



APC CINGSA Lateral

White Paper

December 2014

Date: 10/16/17 Exh # H-85
Regulatory Commission of Alaska
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U-16-066 ENS07527



APC CINGSA Lateral



Executive Summary

APC is planning the construction of a new 16-inch diameter transmission pipeline at an estimated cost of \$10.0 million that will directly connect the CINGSA storage facility to the APC pipeline system. The lateral will be approximately 4-miles in length and designed to a maximum allowable operating pressure (MAOP) of 1,480 psig. Construction of the line is planned to start in early March 2015 with the project being completed and online by the end of September 2015. The project completion is dependent upon the project startup date and construction in frozen soils.

The APC CINGSA Lateral will create means for CINGSA customers to deliver directly onto the APC system. The new pipeline link will provide several significant improvements to Cook Inlet's natural gas transportation system. Once in operation this lateral will provide the following:

- **Increased system efficiency while adding deliverability** – CINGSA gas can enter the APC system via the lateral as high as 1,050 psig, or about 300 psig more than current operating pressure capability. This boost in pressure increases the maximum deliverability of gas to Anchorage by about 30 MMscf/d, about 12.5%, while eliminating operating costs by greatly reducing compression requirements at K-Beach.
- **Decreased greenhouse emissions** – Currently, CINGSA gas headed to the APC system must have its pressure reduced in order to enter the KNPL. Gas is decreased in pressure from more than 1,100 psig¹ down to 690 psig in order to enter KNPL and then arrives at Kalifonsky where it is compressed again up to 800 psig or more upon entering the APC system. A direct feed from CINGSA will reduce greenhouse emissions by eliminating horsepower required to generate over 350 psig of compression.
- **Improved reliability** – The APC CINGSA Lateral will provide a more robust delivery for up to 300 MMscfd of gas to the APC system. ENSTAR's downstream customers in Anchorage rely on high deliverability for heating during the winter months as do Anchorage based power generation facilities such as the recently constructed Southcentral Power Plant and the soon to be updated ML&P No. 2 plant.
- **Simplified tariffs** – All gas injected into CINGSA will still require transportation on the KPBL. However, with the installation of the lateral withdrawal gas will be able to bypass the KBPL system (current tariff rates are approximately \$0.29 per

¹ Flowing/available pressures can vary greatly depending on a number of factors.



APC CINGSA Lateral



Mcf) providing an estimated \$1.8 million in transportation cost savings annually for CINGSA customers.

- **Deferred compression requirements** – APC's current primary purchase point Kalifonsky has long been the hub for gas transportation to the Anchorage market. The CINGSA to APC lateral will defer or eliminate need for additional compression upgrades. Capital considered for K-Beach compression upgrades amounting to \$5.5 million, is best utilized on the proposed CINGSA connection.
- **Annual Operating Income** – The lateral will add \$10.0 million to APC plant, and is expected to earn \$0.3 million of AFUDC and \$0.5 million of operating income in 2015 pending the completion in September 2015. The annual operating income for 2016 and beyond is expected to be to \$1.4 million.

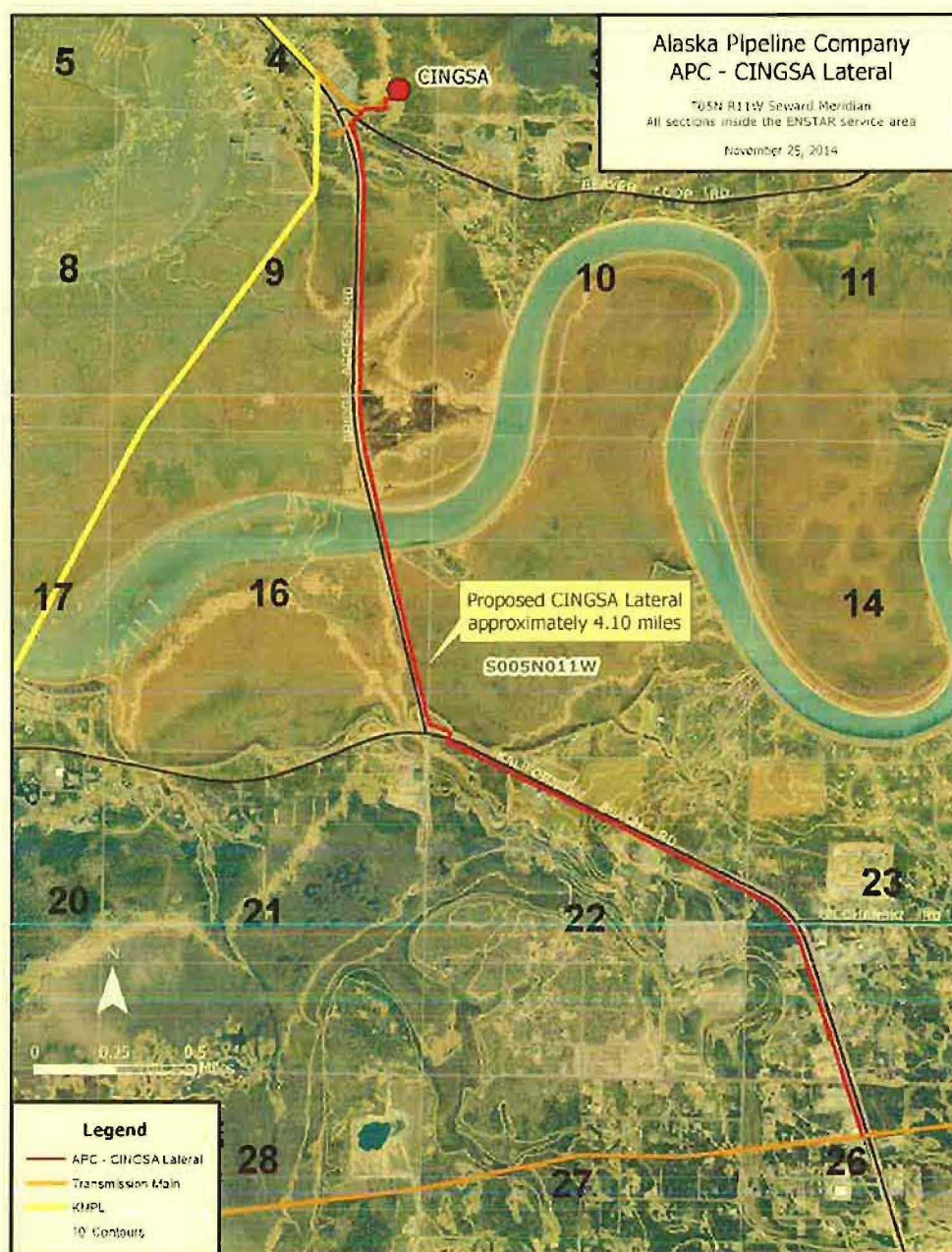
A construction start date of March 1, 2015 is critical in order to achieve a timely completion of this project. Should the start date slip, the project will be unlikely to take advantage of a necessary winter construction spread that enables installation across an extensive wetland. As a result of missing this construction window the completion date would potentially slip to January 2016 which would likely cause the project to be excluded from the current rate case. Ensuring that materials arrive at the project no later than February 2015 is imperative to maintaining the March 1 start date and the critical path for a third quarter 2015 project completion.



1 Introduction

The proposed APC CINGSA Lateral will create a bypass of the KNPL pipeline for CINGSA customers planning to deliver gas from storage into the APC system. The 16-inch diameter lateral will transport gas south and east from CINGSA approximately 4.1-miles to where it will connect into two 12-inch diameter APC pipelines, known as the "A" and "B" Pipelines that carry gas north to Anchorage.

Figure 1.0 APC CINGSA Lateral Route





2 Project Outline

The engineering and design of the 4.1-mile pipeline is currently under way. APC is designing the pipeline in house, which includes the route, the tie-in to the CINGSA facility, and the tie-in to the APC A and B pipelines. A 16-inch diameter pipeline was selected (see Table 2.0 below) and proves to have sufficient capacity for current demand and future demand of up to 300 MMscfd. The pipeline is designed to meet ANSI 600 requirements, with a maximum allowable operating pressure (MAOP) of 1,480 psig. The pipeline route, which crosses almost 2 miles of wetlands, includes a 2,000-ft horizontal directional drill (HDD) under the Kenai River, and potentially another 4,000-ft of HDD across some of the more challenging wetlands adjacent to the river crossing. Final design is expected to be complete by the end of January 2015.

Table 2.0 APC CINGSA Lateral Pipeline Pressure Drop

16" O.D. 0.375" w.t. Pipeline at 1,000 psig (using Panhandle A)	
Flow [MMscfd]	Pressure Drop [psi]
100	10
200	40
300	90

The permitting of this project presents a challenge because of the extensive amount of wetlands. A cultural resources study and wetlands survey was completed in early December 2014 for the entire pipeline corridor. Upon project approval, a U.S. Army Corps of Engineers (USACE) permit and an Alaska Department of Transportation (ADOT) permit will be applied for. Receipt of these permits could take 45-days or more, and are required before construction of the pipeline can start. A Kenai Peninsula Borough (KPB) permit is also necessary, and has a 30-day anticipated lead time. Small temporary construction easements on private property are required along the pipeline and will be requested after final design. Permitting will be completed by the first week of March.

Timely delivery of materials for this project is the most important factor in meeting the project schedule. The 16-inch by 0.375-inch wall thickness pipe has a lead time of 12-16 weeks, and will be ordered upon project sanctioning. APC has already received pipe quotes and has arranged for a part of the shipment to arrive in the middle to end of February 2015. The valves and vessels for the pipeline have 32-week lead times, but cannot be ordered until the preliminary design is completed. Other materials relating to this project have lead times of 10-30 weeks, and will be ordered upon final design completion. Timing of the delivery of these materials is flexible and is therefore not critical to maintaining the construction schedule of the pipeline.

Construction of the pipeline will be completed by contractors. APC is taking two approaches to bid out the pipeline construction: first to award the entire project to a

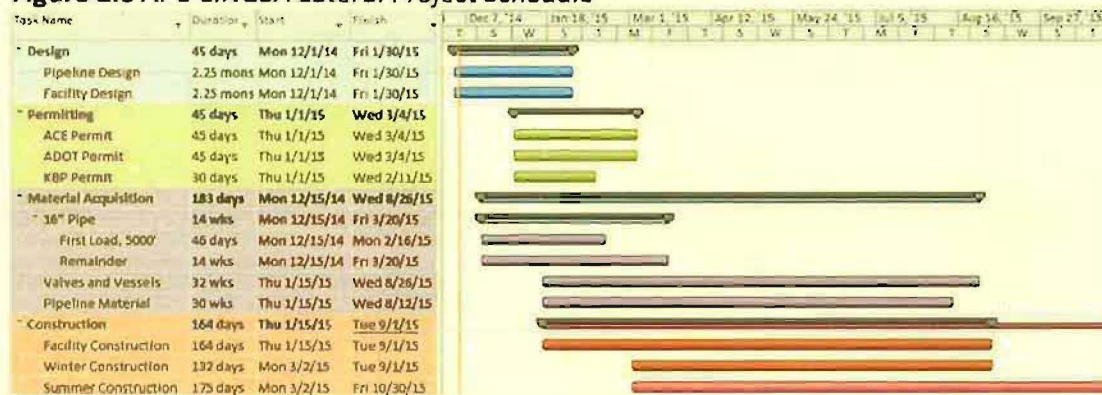
Cook Inlet Natural Gas STORAGE

APC CINGSA Lateral



single general contractor, and the second to award the HDD and trenching under separate contracts. Both of these approaches are lump sum and will be evaluated for competitiveness. Communications with pipeline contractors and HDD contractors to discuss the bidding, timing, and challenges of wetland construction is ongoing. APC has set a target for beginning the pipeline construction of March 1st, 2015 which would allow construction on frozen wetlands prior to the summer construction season. Completing pipeline construction across the wetland areas prior to the summer construction season is imperative so that the project may be completed by September 1st, 2015. Figure 2.0 outlines a full project schedule.

Figure 2.0 APC CINGSA Lateral Project Schedule



The cost of construction for both the pipeline and the facility modifications is estimated at \$11.5 million, with \$10.0 million for APC to build the pipeline and \$1.5 million for CINGSA for the required facility work. A spend schedule is shown below in Table 2.1. Most of the spending will take place between March and August, when material arrives and the construction is on-going. Material is expected to begin arriving in February, and will continue through March, and July, increasing the monthly spending. Final project completion and clean up spending is expected after the pipeline is constructed in September.

Table 2.1 APC CINGSA Lateral Spend Schedule (\$ in millions)

2015								
January	February	March	April	May	June	July	August	September
\$0.05	\$0.75	\$2.0	\$1.25	\$1.25	\$1.25	\$2.0	\$1.25	\$0.2



3 Project Benefits

An APC CINGSA Lateral will provide numerous benefits to the Cook Inlet natural gas pipeline system. Most significant is the increase to the APC system deliverability. Currently, CINGSA must reduce the pressure of withdrawal gas by 400 to 600 psi, sometimes even more in order to enter the KNPL, which normally operates at between 690 and 715 psig. Prior to entering the APC system KNPL gas must then be recompressed at Kalifonsky Compressor Station (K-Beach). The APC CINGSA Lateral would direct deliveries to the APC system without the requirement to reduce pressures below 1,000 psi. With these higher delivery pressures APC will improve system capacity for Anchorage customers from 240 MMscfd to 270 MMscfd. This additional capacity is required due to recent upgrades made by transportation customers of APC, such as the Southcentral Power Plant (SPP) and soon the Municipal Light and Power Plant 2 (ML&P 2) expansion.

Capital projects to replace aging compressors and increasing compression at K-Beach have been on the horizon for APC. However, due to the addition of a lateral with the potential for high pressure and large volumes compression at K-Beach will not require upgrades anytime soon. Additionally, less compression is required farther downstream at the Gudenrath facility due to the overall increase in pipeline pressure. A minimum of 625 horsepower (HP) is required at K-Beach during the 4 month withdrawal season to transport deliveries from CINGSA on the KNPL up to 46 MMscfd per day onto the APC system. To achieve the equivalent capacity increase up to 270 MMscfd, an additional 7000 HP is required at K-Beach, or an additional 4 or 5 compressor units. The proposed lateral eliminates the need to compress the deliveries from CINGSA onto the APC system altogether. This reduces compressor emissions, run time, fuel costs of \$125,000 annually, and operating costs by an estimated \$50,000 per year at the same time as the new higher pressure will increase deliverability to customers.

A direct cost savings will be recognized by ENSTAR and other CINGSA customers withdrawing onto the APC pipeline system once this lateral is constructed. In November 2014, Hilcorp consolidated its four pipelines, including the KNPL, into the all-inclusive KBPL system, thus increasing the tariff on the KNPL from \$0.05-0.07/Mcf to \$0.29/Mcf. The effect on withdrawal transportation costs of this increased tariff is detailed in Table 3.0 and Table 3.1. APC and other CINGSA customers using the bypass would save approximately \$1.85 million annually in KBPL transportation costs. This also reduces the number of tariffs for APC transport customers to a single tariff on the APC system, instead of two tariffs, one on the KBPL and one on the APC system. At the current time, customers who inject into CINGSA would still do so through the KBPL system.


Table 3.0 CINGSA Customer Withdrawal Volumes and Estimated KNPL Costs

	2012	2013	Q1-3 2014
CINGSA Customer Withdrawal Volumes	0.96 Bcf	5.11 Bcf	3.6 Bcf
Estimated KNPL Tariff Charges (Est. \$0.06/Mcf)	\$57,600	\$357,700	\$216,000
Estimated KNPL LAUF Costs (Est. 0.2%, \$7/Mcf)	\$13,440	\$71,540	\$50,400
Total Estimated KNPL Cost	\$71,040	\$429,240	\$266,400

Table 3.1 CINGSA Customer Costs on KBPL with \$0.29/Mcf Postage Stamp Rate

	Annual Estimate
CINGSA Customer Withdrawal Volumes	5.5 Bcf
Estimated KBPL Tariff Charges (Est. \$0.29/Mcf)	\$1,595,000
Estimated KBPL LAUF Costs (Est. 0.65%, \$7/Mcf)	\$250,000
Total Estimated KNPL Cost	\$1,845,000

Finally, the lateral also adds \$10.0 million to APC plant increasing the revenue stream. Table 3.2 details the annual expenses and revenue expected for this pipeline. Additional revenue of \$0.5 million is expected in 2015 pending the completion of the pipeline. After 2015, annual revenue is projected at \$1.7 million.

Table 3.2 APC CINGSA Lateral Operating Income Analysis

The estimate is based on the assumptions included in the pending ENSTAR's 2014 Rate Case		
Planned CINGSA/KNPL By-Pass Pipeline		\$ 10,000,000
Additional Plant		\$ 10,000,000
Depreciation Expense - 1.87%		\$ 187,000
Taxes Other than Income - Property Taxes - 1.82%		\$ 181,800
Annual Expenses Included in Revenue Requirement		\$ 368,800
Return on \$10 Million Rate Base at 12.55% ROE		\$ 1,355,000
Annual Revenue Requirement associated with this investment		\$ 1,723,800
If project is not completed until 9/01/2015 (assuming a Step II increase is permitted)		
	2015	2016
Impact on Revenue	\$ 510,200	\$ 1,723,800