

Questions from Morning Session Low Flow Presentation
9 am October 1, 2008
Shippers, Potential Shippers, Connectors

Categorized by Topic

More information:

1. When can you release the details of the Phase I Low Flow Study? How/where will it be available? Is any or all of the study going to be publically available?
An executive summary of the Phase I report will be made available on this web site during the first quarter of 2009.
2. What is the timeframe for completion of identified studies based on the results of this initial evaluation? When do you expect an interim report out on the low flow study? What is the stage of study? Engineering firms engaged?
The low flow studies are in their early stages. Several engineering firms and laboratories have been engaged. We believe we will have some preliminary results to share in mid 2009. We hope to have the majority of the Phase II studies completed by the fourth quarter of 2010, but it is too early to make a reliable estimate of the completion date.
3. Can additional questions be submitted on the website?
Additional questions will be taken via the website until one month after the executive summary of the Phase I report is released. Notification will be given on this website when the last question and answer document is posted.

Water:

4. During the presentation Mr. McDevitt stated during a TAPS shutdown, water could drop out and build up. Is it possible that large unexpected water slugs could hit the refineries? Without notice?
Alyeska is developing a water monitoring tool to help predict the location of water in the system. This could be used to notify refineries if a slug is expected during normal operating conditions or as the result of a pipeline restart.
5. When is water a problem?
Water is currently in the ANS crude oil stream, as it is in all crude oils. We are still developing information on the future impact to the pipeline of that water at lower throughputs and lower temperatures. We anticipate that one of the outcomes of the Low Flow studies will be determining the conditions under which the impacts of water are substantial enough that more aggressive changes will have to be made.
6. Do we have estimates on water content trends for the future?
At this time we have no such information. The water trend alone is not the only variable that must be considered. Throughput and temperature directly interact with water content. We expect to modify the TAPS water specification to ensure continued safe and reliable operations.

Heat:

7. Have pilot studies been initiated for heaters?
While some early work has been done, conceptual engineering for heaters has not yet been initiated. First a further evaluation of the extent of the critical issues and the need for heat needs to be completed.
8. What is the value of heat returned by refineries? The model probably assumes that certain connectors contribute a significant quantity of warm oil into the line. What is the impact to TAPS if this doesn't happen? Conversely is there value in increasing the temperature of certain contributions?
TAPS has connectors at PS1, Fairbanks, and Valdez. The characteristics of each connector's crude streams, including temperature, viscosity and other crude characteristics, are being considered in the studies. The low flow plan evaluation assumes the refineries along TAPS (Fairbanks and Valdez) will continue to off take (and re-inject) crude with similar characteristics and at about the same levels as they currently do.

Specification Changes:

9. For the near term (next 10-15 years), will the low flow study address specifics in particular regarding potential crude specification changes?
Basic sediment and water (BS&W) and viscosity specifications are being evaluated for possible changes, but there may be others that come into consideration as our studies continue.

10. When and how are the “commercial issues” surrounding wax and BS&W going to be addressed?
11. How much advance notice will be provided prior to changing crude oil specifications?

In response to questions 10 - 11: We will continue to discuss potential commercial issues and specification changes with TAPS shippers and regulators and based on all the information available to us make our decision on how to proceed. The shippers will then be notified as soon as possible after a firm decision has been made that a change to crude quality specifications is necessary to protect the safety and integrity of TAPS.

Magnitude of Cost:

12. Cost estimates (rough) available for various options? What range of tariff increases?
13. Studies cost? Addressing the issues cost?
14. Between now and 2030, can you share what potential “additional investments” may be required?
In response to questions 12 – 14: An executive summary of the Phase I report will be made available on this web site during the first quarter of 2009. Information regarding cost estimates and levels of required investment will be made available within this executive summary to the extent that is legally permissible.
15. What is the process for deciding/approving spends, given impact to non-owner shippers, investors and explorers? (Who decides and how?)
Expenditures for mitigative measures considered in this study will be handled in the ordinary course of conducting TAPS business.

Throughput and Timing:

16. When will TAPS be impacted by low throughput if no mitigations are implemented?
The purpose of the Study is to implement required mitigations in time to prevent any adverse impact to TAPS operations. One of the outcomes of the ongoing Low Flow studies will be determining the conditions under which the impacts of water, wax, higher viscosity, and geotechnical or other issues are substantial enough that changes will have to be made. Mitigation plans will be developed according to these findings.
17. What is the current viscosity of TAPS throughput?
The viscosity can vary and is dependent on the mix of crude oil received at Pump Station 1; some recent viscosity values of the TAPS comingled crude stream at PS 1 are 9.5 cSt @ 60 °F and 4.1 cSt @ 110 °F.
18. What do you assume to be TAPS minimum throughput volume?
No assumption is made about a minimum throughput volume. We believe TAPS can continue to operate in a safe and efficient manner for the plan period (through 2030) with additional investment.

Miscellaneous:

19. With viscosity of crude expected to be heavier, can we also expect more NGL's to be injected?
Injecting additional NGL's into the TAPS stream may be possible. However, there are regulatory and operational issues associated with the addition of NGL that may influence that option. In addition, at this time it does not appear that there are sufficient additional NGLs available to materially impact the wax or viscosity issues.
20. We have seen the cost to treat jet fuel increase significantly over the last few years. Are chemicals used in the fields or lines evaluated for impact on jet fuel quality?
Neither the TAPS Owners nor Alyeska can comment on issues related to the use of chemicals upstream of Pump Station 1. However, chemical injection into TAPS is being considered as a potential mitigative measure. Potential impacts to refineries and other downstream parties will be evaluated before using any chemical in TAPS.

Questions from Afternoon Session Low Flow Presentation

1 pm October 1, 2008

TAPS and Owner Regulators

Categorized by Topic

More Information:

1. What infrastructure changes, if any, are necessary to allow for continued safe, reliable TAPS operation up to 2030?
An executive summary of the Phase I report will be made available on this web site during the first quarter of 2009. Information of this type will be made available within this executive summary to the extent that legal and regulatory conditions allow.
2. Are you evaluating impacts to the Valdez Marine Terminal too? Ex. Cooler crude and snow/ice buildup on tanks.
This is not included in the scope of this study. Separate studies are currently underway by Alyeska Pipeline Service Company to evaluate wax management and other low flow impacts at the Valdez Marine terminal.

Current Conditions:

3. What immediate steps will be taken to ensure availability to start up in the middle of winter this year, if necessary? Are the Owners comfortable with current conditions/equipment/etc...?
4. How immediate are the cold restart issues? This winter? In 5 years?
In response to questions 3 – 4: The current Alyeska Pipeline Service Company cold restart plan is in effect and viable for operation in the winter at current levels of throughput. We anticipate that one of the outcomes of the ongoing Low Flow studies will be determining the point, if any, at which the impacts of water and wax are substantial enough that more aggressive changes will have to be made. Mitigation plans will be developed according to these findings.
5. Are you planning, or have you done an assessment of the current status of piping, i.e. do you know where you already have corrosion issues?
Alyeska Pipeline Service Company conducts extensive ongoing assessments that provide monitoring for both mainline pipe and station piping for corrosion related issues. Alyeska's corrosion management program is designed and operated to meet federal DOT requirements, as well as those of the JPO. These existing corrosion monitoring programs are not within the scope of the Low Flow studies.
6. Does the SR design make the low flow issue more difficult to manage?
The SR design makes lower flow rates easier to manage. The new variable speed drives and new electric motors provide additional flexibility in addressing low flow issues.
7. Are you seeing problems associated with wax and water under low flow conditions already? Or just anticipating?
Water and wax have always been a component of ANS crude oil, like it is in all crude oils. We are still developing information on the future impact to the pipeline of that water and wax at lower throughputs and lower temperatures. We anticipate that one of the outcomes of the Low Flow studies will be determining the conditions under which the impacts of water and wax are substantial enough that more aggressive changes will have to be made. Mitigation plans will be developed according to these findings.

Water:

8. Are the producers willing to discuss new water separation upstream of PS 1? Could the TAPS Owner have this discussion without fear of legal issues? Could the gov. have these discussions absent the Owners if they were not allowed to meet?
Water should be removed before being tendered for shipment to the extent necessary to maintain the safety and integrity of TAPS. Unlike viscosity, water is not a property of the crude oil, but rather a contaminant that should be removed before being tendered for shipment. As stated in the presentation, we are evaluating the existing specification, how it is enforced, and if there is a need to change the specification. Stakeholder communication meetings and the website are forums for relaying additional information to the producers.

Viscosity:

9. To what extent can viscosity issues be addressed by the application of heat, if at all?
The application of heat will lower the viscosity of the crude oil. For example, recent tests of the TAPS crude oil show viscosities of 9.5 cSt @ 60 °F and 4.1 cSt @ 110 °F. However, the Low Flow Study Team is still studying this issue as well that the interaction of this with other critical issues (specifically geotechnical) and evaluating the best approach to take to mitigate the set of issues as a whole.

Magnitude of Cost:

10. How will these costs be allocated? By volume or ownership?
The allocation of the costs is not within the scope of the Low Flow study. Expenditures for mitigative measures considered in this study will be handled in the ordinary course of conducting TAPS business.

Throughput and Timing:

11. By 2030, what is the actual projected volume of throughput from the study?
An executive summary of the Phase I report will be made available on the web site during the first quarter of 2009. Information of this type will be made available within this executive summary to the extent that legal and regulatory conditions allow.

Questions Received from Website

1. With the recent work done on the pumping stations, how much crude can the pipeline system now physically move, without addition of more drag reducing agent? (Question received via website 10/1/08)
The TAPS low flow study is not investigating maximum throughputs on the pipeline but instead is focusing on issues that arise due to low throughput. Information on TAPS throughput can be found on the Alyeska Pipeline Service Company's website.
2. What is the (minimum) pipeline flow limit (bpd) of the existing equipment assuming no free water, geohazard, wax, or viscosity issues, the current oil composition, and 105F minimum temp?
No assumption is made about a minimum throughput volume. We believe TAPS can continue to operate in a safe and efficient manner for the plan period (through 2030) with additional investment
3. How will pipeline capital investments to handle higher viscosity oil will be charged to the shippers? Will the higher viscosity shippers pay more than those shippers with lower viscosity oil? (Question Received via website 10/7/08)
The Study includes efforts to determine the highest viscosity oil that TAPS can handle with current equipment. Once this value is determined one possibility is that a pipeline entrance specification for viscosity be established, if necessary. In that case the shipper will be responsible to make the crude oil "pipeline ready" and meet all entry specification criteria prior to entry into TAPS. The recovery of any capital investments that may be required to handle higher viscosity oil is beyond the scope of the Study.