

1. Introduction

1.1 Purpose and Need

The Trans-Alaska Pipeline System (TAPS) was constructed in 1974–1977 through the central portion of Alaska from the North Slope oil fields at Prudhoe Bay to a marine terminal at the Port of Valdez (Map 1-1).¹ The pipeline was constructed on a right-of-way (ROW) granted by federal, state, and private landowners.² The federal and state ROWs were granted for periods of 30 years, which expire in January and May 2004, respectively.³

On May 2, 2001, the Bureau of Land Management (BLM) of the U.S. Department of the Interior (DOI) received an application for renewing the federal “Agreement and Grant of Right-of-Way for Trans-Alaska Pipeline” (Federal Grant) for 30 years beyond the current expiration date of January 22, 2004. The application for renewal was received from the current owners of the Trans-Alaska Pipeline System (TAPS Owners): BP Pipeline (Alaska), Inc. (46.9263% share); Phillips Trans Alaska, Inc. (26.7953%); ExxonMobil Pipeline Company (20.3378%); Williams Alaska Pipeline Co. (3.0845%); Amerada Hess Pipeline Corp. (1.5000%); and Unocal Pipeline Company (1.3561%). The renewal of the Federal Grant covers the TAPS ROW as well as ROWs and permits for related facilities on lands subject to federal administration. The BLM determined that a decision to renew the Federal Grant would represent a major federal action under the National Environmental Policy Act (NEPA). Thus, the BLM is undertaking this environmental impact statement (EIS) process to assess the positive and negative environmental, social, and economic impacts associated with the application.

The DOI issued the Federal Grant for the primary ROW for the TAPS on January 23, 1974. Because the Mineral Leasing Act (MLA) limits ROWs to no more than 30 years, the Federal Grant will expire in January 2004. Moreover, although they were issued on different dates by the federal government, some grants for the ROWs for related facilities and access roads also expire on January 22, 2004, as does a Memorandum of Understanding (MOU) for the use of 95 oil spill contingency sites. The ROWs and sites involved include 175 access roads, a fuel gas line and related facilities, a power and communication line, and a communication site and access road.

The MLA states, “The Secretary [of the Interior] or agency head shall renew any right-of-way, in accordance with the provisions of this section, so long as the project is in commercial operation and is operated and maintained in accordance with all of the provisions of this section” (*United States Code*, Volume 30, Section 185(n) [30 USC §185(n)]). It also states that the Secretary or agency head can renew such ROWs only “when he is satisfied that the applicant has the technical and financial capability to construct, operate, maintain, and terminate the project for which the right-of-way . . . is requested in accordance with the requirements of this section” (30 USC §185(j)). In addition, the law empowers the Secretary or agency head to impose terms and conditions “regarding extent, duration, survey, location, construction, operation, maintenance, use, and termination” of the ROW (30 USC §185(f)). Terms and conditions may be imposed or modified at any time. The MLA directs the

¹ All maps referred to by map number in this EIS are contained in Volume 7.

² The TAPS and its related facilities are authorized under a bundle of separate rights-of-way. Common usage is to refer to the TAPS rights-of-way as a single right-of-way (i.e., ROW). This EIS generally follows that practice.

³ Under the Administrative Procedures Act, once an application to renew is filed, the system will continue to operate under the existing grant until processing is completed, even if the grant expires while the application is pending. The BLM has determined the TAPS Owners’ application to be complete (Brossia 2001).

Secretary or agency head to impose “requirements for the operation of the pipeline and related facilities in a manner that will protect the safety of workers and protect the public from sudden ruptures and slow degradation of the pipeline” (30 USC §185(g)).

In the early 1970s, many Americans saw the construction of the TAPS as a key means of lessening dependence on foreign oil supplies, a concern highlighted by the 1973 oil embargo. In that year, the United States imported 26% of its crude oil and 34% of all its petroleum (EIA 2001). The TAPS was seen as a necessary development that would bring North Slope oil, discovered in 1968 at Prudhoe Bay, to market. Prudhoe, the largest oil discovery in United States history, and its neighboring fields were viewed as critical to markedly increasing American domestic oil production and reducing reliance on foreign oil imports.

Congress enacted the Trans-Alaska Pipeline Authorization Act (TAPAA) on November 16, 1973. TAPAA mandates federal oversight of all TAPS activities and allows modification of operating conditions at any time. It directs that “the Secretary of the Interior and other appropriate Federal officers and agencies . . . take all necessary action to administer and enforce rights-of-way, permits, leases, and other authorizations that are necessary for or related to the construction, operation, and maintenance of the trans-Alaska oil pipeline system” (43 USC §1652(b)). At the same time, Congress also gave the government broad authority to protect the public interest. TAPAA states, “The Secretary of the Interior and the other Federal officers and agencies are authorized at any time when necessary to protect the public interest, pursuant to the authority of this section and in accordance with its provisions, to amend or modify any right-of-way, permit, lease, or other authorization issued under this chapter” (43 USC §1652(e)). The TAPAA remains in full force and effect.

The TAPS continues to be recognized as an important component of the nation’s energy infrastructure. President George W. Bush’s National Energy Policy states that the TAPS is “the single most important crude oil pipeline in the United States.” Alaska’s North Slope oil

fields currently account for 17% of domestic oil production and about 6% of the nation’s oil consumption. In 2000, the United States imported 60% of its crude oil and 52% of all its petroleum (EIA 2001). Recognizing this, the President’s energy policy calls for the “most expeditious process for renewal of the Trans-Alaskan Pipeline System right-of-way to ensure that Alaskan oil continues to flow uninterrupted to the West Coast of the United States” (National Energy Policy Development Group 2001). The national policy to expedite energy-related projects such as renewal of the TAPS ROW is further supported by Executive Order 13212 issued on May 18, 2001, which directs federal agencies “to expedite projects that will increase the production, transmission, or conservation of energy.”

1.2 Scope of the Decision and Analysis

The TAPAA provides the Secretary of the Interior with the authority and obligation to oversee the construction, maintenance, operation, and termination of the entire pipeline system. The TAPAA provides more specific flexibility and authority for regulating the TAPS, inclusive of and beyond the usual requirements of Section 28 of the MLA. The BLM can impose new or supplementary requirements on the TAPS permittees at any time, not just at the time of ROW renewal. Even though some portions of the pipeline system — including Pump Station (PS) 1, 8, and 9 and the Valdez Marine Terminal — are on land owned by the TAPS Owners, the TAPAA and Federal Grant provide that all TAPS operations (i.e., even those on state and private lands as well as federal lands) are subject to BLM systemwide oversight and decisions. The Federal Grant specifies many of the federal responsibilities. Thus, this EIS evaluates alternative decisions, analyzes impacts, and considers mitigation measures applicable to all parts, and any part, of the TAPS, regardless of the underlying land ownership (Map 1-2). The State of Alaska also has specific authorities over state lands that relate to its oversight of the TAPS. As a practical matter, the State of Alaska and the BLM coordinate on major oversight actions.

The TAPS Owners have applied for renewal of an array of uses, ranging from the main-line ROW to oil spill contingency plan sites. The scope of the BLM decision and analysis encompasses the array of renewal considerations found in the TAPS Owner's application as amended (see www.tapsrow.com for the full application, including line lists at Volume 2, tabs D through H). Further summary descriptions of the array of renewal considerations found in the application can be found in Section 2.2 of this EIS.

NEPA regulations require federal agencies to analyze the totality of the affected environment associated with a federal action, including cumulative impacts (*Code of Federal Regulations*, Title 40, Part 1508, Section 25 [40 CFR 1508.25]). In the case of the TAPS, indirect and cumulative impacts may include past, present, and reasonably foreseeable future actions that would affect the (1) same resources and lands as those that are affected by the pipeline system itself, (2) North Slope oil fields that depend on the pipeline to deliver oil to market, and (3) tanker traffic associated with transporting oil from the Valdez Marine Terminal to market. The TAPS is distinct from the North Slope oil fields and tanker traffic, relating to them as follows:

- TAPS/North Slope oil fields: The upstream end of the TAPS begins at the foot of the workpad at PS 1.
- TAPS/tanker traffic: The downstream end of the TAPS extends to the end of the loading arms for crude oil located at the tanker loading berths in the Valdez Marine Terminal; vapor control and ballast water treatment systems are considered part of the TAPS.

1.3 Description of the TAPS and Its Surrounding Area

The TAPS crosses seven major physiographic provinces and widely varying landscape features, including three major mountain ranges (Map 1-3). More than half of the topography along the route has been heavily

influenced by past and present glaciation, which has produced steep side slopes in the mountains and linear U-shaped valleys that are often bisected by streams and braided rivers carrying large loads of sediment. The highest elevation along the route occurs at Atigun Pass in the Brooks Range (4,739 ft). Oil must also be pumped over Isabel Pass (3,420 ft) in the Alaska Range and over Thompson Pass (2,812 ft) in the Chugach Mountains. Because of the widely varying topography, soil, and climate of the land that the pipeline traverses, vegetative communities range from the tundra-covered coastal plain of the North Slope, to the extensive spruce-birch forests of the Interior, to the western hemlock and Sitka spruce forests of the Prince William Sound coastal areas.

The TAPS is a complex industrial system. Its major components are described here.

Pipeline: Oil flows from PS 1 near the Prudhoe Bay oil field to the Valdez Marine Terminal on Port Valdez through an 800-mi, 48-in.-diameter hot oil pipeline (Map 1-1). Approximately half the pipeline is buried. To prevent thawing of permafrost, half of the pipeline is aboveground, mounted on approximately 78,000 vertical support members (VSMs), and some buried sections are insulated or refrigerated and insulated. The pipeline makes hundreds of crossings over and under rivers, streams, and other water bodies. It is buried at most crossings; most aboveground stream crossings are on VSMs over small streams, but there are 13 bridge crossings. The pipeline system also includes armored banks and specially constructed embankments (river entrainment structures) that protect the pipeline from the potentially erosive migration of the rivers it crosses or parallels. One hundred and fifty-three valves help control oil flow along the pipeline. Sixty-three are remote gate valves (RGVs) that allow Alyeska Pipeline Service Company (APSC) (which operates the TAPS for the TAPS Owners) to rapidly (in 4 to 12 minutes) shut down the flow of oil through electronic instructions from the pipeline control center in Valdez. Eighty-one check valves located on or near slopes operate automatically if oil flow in the pipeline reverses. Nine manually controlled gate valves provide backup support to the check valves and facilitate maintenance operations. The pipeline also incorporates technology that

detects pressure and flow fluctuations that can indicate leaks or the buildup of excessive pressure in the pipeline.

Pump Stations: Six operating pump stations (PS 1, 3, 4, 7, 9, and 12) propel oil through the pipeline. One additional pump station (PS 5 on the southern slope of the Brooks Range) operates only to relieve pressure in the line. As a result of the decline in throughput in the 1990s, four other pump stations (2, 6, 8, and 10) were placed on standby in 1996 and 1997. PS 11 was never constructed. Natural gas powers the turbines at PS 1, 3, and 4; farther south, liquid fuel turns the turbines.

The pump stations include valves, pipe, tanks, and control equipment designed to relieve excessive pressures on the pipeline when the pipeline or a pump station shuts down. Map 1-4 provides a view of PS 1, which, while more complex than the other pump stations, highlights the important components found at each pump station. Pressure relief valves open automatically when the pipeline pressure exceeds set limits, and they can also be opened by controllers by resetting the pressure limits.

Relief tanks are located at all pump stations south of PS 1 to temporarily contain oil discharged from the pipeline by pressure relief valves at the pump stations. At PS 1, there are tanks to balance and meter oil before it is injected into the pipeline. Other tanks along the TAPS store fuels used to run the pump stations. To prevent the escape of crude oil or fuel oils, the tanks are surrounded by secondary containment structures. Those for the relief tanks and other large tanks are generally composed of earthen dikes and a geosynthetic liner.

PS 1, 7, and 9 include drag reducing agent injection facilities, including a storage tank and piping to an injection pump and injection ports in the pipeline. Drag reducing agent is a viscous hydrocarbon added in small quantities to the crude oil to improve flow in the pipeline. Five of the active pump stations have living quarters. Pump stations are also equipped with fire detection and suppression systems, completely fenced, and provided with security services.

Access Roads and Bridges: There are 284 access roads (175 access roads cross federal land and are included in the applicant's renewal request) that traverse state, federal, municipal, and private lands as they extend from state roads to the pipeline, material sites, disposal sites, and pump stations. These access roads typically consist of two-lane gravel embankments constructed of locally available granular material. The roads cross approximately 44 bridges over water drainages.

Valdez Marine Terminal: The Valdez Marine Terminal is a 1,000-acre facility on land owned by APSC on the southern shore of Port Valdez, across from the town of Valdez (Map 1-5). The Valdez Marine Terminal performs two major functions: it stores and loads oil onto tankers for shipment to market and it houses the Operations Control Center (OCC).

The pipeline delivers crude oil to the Valdez Marine Terminal, where it is first measured at the East Metering Building. From there, either it can be directly loaded onto tankers through one of four loading berths or it can be placed in one of the eighteen 510,000-bbl storage tanks to be loaded onto tankers later. Lined earthen dikes provide secondary containment for the crude oil storage tanks. Vapor control systems are in place for the tanks and for the two primary tanker loading berths. Ballast water removed from incoming tankers and all other oily water collected at the Valdez Marine Terminal is processed (secondary treatment). Treated water is discharged into Port Valdez, and recovered oil is returned to the crude oil system. Water treatment is required to meet all U.S. Environmental Protection Agency (EPA) permit requirements.

The OCC controls the flow of oil through the Valdez Marine Terminal and along the entire TAPS. By using remote sensors and electronic communications systems, operators at the OCC are able to monitor the oil flow rate, temperature, pipeline pressure, and valve positions along the TAPS. Operators can react to detected abnormalities by slowing or stopping pumps and by closing main-line valves or opening relief valves.

Telecommunications: Satellite, cable, and terrestrial microwave radio systems provide key communications along the TAPS. Satellite and land-based microwave radio systems transmit critical signals to control the flow of oil through the pipeline. Fiber-optic cable along the pipeline route, backed up by the satellite system, is the primary transmission medium for all other communications among the OCC, pump stations, oil-producing companies at Prudhoe Bay, transient construction sites, and APSC administrative offices in Fairbanks.

Workpads: Workpads are mineral-material-filled embankments on which the travel lane next to much of the pipeline is located, or they are fill areas used during construction to provide access to diverse items of heavy equipment and to act as a sound working surface for this equipment. Some workpads are insulated to assure that ice in underlying soils does not melt.

Gas Line: Natural gas is produced along with oil at Prudhoe Bay. Some of this gas is piped to a metering, filtering, compressing, and cooling facility at PS 1. A buried 149-mi gas pipeline transports this fuel to power PS 3 and 4.

1.4 Relationships of the TAPS to BLM Policies, Plans, and Programs

The BLM develops land use plans to guide use activities, stewardship goals, and management approaches. Within Alaska, the BLM plans recognize the importance of energy resources.

The BLM has three multiple-use land use plans that encompass portions of the TAPS. The Southcentral Management Framework Plan was issued in 1980 (BLM 1980). It covers portions of the TAPS on BLM lands south of the Alaska Range but discusses no management decisions affecting the TAPS. The Fort Greely Resource Management Plan (RMP) was issued in 1994 (BLM and U.S. Department of Defense 1994). It acknowledges the prior existence of the TAPS and states that the BLM will protect “valid existing rights.” In the Utility Corridor Proposed RMP (BLM 1989), the BLM makes the

preeminence of energy delivery very clear for its lands north of the Yukon River near the TAPS. The Utility Corridor Proposed RMP states, “No proposed management action [in the plan] should be interpreted as limiting current or future energy transportation needs in the Utility Corridor. The need for the transportation of energy minerals supersedes all other uses of the Utility Corridor” (BLM 1989). The Utility Corridor RMP’s 1991 Record of Decision (ROD) (BLM 1991) states that “the primary management direction and use of BLM-administered lands in the Utility Corridor is for energy transportation.” All three plans are consistent with the proposed action.

In the past five years (1997–2002), the BLM has undertaken planning efforts for the National Petroleum Reserve-Alaska (NPR-A). In 1998, it completed the northeastern NPR-A integrated activity plan/EIS and made approximately 4 million acres available for leasing oil and gas. In 1999, the BLM conducted a lease sale for this area, and oil companies purchased 133 tracts. The BLM conducted a second lease sale in this area in June 2002. Oil companies have conducted exploratory activities for their lease holdings. In November 2001, the BLM initiated a similar planning process for the northwestern NPR-A, which may result in additional acreage being offered for leasing oil and gas. The BLM in its studies anticipated that any crude oil obtained from NPR-A would depend on the TAPS to reach markets.

1.5 References for Chapter 1

BLM (Bureau of Land Management), 1980, *Management Framework Plan for the Southcentral Planning Area*, Anchorage District Office, Anchorage, Alaska.

BLM, 1989, *Utility Corridor Proposed Resource Management Plan and Final Environmental Impact Statement*, Arctic District Office, Fairbanks, Alaska.

BLM, 1991, *Utility Corridor Resource Management Plan/Environmental Impact Statement Record of Decision*, Arctic District Office, Fairbanks, Alaska, Jan. 11.

BLM and U.S. Department of Defense, 1994, *Fort Greely Proposed Resource Management Plan Final Environmental Impact Statement*, Steese/White Mountains District, Report No. BLM/AK/PT/94/010+1600+080, Anchorage, Alaska.

Brossia, J., 2001, letter from Brossia (Authorized Author, Bureau of Land Management/Office of Pipeline Management) to S. Jones (Renewal Project Manager, Alyeska Pipeline Service Company), Anchorage, Alaska, May 31.

EIA (Energy Information Administration), 2001, *Annual Energy Review 2000*, U.S. Department of Energy, Washington, D.C., p. 123.

National Energy Policy Development Group, 2001, *Reliable, Affordable, and Environmentally Sound Energy for America's Future: Report of the National Energy Policy Development Group*, Washington, D.C., p. 7-10.