ENVIRONMENTAL, SOCIAL, AND ECONOMIC ANALYSIS OF THE TRANS-ALASKA PIPELINE SYSTEM

Between July 2001 and November 2002, staff from the Environmental Assessment Division (EAD) and the Decision and Information Sciences Division (DIS) of Argonne National Laboratory evaluated likely environmental impacts of renewing the right-of-way for the 800-mile-long Trans-Alaska Pipeline System (TAPS), which was constructed in the 1970s and has operated for more than 25 years. The environmental impact statement (EIS) prepared by Argonne considered the potential impacts of three alternatives: renewing the federal grant for the TAPS right-of-way for 30 years, renewing the grant for less than 30 years, and not renewing it at all. The EIS provided the first comprehensive evaluation of impacts of the TAPS since the pipeline was constructed and began operations.

PROBLEM/OPPORTUNITY

Oil from Alaska's North Slope reserves currently accounts for about 18% of U.S. domestic production, and the TAPS plays the essential role of transporting that oil from remote oil fields near the Arctic Ocean to the southern Alaskan port of Valdez. At Valdez, the oil was loaded on tankers and shipped to the West Coast market. However, in January 2004 the federal right-of-way grant for the TAPS will expire, so the consortium of pertroleum companies that owns the TAPS submitted an application to the U.S. Bureau of Land Management (BLM) to renew the federal grant for another 30 years. The request for renewal of the right-of-way provided the BLM an opportunity to evaluate the broad range of environmental, social, and economic issues associated with the operation and maintenance of the TAPS. The BLM turned to Argonne to conduct that evaluation.

Assessing the environment impacts of the TAPS was a complex task. To begin with, the pipline crosses the entire state of Alaska from north to south, traversing about 800 miles of mountains, forests, and tundra. The area traversed by the long pipeline includes a broad range of physical, natural, and human environmental settings, and impacts had to be analyzed for all. In addition, the TAPS carries what in may ways is the economic lifeblood of the state of Alaska, contributing nearly 80% of state-generated revenues, placing the TAPS in a unique position relative to the economic future of the state.

Finally, the TAPS is nearly 30 years old and crosses broad expanses of sensitive natural environment upon which an important segment of Alaska populatino relies for their livelihood. Although the system had never experienced a catastrophic oil spill, the combination of its age and the potential impacts of such an accident generated considerable concern abaout its continuation in the minds of many.

The TAPS includes both buried pipe and pipe supported on steel structure above ground, depending on local soil and geologic conditions.

APPROACH

The EIS prepared by Argonne on the TAPS considered the likely affects of three alternative scenarios:

- Renewal of the right-of-way for another 30 years,
- Renewal of the right-of-way for a period of less than 30 years, and
- No renewal of the right-of-way (the *no action alternative*).

For each alternative, the EIS team employed an integrated evaluation that considered not only the range of potential impacts on a particular component of the environment, but the implications of those impacts on other environmental components. As one example, the evaluation not only considered the impact of right-of-way renewal on surface hydrology, notably the 800 streams and rivers crossed by the system, but also went on to evaluate the implications of those surface hydrology impacts on other components of the Alaskan environment and society. Implications of those impacts were evaluated for biological resources that live in or otherwise rely on the rivers and streams; subsistence practices that harvest resources from the rivers and streams for economic (food and other uses), sociocultural, or ceremonial purposes; Alaska Native and rural non-Native sociocultural systems that rely on such components of the environment; and recreation and wilderness depending on the particular streams and rivers considered. A similar approach was used for the other environmental components evaluated for the EIS. The EIS benefited greatly from a geographic information system (GIS) developed specifically for this project, which substantially enhanced the identification of interrelated impacts.

RESULTS

The TAPS EIS provided a scientifically based evaluation of likely environmental consequences of three alternatives considered in the study. As such, it represents the first integrated evaluation of environmental impacts associated with this key component of national oil production since its construction was completed in the 1970s. Results of the EIS provided information crucial to the Secretary of the Interior's decision on right-of-way renewal.

Several components of the TAPS EIS particularly stand out as important contributions to the evaluation. One is the assessment of likely impacts on subsistence fishing and hunting across the state. Subsistence is extremely important to Alaska Natives and many non-Natives. Because of the geographic extent of the TAPS, the EIS considered subsistence impacts on 21 Alaska Native villages as well as four rural non-Native communities. Through the use of GIS-based analysis, the EIS was able to define subsistence use areas potentially affected driectly and indirectly by continued TAPS operations, the likely nature of those effects, and potential cumulative effects of the TAPS and other activities on subsistence.

Another key component of the TAPS EIS was the spills analysis - particularly important because such events, rather than normal operations, would lead to the greatest environmental impacts from continued operation of the pipeline. The document identified particular locations of potential spills, their direct impacts in terms of duration, volume of oil released, area affected, and their likelihood of occurrence. Many of the spill scenarios examined were tied specifically to the location of key resources. The spills analysis in the TAPS EIS remains the only comprehensive evaluation of spills at particular locations along the pipeline.

FUTURE

The TAPS EIS was completed in late 2002, providing key information considered by the Secretary of the Interior in her decision to renew the right-of-way in January 2003. The Environmental Assessment Division continues to provide support to the Joint Pipeline Office (the combined federal and state agencies responsible for regulating the TAPS) in the form of engineering and environmental studies.

For more information, contact: J. Krummel • jkrummel@anl.gov • Environmental Science Division (www.EVS.anl.gov)
Argonne National Laboratory, 9700 South Cass Avenue, Argonne, IL 60439 • 630-252-3269 •