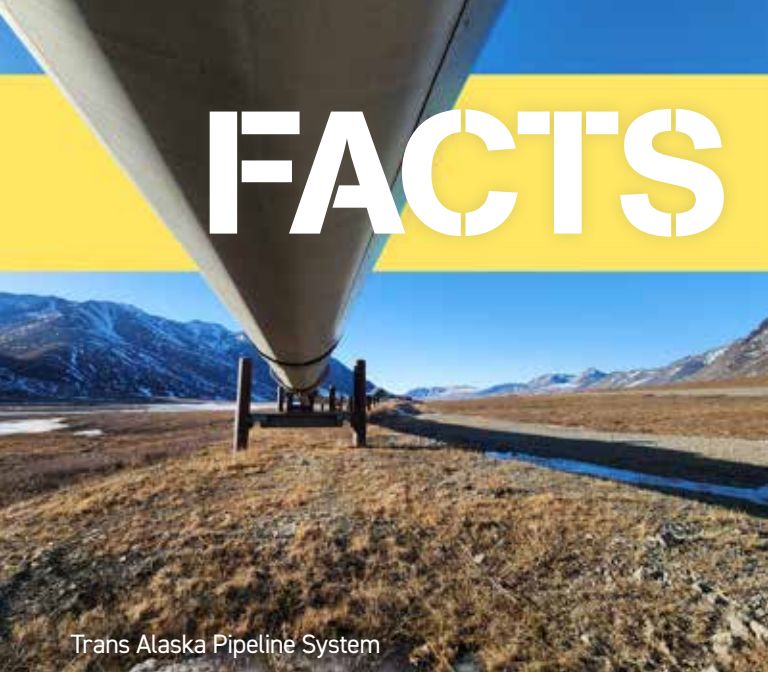
FACTS



Trans Alaska Pipeline System

A collection of facts compiled over the duration of the operation of the Trans Alaska Pipeline System, by Alyeska Pipeline Service Company.

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pipeline fast facts

Air Temperature Range Along Route: -80 degree Fahrenheit to 95 degree Fahrenheit.

Diameter of Pipe: 48 inches.

Elevations, Highest:

- Atigun Pass: 4,739 feet (crest, pipeline MP 166.6).
- Isabel Pass: 3,420 feet.
- Thompson Pass: 2,812 feet.

Grade, Maximum: 145 percent (55 degrees) at Thompson Pass.

Length of Line: 800 miles (1,288 kilometers); includes 407 feet added in MP 200 reroute, April 22, 1985.

Linefill Volume: 9,059,057 barrels. This number differs with the "Linefill" (9,059,622 barrels).

Mountain Ranges Crossed, North to South (three): Brooks Range, Alaska Range, Chugach Range.

Number of Gallons in a Barrel: 42.

Right-of-Way Widths:

- Federal land: 54 feet (buried pipe); 64 feet (elevated pipe).
- State land: 100 feet.
- Private land: 54 feet to 300 feet.

River and Stream Crossings: 34 major, nearly 500 others.

Valves: 178.

Vertical Support Members (VSMs): 78,000.

Workpad, Length: 790 miles.

acronyms and abbreviations

ADEC: Alaska Department of Environmental Conservation

ANP: Alaska Native Program

ANUA: Alaska Native Utilization Agreement

API: American Petroleum Institute

APSC: Alyeska Pipeline Service Company

ARCS: Alternate Route Communications System

BBL: Barrel

BLM: United States Bureau of Land Management

BPD: Barrels per day

BWT: Ballast Water Treatment

CPW: Centerpoint West

CV: Check Valve

DG: Diesel generator

DOC: Depth of cover

DRA: Drag Reducing Agent

DSMA: Digital Strong Motion Accelerograph

DWT: Deadweight Tons

E&A: Electification & Automation

ECO: Edison Chouest Offshore

EDRC: Equipment Diagnostic Reliability Center

EMS: Earthquake Monitoring System

EPA: United States Environmental Protection Agency

GP Tug: General purpose tug

IM: Integrity Management

IMT: Incident Management Team

JPO: Joint Pipeline Office

KV: Kilovolts

MLU: Mainline Unit

MP: Milepost

MTU: Master Terminal Unit

MW: Megawatts

OCC: Operations Control Center

OSRB: Oil spill response barge

PHMSA: Pipeline and Hazardous Materials Safety Administration

PL: Pipeline

PPE: Personal protection equipment

acronyms and abbreviations

PS: Pump Station

PSI: Pounds Per Square Inch

PV: Power Vapor

RCAC: Regional Citizens Advisory Council

RGV: Remote Gate Valve

ROW: Right of Way

SERVS: Ship Escort/Response Vessel System

SIPPS: Safety Integrity Pressure Protection System

TAPS: Trans Alaska Pipeline System

TG: Turbine Generator

VFD: Variable Frequency Drive

VMT: Valdez Marine Terminal

VSM: Vertical Support Member

VTO: Valdez Terminal Office

UPS: Uninterruptible Power Supply

A

ABOVEGROUND PIPE: See "PIPE, Aboveground."

ACCESS ROADS: 225, linking state roads with the pipeline, pump stations and airfields.
- Gravel base: 3 feet minimum.
- Length: 120 feet to 7.5 miles.
- Number of roads: 225.
- Width: 28 feet.

AIRFIELDS, Operations: Two of the 14 airfields built during TAPS construction are still in operation: Galbraith Lake (5,200 feet long) and Prospect (5,000 feet long). These two airfields are on federal land and are operated under state leases.

ALASKA, Facts:
- Coastline: 33,900 miles.
- Land area: 586,000 square miles.
- Population: 736,812 (2023, Alaska Department of Labor).

*See back inside cover for 2024 update

ALASKA NATIVE PROGRAM: Alyeska created the Alaska Native Program in October 1995 to ensure TAPS owners fulfill their commitments to the United States as embodied in Section 29 of the Federal Agreement and Grant of Right-of-Way. Through the Alaska Native Program, Alyeska is committed to supporting recruitment, employment, job counseling, education and training opportunities for Alaska Native people. See "SECTION 29."

ALYESKA, Corporate Name: Alyeska Pipeline Service Company. *Alyeska* is an Aleut word meaning *mainland*.

ALYESKA, Date of Incorporation: August 14, 1970.

ALYESKA, Early History: The Trans Alaska Pipeline System (TAPS), was originally called the Trans Alaska Pipeline Project, and was a joint venture of Atlantic Pipe Line Company (now ConocoPhillips Transportation Alaska, Inc.), Humble Oil Pipeline Company (now ExxonMobil Pipeline Company) and BP Oil Corporation (later BP Pipelines (Alaska) Inc.), formed to develop a plan for construction of a pipeline for Prudhoe Bay oil.

ALYESKA, Office Addresses:

Anchorage (Corporate Headquarters):

Alyeska Pipeline Service Company
3700 Centerpoint Drive
Anchorage, AK 99503
907-787-8700
Toll free: 877-257-5778
Mailing address:
Alyeska Pipeline Service Company
P.O. Box 196660
Anchorage, AK 99519-6660

Fairbanks:

Alyeska Pipeline Service Company
701 Bidwell Avenue
Fairbanks, AK 99701
Toll free: 877-257-5778
Mailing address:
Alyeska Pipeline Service Company
P.O. Box 60469
Fairbanks, AK 99706

SERVS:

Mailing address:
Alyeska Pipeline Service Company
SERVS (Ship Escort/Response Vessel System)
P.O. Box 109
Valdez, AK 99686
Toll free: 877-257-5778

Valdez Marine Terminal:

Mailing address:
Alyeska Pipeline Service Company
P.O. Box 300
Valdez, AK 99686
Toll free: 877-257-5778

ALYESKA, Owners: The consortium of companies that owns TAPS. For a complete list, see www.alyeskapipeline.com.

ALYESKA, Personnel: Approximately 800 Alyeska employees and 1,000 or more contractors operate and maintain TAPS. As of October 2024, employee demographics were:

- 723 Alyeska employees
- Anchorage: 276
- Fairbanks: 225
- Valdez: 222
- Alaska residents: 93.7 percent, approximately

ALYESKA, Responsibilities: Design, construct, operate and maintain TAPS.

ALYESKA, Social Media and Website:
- Facebook: @alyeskapipeline
- LinkedIn: www.linkedin.com/company/alyeska-pipeline-service-company
- Twitter: @alyeskapipeline
- Website: www.alyeska-pipe.com

ANIMAL CROSSINGS, Mainline: The purpose is to allow for free movement of big game animals (caribou, moose, etc.) across the pipeline right-of-way. Approximately 579 animal crossings are incorporated into TAPS, including:
- Elevated: 554 (minimum height 10 feet).
- Buried: 23.
- Buried, refrigerated: 2 (MP 645 and MP 649).

ARCHAEOLOGICAL SURVEY, Preconstruction:
The entire TAPS route was surveyed by the University of Alaska and Alaska Methodist University under contract to Alyeska. The survey, which cost approximately $2.2 million, resulted in the excavation of approximately 330 sites.

ARCS (Alternate Route Communications System):
A private radio network used by TAPS technicians for voice communications in remote locations.

ATIGUN AWARDS: Launched in 2014, the Atigun Award Program recognizes employees, contractors and teams for excellent performance in five categories: Environment; Health and Safety; Innovation; Integrity; and Teamwork. Awards are also given to individuals who have demonstrated elevated work on TAPS, earning a President's Choice recognition.

B

BALLAST WATER TREATMENT (BWT): The Valdez Marine Terminal treats tanker ballast water and other industrial wastewater streams to remove oil.

- Average ballast water treated: 24,000 barrels/day
- Capacity of system: 8,600 barrels/hour
- Crude oil recovered from ballast: 74 barrels/day average
- Purity standards: 0.73 parts per million aromatic hydrocarbons (permitted daily maximum)

BALLAST WATER TREATMENT (BWT) Facility:

Major components:

- Biological treatment tanks: two aboveground concrete tanks, one in service and one in stand-by, with a capacity of 5.5 million gallons each.
- Diffuser line at discharge into Port Valdez: The line discharges at a maximum depth of 300 feet at a distance of 700 to 1,050 feet offshore.
- Dissolved Air Flotation (DAF) units: two cells, each 144 feet long, 24 feet wide and 12 feet deep.
- Piping from berths to tanks: 42-inch diameter.
- Time required for treatment: two-and-a-half to three days on average.
- Settling tanks: two tanks with capacity of 430,000 barrels each, 53 feet, 6 inches high and 250 feet in diameter.
- BETX air strippers: four with a capacity of 1,100 gallons per minute each.

- Regenerative thermal oxidizers: Two with a capacity of 11,000 cubic feet per minute each.

BARREL, Crude Oil: The normal unit of measurement for crude oil: 1 barrel = 42 gallons; 310.9 pounds per barrel.

BERTHS, Valdez Marine Terminal: Four berths were built at the Terminal: Berth 1 (floating platform with 13 buoyancy chambers and weighing 6.5 million pounds) and Berths 3, 4 and 5 (fixed platform). Berths 1 and 3 are now out of service. Berths 4 and 5 are equipped with vapor-recovery arms, and as such, are the only active berths on the Terminal. All the loading and vapor arms on Berth 4 were replaced in an overhaul in 2014. The loading and vapor arms on Berth 5 were replaced beginning in 2016.

BIRD SPECIES: More than 170 identified along the TAPS route.

BRIDGE, Yukon River: Located at MP 353.3.
- Construction dates: 1974-1975.
- Cost: $30 million (owners' share approximately $10 million).
- Dimensions: 2,295 feet long; road deck, 30 feet wide; grade, 5.99 degrees.
- Name: Bridge officially named E.L. Patton Yukon River Bridge by Alaska Legislature in 1982, after E.L. Patton, president of Alyeska during pipeline construction. A monument to E.L. Patton was dedicated in October 1982.
- Opening date: October 1979.
- River width: 1,900 feet, typical.

BRIDGES, Pipeline: 13 total along TAPS.

BRIDGES, Road: 10 north of Yukon; 36 south of Yukon.

C

CARIBOU: TAPS crosses the ranges of the Central Arctic Herd on the North Slope and the Nelchina Herd in the Copper River Basin.

COLUMBIA GLACIER: Tidewater glacier in the northeast corner of Prince William Sound, at the head of Columbia Bay.

- Impact on tankers: When the captain of the port determines hazardous ice conditions exist in Valdez Arm, the Valdez Narrows ice routing measures are placed into effect in accordance with the Prince William Sound Vessel Escort Response Plan.

COMMUNICATIONS SYSTEM: The communications system comprises both microwave and fiber.

COMMUNICATIONS SYSTEM, Control: Control data systems provide supervisory control and telemetry, seismic monitoring, maintenance monitoring and control of pipeline operations.

COMMUNICATIONS SYSTEM, Enterprise Data Services: Voice, data, video, and Internet are provided for business systems.

CONCRETE WEIGHTS:

- Pipe coating: Used at river crossings; weight 75,000 pounds per 40-foot section.
- Saddles: Used in floodplains; weight 18,500 pounds each.

CONSTRUCTION, Airfields:
- Seven, 2,500 to 3,000 feet long.
- Seven, 5,000 feet long (Galbraith Lake and Prospect continue to be used by TAPS).

CONSTRUCTION, Camps:
- Largest camp: Valdez Marine Terminal, 3,480 beds.
- Largest pipeline camp: Isabel Pass, 1,652 beds.
- Number, 1974 to 1977: 29 total.
- Smallest pipeline camp: Sourdough, 112 beds.

CONSTRUCTION, Contractors and Subcontractors:
2,000, approximately.

CONSTRUCTION, Cost: Approximately $8 billion for entire system, including terminal and pump stations, at conclusion of initial construction period in 1977. Does not include interest on capital investment or capital construction after 1977.

CONSTRUCTION, Ditch: See "DITCH, Buried Pipeline."

CONSTRUCTION, Hydrostatic Testing:
- Maximum: equivalent to 96 percent of specified minimum yield strength.
- Minimum: 125 percent of operating pressure or 750 psi, whichever was greater.

CONSTRUCTION, Materials:
- Gravel for entire project: 73 million cubic yards.
- Gravel for work pad: 32 million cubic yards.
- Largest piece shipped: Floating tanker berth (3,250 tons).
- Shipped to Alaska: 3 million tons, approximately.

CONSTRUCTION, Time: Three years, two months (April 29, 1974 to June 20, 1977) to complete pipeline, pump stations, roads and terminal.

CONSTRUCTION, Time for Preconstruction Effort: six years, approximately.

CONSTRUCTION, Welding: See "WELDS, Pipe."

CONSTRUCTION, Workforce:
- Minority hire: Ranged from 14 to 19 percent.
- Peak, contractors only: 21,600.
- Peak, total: 28,072 in October 1975 (Alyeska employees and contractors).
- Total for project: 70,000 approximately (1969-1977).
- Women: Ranged from 5 to 10 percent.

CONTINGENCY PLANS: A Contingency Plan (C-Plan) is a regulatory document that outlines commitments to specific oil spill response and preparedness. It is approved by both federal and state agencies. The plan is renewed every five years, when it is updated by Alyeska and then subjected to a lengthy public review when interest groups and individuals submit comments. Alyeska owns two C-Plans: one for the pipeline, one for the Valdez Marine Terminal. Alyeska supports the Prince William Sound C-Plan (also known as the Tanker Plan) and owns SV-140. The oil shipping companies are responsible for the Tanker C-Plan.

CROSSINGS, Refrigerated, Road: The buried pipeline crossing of the Glenn Highway at Glennallen is refrigerated.

CRUDE OIL: A fluid made up of various hydrocarbon components, natural gas liquids and fixed gases.

CRUDE OIL, API Gravity: 33.4 degrees API at 60 degrees Fahrenheit for North Slope crude oil.

CRUDE OIL, Heating: Pipeline Milepost 238 is used as a crude heating station. Coldfoot is Milepost 175 on the Dalton

Atigun Construction Camp was one of 30 camps operating during pipeline construction. The buildings were removed and the site was revegetated in 1978.

Highway, for reference.

CRUDE OIL, TAPS:

- Minimum temperature in 2024: 85 degrees Fahrenheit at injection into the pipeline at PS 1. Approximately 50 degrees Fahrenheit at the Terminal
- Throughput (daily average in 2024, 465: 831 barrels/day = 19,410 barrels/hour = 13,587 gallons/minute)
- Daily average travel time in 2024: 19.5 days from PS 1 to the Terminal
- Velocity: 1.7 mph in pipeline
- Weight: 301.8 pounds/barrel; 6.63 barrels/ton

D

DALTON HIGHWAY (Formerly North Slope Haul Road): James B. Dalton Highway is the name applied by the state in 1981 to 415 miles of roadway, including the North Slope Haul Road and the 57-mile road from the Yukon River to Livengood, constructed by Alyeska in the winter of 1969-70. This section of road was originally 56 miles, but one mile was added after realignment by the state at Livengood in 1981. James B. Dalton was a native-born Alaskan and graduate mining engineer who supervised construction of the Distant Early Warning (DEW) line in Alaska. He was an expert in Arctic engineering and logistics and served as a consultant in early oil exploration in northern Alaska, pioneering winter trails for heavy equipment transport. The following information about the highway is current as of construction:

- Bridges, permanent: 20.
- Grade: 12 percent maximum.
- Gravel used: 32 million cubic yards.

DALTON HIGHWAY, Haul Road Portion: See "HAUL ROAD."

DALTON HIGHWAY, Ownership: Originally Alyeska; control transferred to the state in October 1978.

DAMAGE PREVENTION PROGRAM: Alyeska Pipeline continually seeks to reduce the risk of accidental releases and pipeline damage through its public awareness and damage prevention programs. Alyeska participates in the 811 "Call

Before You Dig" program and regularly communicates with land owners, excavators and emergency responders who live and work within the pipeline corridor.

DEADWEIGHT TONS (DWT): A unit of measure for the weight of tanker cargo; dwt x 7 = number of barrels, approximately.

DESIGN MODES, Selection: Soil sampling and other means were used to determine soil types along the route. Where thaw-stable soils were found, the pipeline was buried in the conventional manner. In areas of thaw-unstable soils, and where heat from the pipeline might cause thawing and consequent loss of soil foundation stability, the pipeline was insulated and elevated aboveground by means of a unique support system (see "VERTICAL SUPPORT MEMBERS"). To allow animals to cross, 23 sections were buried line-wide, each about 200 feet long.

DESIGN MODES, Types:

- Aboveground: 420 miles (see "VERTICAL SUPPORT MEMBERS"). Where thaw-unstable permafrost was encountered, problems associated with melting permafrost were avoided by placing the pipeline aboveground on an elevated support system. VSMs (pilings) were designed to resist frost-jacking forces and support the line.
- Belowground (conventional): 376 miles. Where either unfrozen or thaw-stable permafrost was encountered, the pipeline was buried in the conventional manner with no special provisions for permafrost; see "PIPE, Belowground (Conventional)."
- Belowground (special burial): About 4 miles; see "PIPE, Special Burial." Where thaw-unstable permafrost was found, but where the pipeline had to be buried for highway, animal crossing, or avoidance of rockslides and avalanches, the

permafrost was protected from the heat of the pipeline by insulation around the pipeline. Some special burials include ground refrigeration systems along with pipe insulations. Special burial locations:

- Atigun Pass: two sections (about 1 mile) were buried in insulated boxes to provide protection from rockslides and avalanches.
- MP 645-649: caribou crossing.
- MP 653: caribou crossing.
- MP 681: crossing of Glenn Highway.
- 23 animal crossings (all animal crossings are special burial).

DIGITAL STRONG MOTION ACCELEROGRAPH (DSMA): Field instrument to evaluate pipeline motion caused by earthquakes (see "EARTHQUAKE, DSMAs"). Pipe is wrapped before being placed in the trench during construction.

DISCHARGE PRESSURE: Pressure of the oil leaving a pump station.

DITCH, Buried Pipeline: 8 feet wide, 8 feet deep, approximately, but variable for overburden depth, which ranged from 3 to 35 feet.

DRAG REDUCING AGENT (DRA): A long-chain hydrocarbon polymer injected into the oil to reduce the friction due to turbulence in the oil. In today's operating climate, DRA is periodically used to facilitate ramping up to higher throughputs while running Inline Inspection Tools, and during other operational activities.

E

EARTHQUAKE, Denali Fault, November 3, 2002: The pipeline withstood a magnitude 7.9 Richter Scale earthquake that was centered along the Denali Fault in Interior Alaska, approximately 50 miles west of the pipeline. The ground along the fault moved an estimated 18 feet horizontally and nearly 2.5 feet vertically. The quake was the largest on the Denali Fault since at least 1912 and among the strongest earthquakes recorded in North America in the last 100 years.

EARTHQUAKE, Design Magnitude: TAPS is seismically designed to survive earthquakes without damage or leakage. It can withstand a maximum magnitude 8.0 earthquake around the Denali Fault and between a 5.5 and 8.5 magnitude earthquake, depending on the area.

EARTHQUAKE, Design Movement: Maximum movement of pipe at pipeline crossing of major faults:

- Denali Fault: 20 feet lateral, 5 feet vertical.
- McGinnis Glacier Fault: 8 feet lateral, 6 feet vertical.
- Donnelly Dome Fault: 3 feet lateral, 10 feet vertical.
- Minor Potential Faults: 2 feet lateral, 2 feet vertical.

EARTHQUAKE, Faults Crossed by Pipeline: Denali, McGinnis Glacier and Donnelly Dome.

EARTHQUAKE, Monitoring: Seismograph instrumentation is installed at field locations consisting of accelerometers that measure earthquake ground motions. This data is continuously

monitored at the Operations Control Center and automatic alerts are issued if a significant earthquake is detected.

EARTHQUAKE, November 30, 2018: A magnitude 7.0 earthquake struck north of Anchorage on November 30, 2018. There was no damage to TAPS.

ELECTRIFICATION AND AUTOMATION (E&A): Electrification and Automation (also called "Strategic Reconfiguration" or "SR") refers to Alyeska's overall renewal of assets. Work began in 2001 and concentrated on reducing physical infrastructure and simplifying operations and maintenance. The project focuses on creating more efficient operations while maintaining or enhancing safety, operational integrity and environmental performance. The system is modular and scalable and with flexibility for future increases or decreases in throughput. As of 2024, pump stations 1, 3, 4 and 9 were operating on new pumps.

EMERGENCY RESPONSE: TAPS personnel train year-round to respond to emergencies, including oil spills. Requirements for response capabilities are outlined in three oil spill contingency plans (see "CONTINGENCY PLAN"). As part of Alyeska's response strategy, employees are trained to fulfill roles in both the Incident Management Team (IMT) and the Crisis Management Team (CMT).

- CMT: The CMT's objective is to prevent an internal or external event from creating a crisis situation. The team is focused on business continuity, while providing other assistance so the IMT can focus on managing the incident.
- IMT: The IMT is a universal organization with common terminology, structure and roles that forms to manage an incident. The IMT often includes representatives from many different agencies.

ESCORT TUGS: Commander, Contender, Challenger, Courageous and Champion. Designed and purpose-built for tethered tanker escort and oil spill response operations. The 140-foot vessels primarily assist tankers as they transit Prince William Sound. These powerful, state-of-the-art tugs have exceptional maneuverability and launched in 2018.

- Crew: seven trained response personnel, bunk space for 12
- Firefighting: ABS Class 1 firefighting rating that includes pumps, monitors, foam and vessel spray system
- Propulsion: Azimuthing drive with Kort nozzles; 12,336 horsepower
- Spill response equipment:
  - Oil detection radar
  - Infrared camera system
  - 2,000 feet of oil containment boom
  - DESMI skimmer
  - 40,000 gallons of recovered oil storage capacity
  - Dispersant spray arm systems (on tugs Commander and Courageous)
  - Alaskan-built work boat

F

FATALITIES, Construction: 32 incidents directly related to construction (includes employees of Alyeska, contractors and subcontractors; excludes common carriers).

FATALITIES, Operations: Nine operations-related incidents (includes employees of Alyeska, contractors and subcontractors):

- July 1977: PS 8 explosion.
- September 1977: Chandalar Camp heavy equipment accident.
- November 1978: PS 8 snow-clearing accident.
- December 1984: Valdez Marine Terminal heavy equipment accident.
- August 1985: Charter aircraft accident, Glennallen.
- 1987: Security helicopter accident, Keystone Canyon.
- March 1997: Vehicle accident, Haul Road.
- August 2000: Vehicle accident, Valdez Marine Terminal.
- April 2006: Tug operations accident, SERVS.

FISH, Species: 34 identified in waters crossed by the pipeline.

FUEL GAS LINE: Carries natural gas received from the North Slope fields from PS 1 to PS 4. It fuels pump stations and cathodic protection systems north of the Brooks Range. In general, it parallels the Dalton Highway, from PS 1 to PS 4.

- Diameter: 10 inches from PS 01 to MP 34 (34 miles); 8 inches from MP 34 to PS 04 (115 miles)
- Length: 149 miles
- Pressure: maximum design pressure of 1,440 psi (MAOP)
- Operating: current ~600 psi

G

GABIONS AND CONCRETE MATS: Used in Atigun Floodplain Pipe Replacement Project as cover on pipe in shallow burial area for protection from natural erosion and scouring. A gabion is a metal cage filled with rock; gabions are used to stabilize banks.

- Gabions: 31,750 feet.
- Concrete mats: 9,525 feet.

GENERAL PURPOSE TUGS: Bainbridge, Elrington, Latouche and Ingot. Designed and purpose-built for a variety of operations in Prince William Sound. The vessels dock tankers coming into the Valdez Marine Terminal and tow response barges, support equipment deployments and perform other marine operations as needed.

- Size: 102 feet long
- Crew: six trained response personnel, bunk space for 12
- Propulsion: Azimuthing drive with Kort nozzles; 6,006 horsepower
- Firefighting: Off-vessel firefighting system that includes pumps, monitors, foam and vessel spray system on two tugs (Bainbridge and Ingot)

GRADE, Maximum on TAPS Route: 145 percent (55 degrees) at Thompson Pass.

H

HAUL ROAD: Portion of Dalton Highway from the Yukon River to Prudhoe Bay, built by Alyeska.

- Cost: $125 million, approximately.
- Dates: Started April 29, 1974; completed and dedicated September 29, 1974.
- Labor: 3 million hours.
- Time: 154 days.
- Length: 358 miles (Yukon River to Prudhoe Bay).

HEAT PIPES: These self-contained passive refrigeration devices contain anhydrous ammonia or carbon dioxide gas under pressure which vaporize at temperatures just below freezing, rise and condense at radiators aboveground when the air temperature is well below freezing. This process transfers ground heat into the air during cold periods, thereby lowering the ground temperature to ensure thaw unstable soils remain frozen throughout the summer to steadily support the pipeline. There are 124,300 individual heat pipes along the pipeline (see "VERTICAL SUPPORT MEMBERS").

INSULATION, Thickness:
- Elevated pipeline: 3.75 inches thick.
- Refrigerated belowground pipeline: 3.2 inches thick.
- Under gravel workpad or road: 2 to 4 inches.

INTEGRITY MANAGEMENT PLAN (IMP): Integrity management comprises all activities that monitor and maintain the integrity of all hydrocarbon handling facilities on TAPS. The purpose of IMP is to protect the environment by preventing oil spills, comply with all laws and regulations, maintain facilities within industry standards, and monitor and mitigate integrity risks.

J

JOINT PIPELINE OFFICE (JPO): The JPO is a consortium of federal and state agencies. The agencies include the State of Alaska Departments of Natural Resources, Environmental Conservation, Fish and Game, Labor and Workplace Development, Transportation Public Facilities, and Public Safety, Division of Fire Prevention; and, on the federal side, The Bureau of Land Management, the U.S. Department of Transportation/ Office of Pipeline Safety, Environmental Protection Agency, U.S. Army Corps of Engineers, U.S. Coast Guard, and Minerals Management Service. The JPO has employees with offices in Anchorage, Fairbanks and Valdez. See "REGULATORY AGENCIES."

L

LAND, Municipal Jurisdiction: Approximate pipeline length in each jurisdiction, north to south:
- North Slope Borough: 179.2 miles.
- Fairbanks North Slope Borough: 89.1 miles.
- City of Delta Junction: 5.5 miles.
- City of Valdez: 20.8 miles.

LAND OWNERSHIP, Area: Approximate area for all the pipeline ROW (18.4 square miles total):
- State government: 9.33 square miles.
- Federal government: 6.77 square miles.
- Owner companies: 2.9 square miles.
- Private: 1.41 square miles.

LAND OWNERSHIP, Owner: Approximate pipeline length for each ownership category (800 miles total):
- Federal government: 376 miles.
- State government: 344 miles.
- Private: 80 miles (including 51 miles on Alaska Native corporation land).

LEAK DETECTION SYSTEM: Provides detection and location of oil spills. TAPS has three independent systems:
- Deviation Alarm (DA) System
- Pipeline Leak Detection System (PLDS)
- Visual observation

LINEFILL: The oil necessary to fill the pipeline to start the pumps in a mechanically sound manner. At a throughput of 0.935 million barrels per day, the linefill volume is 9,059,622 barrels.

M

MAXIMUM ALLOWABLE OPERATING PRESSURE: A rating indicating the maximum pressure at which a pipeline or segment of a pipeline may be operated under U.S. Department of Transportation regulations in normal conditions. Also called *pressure rating*.

MINDSETS

Alyeska Pipeline Service Company has defined eight mindsets. These mindsets are recognized and reinforced throughout the company as critical to safe day-to-day operations and future success.

They are:

- BE ACCOUNTABLE: We all take ownership in the success of Alyeska. We ask, "What else can I do?" to move forward. We keep our commitments and expect the same from others, with respect and without excuses. After all, we know our future depends on it.

- BELIEVE IN ZERO: We believe zero is far from nothing. Zero accidents and spills make this a safer place to work. Zero regulatory infractions and operations upsets help things run
- SPEAK AND WORK AS A TEAM: We never go it alone, and only win together. We know that everyone is important; no one is more important than another. We build each other up and form stronger bonds with every interaction. We tear down silos. "They" is not in our vocabulary because "we" are TAPS.
- GET BETTER EVERY DAY: We're for better. It helps us evolve the way we work to deliver stronger results. It builds trust with our customers and co-workers. By learning, growing, and challenging the norm, we'll leave TAPS better for everyone.
- SPEAK UP, STEP UP: Here we feel free to use our voice. We speak up about opportunities and ideas and when we see any safety risks or concerns. And we step up to assess problems and implement solutions. Being proactive is a way of life at Alyeska.
- ACT WITH DISCIPLINE: We know there's no easy path to excellence. It takes high standards that we fully commit to for ourselves and our contractors. It's hard work, requiring rigor and precision, but practice delivers outstanding results.
- SPEND WISELY: We treat the company as if it were our own. That's why we track and optimize our resources. We balance people, time, materials and budget to ensure we're being smart with money and eliminating waste.

- TAKE ACTION: You won't find us standing on the sidelines waiting for the perfect solution. We know when progress is more important than perfection. We're agile, quick and make well-informed decisions. It's what lets us move further, faster.

MOUNTAIN RANGES, Crossed by Pipeline: Three - Brooks Range, Alaska Range and Chugach Range.

MUTUAL AID AGREEMENTS: See "OIL SPILL RESPONSE, Mutual Aid Agreements."

N

NORTH SLOPE, Environment: A nearly flat, treeless plain, covering about 88,000 square miles extending from the foothills of the Brooks Mountain Range to the Arctic Ocean. For 56 days in winter, the sun never rises. Winter twilight provides sufficient light for driving without headlights during the day. Winter temperatures drop to minus 60 degrees Fahrenheit. Wind chill factor may fall as low as minus 135 degrees Fahrenheit. From mid-April to mid-August, there is daylight 24 hours a day. Summer temperatures climb to 70 degrees Fahrenheit and higher.

NORTH SLOPE, Oil Discovery: Exploratory drilling on the North Slope continued for more than 20 years. Many unsuccessful exploratory wells were drilled and many companies gave up the search before the Prudhoe Bay Discovery Well was drilled by Atlantic Richfield Company and Humble Oil and Refining Company in 1967. A confirmation well the following year proved the discovery of the large oil and gas reservoir.

NOTICES TO PROCEED, Construction: 465 federal and 403 state notices to proceed were required from the Federal Alaska Pipeline Office and the State Pipeline Coordinator's Office.

O

OILMAP

- OILMAP is an oil spill modeling system that predicts the movement of oil discharged to marine or fresh water.
- Its capabilities include calculating the most probable path of oil using an embedded Geographic Information System (GIS) and real-time data inputs, such as the prevailing air and water temperatures, weather conditions, and seasonal ocean currents. It forecasts potential points of shoreline contact and anticipated time of impact.
- OILMAP also integrates with the Graphical Response Database (GRD) which contains information on biological and socioeconomic resources, locations of wildlife habitation, designated cultural and historical sites, residential communities, hatcheries, shoreline types, and other sensitive areas.

OIL SPILL CONTINGENCY PLAN, Pipeline: TAPS Pipeline Oil Discharge Prevention and Contingency Plan:

- Containment Sites: 222 designated sites on or near drainages along TAPS. Criteria for selection: accessibility, river velocity, river channel configuration, environmental sensitivity. 81 of the 222 containment sites have pre-staged oil spill equipment and supplies specific to the area response requirements.

- Equipment: Varies by response facility. Total inventory available includes the following:
  - Vessels (jet boats, airboats, landing craft, airboat freighters): 31
  - Boom, containment: 65,500 feet
  - Boom, fire: 2,150 feet
  - Vacuum trucks: 11
- Leak Detection: Three systems (see "LEAK DETECTION SYSTEMS").
- Personnel:
  - Pipeline personnel trained in oil spill response. Each response facility has 24-hour oil spill response capabilities.
  - Drills: Field drills are conducted to evaluate preparedness to react to an oil spill. The drills permit evaluation of the training program, particularly oil spill skills such as reconnaissance, assessment and response.
  - Training: Consists of a five-day academy for new employees and a two-day refresher for existing employees, as well as other specialized training such as fast water response, vessel operations and source control.

OIL SPILL CONTINGENCY PLAN, Tankers:
Tankers transiting Prince William Sound are required by the state to have oil spill contingency plans. The Prince William Sound Tanker Oil Discharge Prevention and Contingency Plan is a required part of each tanker's individual contingency plan. Alyeska Pipeline/SERVS is the primary response action contractor responsible for the implementation aspects of the tanker plan.

The prevention portion of this plan requires that each laden tanker transiting Prince William Sound must be escorted by two vessels, one of which must be a specially equipped prevention and response vessel or tug. Laden tankers are tethered to escort tugs from the Terminal through the Valdez Narrows and Valdez Arm.

Also included in the plan are speed limits for tankers and weather restrictions. The response portion of the plan includes plans for open-water and nearshore shoreline response and support operations.

OIL SPILL CONTINGENCY PLAN, Terminal:
The Valdez Marine Terminal Oil Discharge Prevention and Contingency Plan includes a comprehensive prevention plan outlining spill prevention measures taken at the Terminal, as well as a response section describing land and water response for spills originating from Terminal facilities. A spill from a tanker at berth or transiting Port Valdez is covered under the Prince William Sound Tanker Oil Discharge Prevention and Response Plan. Although a spill from a tanker is the responsibility of the tanker owner, Alyeska provides initial spill response.

RESPONSE RESOURCES:

- Personnel: Oil spill response crews trained to conduct land and water response operations are available 24 hours a day.
- Equipment: The following equipment is stored in Prince William Sound:
  - Barges: Seven barges (608,000 barrels, approximately, for recovered oil); one flat-deck barge with sensitive-area protection boom (serves as on-water staging location).
  - Boom: More than 50 miles of various types of containment and recovery boom.

- More than 150 skimming systems providing the capability to recover 300,000 barrels of oil within 72 hours.
- Skimmers, self-propelled: four total—Dynamic Inclined Plan skimming vessel (Valdez Star) with recovery rate of 2,000 barrels/hour and storage of 1,310 barrels; two JBF skimming vessels with recovery rate of 571 barrels/hour; and MARCO Class VII with recovery rate of 1,281 barrels/hour.
- Tugs: 11
- Vacuum trucks: Three
- Work boats: 31

• Prevention programs applicable to the various contingency plans:
- Corrosion control programs
- Inspection and records
- Medical monitoring
- Preventive maintenance
- Security
- Substance abuse programs
- Tank leak protection
- Training programs
- Transfer procedures
- Escort System

OIL SPILL RESPONSE, Mutual Aid Agreements: An official agreement to provide equipment and resources for oil spill response to entities outside of Alyeska, such as the United States Coast Guard.

OPERATIONAL INTEGRITY: An Alyeska program designed to assure the integrity of the pipeline system is maintained while attaining the highest standards of safety and environmental protection.

OPERATIONS CONTROL CENTER (OCC): The OCC in Anchorage continually monitors the status of all pump stations and valves using supervisory control and data acquisition (SCADA) systems with remote sensors. Data such as pressures, flow rates, temperatures, tank levels and valve positions are recorded and analyzed for abnormal operations or any indication of a pipeline leak. The pipeline controller at the OCC can rectify any abnormal operation by changing settings for pump speed or relief valves, or by issuing idle or stop commands to the mainline pumps. The OCC controller can also activate remote control valves. The monitoring and analysis systems include backup communications equipment and computers.

P

PACKLINE: Oil flow that completely fills a pipeline

PERMAFROST: Any rock or soil material that has remained below 32 degrees Fahrenheit continuously for two or more years. The two-year minimum stipulation is meant to exclude from the definition the overlying ground surface layer which freezes every winter and thaws every summer (called the *active layer* or *seasonal frost*).

PERMAFROST, Affected Areas on TAPS: Approximately 75 percent of the line passes through permafrost terrain. The line traverses the continuous zone on the North Slope and through the Brooks Range. It then encounters the discontinuous and sporadic zones and passes through areas of no permafrost in the immediate vicinity of Valdez.

PERMAFROST, Depth Along Pipeline Route: A few inches to 2,230 feet, approximately.

PERMAFROST, Design Solutions: The pipeline design is based primarily on the soil conditions encountered along the right-of-way. There are three principal design modes: aboveground, conventional burial and special burial (see DESIGN MODES).

PERMAFROST, Problems:

- Frost-heaving: When the active layer freezes, ice forms and pushes the ground surface upward.
- Frost-jacking: When heaving occurs, if a structure embedded

in the ground is not properly anchored to resist such movement, the structure will be forced upward along with the ground surface. In most cases, the structure does not return to its original position when the active layer thaws during the following summer. The net upward movement is called *jacking*. This phenomenon can occur whenever there is seasonal freezing and thawing of the active layer and is not limited to permafrost areas.

- Thaw settlement: Structures founded on *thaw-unstable* permafrost may settle if large amounts of ice in the permafrost melt. Melting is typically caused by heat from the structure or changes to the natural thermal conditions.

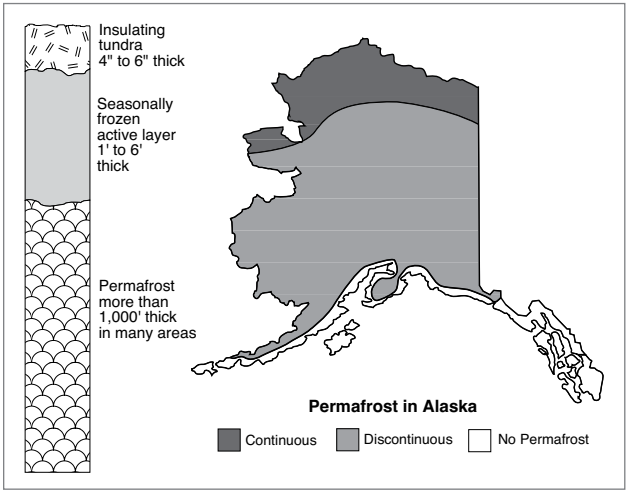
PERMAFROST, Types:

- Cold permafrost: Remains below 30 degrees Fahrenheit (may be as low as 10 degrees Fahrenheit on the North Slope); tolerates introduction of considerable heat without thawing.
- Ice-rich: 20 to 50 percent visible ice.
- Thaw-stable: Permafrost in bedrock, in well-drained, coarse-grained sediments such as glacial outwash gravel and in many sand and gravel mixtures. Subsidence or settlement when thawed is minor, foundation remains essentially sound.
- Thaw-unstable: Poorly drained, fine-grained soils, especially silts and clays. Such soils generally contain large amounts of ice. The result of thawing can be loss of strength, excessive settlement and so much moisture in the soil that it flows.
- Warm permafrost: Remains just below 32 degrees Fahrenheit. The addition of very little heat may induce thawing.

PERMAFROST, Zones:

- Continuous zone: Permafrost is found almost everywhere in

the zone, as the name implies; includes all of the North Slope.
- Discontinuous zone: Permafrost is found intermittently; includes much of the interior of the state.
- Sporadic zone: Permafrost is found in isolated small masses of permanently frozen ground.



PERMANENT LIVING QUARTERS: See "PUMP STATIONS, Living Quarters."

PERMITS, Construction: 515 federal and 832 state permits were required to build TAPS.

PHILANTHROPY: Alyeska supports organizations that fuel healthy, vibrant communities and that employees engage in and value. Alyeska operates in communities with unique characteristics, needs and priorities. Special consideration will

go to health and social services in Anchorage and Fairbanks, and to environmental stewardship and regional partnerships out of Valdez (http://giving.alyeska-pipeline.com).

PIG: A pig is a mechanical device that is pushed through the pipeline by the product (free-swimming) to clean and inspect the pipeline without stopping flow. This process is referred to as pigging. Alyeska runs two basic types of pigs: cleaning and instrumented or smart. These devices help Alyeska prevent internal corrosion and ensure timely detection and monitoring of integrity threats. Smart pigs are used to periodically inspect for pipeline corrosion, deformation, and pipeline movement using nondestructive sensors. As they evaluate the data, engineers prioritize locations and schedule integrity investigations to physically examine the pipeline.

- CLEANING PIG: Non-instrumented pigs that are designed for cleaning the pipe wall to mitigate internal corrosion and/or prepare the pipe for a smart pig run. The cleaning, or scraper, pigs run in the mainline and mitigate internal corrosion by removing wax and water from the pipe wall, disrupting the life cycle of aerobic bacteria that cause microbiologically influenced corrosion (MIC) when left in place. Cleaning pigs also improve the success rate of smart pig runs by removing debris that would compromise data collected by the sensors.
- INSTRUMENTED (SMART) PIG: Instrumented pigs are in-line inspection (ILI) tools called smart pigs. The data they gather allows engineers to recommend intervention before wall loss anomalies become a problem. Alyeska has been an industry leader in the use of ILI tools, also doing so before it was mandated by regulations. Smart pig sensors can include UT and MFL which are used to detect and measure corrosion and

metal loss internally and externally on the pipe wall, inertial measurement (IMU) to detect pipe movement and curvature, and caliper to detect pipe deformation (dents, ovalities, wrinkles, buckles).

- Ultrasonic Transducer (UT) pig: This pig uses sound waves to measure the thickness of the steel pipe wall. Since the speed of sound in steel is known, pipe wall thickness can be calculated.
- Magnetic Flux Leakage (MFL) pig: This type of inspection tool uses powerful magnets to saturate the pipe wall with magnetism. Sensors between the poles of the magnets detect disturbances in the magnetic field caused by metal loss due to corrosion or other mechanical damage. The MFL tool has 784 sensors to characterize the shape of the disturbance in the magnetic field.
- Caliper and IMU pigs: An IMU pig uses inertial navigation technology to measure the position of the pipe. This device tells the recorder where the pig is in three-dimensional space. Engineers use this data to determine if the pipeline is moving due to settlement or upheaval. A Caliper pig is comprised of 112 radius measuring fingers arrayed around the pig body to measure the shape of the pipe. This data allows the engineers to monitor dents, ovalities and wrinkles in the pipe.

• Facility Piping ILI: Smart pigs used to inspect facility piping are often self-propelled (crawler) using remote operation and require the pipe to be isolated and cleaned prior to performing the inspection. Alyeska uses these tools to inspect varying pipe diameters in configurations that are not outfitted with traditional launching and receiving facilities such as crude oil relief piping systems at pump stations and the ballast water system at the Valdez Marine Terminal.

- PIGLET: Affectionate term for small-bore pigs Alyeska uses to clean and inspect pipe diameters less than 4-inches.

PIG, Frequency: Smart pigs are run in the mainline on a three-year interval. Scraper pigs are run every 14 days (as of 2024). Changes to this schedule are made based on operational needs

PIG, Launching/Receiving Facilities: PS 1 (launch only), PS 4 (launch and receive), PS 8 (contingency launch only for smart pigs), PS 9 (launcher and receiver) and the Valdez Marine Terminal (receive only).

PIPE: The pipe for TAPS was manufactured in Japan (Italy for Atigun floodplain pipe replacement project).

A TAPS employee cleans a scraper pig at the Valdez Marine Terminal. Scraper pigs, which clean the pipeline and enhance oil flow, are pushed by the oil.

- Diameter, outside: 48 inches (122 centimeters).
- Lengths, standard: 40 feet and 60 feet.
- Pieces required for pipeline: More than 100,000.
- Tested to: maximum axial force of 2.52 million pounds and

lateral deflection force of 459,000 pounds before wrinkling (typical test sample: 31 feet 5 inches).
- Thickness, wall: 0.462 inches (466 miles) and 0.562 inches (334 miles).
- Total shipped: 550,000 tons, approximately; 120 shiploads for original construction; six for Atigun Floodplain Pipe Replacement Project.
- Volumetric displacement: 11,366 barrels/mile (0.462-inch thickness); 11,270 barrels/mile (0.562-inch thickness).
- Weight: 235 pounds/linear foot (0.462-inch thickness); 285 pounds/linear foot (0.562-inch thickness).

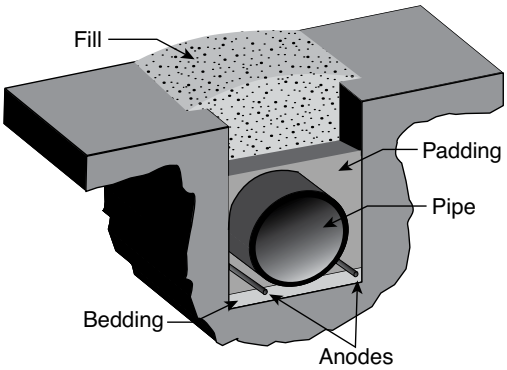
PIPE, Aboveground: Specially designed vertical supports were placed in drilled holes or driven into the ground. In warm permafrost (see "PERMAFROST") and other areas where heat might cause undesirable thawing, the supports contain two, 2-inch diameter pipes called "heat pipes," containing anhydrous ammonia, which vaporizes belowground, and rises and condenses aboveground, removing ground heat whenever the air temperature is 5 to 10 degrees Fahrenheit cooler than the ground temperature at the base of the heat pipe. Heat is transferred through the walls of the heat pipes to aluminum radiators atop the pipes (see "VERTICAL SUPPORT MEMBERS").

PIPE, Belowground (Conventional): The pipe is underlain with a layer of fine bedding material and covered with prepared gravel padding and soil fill material, in a ditch from 8 to 16 feet deep in most locations, but up to 49 feet deep at one location. Zinc ribbons, which serve as sacrificial anodes to inhibit corrosion of the pipe, are buried alongside the pipeline. (The Atigun pipe replacement section, 8.5 miles in length, has four magnesium ribbon sacrificial anodes installed.) Electrical currents in the

earth's surface, called *telluric currents* and caused by the same phenomenon that generates the Northern Lights, can be picked up by the pipeline and zinc/magnesium anodes. The anodes act like grounding rods to safely return these currents to the earth, reducing the risk of damage to the pipeline.

PIPE, Special Burial, Non-Refrigerated: In areas of thaw-unstable soils calling for elevated pipeline construction, but where the pipeline had to be buried for highway crossings, animal crossings, or avoidance of rockslides and avalanches, the line was insulated to protect the permafrost from the heat of the pipeline and buried.

PIPE, Special Burial, Refrigerated: In some areas the line was insulated and buried in a refrigerated ditch. Refrigeration plants at each of these points circulate chilled brine through loops of 6-inch diameter pipe to maintain the soil in a stable frozen condition.



PIPE SHOES: 39,000, approximately.

PORT OF VALDEZ: A natural fjord 12 miles long, 2.5 miles wide and up to 800 feet deep, with a tidal range of 12 to 14 feet.

POWER VAPOR FACILITY: The power generation facility at the Valdez Marine Terminal.

- Primary plant facilities:
  - Three steam boilers each with an output of 175,000 pounds/hour at 600 psi at 750 degrees Fahrenheit.
  - Three condensing steam turbine generators each with capacity of 12.5 MW at 13.8 kV.
- Standby systems:
  - Two 16-cylinder diesel generators: capacity 6.0 MW total.
  - Four uninterruptable power supply systems supplied by 125 volt battery bank for essential control equipment.

PRESIDENTS:
Ed L. Patton, 1970-1976
William Darch, 1976-1978
Frank G. Turpin, 1978-1985
George M. Nelson, 1985-1989
James B. Hermiller, 1989-1993
David Pritchard, 1993-1996
Robert A. Malone, 1996-2000
David G. Wight, 2000-2005
Kevin M. Hostler, 2005-2010
Admiral Thomas, Barrett 2010-2019
Brigham McCown, 2020-2022
Danika Yeager, 2022 (Interim)
Betsy Haines, 2022-2023 (Interim)
John Kurz, 2023-Present

PRESSURE, Maximum Operating: 1,180 psi.

PRESSURE RELIEF STATION: PS 5 re-injects oil drained down for pressure relief, but does not have mainline pumps and does not boost total stream.

PRESSURE RELIEF VALVE: A valve designed to open automatically to relieve pressure and keep it below a designated level.

PRESSURE SPIKE: A sudden, brief rise in pressure.

PRESSURE SURGE: A pressure spike/excursion moving through the pipeline at sonic velocity. Produced by a sudden change in velocity of the moving stream that results from shutting down a pump station or pumping unit, closure of a valve or any other blockage of the moving stream.

PRINCE WILLIAM SOUND REGIONAL CITIZENS ADVISORY COUNCIL (PWSRCAC): Independent citizens' council empowered by the federal Oil Pollution Act of 1990 to provide comment on Alyeska's PWS operations, promoting environmentally safe operation of the Valdez Marine Terminal and the TAPS tanker traffic in PWS.

- Budget: Averages more than $4 million per year (provided by Alyeska under a signed contract that ensures PWSRCAC's absolute independence from Alyeska).
- Members include the Alaska State Chamber of Commerce; Alaska Wilderness Recreation & Tourism Association; Chugach Alaska Corporation; the cities of Cordova, Homer, Kodiak, Seldovia, Seward, Valdez and Whittier; the communities of Chenega Bay and Tatitlek; Cordova District Fishermen United; the boroughs of Kenai Peninsula and Kodiak Island; Kodiak Village Mayors Association; Oil Spill Region Environmental Coalition; and Prince William Sound Aquaculture Corporation.

PRUDHOE BAY: A coastal feature of the Beaufort Sea, approximately 250 miles north of the Arctic Circle and 1,300 miles south of the North Pole. Also used generally to describe a land area of petroleum development of Alaska's North Slope: 18th largest field in the world, largest field in North America.

PUMP STATIONS: Original design called for 12 pump stations with four pumps operating at each pump station. PS 11 was never built. PS 5 was built as a relief station. Eight stations were operating at start-up (PS 1, 3, 4, 6, 8, 9, 10 and 12). PS 8 pump building was destroyed by an explosion and fire on July 8, 1977 that occurred during start-up; the station was re-commissioned on March 7, 1978. PS 2 was commissioned October 2, 1979; PS 7 was commissioned December 1, 1980.

PUMP STATIONS, Crew: Crews vary per station; typically six to 25 employees. Personnel include security, maintenance, technician and safety employees. Shifts are generally one week on/one week off, or two weeks on/two weeks off.

PUMP STATIONS, Crude Oil Tank Capacity: PS 1: 420,000 barrels; PS 5: 150,000 barrels; all others: 55,000 barrels.

PUMP STATIONS, Electrification and Automation (E&A): Pump Stations 1, 3, 4 and 9 have been upgraded to use electrical (instead of diesel) power and are now automated [controlled remotely by Operations Control Center (OCC)]. Pump Stations 5 and 7 are using legacy equipment.

E&A upgrades include:

- Three new electrically driven mainline pump/motor modules or MLUs at Pump Station 1, 3, 4, and 9.
- Power generation modules at PS 1, 3 and 4 that include turbine drivers

- Transmission line and substations for power supply from North Slope Central Power Facility at PS 1 and from GVEA at PS 9
- Electrical distribution system and modules
- Tie-ins and interconnecting crude oil and fuel gas piping and supports
- Essential facilities maintained as appropriate
- Upgraded relief control system actuators
- Upgraded fire and gas systems
- New onsite control, data gathering and data transfer systems
- Upgraded pressure protection and process safety command system

PUMP STATIONS, Fire Systems:
- Airfield rescue and fire training provided at stations with airports
- Pump stations with airports have designated firefighting trucks for the airfields
- Types: Halon, NOVEC, water and foam, wet chemical

PUMP STATIONS, Permanent Living Quarters: Permanent living quarters at PS 4, 5, and 6. PS 9 personnel live in nearby communities.

PUMP STATIONS, Power: The operating pump stations generate electrical power, with power plants or commercial power.

PS 1: has a 12.9MW gas-fired Siemens turbine generator, a 5.2MW gas-fired Rolls Royce turbine generator and commercial power from the Central Power Station.

PS 3 and PS 4: each station has 2 12.9MW gas-fired Siemens turbine generator.

PS 5: has a diesel-fired 800Kw solar turbine generator and 3-400Kw diesel-fired Garrett turbine generator.

PS 9: Receives their electric power from Golden Valley Electric Association.

PUMP STATIONS, Recirculation: At pump stations with Siemens turbine generators, oil is recirculated within the pump station in order to maintain the minimum loading on the turbine generators.

PUMP STATIONS, Refrigerated Foundations: PS 1, 3, 5 and 6.

PUMP STATIONS, Status as of 2024:
- PS 1, 3, 4 and 9 operating pumping stations.
- PS 2 ramped down July 1, 1997.
- PS 5 operating as relief station.
- PS 6 ramped down August 8, 1997.
- PS 7 ramped down 2023.
- PS 8 ramped down June 30, 1996, now used for heating crude oil.
- PS 10 ramped down July 1, 1996, demolished in 2019.
- PS 11 was not built, but has maintenance facilities.
- PS 12 ramped down April 1, 2005, demolished in 2022.

PUMP STATIONS, Turbines: Turbine engines drive the pumps. See "TURBINES."

PUMPS, Booster: All pump stations have booster pumps to move oil from the storage tanks to the mainline. (PS 1 has two mainline booster pumps to boost oil pressure.) PS 5 has one injection pump.

The pipeline begins at Pump Station 1 in Prudhoe Bay.

R

RECIRCULATION: See PUMP STATIONS, Recirculation.

REGULATORY AGENCIES: The following agencies have jurisdiction over various aspects of TAPS. **The asterisk denotes a member of the Joint Pipeline Office (JPO):*

- Alaska Department of Environmental Conservation*
- Alaska Department of Fish and Game*
- Alaska Department of Labor & Workforce Development*
- Alaska Department of Natural Resources*
- Alaska Department of Public Safety
- Alaska Department of Transportation & Public Facilities
- Alaska State Fire Marshal*
- Regulatory Commission of Alaska
- Federal Aviation Administration
- Federal Energy Regulatory Commission
- Federal Maritime Commission
- Interstate Commerce Commission
- Local Boroughs and Municipal Governments
- U.S. Environmental Protection Agency*
- U.S. Fish and Wildlife Service*
- U.S. National Transportation Safety Board

RESTORATION, Visual Impact Stipulations: See "VISUAL IMPACT STIPULATIONS."

RIGHT-OF-WAY USE GUIDELINE (RUG) Program: TAPS crosses hundreds of tracts of public and private land, has above- and belowground segments, and is designed to accommodate transportation crossings at documented public trails. Alyeska adopted a policy for protecting the safe operation of TAPS and respecting the rights of public and private landowners along the TAPS ROW while assuring the public's right of entry under the law. Alyeska requires those wanting linear use of the ROW or its numerous access roads to register for permission under the Right-of-Way Use Guideline (RUG). Perpendicular pipeline crossings with vehicles under 1,500 pounds or non-vehicular, low-impact modes of transportation may proceed without Alyeska permission. While on the ROW, individuals must be in possession of a copy of the RUG plus government-issued photo identification to be presented if requested by TAPS security officer or employee.

The ROW was not designed to be used as a roadway and can be hazardous. Depending upon security conditions, TAPS work activity or weather, portions of the ROW may be closed to the public. Blocking Alyeska access roads is not allowed. Hunting, trapping or shooting along the pipeline ROW is also prohibited.

RIGHT-OF-WAY WIDTHS:

- Federal lands: 54 feet (buried pipe); 64 feet (elevated pipe)
- State lands: 100 feet
- Private lands: 54 to 300 feet

ROAD CROSSINGS, Pipeline: 17 (highway) north of Yukon River; 22 south (highway and numerous state and municipal maintained roads). The crossing at the Glenn Highway in Glennallen is refrigerated.

S

SAFETY MANAGEMENT SYSTEM: Managing a pipeline, like other manufacturing and industrial activities, requires a systematic approach to conduct safe operations. Alyeska is following the recommendation of the U.S. National Transportation Safety Board by adapting the Pipeline Safety Management System (SMS). This can maximize safety performance and serve as a model to risk-prone industries. SMS provides operators with a structured, comprehensive, regular method of assessing risks of operations, learning from experience and continuously improving pipeline safety.

SMS will help TAPS operators more effectively manage all the aspects of pipeline safety through a 10-step multifaceted approach.

1. Leadership and management commitment
2. Stakeholder engagement
3. Risk management
4. Operational controls
5. Incident investigation, evaluation and lessons learned
6. Safety assurance
7. Management review and continuous improvement
8. Emergency preparedness and response
9. Competence, awareness and training
10. Documentation and record keeping

Alyeska incorporates SMS into its existing safety management

processes, ensuring operators integrate learnings from industry trends, incident findings and recommendations, regulatory notices and advisories, internal audits and evaluations or changes in operations. The result is a comprehensive system that is a catalyst for safety management and allows for flexible and scalable solutions.

SAFETY, Philosophy: The management and employees of Alyeska Pipeline Service Company believe that:

- All occupational injuries and illnesses are preventable.
- All Alyeska personnel have a personal responsibility for their own safety and the safety of their co-workers.
- If an employee or contractor observes or knows of an unsafe condition(s), he or she will appropriately and respectfully intervene to mitigate that condition(s). If the unsafe condition(s) cannot immediately be addressed or mitigated, it will be immediately reported up the chain of command.
- No business objective is so important that it will be pursued at the sacrifice of safety.
- Safe conduct is a condition of employment at APSC.
- Safety is an integral part of every job performed on TAPS.
- APSC will have the best safety performance in the industry.

These statements represent Alyeska's fundamental safety beliefs that are vital to Alyeska's business. Internalizing these beliefs will ensure that nobody gets hurt.

SECTION 29: Prior to the construction of TAPS, Alyeska made a commitment to the Alaska Native community to recruit, train, employ and promote Alaska Natives. This commitment was defined in Section 29 of the Federal Agreement and Grant of Right-of-Way for the Trans Alaska Pipeline System. Section 29

recognizes that Alaska Natives as landowners, like all private landowners, must be compensated for land use and occupancy. Instead of cash payments, Alaska Natives opted for jobs and job training opportunities (see "ALASKA NATIVE PROGRAM").

SERVS (Ship Escort/Response Vessel System): The mission of SERVS, which was established July 10, 1989, is to prevent oil spills by assisting tankers in safe navigation through Prince William Sound and to protect the environment by providing effective response services to the Valdez Marine Terminal and Alaska crude oil shippers in accordance with oil spill response agreements and plans.

SERVS, Boom: More than 50 miles of various types of oil containment and recovery boom are available at SERVS.

SERVS, Escort Tugs: See "ESCORT TUGS."

SERVS, Fishing Vessels: 450+ vessels.

SERVS, General Purpose Tugs: See "GENERAL PURPOSE TUGS."

SERVS, Nonmechanical Response Equipment:

- Helitask Airborne Dispersant Systems (2): Treatment potential 4,200 gallons/payload
- Heli-torch: One airborne ignition system
- Spill spray: Two meter-controlled dispersant spray arm systems on Escort Tugs Commander and Courageous

SERVS, Pre-staged equipment: Hatcheries and sensitive areas: Lake Bay, Cannery Creek, Solomon Gulch, Main Bay, Sawmill Bay, Valdez Duck Flats.

SERVS, Response Barges: 8.
- Open water barges: 4: OSRB-1, OSRB-2, OSRB-3 and OSRB-4
- Dedicated Nearshore Barge: 1: 500-2
- Lightering Barge: 1: OSRB-5
- Deck Barge: 1: Sawmill Creek
- Small Product Storage Barge: 1: Allison Creek
- Total storage capacity: more than 600,000 barrels

SERVS, Response Centers: Chenega Bay, Cordova, Tatitlek, Valdez and Whittier.

SERVS, Skimmers: Approximately 150 skimming units.
- Skimming capacity: Ranges from greater than 1,258 barrels/hour to small systems for operating in shallow water
- Total recovery capacity: More than 30,000 barrels/hour
- Valdez Star oil spill recovery vessel: 123-foot vessel with dynamic-inclined-plane skimming system with a design skimming capacity of 2,000 barrels/hour

SERVS, Vessels (Utility Tug): The anchor-handler Ross Chouest is SERVS' utility tug. It performs mooring maintenance, supports fishing vessel training and carries out a host of other duties.

SERVS, Wildlife Task Force: Wildlife task forces are vessels with trained crews who perform wildlife response tactics and have received training in wildlife hazing, bird and otter capture and transport, and wildlife carcass collection.

SHIP ESCORT/RESPONSE VESSEL SYSTEM: See "SERVS."

SLACKLINE: Oil flow that does not completely fill a pipeline.

SOIL SURVEYS, Pre-Construction:
- Bore holes: 3,500, approximately.
- Soil samples: 15,000, approximately.

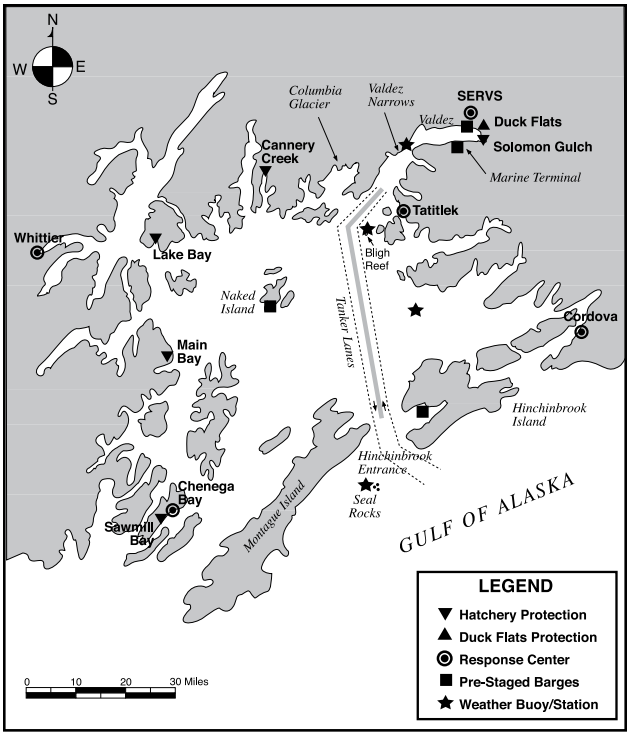
SPILLS, Reported: The table on the next page lists the yearly totals for crude oil spills reported to agencies according to U.S. Department of Transportation regulations. These spills include Alyeska and shipper vessel spills that occurred on TAPS.

REPORTABLE SPILLS BY YEAR

Year	# of Spills	Amount (barrels)
1977	34	1,932
1978	24	16,013
1979	43	5,566
1980	55	3,531
1981	32	1,508
1982	30	39
1983	17	4
1984	32	78
1985	31	27
1986	40	38
1987	37	4
1988	35	14
1989	26	251,712
1990	31	6.06
1991	54	11
1992	55	19.5
1993	65	8.6
1994	44	324
1995	6	2
1996	12	814
1997	5	2
1998	5	.5
1999	4	.07
2000	3	3.9

Year	# of Spills	Amount (barrels)
2001	11	6,857
2002	3	.1
2003	3	.31
2004	0	0
2005	0	0
2006	3	1.33
2007	4	21.64
2008	1	.10
2009	2	.93
2010	2	2,580.12
2011	4	308.39
2012	4	5.92
2013	5	1.26
2014	0	0
2015	5	5.33
2016	2	3.1
2017	1	1.2
2018	0	0
2019	1	3.92
2020	0	0
2021	0	0
2022	1	18
2023	0	0

*See back inside cover for 2024 update.



Map of Prince William Sound showing tanker lanes, hatcheries and duck flats, response centers, pre-staged barge locations that contain spill response equipment, and weather buoys and stations.

T

TANKER VAPOR CONTROL SYSTEM: Berths 4 and 5 are fitted with vapor recovery arms to collect vapors released during tanker loading. Operation of the system began in March 1998.

TANKERS, Aids to Navigation and Safety:

- Major lighthouse, light towers, differential GPS coverage, radar reflectors, racons, fog signals, buoys, day markers and strobe beacons.
- The U.S. Coast Guard maintains a vessel traffic service which includes radio/telephone communications with vessels, GPS-based transponder surveillance system in the Gulf of Alaska approaches and Prince William Sound, and two radar sites providing coverage in Port Valdez, the Valdez Narrows and Valdez Arm.
- Vessels are escorted through Prince William Sound.
- Ice navigation rules/restrictions and wind restrictions apply to tanker operations in the Sound.

TANKERS, Alyeska Role: The tankers that carry oil from the Valdez Marine Terminal are not owned by Alyeska. The role of Alyeska is to operate the Terminal and SERVS on behalf of the tanker owners. Alyeska, through SERVS, is contracted as a primary response action contractor to provide services in the event or threat of an oil spill from a tank vessel carrying crude oil that has been transported by TAPS.

TANKERS, Approach Routes:
- Gulf of Alaska to Prince William Sound to Port Valdez, via Hinchinbrook Entrance following dedicated traffic lanes to Valdez Arm and Valdez Narrows.
- Hinchinbrook Entrance: 6.4 to 6.8 miles clearance.

TANKERS, Classification:
- General purpose: Up to 25,000 dwt.
- Super tanker: 25,000 to 150,000 dwt.
- Very large crude carrier (VLCC): 150,000 to 300,000 dwt.
- Ultra large crude carrier (ULCC): More than 300,000 dwt.

TANKERS, Draft of Largest Tankers: 85 feet.

TANKERS, Escorts: Outbound laden tankers are escorted by two tugs from the Terminal to Cape Hinchinbrook, a distance of approximately 77 miles, with one tug remaining on station at Cape Hinchinbrook until the tanker proceeds 17 miles into the Gulf of Alaska. One of the tugs is attached (tethered) to the tanker for the first 20 miles to provide immediate assistance if required. Inbound tankers (in ballast) are provided a standby sentinel escort from the Gulf of Alaska to the Terminal. Inbound laden tankers are escorted in the same way, but in reverse order of operations. In 2018, a fleet of new, mission-built tugs arrived in Prince William Sound, a significant investment in safe oil transportation for years to come. The tanker escort system in Prince William Sound uses best available technology in accordance with State of Alaska and federal laws.

TANKERS, Largest Berthed and Loaded to Date:
270,000 dwt.

TANKERS, Natural Phenomena Affecting Movements:

- High winds: The Valdez Narrows is closed to all tanker traffic if the winds exceed 40 knots.
- Cape Hinchinbrook: When the winds exceed 45 knots or the seas exceed 15 feet, Hinchinbrook Entrance is closed to laden tankers.
- Glacier ice: The U.S. Coast Guard Prince William Sound Vessel Traffic Center may impose ice routing measures as appropriate. These may include movable one-way zones, daylight-only restrictions or closure to tankers (see also "COLUMBIA GLACIER").

TANKERS, Number Loaded per Month: 20 average (2024)

TANKERS, Size that can be Berthed and Loaded: Berths 4 and 5: 270,000 dwt

TANKERS, Traffic Lanes:

- Depths along: 600 to 1,000 feet average; 350 feet minimum (in Valdez Narrows)
- Distance separating: 1 mile
- Width: 3/4 mile
- Valdez Narrows: One-way traffic; clearance 1,000 yards from Middle Rock to southeast shore

TELLURIC CURRENTS: Electrical currents in the earth's surface, caused by the same phenomenon that generates the northern lights.

THERMAL EXPANSION: Change in pipe length due to change in crude oil temperature.

- Tie-in temperature: Actual pipe temperatures at the time when final welds were made which joined strings of pipe into a continuous line

- Hot position: Pipe at maximum oil temperature (145 degrees Fahrenheit)
- Cold position: Pipe at minimum steel temperature (minus 60 degrees Fahrenheit, pre-start-up)
- Each 40-foot length of pipe expands 0.031 inches with each 10 degree Fahrenheit rise in temperature and contracts the same distance with each 10 degree Fahrenheit drop in temperature
- Longitudinal expansion of typical 720-foot straight aboveground segment from minimum tie-in temperature to maximum operating temperature: 9 inches. Note: Due to anchoring, the pipeline does not expand lengthwise, but shifts laterally on the aboveground supports (see "ZIGZAG CONFIGURATION")
- Maximum aboveground lateral movement:
  - Tie-in to hot position: 8 feet
  - Tie-in to cold position: 4 feet
- Thermal stress: Maximum 25,000 psi where belowground pipeline is fully restrained by the soil (the maximum longitudinal stress due to change in temperature from pipe temperature at tie-in to maximum oil temperature)

THROUGHPUT: The amount of North Slope crude oil transported from PS 1 to the Valdez Marine Terminal

THROUGHPUT, Average (2023): 469,196 barrels/day, or 19,549.8 barrels/hour or 13,684 gallons/minute.

THROUGHPUT, History: See table on next page.

Year	Daily Average	Yearly Total	Cumulative Total
1977	610,408	112,315,078	112,315,078
1978	1,088,078	397,148,560	509,463,638
1979	1,282,025	467,939,079	977,402,717
1980	1,516,022	554,864,192	1,532,266,909
1981	1,523,368	556,029,380	2,088,296,289
1982	1,619,973	591,290,205	2,679,586,494
1983	1,645,699	600,680,701	3,280,266,701
1984	1,663,353	608,787,098	3,889,053,799
1985	1,780,561	649,904,636	4,538,958,636
1986	1,823,144	665,447,508	5,204,406,144
1987	1,963,770	716,776,052	5,921,182,196
1988	2,032,928	744,051,738	6,665,233,934
1989	1,884,829	687,962,558	7,353,196,492
1990	1,793,082	654,474,774	8,007,671,266
1991	1,822,463	665,198,902	8,672,870,168
1992	1,746,969	639,390,499	9,312,260,667
1993	1,619,780	591,219,747	9,903,480,414
1994	1,587,459	579,422,667	10,482,903,081
1995	1,522,918	555,864,927	11,038,768,008
1996	1,435,971	525,565,207	11,564,333,215
1997	1,334,293	487,017,022	12,051,350,237
1998	1,206,799	440,481,529	12,491,831,766
1999	1,078,101	393,506,885	12,885,338,651
2000	999,324	365,752,587	13,251,091,238
2001	992,285	362,183,985	13,613,275,223
2002	1,000,916	365,334,233	13,978,609,456
2003	993,276	362,545,886	14,341,155,342

Year	Daily Average	Yearly Total	Cumulative Total
2004	935,108	342,249,701	14,683,405,043
2005	891,104	325,252,788	15,008,657,831
2006	759,081	277,064,405	15,285,722,236
2007	740,170	270,161,990	15,555,884,226
2008	703,551	257,499,836	15,813,384,062
2009	672,028	245,290,119	16,058,674,181
2010	619,655	226,174,050	16,284,848,231
2011	582,895	212,756,749	16,497,604,980
2012	547,866	200,518,907	16,698,123,887
2013	534,480	195,085,253	16,893,209,140
2014	513,441	187,406,088	17,080,615,228
2015	508,446	185,582,715	17,266,197,943
2016	517,686	189,539,817	17,455,737,760
2017	527,323	189,539,817	16,893,209,140
2018	509,315	185,900,077	17,834,110,634
2019	490,366	178,983,638	18,013,094,272
2020	480,199	175,752,654	18,188,846,926
2021	477,798	174,396,146	18,363,243,072
2022	483,415	176,446,377	18,539,689,449
2023	469,196	171,256,363	18,710,945,812

*See back inside cover for 2024 update.

THROUGHPUT, Maximum Daily: 1.14 million barrels average (with four pump stations operating). Rates exceeding 750,000 barrels require addition of drag reducing agent (DRA).

TOPPING UNIT: Mini-refinery that produces turbine fuel. The topping units are no longer in service on the pipeline. Topping units are located at PS 6, 8 and 10, and all are ramped down. The unit at PS 10 was ramped down in 1995, the unit at PS 8 in 1996 and the PS 6 unit in 1997.

TRANS ALASKA PIPELINE SYSTEM: The formal name for the infrastructure maintained and operated by Alyeska Pipeline Service Company. The informal acronym more commonly used is TAPS.

TRANS ALASKA PIPELINE SYSTEM, in Pop Culture: TAPS makes numerous appearances in pop culture. Highlights include a 1976 movie and song titled "Pipe Dreams," helmed by Gladys Knight; a 1977 Godzilla comic that finds the mythical beast wrenching the pipe from its supports and wielding it as a weapon; a 1978 TV commercial for Ford Motorcraft products featuring Muhammad Ali in a furry-hooded parka, with rigs ripping beneath TAPS amid flurries of snow; the 2007 vampire flick *30 Days of Night* that features characters that are pipeline employees; and the follow-up to the classic 1970s TV show *Sanford and Son*, called *Sanford*, which credits son Lamont's absence to having relocated to Alaska to work on the pipeline. In 2007's *The Simpsons Movie*, the Simpson family is treated with a $1,000 check upon entering Alaska, and told it's essentially a payoff from oil companies. The industry is also broadly featured in Steven Seagal's 1994 macho movie *On Deadly Ground*, which filmed on location in Valdez and also made Siskel and Ebert's list of the 10 worst movies of the year. The pipeline is also a central figure in many, many badly reviewed novels.

TURBINES, Fuel Requirements, SGT 400:

- Gas-fired units: 3.5 million standard cubic feet/ unit/day, average

- Liquid-fired units: 20,000 gal/unit/day, average (rim cooled); 24,000 gal/unit/day, average (non-rim cooled)

TURBINE GENERATORS, Electrical: PS 1 has one Siemens SGT 400 12.9 MW and one Rolls Royce 501KB7S 5 MW turbine generator. PS 3 and 4 each have two Siemens SGT 400 12.9 MW turbine generators. The units provide electricity to the station for essentials such as heat and lighting, as well as power for operation of the newer electrical pumps. At PS 1, both units are natural gas fired. At PS 3 and 4, one unit each is fired on natural gas only, while one unit each can be fired on natural gas or liquid (diesel) fuel. Liquid fuel is only used when the natural gas line is out of service. At PS 1, the SGT 400 is the normal turbine generator in service. The Rolls Royce–powered turbine generator is a backup, and Prudhoe-area grid power can be imported, if necessary. At PS 3 and 4, one unit at each station is normally in operation during summer months, and both units are normally in operation at each station during the winter months when pump recycle is being utilized. A gas-fired Rolls Royce 501 KB7S running at full load consumes approximately 1.7 million standard cubic feet per day.

U

ULTIMATE STRENGTH: The stress level at which the pipe will fail/rupture or break. The ultimate strength of the steel is determined by testing during the manufacture of the pipe.

V

VALDEZ MARINE TERMINAL (TERMINAL): The Terminal, the southern terminus of the Trans Alaska Pipeline, is located on ice-free Port Valdez at the northeastern end of Prince William Sound. The Terminal occupies approximately 1,000 acres on the southern shore of Port Valdez. The facility was designed to load tankers and to provide the storage capacity in TAPS to allow production on the North Slope to operate without impact-related delays from the marine transportation system. The Terminal today operates with two tanker loading berths, with 13 storage tanks with a working inventory capacity of 6.6 million barrels of crude oil.

VALDEZ MARINE TERMINAL, Cost to Build: $1.4 billion.

VALDEZ MARINE TERMINAL, Elevation: Sea level to 660 feet. All facilities except berths are 15 feet or higher.

VALDEZ MARINE TERMINAL, Emergency Shutoff Valves: Crude oil loading onto a tanker can be shut down in less than 10 seconds at loading rates up to 100,000 barrels/hour.

VALDEZ MARINE TERMINAL, Firefighting: Alyeska Pipeline Fire & Rescue, a registered fire department with the Alaska Division of Fire and Life Safety, has a robust training program and provides on-scene fire, technical rescue and emergency medical response to the Terminal.

• Fire boats: Six (tugs equipped with firefighting equipment).

- Three industrial fire engines; one squad (rescue truck/fire engine pumper); one foam tanker, one ambulance, four mobile fire response trailers.
- Personnel training: All Terminal technicians trained to incipient level; advanced training for exterior and interior level fire brigade members; annual refresher for all three levels.
- Systems: Portable extinguishers, water and foam systems, Halon, NOVEC.
- The brigade performs rescue standby for over 2,000 confined space entries annually.
- The brigade is part of the Source Control team that provides emergency response to the pipeline.

Valdez Marine Terminal (VMT).

VALDEZ MARINE TERMINAL, Fuel Requirements: All Terminal and SERVS operations (fuel oil equivalent), 500 barrels/day, average.

VALDEZ MARINE TERMINAL, Holding Tanks (Crude):

- Capacity: 510,000 barrels each; 9.18 million barrels total volume.
- Dimensions: Height 63.3 feet, diameter 250 feet.
- Floor thickness: 1/4-inch steel plate (on concrete ring wall).
- In service: 13.
- Number: 18 constructed; 13 in service.
- Roof: fixed, conical.
- Roof supports: 61 columns, 24 inches in diameter.
- Slosh zone: 3 feet, 9 inches.
- Space enclosed: 1.2 acres each, approximately.
- Wall thickness: Graduated from 1-1/8 inch steel bottom ring, to 1/2 inch top ring.

VALDEZ MARINE TERMINAL, Holding Tanks (Crude) Containment Dikes:

- Capacity: 110 percent capacity of both tanks, which accounts for water and snow accumulation.
- Number of tanks in each: two.
- Reinforcing steel: 52 miles in each, diameter 1/2 to 3/8 inch.

VALDEZ MARINE TERMINAL, Stack Heights: boiler, 300 feet; incinerators (four) 108 feet.

VALDEZ MARINE TERMINAL, Tanker Vapor Control System: See "TANKER VAPOR CONTROL SYSTEM."

VALDEZ MARINE TERMINAL, Vapor Recovery: Five rotary compressors each rate at 13,500 standard cubic feet per minute. Two compressors are dedicated to recovering vapors

from storage tanks, two compressors dedicated to recovering vapors from tanker berths and one swing compressor that can provide either function.

VALDEZ NARROWS, Clearance: 1,000 yards: Middle Rock to southeast shore.

VALVE, Block: When closed, the valve can block oil flow in either direction. Block valves include manual gate valves, remote gate valves, and station block valves (suction valves and discharge valves).

- Manual gate valve: Block valve that is operated manually; placed in check valve segments periodically to provide more positive isolation than can be provided by check valves during pipeline maintenance.
- Remote gate valve (RGV): A remotely controlled block valve for the primary purpose of isolating segments of the line in the event of a catastrophic pipeline break. Valve operating times are either four or eight minutes to fully open or fully close.
- Station block valve: A gate valve installed at the inlet (suction) side and the outlet (discharge) side of the pump station or terminal to isolate the facility from the pipeline in the event of an emergency.

VALVE, Check: A valve that operates one-way and prevents the reverse flow of oil. Check valves are designed to be held open by flowing oil and to drop closed automatically when oil flow stops or is reversed. To increase operating efficiency, some check valves are held fully open mechanically, thus lifting valve clappers entirely free of the oil stream, reducing turbulence. Actuators fitted to these valves receive signals from flow or pressure sensors to drop the valve clappers free. Once the

clappers have been released, the actuated check valve functions as a normal check valve to stop flow reversal. Approximately one-half of the mainline check valves are fitted with hydraulic actuators. The remainder have manual actuators only.

VALVE, Pipeline:
- Check: 83.
- Remotely Operated Gate Valve: 63.
- Block Gate Valve: There is a BL1 and BL2 at each pump station, except Pump Station 1; there is only BL1 there. Block Valves at Pump Station 2 were removed. Total number: 21
- Total: 176

VALVE, Pressure Relief: A valve designed to open automatically to relieve pressure and keep it below a designated level.

VALVE REPAIR PROGRAM: The program's goal is to evaluate the conditions of TAPS valves, actuators, and operators as appropriate and to implement a comprehensive maintenance program to ensure long-term system integrity.

VALVES, Pump Stations and Terminal:
- Size: two to 48 inches.
- Design pressure: varies to meet process conditions. (Class 150# through Class 2500#).
- Type: gate, ball, check, plug, etc.

VAPOR RECOVERY: See "VALDEZ MARINE TERMINAL, Vapor Recovery."

VERTICAL SUPPORT MEMBERS (VSM): Pipe embedded in the ground to support the aboveground pipe in areas of thaw-unstable permafrost. Some VSMs contain heat pipes to remove heat and keep the ground frozen.

- Number: 78,000.

- Depth embedded: 15 to 70 feet.
- Distance between: anchor supports, 800 to 1,800 feet; standard supports, 60 feet, approximately.
- Number fitted with heat pipes: 61,000 (122,000 individual heat pipes, two per VSM where fitted).

VESSEL OF OPPORTUNITY PROGRAM: Alyeska Pipeline, through the Ship Escort/Response Vessel System (SERVS), contracts with more than 400 vessels around Prince William Sound to provide oil spill response support. The Vessel of Opportunity program was started in 1990 to employ local residents in oil spill response, especially those working in the fishing industry. Today, the boats and their crews are an integral part of Alyeska's response readiness. Every year, vessels of opportunity participate in rigorous training that lasts several days. Crews spend time in the classroom learning oil spill and emergency response basics. Then they head on water for hands-on experience. They work with SERVS personnel on response barges to load up their own boats with equipment, and then practice deploying boom, setting up skimmers, and rehearsing other recovery tactics. Additionally, many vessels participate in drills and exercises to ensure they are prepared to respond in case of an actual incident. Vessel Administrators have offices in Cordova, Whittier, Kodiak, Homer, Seward and Valdez.

VISUAL IMPACT STIPULATIONS:
- Access roads: 12 degrees maximum allowable grade.
- Buffer strips (undisturbed land):
  - 300-foot width of undisturbed land along streams.
  - 500-foot width required between state highways and material sites.
  - half mile required between workpads and parks, refuges, etc.
- Right-of-way visibility: maximum straight length permitted visible from highway: 600 feet.

W-Z

WATERFLOOD: An oil field term referring to a system of pumping water into the oil reservoir behind the produced oil to maintain reservoir pressure and ultimately recover more oil.

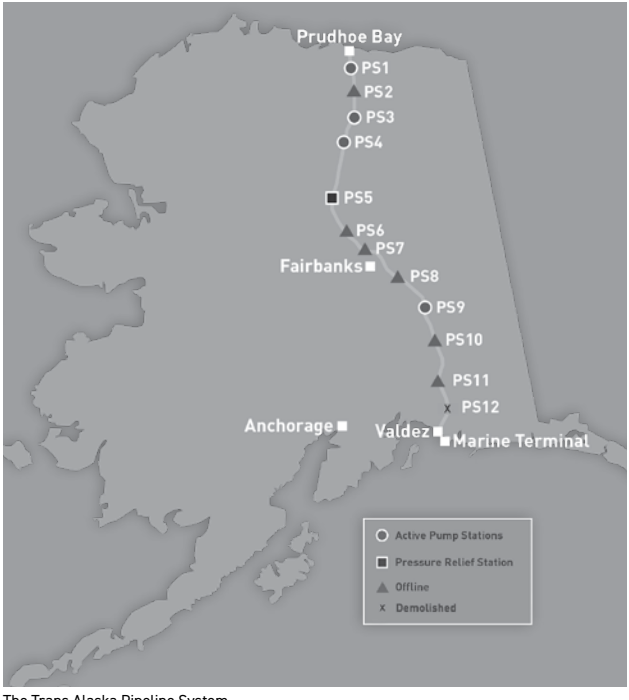
WELDS, Pipe:

- Double joints: 42,000 (a double joint is two pipe sections welded into a single length before transport to the field for placement in the line).
- Field girth welds: 66,000
- Passes for field girth welds: seven for 0.562-inch pipe; six for 0.462-inch pipe

YIELD STRENGTH: The stress level above which the pipe will yield, bend and/or stretch.

ZIGZAG CONFIGURATION: Aboveground sections of the pipeline are built in a zigzag configuration to allow for expansion or contraction of the pipe because of temperature changes. The design also allows for pipeline movement caused by an earthquake.

map, TAPS



The Trans Alaska Pipeline System.

history, TAPS

The following is a chronology of significant events during operations of the Trans Alaska Pipeline System.

1968

Mar. 13 Atlantic Richfield Company (ARCO) and Humble Oil and Refining Company (now Exxon Company, U.S.A.) announce Prudhoe Bay discovery well.

June 25 Confirmation well announced by ARCO and Humble.

July 29 Pipeline field study team arrives in Alaska under authority of a transportation subcommittee of an ARCO-Humble North Slope Coordinating Committee.

Oct. 28 Atlantic Pipeline Company (a subsidiary of Atlantic Richfield), Humble Pipe Line Company (a subsidiary of Humble Oil and Refining Company), and BP Exploration U.S.A., Inc. (a subsidiary of British Petroleum Company, Ltd.) enter into an "agreement for a planning study and for engineering design and construction of the Trans Alaska Pipeline Project."

1969

Feb. 7 Atlantic Pipeline, Humble Pipe Line and BP Oil Corporation (formerly BP Exploration U.S.A., Inc.) approve an amendment to their original agreement, electing to proceed with design and construction, and changing the name of the project to *Trans Alaska Pipeline System*. The acronym *TAPS* is coined.

Feb. 10 Atlantic Pipeline, Humble Pipe Line and BP Pipeline Corporation (a subsidiary of BP Oil Corporation) announce plans to build an 800-mile trans-Alaska pipeline.

June 6 TAPS files for federal right-of-way permits over public lands.

Sept. 13 First 48-inch pipe arrives in Valdez from Japan.

Oct. 22 Humble Pipe Line, Atlantic Pipeline, and BP Pipeline are joined by Amerada Hess Corporation, Home Pipeline Company, Mobil Pipeline Company, Phillips Petroleum Company and Union Oil Company of California in joint venture.

December Road from Livengood to the Yukon River was built (winter of 1969-1970).

1970

April Lawsuits are filed by environmental groups and others to block pipeline construction.

Aug. 27 Trans Alaska Pipeline System Agreement made and signed by Atlantic Pipeline Company, BP Pipeline Corporation, Humble Pipe Line Company, Amerada Hess Corporation, Home Pipeline Company, Mobil Pipeline Company, Phillips Petroleum Company and Union Oil Company of California, all referred to as *TAPS Owners*.

Aug. 27 TAPS Owners form Alyeska Pipeline Service Company, a separate corporation.

Aug. 27 Agreement made to design and construct the Trans Alaska Pipeline. Alyeska Pipeline Service Company appointed as contractor and agent for the construction project.

1971

Jan. 1 Atlantic Pipeline Company (TAPS Owner) stock reissued to ARCO Pipeline Company.

1973

Nov. 16	Trans Alaska Pipeline Authorization Act (TAPAA) becomes law.

1974

January	Home Pipeline Company (TAPS Owner) stock reissued to six other oil pipeline companies.
Jan. 3	Federal right-of-way grant issued.
Apr. 29	Construction of road from Prudhoe Bay to Yukon River begins.
May 3	State right-of-way lease issued.
Sept. 29	Road from Prudhoe Bay to Yukon River completed.
Dec. 19	Humble Pipe Line Company (TAPS Owner) stock reissued to Exxon Pipeline Company.

1975

Mar. 27	First pipe laid at Tonsina River.
Oct. 11	Yukon River Bridge completed.
Oct. 26	Pipeline project 50 percent complete.

1977

May 20	Operating agreement established between Alyeska Pipeline Service Company (as agent) to operate and maintain TAPS on behalf of TAPS Owners.
May 31	Final pipeline weld near PS 3.
June 20	First oil flows from PS 1 (10:26 a.m. AST, pig in trap; 10:27 a.m. AST, pig depart signal).

June 24	Oil front at PS 3 (12:56 p.m.).
June 25	Oil front at PS 4 (7:50 a.m.).
June 28	Oil front at PS 5 (6:23 a.m.).
July 1	Oil front at PS 6 (6:30 p.m.).
July 4	Nitrogen leak detected ahead of oil front, MP 489.12 (near PS 8 north block valve). Oil flow stopped.
July 7	Pipe repair, MP 489.12. Pipe and elbow cracked from injection of super cooled nitrogen. Pipe replaced.
July 7	Oil front at PS 8 (9:24 p.m.).
July 8	PS 8 pump building destroyed by explosion and fire; one fatality; oil loss, 300 barrels.
July 19	Oil leak (heavy equipment accident) at CV 7, 1,800 barrels.
July 20	Oil front at PS 9 (10:37 a.m.).
July 22	Oil front at PS 10 (4:46 a.m.).
July 26	Oil front at PS 12 (3:48 a.m.).
July 28	Oil reaches the Terminal (11:02 p.m.).
Aug. 1	*ARCO M/V Juneau* departs Valdez with first oil.

1978

Feb. 15	Oil spill caused by sabotage at Steele Creek, MP 457.53, 16,000 barrels.
Feb. 16	Pipe repair MP 457.53.
Mar. 7	PS 8 recommissioned (11:05 a.m.).

1979

June 10	Oil leak caused by pipe settlement at MP 166.43, Atigun Pass, 1,500 barrels.

June 13	*ARCO M/V Heritage*, 1,000th tanker to load.
June 15	Oil leak caused by pipe settlement at MP 734.16, 4,000 barrels.
June 19	Pipe repair, MP 734.16.
July 1	First commercial injection of DRA into pipeline at PS 1.
Aug. 18	Curvature pig (super pig) stuck in line at CV 29.
Sept. 25	CV 29 opened; stopple and bypass installed; curvature pig removed.
Oct. 2	PS 2 commissioned.
October	Yukon River Bridge opened.

1980

Jan. 22	One billionth barrel arrives at the Terminal.
Feb. 11	Oil leak from leaking valve at the Terminal east tank farm, 3,200 barrels.
May 12	Oil leak from relief tank valve, 238 barrels.
Sept. 20	Monument to pipeline construction workers dedicated at the Terminal.
Dec. 1	PS 7 commissioned.
Dec. 29	*M/V Thompson Pass*, 2,000th tanker to load.

1981

Jan. 1	Oil leak from drain connection failure at CV 23, 1,500 barrels.
Nov. 10	Two billionth barrel arrives at the Terminal.
Dec. 15	First Kuparuk field oil delivered to PS 1.

1982

June 7 RGV 121A, uncommanded closure.

June 19 *M/V Philadelphia*, 3,000th tanker to load.

June 20 Fifth anniversary of TAPS operations.

1983

July 21 Three billionth barrel arrives at the Terminal.

Nov. 8 *M/V Tonsina*, 4,000th tanker to load.

1984

Mar. 20 Removal of stuck scraper pig at CV 4 and relocation of pig trap from PS 5 to PS 4.

Nov. 1 Removal of stuck pig at PS 10.

1985

Jan. 11 *M/V Overseas Boston*, 5,000th tanker to load.

Mar. 11 Four billionth barrel arrives at the Terminal.

Apr. 22 MP 200 final tie-in of 48-inch permanent reroute (404.7 feet added to total pipeline length); reroute due to pipe settlement.

Nov. 2 Milne Point field start-up.

Nov. 9 Two primary generators damaged by fire in generator room at PS 1.

1986

Mar. 5 *ARCO M/V Sag River*, 6,000th tanker to load.

Apr. 18	Union Oil Pipeline Company (TAPS Owner) becomes Unocal Pipeline Company.
Sept. 15	Five billionth barrel arrives at the Terminal.
Nov. 18	"Tee" damaged by scraper pig at PS 10; tee replaced.
Dec. 15	Lisburne field start-up.
Dec. 24	Sohio Pipeline Company (TAPS Owner) becomes Sohio Alaska Pipeline Company.

1987

Apr. 1	First high-definition corrosion pig run.
Apr. 19	*M/V Atigun Pass*, 7,000th tanker to load.
June 20	Tenth anniversary of TAPS operations.
Sept. 29	Buckled pipe replaced, Atigun Pass, MP 166.4.
Oct. 3	Endicott field start-up.

1988

Jan. 1	BP Pipelines, Inc. (TAPS Owner) merged into Sohio Alaska Pipeline Company (TAPS Owner).
Jan. 14	Highest daily throughput of 2,145,297 barrels.
Feb. 16	Six billionth barrel arrives at the Terminal.
May 2	*Chevron M/V Mississippi*, 8,000th tanker to load.
September	PS 2 pump manifold pipe replacement project complete.
October	Atigun Pass releveling project, MP 167; pipe settled due to erosion of ground below.

1989

Jan. 3	Oil spill, *M/V Thompson Pass*, 1,700 barrels; crack in vessel's hull.
Mar. 1	Sohio Alaska Pipeline Company (TAPS Owner) becomes BP Pipeline (Alaska), Inc.
Mar. 24	*Oil spill, M/V Exxon Valdez*, 250,000 barrels; vessel runs aground at Bligh Reef.
May 27	*Texaco M/V Florida*, 9,000th tanker to load.
June 1	First ultrasonic corrosion pig run.
June 30	Seven billionth barrel arrives at the Terminal.
July 10	Ship Escort/Response Vessel System (SERVS) established for oil spill prevention and response in Prince William Sound.
August	Feasibility study for Atigun floodplain pipe replacement project done to replace 8.5 miles of mainline pipe between MP 157 and 165.5.

1990

Feb. 8	Alyeska and Regional Citizens' Advisory Council (RCAC) signed contract.
June	Construction complete on the Terminal incinerator repair project.
June 12	Deadleg repair/replacement, PS 1.
July 31	*Exxon M/V New Orleans*, 10,000th tanker to load.
Aug. 25	1,000th SERVS escort.
September	PS 3 corrosion repair; station temporarily bypassed.
September	Construction begins on 8.5-mile Atigun Floodplain Pipe Replacement Project.

Sept. 15	Project to inspect, recoat, and reinsulate 1,600 feet of insulated buried mainline pipe between MP 167.3 and 167.5 complete.
December	First shipment of pipe for Atigun Floodplain Pipe Replacement Project arrives in Valdez.

1991

Jan. 1	Eight billionth barrel arrives at the Terminal.
Feb. 28	ARCO Pipeline Company (TAPS Owner) becomes ARCO Transportation Alaska, Inc.
March	Concrete biological treatment tanks (BTT) placed in service at the Terminal.
September	Atigun Floodplain Pipe Replacement Project completed (MP 157-165.5).
Oct. 2	*M/V Overseas Boston*, 11,000th tanker to load.
Oct. 14	2,000th SERVS escort.

1992

January	Floor of crude oil storage Tank 5 at the Terminal replaced and cathodic protection installed.
April-May	Corrosion repairs to 2.5-mile section of pipe in the Chandalar Shelf.
June	First run of inertial pipeline pig.
June 20	15th anniversary of TAPS operations.
July 7	Nine billionth barrel arrives at the Terminal.
July 30	Full-scale aerial dispersant test in Prince William Sound.
Aug. 7	RGV 73 uncommanded closure, overpressuring the pipeline.

September	Tank 111 at PS 1 returned to service after bottom replacement project complete.
October	Recoating of superstructure for Berths 3 and 4 at the Terminal completed.
December	Completion of new roof for 40,000-square-foot dissolved air flotation (DAF) building at the Terminal.
Dec. 10	Fuel gas line (north of the Brooks Range) releveling project complete.
Dec. 28	*ARCO M/V California*, 12,000th tanker to load.

1993

Jan. 1	3,000th SERVS escort.
Jan. 20	Petro Star Refinery online in Valdez.
March	Construction of new tug dock at the Terminal complete.
June	PS 10, desalter for pretreating topping unit crude feed put in service.
June	PS 9, mainline pump no. 3 converted to half-head operation.
September	Recoating of the TERMINAL Berth 5 superstructure complete.
October	Completion of inspection, repair and recoating of last of 10 storage tanks at the Terminal. This completes the initial inspection of all major storage tanks at the Terminal.
Dec. 10	Fuel gas line pig launcher installed at MP 34.

1994

March	Tank 209 at PS 10 leaks 3,500 gallons of residual oil in tank farm.
Mar. 5	10 billionth barrel arrives at the Terminal.
May 13	*ARCO M/V Texas*, 13,000th tanker to load.
June 18	4,000th SERVS escort.
July 5	Alyeska selects method of tanker vapor control at the Terminal.

1995

Mar. 9	Valdez Emergency Operations Center/Escort Response Base opened.
Mar. 30	Alyeska employees work one million consecutive hours without a lost-time accident.
April	Alyeska completes major electrical improvement project (ANSC) line-wide.
May 24	PS 8 topping unit shut down.
Oct. 20	Alyeska and U.S. Department of Interior sign new Alaska Native Utilization Agreement.
Oct. 26	PS 7 idled for maintenance, three months.
December	Alyeska completed construction on new otter rehabilitation facility.
Dec. 12	11 billionth barrel arrives at the Terminal.
Dec. 31	*ARCO M/V Juneau*, 14,000th tanker to load.

1996

January	5,000th SERVS escort.

Apr. 20	Oil leak at CV 92 discovered, 800 barrels released.
Apr. 25	CV 92 leak repair begins.
June 30	PS 8 placed in ramped-down status.
July 1	PS 10 topping unit placed in ramped-down status.
August	Pressure pulsations felt in Thompson Pass created by slackline condition.
Sept. 17	Alyeska investigates pipe vibrations near pipeline MP 776.
Nov. 27	Alyeska responds to evidence of hydrocarbons detected by soil probes near MP 776; no spill found.

1997

January	Exxon Pipeline Company (TAPS Owner) becomes ExxonMobil Pipeline Company.
January	Temporary back-pressure system installed at the Terminal to stop pressure pulsations in Thompson Pass.
Jan. 1	Phillips Alaska Pipeline Corporation (TAPS Owner) stock reissued to Phillips Transportation Alaska, Inc.
June 20	20th anniversary of TAPS operations.
July 1	PS 2 placed in ramped-down status.
Aug. 5	6,000th SERVS escort.
Aug. 8	PS 6 topping unit placed in ramped-down status.
Aug. 12	*M/V Overseas Juneau*, 15,000th tanker to load.
Oct. 2	Permanent back-pressure control system operational.
Dec. 1	12 billionth barrel arrives at the Terminal.

1998

Mar. 19	Tanker vapor control system brought into full operation at the Terminal.
Sept. 25-26	Pipeline shut down for 28 hours, 40 minutes to repair CV 122 and replace RGV 80.
Oct. 15	Alyeska and U.S. Department of Interior renew Alaska Native Utilization Agreement.

1999

Jan. 27	*Nanuq*, enhanced tractor tug, arrives at Valdez to join SERVS' fleet.
May 21	7,000th SERVS escort.
May 22	*Tan'erliq*, enhanced tractor tug, arrives at Valdez to join SERVS fleet.
June 26	*ARCO M/V Spirit*, 16,000th tanker to load.
July 10	10th anniversary of SERVS.
Sept. 11	Pipeline shut down for 25 hours, 49 minutes to replace RGV 60.

2000

February	*M/V Alert*, prevention/response tug, arrives at Valdez to join SERVS' fleet.
April	Pipeline movement at MP 170.
Apr. 27	13 billionth barrel arrives at the Terminal.
May	*M/V Attentive*, prevention/response tug, arrives at Valdez to join SERVS' fleet.
June	Scraper pig removed seat ring from CV 74.

June 30	Mobil Alaska Pipeline Company (TAPS Owner) stock reissued to Williams Alaska Pipeline Company, LLC.
July	*M/V Aware*, prevention/response tug, arrives at Valdez to join SERVS' fleet.
Aug. 1	ARCO Transportation Pipeline Company (TAPS Owner) stock reissued to Phillips Transportation Alaska, Inc.
Summer	Extensive rebuilding of Berth 4 at the Terminal.
Sept. 16	Pipeline shut down to replace CV 74 and the M-2 valve at PS 9.
Oct. 7	Shutdown to test remaining valves needed to complete the five-year test program for all mainline valves.

2001

July 11	*M/V Polar Endeavor*, first millennium class double-hull tanker, arrives at the Terminal.
July 19	8,000th SERVS escort.
Summer	Extensive renewal of Berth 5 at the Terminal.
Aug. 21	SERVS receives Distinguished Achievement award in recognition of outstanding third-party oil spill response to the grounding of the *F/V Windy Bay* in Prince William Sound.
Sept. 22	*M/V Marine Columbia*, 17,000th tanker to load.
Sept. 22	Pipeline shut down for mainline valve maintenance and integrity test and performance evaluation of two 48-inch mainline RGVs.
Oct. 4	Bullet hole at MP 400 leaks 258,000 gallons of oil. More than 178,000 gallons recovered and reinjected into the pipeline.
Oct. 25	Alyeska and U.S. Department of Interior renew Alaska Native Utilization Agreement.

November	Terminal Tank 94 raised 2 feet (ballast water tank, 250-foot diameter).
Nov. 2	First oil from Northstar field received at PS 1.
Nov. 9	*Chevron M/V Mississippi*, final tanker load after 30 years of service and 1,002 sailings, all ports (432 from the Terminal).

2002

June 20	25th anniversary of TAPS operations.
July 25	Pipeline shut down to replace RGV 39.
Aug. 1	Valdez Marine Terminal office building dedication.
October	Phillips Transportation Alaska, Inc. (TAPS Owner) becomes ConocoPhillips Transportation Alaska, Inc.
Oct. 10	Laden tanker Kenai assisted by escort vessels when mechanical problems developed at Hinchinbrook Entrance.
Oct. 30	Main firewater distribution line at the Terminal relined.
November	Terminal tank 93 raised two feet (ballast water tank, 250-foot diameter).
Nov. 3	7.9 earthquake at MP 588. Damaged shoes and VSM crossbeams repaired and replaced. No oil spilled.
Nov. 26	State of Alaska renews pipeline right-of-way for 30 years.

2003

Jan. 20	14 billionth barrel arrives at the Terminal.
April	Alyeska Pipeline receives the American Petroleum Institute's 2002 Environmental Large Operator Award and recognition for improved safety performance (29 percent

reduction in OSHA recordables over a three-year period).

July 23 9,000th SERVS escort.

Oct. 10 *M/V Marine Columbia*, 18,000th tanker to load.

2004

Mar. 31 Williams Alaska Pipeline Company, LLC (TAPS Owner) stock reissued to Koch Alaska Pipeline Company, LLC.

April Alyeska Pipeline receives the American Petroleum Institute's 2003 Environmental Large Operator Award and recognition for improved safety performance (47 percent reduction in OSHA recordables over a three-year period).

2005

April Alyeska Pipeline receives the American Petroleum Institute's 2004 Environmental Large Operator Award (no Pipeline Performance Tracking System releases).

Dec. 14 10,000th SERVS escort.

Dec. 21 15 billionth barrel arrives at the Terminal.

2006

April Alyeska wins the American Petroleum Institute's Distinguished Environmental and Safety Award, API's highest recognition for a pipeline operator. Alyeska also received the 2005 Environmental Large Operator Award (zero releases).

Apr. 11 *M/V Kodiak*, 19,000th tanker to load.

August Smart pig run from PS 1 to PS 4, successful.

September Smart pig run from PS 4 to the Terminal, not successful

due to wax buildup. Rerun scheduled for March 2007.

Dec. 22 Scraper pig 67 came apart in line at PS 7.

2007

Jan. 9 Pipeline restarted after leak on bypass piping stopped.

Feb. 9 Alyeska starts up new pumps at PS 9, the first station to receive upgraded equipment.

March Smart pig launches at PS 4.

Mar. 22 Smart pig completes review of TAPS.

May 14 Project work at PS 3 stabilizes pipeline.

June 20 30th anniversary of TAPS operations.

Nov. 1 TAPS crews wrap up repairs to storm damage to right-of-way.

Dec. 17 New pumps started at PS 3: Second station to receive upgraded equipment.

2008

Jan. 23 Operations Control Center begins 24/7 operations in Anchorage.

Feb. 7 BWT successfully connects to vapor recovery system, substantially reducing the risk of fire and explosion associated with flammable vapors in the tanks, and also eliminating a major source of emissions at the Terminal.

Apr. 3 Alyeska installs pressure-containing sleeve to repair areas of external corrosion near PS 1.

June 28-29 Pipeline shut down to replace RGV 72.

Aug. 13 Alyeska wraps up cathodic protection project near Valdez.

Aug. 16-17 Pipeline shut down for routine maintenance, including pig

trap replacement at the Terminal.

Aug. 19 SERVS assists *F/V Northern Mariner* that went aground on northeast side of Flemming Island.

Nov. 5 Federal Transportation Worker Identification Credential (TWIC) program implemented at the Terminal.

2009

Jan. 28 11,000th SERVS tanker escort.

April Alyeska receives 2008 American Petroleum Institute's Distinguished Operator Award (Large Operator), among the oil industry's top honors and reserved for pipeline operators that demonstrate excellence in safety, environment and integrity. Alyeska also won API's Distinguished Environment and Safety award for the fifth consecutive year.

May 21 New pumps started at PS 4: Third station to receive upgraded equipment.

July 10 SERVS marks 20th anniversary.

2010

April Alyeska is awarded the 2009 American Petroleum Institute's award for top environmental performance in 2009.

2011

May 12 Alyeska Pipeline Service Company employees and contractors reach a major safety milestone: 10 million hours without a Day Away From Work Case (DAFWC).

July An Alyeska team completes the Low Flow Impact Study, a $10 million project designed to study and evaluate operational risks related to declining throughput.

Sept. 21 TAPS receives the 2011 Outstanding Environmental Engineering Geologic Project Award from the Association of the Environmental and Engineering Geologists.

2012

Jan. 9 Alyeska Pipeline Service Company receives a legislative citation for its response to the January 2011 booster pump piping leak at PS 1.

Mar. 16 Alyeska Pipeline wins a World's Most Ethical Companies Award from the Ethisphere Institute.

April The Alaska Legislature honors Alyeska Pipeline with a legislative citation for its Alyeska's World's Most Ethical Company award.

May Alyeska receives the Most Improved Projects Process Award for small projects (between $2-$10 million) from Independent Project Analysis.

June 6 SERVS celebrates 12,000 tanker escorts.

June 20 Alyeska reaches its 35th anniversary of operations.

Aug. 2 The 35th anniversary of first tanker leaving Valdez.

2013

Mar. 5 Alyeska wins a World's Most Ethical Companies Award from the Ethisphere Institute for the second year in a row.

July Koch withdraws as TAPS owner.

2014

Mar. 20 Alyeska wins a World's Most Ethical Companies Award from the Ethisphere Institute for the third year in a row.

Aug. 13 17 billionth barrel arrives at Valdez Marine Terminal.

2015

February Vessel of Opportunity Program, managed by Alyeska's SERVS team, wins the Ocean Leadership Award from the Alaska SeaLife Center.

March At Governor's Health & Safety Conference, Alyeska wins a Governor's Safety Award of Excellence.

Mar. 9 Alyeska wins a World's Most Ethical Companies Award from the Ethisphere Institute for the fourth year in a row.

Oct. 14 New pumps started at PS 1; fourth station to receive upgraded equipment.

December Alyeska finishes year with best safety performance on record, with Alyeska employees and contractors working a combined 5,827,988 hours with just four recordable injuries.

2016

Mar. 7 Alyeska wins a World's Most Ethical Companies Award from the Ethisphere Institute for the fifth year in a row.

May 7 SERVS escorts 13,000th outbound laden tanker, the *Polar Endeavor*.

Dec. 30 In 2016, the pipeline moved 189,539,817 barrels and averaged 517,868 barrels a day, the first calendar year-over-year throughput increase since 2002.

2017

March	Alyeska wins a World's Most Ethical Companies Award from the Ethisphere Institute for the sixth year in a row.
June 20	Alyeska marks its 40th anniversary of pipeline operations. Activities throughout the year include public receptions and events and employee celebrations. The hashtag #40more launches.
Oct. 24	The Valdez Marine Terminal Operations Control Center, or XOCC, was officially disconnected from TAPS.
Dec. 31	In 2017, TAPS moved 192,472,797 barrels, a year-over-year total increase of 1.5 percent over 2016.

2018

February	Alyeska wins a World's Most Ethical Companies Award from the Ethisphere Institute for the seventh year in a row.
Feb. 25	First Edison Chouest vessels arrive in Valdez: escort tug Commander, general purpose tug Elrington and the OSRB-1 barge.
April 20	17 billionth barrel loaded onto tanker Alaskan Navigator.
July 1	The marine services contract transitions from Crowley Marine Corporation to Edison Chouest Offshore/Alaska Ventures.

2019

April	Alyeska introduced an improved and modernized version of its Earthquake Management System, the system's fourth update since TAPS start-up.
	Sag river flood at mile 28 where pipe was exposed and repairs were made in a multi-year campaign approach that was launched to protect assets along the Sag river.
	Upgrade and enhancement of 19 spur dikes across three spur dike fields.
July 31	A team led by the University of Alaska Fairbanks completes the country's first FAA-approved true beyond-visual-line-of-sight domestic flight of an unmanned aircraft system under the small UAS rule, flying along 3.87 miles of TAPS near the Chatanika River on the Elliott Highway.
Aug. 27	BP announces sale of its Alaska operations and interests, including Prudhoe Bay and the Trans Alaska Pipeline System, to Hilcorp Alaska.
Sept. 27	Major abatement and facility removal of PS 10 is complete, marking first demolition of a legacy pump station.
Dec. 6	18 billionth barrel delivered via TAPS.

2020

May 18 Alyeska receives a gold-level William A Bankert Award for Environmental Excellence From the United States Coast Guard.

Nov. 10 TAPS workers pass safety milestone: 30 million consecutive hours worked without a Days Away from Work Case.

Dec. 31 TAPS ends year with 100 percent reliability.

2021

June 2 Alyeska, Ahtna renew Friendship Agreement.

July 31 U.S. Fish and Wildlife Service recognizes Alyeska with Outstanding Partner Award.

Dec. 21 BP Pipeline (Alaska), Inc. finalizes sale of ownership in TAPS to Harvest Alaska, LLC., an affiliate of Harvest Midstream Company.

2022

January MLR Brine Release Response.

June 20 TAPS marks 45-year anniversary of operations.

October Finished installing reinforcement collars on VMT Crude/ Ballast Tank Pressure Vacuum valves.

Dec. 31 Volume of oil through TAPS increased over 2021, marking the first calendar year-over-year increase since 2017.

2023

April 10 John Kurz named President and CEO of Alyeska Pipeline.

Aug. 15 TAPS returns to pigging after pigging operations suspended from PS 1 to 4 after stuck pig at CV 11 in July 2022.

Sept. 12 Alyeska named Project of the Year for Environmental Stewardship and Innovation Award at the Alaska Oil and Gas Association 2023 Conference.

2024

Feb. 15 Alyeska executives share new mission, vision, mindsets.

April Completed Turbine Generator Overhaul.

May 16 Haul Road celebrates 50-year anniversary.

May 23 Tank 8 removed from service on the VMT.

Aug. 19 ILI pig run concludes.

Aug. 28 Alyeska and TAPS partners recognized with Project of the Year for work on asset retirement/legacy facility removal.

Oct. 8 Three-year project to stabilize GRB hill completed with the installation of 53 tie-back anchors and replacement of eight vertical supports.

repairs, major

Following is a chronology of major TAPS repair and project work since 1977.

1977

July 7 MP 489.12: Approximately 20 feet south of north block valve at PS 8; damage to 30-degree elbow and pipe from injection of super-cooled nitrogen ahead of oil front during oil-in. Replaced with new elbow and two 6-foot pumps. Pipe reburied.

July 8 MP 489.24: Pump building at PS 8 destroyed in an explosion and fire; pipeline undamaged. Pump building was replaced and recommissioned on March 7, 1978.

September MP 388.00: North of Lost Creek; two bullet indentations. Covered with 48-inch diameter, 3-foot welded split-sleeve.

1978

February MP 457.53: Steele Creek; 1-inch diameter hole (sabotage). Covered with 48-inch diameter, 22.5-inch bolted split-sleeve; subsequently covered with welded sleeve.

1979

June MP 166.43: North side Atigun Pass; hairline crack caused by buckle. Covered with 56-inch diameter, 6-foot welded split-sleeve; 19 steel supports installed. Pipe reburied.

June MP 734.16: 1 mile north of PS 12; hairline crack caused by buckle in pipe. Covered with 56-inch diameter, 6.1-foot welded split-sleeve; seven steel supports installed. Pipe reburied.

September MP 157.62 to MP 157.65: Instrument pig ("super pig") lodged in line at CV 29. Stopple and bypass installed, valve bonnet lifted, pig removed. Pipe reburied.

October MP 166.41: north side Atigun Pass; buckled pipe. Covered with 56-inch diameter, 6-foot welded split-sleeve. Pipe reburied.

1980

April MP 449.96: indentation, possibly from bullet. Covered with 48-inch diameter, 18-inch welded split-sleeve.

May MP 159.70: Construction damage from backhoe during monitor rod installation. Covered with 48-inch diameter, 3.6-foot welded split-sleeve. Pipe reburied.

June MP 416.00: Approximately 2 miles south of PS 7; pipe settlement. Approximately 430-foot excavation; eight steel supports installed. Pipe not reburied.

August MP 752.00: Flash flood, 900 feet of overburden washed out; no damage. Pipe reburied.

November MP 720.00: Pipe settlement. Approximately 200-foot excavation; pipe lifted and concrete slurry added beneath. Pipe reburied.

1981

No major repairs.

1982

April MP 168.40: south-side Atigun Pass; pipe settlement.

Approximately 300-foot excavation; concrete slurry added beneath pipe. Pipe reburied.

August MP 166.03: north-side Atigun Pass; pipe buckle. Covered with 56-inch diameter, 6.5-foot welded split-sleeve. Pipe reburied.

1983

March MP 730.29: pipe settlement. Approximately 102-foot excavation; nine concrete river weights removed, concrete slurry added beneath pipe. Pipe reburied.

April MP 200.24: Dietrich River channel; pipe buckle. River channel redirected temporarily; approximately 125-foot excavation; 56-inch diameter, 6-foot welded split-sleeve installed; five specially designed steel supports installed. Pipe reburied.

October MP 45.97: pipe settlement. Approximately 200-foot excavation; concrete slurry added beneath pipe. Pipe reburied.

1984

March Removal of scraper pig stuck at CV 4 and relocation of pig trap from PS 5 to PS 4.

November Removal of stuck pig at PS 10.

1985

January MP 200: temporary bypass tie-in, pipe settlement.

April MP 200: Final tie-in of 48-inch permanent reroute (404.7 feet added to total pipeline length, April 22). Reroute due to pipe settlement.

1986

Oct. 10 Steele Creek: Permanent welded sleeve installed over bolted split sleeve.

Nov. 18 PS 10: Replaced "tee" damaged by stuck scraper pig.

1987

Aug. 25 Mechanical damage covered with 3-foot welded sleeve.

Sept. 29 MP 166.41 to 166.43: Atigun Pass. Replaced 234 feet of buckled pipe.

1988

No major repairs.

1989

January 30 sleeves installed for corrosion repairs.

1990

January 86 sleeves installed for corrosion repairs.

Nov. 23 MP 172.62: Dent covered by 6-foot welded sleeve.

Dec. 3 Mechanical damage covered with bolted clamp, later covered with a split "tee" (part of Atigun floodplain pipe replacement project).

1991

January 18 sleeves installed for corrosion repairs.

Mar. 8 MP 779.47: Mechanical damage covered by 4-foot welded

sleeve.

April 6 MP 756.80: Mechanical damage covered by 4-foot welded sleeve.

September MP 157-165.5: Atigun Floodplain Pipe Replacement Project (FPRP) completed. Permanent reroute of 8.5 miles of mainline pipe due to corrosion.

1992

No major repairs.

1993

June 6 MP 775: Mechanical damage covered by 3-foot welded sleeve.

1994

July 22 CV 9: Bypass spool replaced and drain line repaired.

July 30 CV 86: Bypass and drain line repaired.

Sept. 30 CV 74: Drain line repaired.

1995

Mar. 15 CV 55: replaced actuator.

June 8 CV 89: replaced actuator.

July 14 RGV stem leak repaired.

Sept. 15 Extended Chena Hot Springs Road casing.

1996

April 25 CV 92: Replaced bypass line.

1997

Feb. 8 Wilbur Creek: Installed "armadillo" sleeve; repair due to corrosion.

June 20 MP 775.75: Mechanical damage covered by 2.5-foot welded sleeve.

Oct. 9 MP 799.68: Corrosion repair covered by 4.8-foot welded sleeve.

1998

Mar. 19 Tanker vapor control system start-up at the Terminal.

Sept. 25 Replaced RGV 80 and repaired CV 122.

1999

April 26 MP 652: Two sleeves installed for corrosion repair.

Sept. 11 RGV 60: replaced.

2000

May 26 MP 170: Completed reset and repair of tripped anchors, a result of the collapse of vapor pocket after pipeline restart.

June 1 MP 710.76: Mechanical damage covered by two, 2-foot welded sleeves.

Sept. 16 PS 9: replaced CV 74 and M-2 valve.

2001

Sept. 22 Pipeline shut down for mainline valve maintenance and integrity test, and performance evaluation of two, 48-inch mainline RGVs.

Oct. 4 MP 400: Bullet hole repaired with hydraulic clamp. Clamp later replaced with a threaded O-ring fitting.

2002

July 10 Set full-close limit switches on valves along pipeline; changed out three valves in gas building at PS 3.

July 27 RGV 39: Pipeline shut down to replace valve.

Nov. 3 MP 588: Repaired or replaced damaged shoes and VSM crossbeams from 7.9 earthquake.

2003

July 18-19 Set full-close limit switches on RGVs; other pump station work.

Aug. 8-12 Set full-close limit switches on RGVs; other pump station work.

Aug. 15 Performed maintenance and tests on selected RGVs; OCC special commands.

Sept. 10-12 Set full-close limit switches on RGVs; other pump station work.

2004

July 10-11 Pig trap valve replacement at PS 4; set full-close limit switches on valves along pipeline.

Aug. 16-17 Tie-in work at PS 1 and PS 3 for strategic reconfiguration; performed maintenance and tests on selected RGVs; OCC special commands.

2005

June 19-20 Pig trap valve replacement at PS 4, due to factory defective valve installed in 2004. Installed new mainline CV at PS 7.

July 23-24 Tie-in work at PS 9 for strategic reconfiguration. Ramped down and isolated PS 12 and replaced mainline through the station. Isolated all buildings at PS 12 for future demolition/salvage.

2006

July 22-23 Isolated PS 10 from the mainline and installed a mainline 48-inch CV inside the manifold building. Replaced the 48-inch mainline check valve 109 located on the south bank of the Klutina River. Both these scopes were accomplished in the 36-hour shutdown.

October Flooding in the Valdez area causes extensive damage to ROW, state highway and most bridges in the southern 60 miles of the pipeline right-of-way. Repairs continued through 2007.

2007

No major repairs.

2008

June 28-29 Replaced RGV 72 and removed the "tees" for SR configuration at PS 9.

Aug. 16-17 1,700 feet of bypass pipe installed at PS 2, permanently disconnecting PS 2 from TAPS.

2009

June 20-21 Replaced 62,000-pound valve at PS 3 used to redirect crude flow inside the pump station. Enhanced leak protection or mainline valves at PS 1.

July Removed dual functionality "tees" from PS 3 suction and discharge headers, isolating the legacy pump building at PS 3 for future demolition/salvage. This leaves only the new electric drivers to move oil at this location. Also replaced 62,000-pound M2 valve and decommissioned Turbine Fuel Tank 137 from service at PS 3.

2010

June 19-20 Replaced M1 and S2 valves at PS 4.

July Removed dual functionality "tees" from PS 4 suction and discharge headers, isolating the legacy pump building at PS 4 for future demolition/salvage. This completes the transition to the new electric drivers to move oil at this location. Decommissioned Turbine Fuel Tank 147 from service at PS 4.

Nov. 29-Dec. 11 Pump Station 5 Pig 99 incident.

2011

Jan. 8-20 PS 1 Booster Pump Building spill to containment resulted in two back-to-back shutdowns as crews engineered and installed aboveground bypass piping.

2012

June 1-2 Leading Edge Flow Meter modifications at PS 3 and 4; mainline RGV stem seals replaced on three remote gate valves; updates to PS 11 Safety Integrity Pressure

Protection System (SIPPS).

August PS 6 straight pipe project completed.

2013

Mar. 15 In-Line Inspection Tool launched from PS 1, gathering data critical to Alyeska's integrity management program.

Mar. 26 In-Line Inspection Tool relaunched from PS 4 to Valdez, continuing effort to gather integrity management data.

June 8 Mainline valves along pipeline tested during 18-hour shutdown, ensuring performance as part of Alyeska's suite of tools for protecting TAPS and the environment.

July 26 Straight pipe project completed at PS 10 during planned 6-hour shutdown.

Aug. 9 Mainline valves along pipeline tested during 18-hour shutdown.

2014

June 20-21 During 24-hour major maintenance shutdown, crews perform power system modifications at PS 1, isolate belowground piping at PS 3, perform power switch installation at PS 4, test all mainline valves between Atigun Pass and PS 5, and inspect power substation at PS 9.

July 16 First crawler pig run conducted, testing potential of new technology to inspect segments of TAPS facility piping.

Aug. 29-30 During 36-hour major maintenance shutdown, teams tested all mainline valves between PS 1 and 3, returned belowground piping to service at PS 3, installed two

valves at PS 5, removed suction relief dead-leg piping at PS 7, and conducted SIPPS testing and work.

Sept. 14 Pig launcher installed at PS 9, expanding Alyeska's ability to pig TAPS in smaller segments.

Nov. 14 Berth 4 overhaul completed.

2015

January Portable diesel-fired crude oil heater installed at Remote Gate Valve 65 for contingency heat during winter operations to help manage temperature during declining throughput volumes and mitigate ice accumulation incoming to PS 7.

June 12-13 Replaced pig launcher valves at PS 1; isolated belowground piping at PS 4 to use new technology to conduct internal integrity inspection; tested all mainline valves between Isabel and Thompson passes to confirm valve sealing capability.

2016

June 12-13 Replaced pig launcher valves at PS 1; isolated belowground piping at PS 4 to use new technology to conduct internal integrity inspection; tested all mainline valves between Isabel and Thompson passes to confirm valve sealing capability.

Aug. 1-7 Replacement of flare tip at PS 1.

Nov. 23 Slipstream heat implemented as primary strategy to maintain throughput during winter operations.

2017

Nov. 29 Multilateral engineering analyses establish new minimum viable crude oil throughput to extend service life of TAPS.

2018

Oct. 31 Engineering analysis of lower minimum incoming crude oil temperature at PS 1 allows increase in throughput. Completed replacement and movement of six manual gate valves on the fuel gas line.

2019

May 20 Major abatement and facility removal of PS 10 begins. It is the first demolition of a TAPS pump station.

Sept. 27 Major abatement and facility removal of PS 10 ends, an Alyeska project that involved 15 contractors and more than 24,000 man hours.

2020

June 12 G022-RGV Ormat replacement.

Aug. 7 Isolated and inspected belowground relief piping at PS 4 using robotic crawler ILI tool.

2021

Apr. 23-June 18 PS 9 isolated and inspected belowground relief piping using robotic crawler tool.

July 17 DRA fitting replacement straight pipe. 10-year project replacing 104 600-watt Ormat Energy Converters with 800-watt units across TAPS completed.

May 24-Aug. 30 PLMP 392 Lost Creek Hill: installed 62 free-standing heat pipes and relocated four vertical supports to address thaw unstable soils.

2022

June 22-Aug. 25 Isolated and inspected belowground relief piping at PS 3 using robotic crawler ILI tool.

Aug. 26 CKV-1 bypass valves replaced using 6-inch plugging tool during mainline shutdown.

July 9-Sept. 17 Completed mainline investigation at PLMP 781.14 with 28-foot diameter shoring system, reaching a depth of 40 feet below grade to remove rock in contact with pipe and sleeve the mainline.

2023

Feb.-May Replaced CKV-11 following damaged seat ring.

May-Sept. PS 12 facility removal.

May-Sept. All out-of-service pipes at PS 8 cleaned for dismantlement.

July-Sept. Completed mainline investigation at PLMP 758.98 along the Tsaina River utilizing 28-foot diameter shoring system and required dewatering of 7 million gallons per day.

Sept. 29 CKV-110 bypass valves replaced using 6-inch plugging tool.

2024

Aug. 20 CKV-111 bypass valves replaced using 6-inch plugging tool.

shutdowns, pipeline

The following is a chronology of scheduled long-duration maintenance shutdowns and major unplanned shutdowns after oil first reached Valdez. For additional information on other shutdowns, contact Alyeska Pipeline.

1977

Aug. 2	40 min	Equipment malfunction.
Aug. 15	110 hr, 11 min	PS 9 sump overflow.
Sept. 20	59 min	Equipment malfunction.
Oct. 9	4 hr, 14 min	Producer shutdown.

1978

Jan. 10	4 hr	Equipment malfunction.
Jan. 16	4 hr, 22 min	Equipment malfunction.
Feb. 15	21 hr, 31 min	Sabotage, Steele Creek.
May 6	7 hr, 18 min	Equipment malfunction.

1979

June 10	53 hr, 37 min	Atigun Pass leak.

1980

May 12	3 hr, 37 min	PS 10 crude tank valve leak.
Oct. 17	5 hr, 16 min	Scheduled maintenance.

1981

Jan. 1	15 hr, 38 min	CV 23 leak.

1982

Dec. 22	12 hr	Equipment malfunction.

1984

Mar. 20	57 hr, 40 min	Scraper pig stuck at CV 4. PS 4 trap relocation.

1985

Jan. 21	66 hr	MP 200 bypass tie-in.
April 22	20 hr, 40 min	MP 200 final reroute tie-in of 48-inch pipe (404.7 feet added to total pipeline length).
Nov. 9	10 hr, 15 min	PS 1 explosion and fire.

1986

Sept. 26	31 hr, 50 min	Removed scraper pig at PS 10.
Nov. 18	16 hr, 54 min	Replaced "tee" at PS 10.

1987

Sept. 29	24 hr, 6 min	Atigun Pass pipe replacement.

1989

Feb. 26	1 hr, 31 min	Power failure at PS 1.
	32 min	PS 1 block line.
Oct. 20	5 hr, 16 min	Repair corroded pipe at MP 144.2.

1990

Mar. 21	4 hr, 10 min	PS 3, broken valve 320.
June 12	12 hr, 39 min	PS 1, valve D2 pipe replacement.

1992

Aug. 7	1 hr, 49 min	Uncommanded closure of RGV 73, electric short.

1994

Apr. 15	24 hr, 28 min	Replace 002 valve at Valdez and troubleshoot segment 4 RGVs.
April 18	7 hr, 57 min	Work on PS 4 systronics master panel.

1995

Sept. 11	15 hr, 45 min	Scheduled maintenance.
Sept. 12	4 hr, 51 min	Completion of scheduled PS 2 maintenance.

1996

May 6	21 hr, 45 min	Scheduled maintenance.
July 12	10 hr, 25 min	Scheduled maintenance, preparations for PS 8 and PS 10 ramp-down.
Aug. 1	8 hr, 40 min	Scheduled maintenance as part of ramping down PS 8 and PS 10.
Aug. 6	11 hr, 2 min	Scheduled maintenance as part of ramping down PS 8 and PS 10.

1997

June 26	5 hr, 44 min	Communications failure with RGVs in segment 12.
Aug. 1	17 hr, 49 min	Scheduled maintenance for PS 2 and PS 6 ramp-down preparation.
Aug. 8	19 hr, 29 min	Placed PS 6 in ramped-down status.

1998

May 18	5 hr, 9 min	PS 1 in-rush vapor test and vibration test of the VMT incoming relief piping.
Aug. 14	5 hr, 4 min	Communications failure, segment 10.
Sept. 25	28 hr, 40 min	Valve maintenance, replaced RGV 80 and repaired CV 122.

1999

Sept. 11	25 hr, 49 min	Valve maintenance, replaced RGV 60, tested 46 mainline valves and completed 165 other maintenance tasks.
Nov. 13	8 hr, 6 min	Scheduled maintenance and autologic testing.

2000

Sept. 16	29 hr, 39 min	Scheduled maintenance.
Oct. 7	7 hr, 31 min	Scheduled maintenance of mainline valve leak test.

2001

Sept. 22	21 hr, 4 min	Scheduled maintenance.
Oct. 4	60 hr, 30 min	Bullet puncture (sabotage) at MP 400.

2002

July 27	29 hr, 57 min	Scheduled maintenance to replace Remote Gate Valve 39.
Nov. 3	66 hr, 33 min	7.9 earthquake at MP 588.

2004

Jan. 24	5 hr, 51 min	Communications failure at valve 972.
July 10-11	31 hr, 36 min	Scheduled maintenance, including replacing two pig launcher valves at PS 4.
Aug. 16	17 hr	Scheduled maintenance to install new infrastructure at PS 1 and 3, replace two pig trap valves and perform RGV maintenance and testing.

2005

June 19	35 hr, 42 min	Scheduled maintenance to install infrastructure at PS 4 to prepare the station for Strategic Reconfiguration project, replace two pig trap valves at PS 4 and install a 48-inch mainline check valve at PS 7.
July 23	32 hr, 32 min	Scheduled maintenance to prepare PS 9 for electric pump motors and install straight-line pipe at PS 12.

2006

July 22-23	36 hr	Scheduled maintenance. Replaced CV 109, and performed additional maintenance tasks.
Oct. 10	9 hr, 45 min	Communication failure at RGVs 117, 118, 119, 121 and 121A, due to flooding between PS 12 and the VMT.
Nov. 15	16 hr, 25 min	Shutdown due to high inventory in Valdez.
Nov. 17	6 hr, 8 min	Shutdown due to high inventory in Valdez and problems at PS 4.
Nov. 18	22 hr, 30 min	Shutdown to build inventory at PS 1.

2008

June 28	28 hr, 49 min	Scheduled maintenance.
Aug. 16	35 hr, 37 min	Scheduled maintenance to install 1,700 feet of new 48-inch mainline

		pipe at PS 2 and replace a pig trap at the VMT.
	2009	
June 20-21	33 hr, 58 min	Scheduled maintenance to remove unused pipe and replace a valve at PS 3, test new equipment at PS 4 and do leak protection work on valves at PS 1.
July 18	36 hr, 30 min	Scheduled maintenance to install a pig launcher at PS 8.
	2010	
May 25	79 hr, 38 min	PS 9 crude tank 190 relief event/ overfill.
June 19	33 hr, 58 min	Scheduled maintenance to install new aboveground piping connection to Kuparuk at PS 1, and to disconnect legacy piping and replace two large valves at PS 4.
July 31	31 hr, 35 min	Scheduled maintenance to replace a valve at PS 9, replace gas supply lines to the PS 3 and 4 turbine generators, and replace 6-inch bypass piping on a CV at PS 1.
	2011	
Jan. 8	85 hr, 10 min	Booster pump piping leak at PS 1 (restarted on interim basis).
Jan. 15	62 hr, 49 min	Installation of bypass piping at PS 1.

Jan. 8-15	147 hr, 59 min	Total duration of combined Jan. 8 and Jan. 15 shutdowns.
July 16	33 hr, 23 min	Scheduled maintenance to replace valves at PS 4 and the installation of straigh-line pipe at Glennallen Response Base (PS 11).

Here is a closer look at long-duration maintenance shutdowns and unplanned shutdowns since 2012.

2012

June 2	17 hr, 42 min	Scheduled maintenance for mainline valve testing between PS 5 and 7 and SIPPS work at PS 11.
July 28	18 hr, 28 min	Scheduled maintenance.

2013

June 8	18 hr, 46 min	Scheduled maintenance for mainline valve testing, SIPPS upgrades at Pump Stations, fuel gas system work at PS 3.
Aug. 12	19 hr, 20 min	Scheduled maintenance for valve testing in segments 7 to 9, SIPPS upgrades, work at PS 4 and 5, and suction header work at PS 9.

2014

June 20	21 hr, 45 min	Scheduled maintenance for valve testing at PS 5, legacy cut over at PS 1 and installation of pig crawler blinds at PS 3.
Aug. 29-30	36 hr, 5 min	Scheduled maintenance for valve

		testing at PS 1 and 3, removal of pig crawler blinds at PS 3, valve installation at PS 5 and deadleg removal at PS 7.

2015

June 12-13	36 hr, 6 min	Scheduled maintenance for PS 1 pig launcher valve replacement, mainline valve testing between Isabel Pass and Thompson Pass, isolation of crawler pig relief at PS 4.
Aug. 21-22	33 hr, 49 min	Scheduled maintenance for valve testing at PS 3 and 4, PS 1 cutover from MCC to E&A, PS 5 RGV-40 replacement.

2016

April 20	8 hr, 52 min	Pipeline shut down due to fire at PS 5's Tank 150 during inspection of tank pressure/vacuum vents.
June 26	35 hr, 37 min	Scheduled maintenance for PS 1 removal of three legacy commissioning spools, tie-in of new aboveground MLU discharge line and VMT East Metering piping inspection.

2017

May 6	12 hr, 30 min	Scheduled maintenance for isolation of main VMT incoming crude header for cleaning and inspection.
June 5	16 hr, 30 min	Scheduled maintenance for PS 3 manifold building work and stem seal replacements on 33-MOV-3103 and 33-MOV-3201.

2018

June 24	17 hr, 30 min	Scheduled maintenance for CKV-23 bypass replacement and PS 9 Substation maintenance.

2019

June 22	18 hr	Scheduled maintenance, hardware/software updates to Safety Integrity Pressure Protection System, drained/prepared belowground piping for inspection, replaced failed pig departure switch at PS 3, and other maintenance tasks.
Aug. 25	36 hr	Scheduled maintenance, replaced mainline pig receiver isolation valves and other work at the VMT. Upgraded controls systems at PS 9, DOT stroking performed on all remote gate valves and block valves at PS 1, 3, 4, 5, and gas building valves at PS 3 and 4.

2020

July 10	12 hr, 18 min	Scheduled maintenance where the periodic RGV-37, 47, & 73 leak-by testing was performed, and an actuator was replaced on 31-MOV-895. The automations team updated the SIPPS software at multiple locations.
Oct. 12	12 hr, 45 min	Scheduled maintenance where the belowground relief piping was isolated to prepare for the robotic crawler internal piping inspection at PS 4. Bi-annual PS 9 substation maintenance was performed. All this occurred while the Automations team updated the SIPPS software at multiple locations.

2021

April 23	11 hr, 47 min	Scheduled maintenance where the belowground relief piping was isolated to prepare for the robotic crawler internal piping inspection at PS 9. Semi-annual DOT stroking of the mainline valves were performed on all of the remote gate valves. Automations team updated the SIPPS software at PS 4 during the shutdown.

July 17 & 18	36 hr, 32 min	Scheduled maintenance at PS 1 for cutting out the drag reducing agent fitting and replacing it with a straight pipe.

2022

July 1	10 hr, 34 min	Scheduled maintenance where BL1 push button was replaced, removal of obsolete wiring from a SIPPS cabinet, completion of a functional checkout of a 20T0 actuator after replacement, replacement of a stem seal, and a SIPPS colling fan chassis. Automations team updated SIPPS software at PS 3.
Aug. 26	13 hr, 21 min	Scheduled maintenance to replace the 6-inch bypass piping and valves, removal of two out-of service relief valves, and performance of semi-annual DOT stroking of the mainline valves were performed on all remote gate valves. This shutdown was the first use of the Alyeska-designed tool created specifically for this purpose on a live line.

2023

May 1	4 hr, 2 min	Scheduled maintenance for a bypass around CKV-11 in preparation for its replacement due to an obstructed seat ring. There was another scheduled maintenance shutdown a week later to come off bypass after CKV-11 was replaced.
June 16	12 hr	Scheduled maintenance, PS 3 firmware updates, Main Line Unit 2 isolation for drain replacement, PS 9 disconnect switch maintenance, communication device cutover for Tanks 1 to 4, and other maintenance tasks.
July 17	12 hr	Scheduled maintenance, PS 3 and 5 SIPPS and DPS cabinet fan replacements and cabinet diode testing, PS 4 firmware update of Allen-Bradley PLC, PS 9 permanent wiring of relief positioner feedback wires in SIPPS-4701 cabinet.

2024

Apr. 19	12 hr, 38 min	Scheduled maintenance on updating the firmware package on multiple processors at multiple locations, completion of the Y2/ Y6 electrical substation PM at PS 9, and replacement of a stem seal packing at RGV-68.
April 22	12 hr	Scheduled maintenance, removed Spec Blind from MOV-20D2 line at PS 5, TAPS Dot stroke testing of all mainline RGVs, PS 1 switchboard relay maintenance, PS 4 Main Line Unit 2 recycle valve stem seal replacement, bypass flushing at RGVs 72 and 121, annual maintenance on the VMT's hydraulic unit.
May 17	12 hr, 49 min	Scheduled maintenance on replacement of the packing on the grease injection valve at CKV-9, performance on function tests on main and process gate emergency shutdown switches, update on the firmware package on multiple processors, replacement on a station relief valve, and performance on semi-annual DOT stroking of the mainline valves on all the remote gate valves and select motorized gate valves.

May 20	12 hr	Scheduled maintenance, PS 1 Valve Shelter Power Panel Feed Repair, RGV-68 Leak-By testing, PS 3 mechanical cleaning of LEFM, PS 5 SIPPS Special Command testing resulting in the return of pressure relief tank TK 150, PS 9 Processor firmware update, and ESD Push Button testing.
July 1	12 hr	Scheduled maintenance, PS 1 and 3 firmware updates on Control System Processors and PS 9 electrical sub-station preventative maintenance.
Sept. 14	12 hr	Scheduled maintenance, replaced grease injection valve on Check Valve 9, decommissioned legacy station control panel and PS 1, DOT strokes of all mainline remote gate valves and select manual gate valves, replaced fuel gas conditioning skid filter isolation valves at PS 1, and other maintenance tasks.

For additional information on shutdowns, contact Alyeska.

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