August 10, 1979

Mr. Morris J. Turner
Authorized Officer
Alaska Pipeline Office
Box 30
701 C Street
Anchorage, Alaska 99513

Dear Mr. Turner:

This is in answer to your letter of July 23, 1979, (P001.400217) to Mr. Lloyd Ulrich in which you request our Office to determine if certain pipe conditions and possible Alyeska actions are in accordance with the Department's liquid pipeline safety regulations contained in 49 CFR Part 195. These conditions and actions relate to the failures experienced on the Trans-Alaska crude oil pipeline which were discovered on June 10, 1979, at Atigun Pass and on June 15, 1979, at Milepost 734 near Pump Station 12.

Each of your questions regarding certain pipe conditions are answered in turn, with reference to specific sections of Part 195 which are pertinent to the courses of action cited in your letter.

1. "Deformed (buckled) pipe sections with no sleeve repairs." Section 195.402 states:

   "(b) No carrier may operate or maintain its pipeline systems at a level of safety lower than that required by this subpart and the procedures it is required to establish under paragraph (a) of this section".

   "(c) Whenever a carrier discovers any condition that could adversely affect the safe operation of its pipeline system it shall correct it within a reasonable time. However, if the condition is of such a nature that it presents an immediate hazard to persons or property, the carrier may not operate the affected part of the system until it has corrected the unsafe condition."

   In the design of the pipeline, Alyeska developed stress criteria that took into account all credible live and dead loads and occasional loads (such as earthquakes) to which the pipeline could be subjected. To provide an acceptable level of safety under these criteria, when the buried pipe is subject to design contingency loadings (design contingency earthquake and/or

settlement), the highest allowable stress established for the buried pipe was 1.15 SMYS. These design loads were exceeded in the buckled area.

Continuing to operate the buckled section of the pipeline would not be in accordance with ?195.402(b) because the deformation that has occurred materially altered the mechanical properties of the pipe, weakening it which would thereby provide a level of safety lower than that required by this subpart and the allowable stress established by Alyeska. Because the deformed pipeline could adversely affect the safe operation of the pipeline system, ?195.402(c) requires that the condition must be corrected within a reasonable time.

2. "Deformed (buckled) pipe sections with 'Alyeska's' split sleeve installed."

In addition to the possible violation cited under 1. above, ?195.118(c) states:

> "The fitting must be suitable for the intended service and be at least as strong as the pipe and other fittings in the pipeline system to which it is attached."

During meetings following each failure whichwere conducted to discuss cause and remedial actions, we were told by Alyeska personnel that "Alyeska's" split sleeves installed over the two buckles were fabricated for the sole purpose of providing temporary reinforcment [sic] at the buckled area. The sleeves were not designed using proven engineering analytical procedures nor the design substantiated by a rigorous testing program. Therefore, since these sleeves have not been shown to be suitable for the intended service, continuing to operate the deformed pipe sections with Alyeska's split sleeve installed would not be in accordance with ?195.118(c).

Section 195.422(a) states:

> "Each carrier shall, in repairing its pipeline systems, insure that the repairs are made in a safe manner and are made so as to prevent damage to persons or property."

For reasons stated in comments about ?195.118(c) above,

we are not assured that the repairs were made in a safe manner.

3. "Operating the pipeline with deformed sections repaired with 'Alyeska's' split sleeve through two seasonal changes (10 to 11 months) before permanent repairs are made."

   Section 195.402(c) requires that any condition that could adversely affect the safe operation of the pipeline shall be corrected within a reasonable time. We would like to have additional information from Alyeska, as well as the opinion of the Alaska Pipeline Office, concerning what would be a reasonable time to make these repairs, taking into account the short Alaska construction season and adverse winter environmental conditions. We will assess this information in determining if 10-11 months would be a reasonable time to make these repairs.

4. "Operating the pipeline indefinitely with deformed pipe and 'Alyeska's' split sleeve installed as a final permanent repair.

   For the several reasons relating to the pertinent sections of Part 195 cited earlier, the operation of the "pipeline indefinitely with deformed pipe and 'Alyeska's' split sleeve installed as a final permanent repair" is not in accordance with the Federal pipeline safety standards contained in 49 CFR Part 195 absent data showing that these split sleeves are suitable for the intended service.

Although the interpretations above respond to your specific questions, as you know, Dr. Robert L. Paullin, Associate Director for Operations and Enforcement, Materials Transportation Bureau, wrote Mr. W.M. Witten on August 7, 1979, requesting that a metallurgical examination of the failed pipe sections be conducted. This metallurgical examination would require the removal of the failed sections of pipe. We would appreciate receiving from Alyeska the requested additional technical details concerning repair proposals and also knowing the opinion of the Alaska Pipeline Office relative to appropriate courses of action and schedule for repairs.

Sincerely,

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Cesar DeLeon
Associate Director for
Pipeline Safety Regulation
Materials Transportation Bureau

July 23, 1979

Mr. Lloyd W. Ulrich
Office of Pipeline Safety Operations
U.S. Department of Transportation
Materials Transportation Bureau
2100 2nd Street S.W.
Washington, D.C. 20590

Subject: Operating TAPS with Deformed Pipe Sections & Temporary Leak Repairs

Dear Mr. Ulrich:

References:
1. APSC Ltr. No. 79-1112-G, dtd 6/20/79, "Investigation of Atigun Pass Oil Spill of 6/10/79, to OPSO
2. Your telephone conversation on 7/10/79 with Mr. Donald Keyes, Technical Program Manager

This letter confirms our telephone request to evaluate applicable Department of Transportation regulations and industry codes concerning operating the Trans-Alaska Pipeline with deformed pipe sections as repaired in accordance with Alyeska's Maintenance and Repair Manual, which was forwarded to your office (Reference 1).

Specifically, your assistance is requested to determine if the following pipe conditions are in accordance with Department of Transportation regulations on safe operations:

1. Deformed (buckled) pipe sections with no sleeve repairs.
2. Deformed (buckled) pipe sections with "Alyeska's" split sleeve installed.
3. Operating the pipeline with deformed sectionsrepaired with "Alyeska's" split sleeve through two seasonal changes (10 to 11 months) before permanent repairs are made.
4. Operating the pipeline indefinitely with deformed pipe and "Alyeska's" split sleeve installed as a final permanent repair.

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If any of the above pipeline conditions can be considered within reasonable compliance of Department of Transportation regulations on safe operations, what additional data and surveillance activities should be provided by Alyeska?

Sincerely yours,

Morris J. Turner
Authorized Officer

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