

State answers FERC questions about Cook Inlet pipeline crossing

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The state-led gas line development team has told federal regulators it is confident the Alaska LNG project's steel pipeline could withstand Cook Inlet's strong currents, shifting seabed and traveling boulders along the 29-mile underwater route to the gas liquefaction plant in Nikiski on the Kenai Peninsula.

The water-crossing information is among the remaining batches of answers the Alaska Gasline Development Corp. (AGDC) owes to the Federal Energy Regulatory Commission (FERC), which is scheduled to publish sometime this month its draft environmental impact statement for the proposed \$43 billion project to pipe North Slope gas to the LNG terminal for export.

Federal regulators last October asked the state team for more information on the Cook Inlet pipeline crossing, including how the currents could affect the line's stability on the seafloor and how the high-pressure steel pipe would be protected against boulders.

"The strong tidal currents of Cook Inlet could potentially move debris and boulders across the pipeline," AGDC reported in a May 24 filing with FERC. The project team analyzed what would happen if boulders as large as 10 tonnes (22,000 pounds) fell on the 42-inch-diameter pipeline, which would be laid — not buried — on the seabed floor. The analysis also looked at the risk of 15-tonne boulders "traveling at the maximum identified Cook Inlet bottom current velocity of 4.8 knots."

The analysis showed that any hits by boulders of the size modeled "can be easily absorbed by the pipeline steel alone," AGDC told FERC. For additional protection, the 1.25-inch-thick steel pipe would be coated with 3.5 inches of concrete before the lengths are welded together and lowered to the seafloor.

The pipe in Cook Inlet would be substantially heavier than the pipe along the rest of the 807-mile route from Prudhoe Bay to Nikiski, most of which would range between 0.677 and 0.862 inches thick. Because the gas moving through the line is pressurized — to about 2,000 pounds per square inch — to keep it moving and keep it cool, the gas line steel is much thicker than the 0.462-inch and 0.562-inch pipe used for the trans-Alaska oil pipeline construction more than 40 years ago.

AGDC's answers filed with FERC also addressed questions raised last fall by the U.S. Pipeline and Hazardous Materials Safety Administration (PHMSA), which regulates oil and gas pipeline safety standards.

Responding to the regulators' questions, AGDC said it is not planning to install any piling, riprap (large rock) or "concrete mattresses" to help hold the pipeline in place against Cook Inlet currents. Its analysis determined no such anchoring is needed, the state team said in its May 24 filing.

"The analysis indicates that the installed pipeline would be stable and not subject to lateral movement," AGDC said. The state team added that stability designs would be "further evaluated ... when updated geotechnical information is available."

PIPE-LAYING OPERATIONS

The pipe segments would be welded together aboard a pipe-laying barge and the string continuously lowered into the water, putting stress on the steel pipe, concrete coating, and welds. Federal regulators asked AGDC if it had a plan to ensure that the weight of the pipe and strong currents would not damage the line during the pipe-laying operation.

“Initial analysis indicates that pipelay ... will not result in stress loads sufficient to result in pipe buckling or concrete crushing,” AGDC said. The state corporation further explained that the exact tensions on the pipe would be specific to the vessel used for the operation. “Therefore, such issues will be re-examined when contractor equipment is known.”

The project team expects the pipe-laying barge would move at 0.5 to 1 knot a day, with the entire operation from shore to shore scheduled for just short of three months when the inlet is ice-free.

The underwater pipe would link up on the west and east sides of Cook Inlet with shorter segments trenched and buried through shallower water.

In its analysis of seafloor conditions along the crossing route, AGDC relied on 22 soil corings, conducted in 2016 before North Slope oil and gas producers ExxonMobil, BP, and ConocoPhillips left the project and turned over management to the state. The companies at that time did not believe market conditions warranted proceeding with the FERC application and spending more money on permitting and design.

Those 2016 soil corings were taken every 1,000 feet along the route where the pipeline would be buried or trenched near shore and every 3 miles where the pipe would be laid uncovered on the bottom of the inlet.

Federal regulators asked AGDC if it had collected sufficient site-specific data to confirm that the seafloor soil would be firm enough to support the heavily weighted pipeline without the line sinking and putting high-strain loads on the pipe and welds. The state team referred to its 22 soil corings as a “preliminary assessment of bottom soil strata properties and strengths,” adding that “further evaluation will be conducted” if the project goes to the detailed design stage.

Near to shore, the pipe would be buried in a trench. In the very nearshore, about 600 to 800 feet from landfall, the trench would be immediately backfilled to protect and hold the line in place, AGDC said. Farther out, “natural fill is expected to occur” to cover the pipe trench.

EIS and FEDERAL APPROVAL SCHEDULE

The state team is scheduled to file its last responses to FERC’s environmental and engineering data requests later in June and in July. Those last answers are not expected to delay release of the draft environmental impact statement (EIS) in June.

Allowing for public hearings around the state, a public comment period and review by federal agencies participating in the EIS, federal regulators are scheduled to release the project’s final EIS in March 2020. FERC commissioners would be required to take up Alaska LNG’s project application no more than 90 days after the final EIS, putting a decision into June 2020.

The state has been paying 100 percent of the permitting and design costs since the North Slope producers left the project 2½ years ago. AGDC expects to have about \$22 million left in its account as of the end of the fiscal year on June 30, which could be tight to finish the effort at FERC while continuing to market the project to potential investors and customers and work on design issues in hopes of putting together an economically viable development.

Though potential customers have expressed interest in Alaska LNG, none have signed a binding commitment or invested in the development, which would require billions of dollars in equity and tens of billions in long-term financing.

BP and ExxonMobil in late May agreed to help the state finish its work with FERC. Each company will contribute \$10 million to the effort, according to an announcement by Alaska Lt. Gov. Kevin Meyer at an oil and gas industry conference in Anchorage on May 30.

The Alaska Legislature this session provided no additional state funding for AGDC but did grant the corporation the authority to deposit and spend the producers' contributions. With the producers' funding, the state corporation does not have to worry about shutting down later in 2020 for lack of money.

Alaska Gov. Mike Dunleavy has been critical of the state leading the costly project. AGDC interim president Joe Dubler was quoted in March: "We're trying to find potential partners to get the state out of the driver's seat and get other people in."

AGDC APPLIES FOR SPECIAL PERMITS

In addition to providing more information to FERC in late May, the state project team filed four special-permit requests with PHMSA. The applications are out for public comments, which are due to PHMSA no later than July 29. The permits would allow AGDC to construct:

- Limited segments of the pipeline through sparsely populated areas using what's called "strain-based design," requiring AGDC to show regulators that the pipe could withstand ground movement from either frost heave or thaw settlement. The segments would be limited to stretches in the Interior, north of Fairbanks, and in the Denali Borough south of Fairbanks.
- Mainline block valves at 30- or 50-mile intervals — in those same "very sparsely populated" regions — instead of the standard 20-mile spacing. Block valves are a safety feature; they detect a drop in gas pressure and close off and isolate that section of pipe to limit the risk of leaks or explosions.
- Crack arrestors at intervals along the pipeline of up to 1,600 feet, instead of the general standard of every 320 feet. A crack arrestor is a steel sleeve that encircles the pipe and is designed to stop a crack from extending past the sleeve.
- The mainline using a three-layer polyethylene coating on the pipe. PHMSA regulations do not require a specific coating, but developers are required to show that their coating of choice can protect the pipe from damage during transport, construction, and operations. The polyethylene coating would be applied at the pipe mill, to ensure full protection during transport.

AGDC FILES ADDITIONAL DETAILS WITH FERC

In other answers submitted to federal regulators in multiple filings in late May, AGDC reported:

- Additional details of its fire-suppression and spill-prevention systems at the gas liquefaction plant, storage tanks, marine terminal in Nikiski, and at the gas treatment plant at Prudhoe Bay that would remove carbon dioxide, water, and other impurities from the gas stream before it starts its 807-mile journey to the LNG terminal.
- Updated details for direct microtunneling to run the pipe under five waterway crossings, including the Tanana River. The filing includes plans for any inadvertent release of drilling fluids or other contaminants during the tunneling. In microtunneling, a laser-guided machine is lowered into a pit to dig its way under the waterbody.
- Preliminary site-specific plans for each of the 24 gas pipeline crossings beneath the Dalton Highway, which runs from north of Fairbanks to Prudhoe Bay.
- Further details for the 12 locations where the gas line would cross the trans-Alaska oil pipeline. For crossings where the oil line is buried, AGDC proposes to construct the gas line in a berm crossing over the oil line. The berm would provide a minimum of 3 feet of cover around the gas pipeline. Where the oil line is elevated, the gas line would be buried at least 4 feet underground.
- The project's air transport plan, detailing how AGDC proposes to move construction workers by aircraft along the project route. The busiest airport, according to the plan, would be Fairbanks, with up to a dozen flights a day, each carrying between 77 and 144 people. Other hub airports would be Anchorage, Deadhorse, and Kenai.

FERC also had asked how construction and operation of the pipeline and LNG terminal would affect salmon setnetters on the west and east sides of Cook Inlet. The state team said it "will work with setnetters and the Alaska Department of Fish and Game to estimate measurable loss of harvest, if any, related to construction activities. ... Mitigation compensation would be based on the estimated lost harvest, as agreed to by both parties."

AGDC acknowledged that commercial salmon setnetters with leases at the LNG plant site and marine terminal "will lose fishing opportunity at those specific sites due to plant construction and operation. ... AGDC will work with impacted setnetters and the State of Alaska to provide reasonable alternate beach access locations and alternate fishing sites. If no reasonable alternative can be identified, AGDC will work with individual setnetters to determine the appropriate amount of monetary compensation for salmon harvest loss or loss of access to a shore fishery lease."

Several factors will be considered to determine "the appropriate compensation including individual permit harvest history, terms of the shore fishery lease, and whether the damage is temporary or permanent," AGDC said.

In its May filings, AGDC provided FERC with a list of permits and authorizations required for the project with anticipated receipt dates for the approvals. Most of the major approvals

are expected later in 2020, such as the U.S. Army Corps of Engineers Clean Water Act permit, Environmental Protection Agency, Bureau of Land Management, and U.S. Fish and Wildlife Service approvals.

The state project team said it expects to file permit requests in the third quarter of 2020 with the North Slope, Fairbanks, Denali, Matanuska-Susitna, and Kenai Peninsula boroughs. Those would include land-use, waste-disposal, utility, floodplain management, gravel sites, and right-of-way permits.