DEPARTMENT OF TRANSPORTATION

Materials Transportation Bureau, Office of Pipeline Safety Operations

[OPSO Docket No. 77–6]

TRANS-ALASKA CRUDE OIL PIPELINE

Waiver on 13 Repaired Girth Welds at Valdez Terminal

By petition dated June 1, 1977 (follow-up confirmation of a verbal request made on May 6, 1977), the Alyeska Pipeline Service Company (Alyeska) requested that a waiver be granted from the requirements of 49 CFR 195.230 and 49 CFR 195.232 for 13 repaired girth welds in the Trans-Alaska Pipeline System (TAPS) in the Valdez terminal. Those girth welds are in the terminal piping represented in the Fluor Ocean Services, Inc., drawing "D–50–M1558," dated August 9, 1976, Valdez Terminal, Crude System—B31.4 49 CFR 195 and drawing "D–50–M1559," dated August 9, 1976, Valdez Terminal, Crude, Crude Transfer and Relief ANSI–B31.4. The 13 repaired girth welds are listed below in Table 1, setting forth pertinent information relative to each weld. There were nonconformance reports issued on 11 of the 13 welds by the Alaska Pipeline Office of the Department of the Interior for not meeting Department of Transportation (DOT) standards. The other two were not acceptable by Alyeska Quality Assurance for not meeting DOT standards.

Table 1

Repaired Girth Welds Subject to Waiver Request

Weld No.	Connection	Size	DOT Section Violated*	Description of Violation	APO NCR	Design Pressure	Operating Pressure	Test Pressure	Aboveground Belowground
743	E11 to E11	48"	(2) (4)	two repairs	--	275	50	550	A/G
946	Pipe to valve	48"	(1) (3)	repair crack	4125	275	50	550	A/G
948	E11 to valve	48"	(1) (3)	repair crack	4126	275	50	550	A/G
1039	Tee to valve	48"	(1) (3)	repair crack	4125	720	200	510	A/G
1043	Tee to valve	48"	(1) (3)	repair crack	4125	720	200	720	A/G
1051	E11 to valve	48"	(1) (3)	repair crack	4125	720	200	510	A/G
121C	Pipe to pipe	36"	(2) (4)	two repairs	4126	275	50	550	A/G
203	Pipe to pipe	36"	(2) (4)	two repairs	4126	275	50	550	A/G
327	Pipe to pipe	36"	(2) (4)	four repairs	4126	275	50	550	A/G
622	Pipe to pipe	48"	(2) (4)	two repairs	--	720	200	740	B/G 25'
723	Pipe to pipe	48"	(2) (4)	two repairs	4126	275	50	550	A/G
963	Pipe to pipe	48"	(2) (4)	two repairs	4126	275	50	550	A/G
1121	Pipe to pipe	48"	(1) (3)	repair crack	4126	275	50	550	A/G

* The listed numbers correspond to sections as follows:
(1) - §195.230(a)(1)
(2) - §195.230(a)(2)
(3) - §195.232(a)
(4) - §195.232(c)

As Table 1 indicates, 6 of the 13 welds contained cracks which are not allowed to be repaired by DOT standards. The remaining seven were repaired more than once at the same weld location which is likewise not allowed by DOT standards. In each of the above two instances, DOT standards require the weld in question to be completely removed, the ends rebeveled, and a new weld made.

In performing the repairs to the 13 welds, Alyeska followed its established procedures for the repair of welds not subject to the regulations in 49 CFR Part 195 since it believed, at that time, that these welds were not subject to the regulations. Since that time, it has been established that the lines containing these welds are clearly subject to the regulations in 49 CFR Part 195.

In support of its petition, Alyeska states that the repaired cracks and multiple repair of defects provide an adequate level of safety and protection and should not be required to be removed for the following reasons:

With respect to girth welds connecting two fittings or a fitting and a valve (weld numbers 743, 946, 948, 1039, 1043, and 1051):

1. The existing weld cannot be removed, the ends rebeveled, and new welds produced since in each case the joint design would be altered precluding the production of a sound weld. Moreover, since the manifold piping is rigid, tied into concrete, and cannot be shifted for a new lineup, the spacing remaining after removal and rebevel would be too great to produce a sound weld.

2. The cost and time required to obtain replacement valves would be prohibitive. It takes approximately six months to obtain replacements for 49-inch valves which are unique to the trans-Alaska pipeline. In the case of 36-inch valves, the procurement time would be only slightly less.

3. Each replacement fitting would take approximately six months to obtain since fittings of [t]his size are also unique to the trans-Alaska pipeline.

4. The valves and fittings involved are located in manifolded assemblages of several valves and fittings lacking adequate work space for their removal without disassembly of perhaps the entire manifold.

5. If one fitting is replaced with another fitting, the range of dimensional tolerances of the fittings would make matching lineup extremely difficult and perhaps impossible without further disassembly of the manifold assembly. For example, the length

dimension of a replacement tee could vary by as much as : inch.

6. The repair procedures in Alyeska welding specification SWP–100AP used in repairing these girth welds were developed in accordance with the guidelines in the repair procedures in American Petroleum Institute Standard 1104 (API 1104), Section 7.

7. The weld repairs were conducted under closely controlled conditions. They were closely monitored and documented, and all documentation including radiographic records of each repair are available for review.

8. As indicated in Table 1, each repaired girth weld has been pressure tested far in excess of the operating and design pressure of the pipeline.

9. Because spillage due to a failure from these girth welds would be within the confines of the terminal, a leak could be quickly detected and repair crews quickly mobilized to contain and stop the spillage.

With respect to girth welds connecting one section of pipe to another section of pipe (weld numbers 121C, 203, 327, 622, 723, 963, and 1121):

1. Except for girth weld number 622, each of these girth welds is located within a diked area so that any spillage due to a failure would be contained by the dike and the environmentally sensitive Valdez area would not be affected. Furthermore, a leak could quickly be detected and repair crews quickly mobilized to stop the spillage.

2. Weld number 622 is buried 25 feet deep and the excavation and repair of this girth weld would be extremely costly.

3. The repair procedures in Alyeska weld specification SWP–100AP used in repairing these girth welds were developed in accordance with the guidelines in the repair procedures in API 1104, Section 7.

4. The weld repairs were conducted under closely controlled conditions. They were closely monitored and documented, and all documentation including radiographic records of each repair are available for review.

5. As indicated in Table 1, each repaired girth weld has been pressure tested far in excess of the operating and design pressure of the pipeline.

A representative of the Office of Pipeline Safety Operations (OPSO) has inspected the girth welds in question and found that the circumstances described by Alyeska in support of its petition for waiver to be accurate.

The OPSO, through cooperation with the Energy Research and Development Administration (ERDA), had its contractor, Rockwell International, examine Alyeska's radiographs of the 13 original welds and each of the repaired welds. As a result, Rockwell radiographic experts have confirmed that (1) the defects indicated in Alyeska's documentation were correctly identified, (2) each of those defects has been removed, and (3) none of the repaired girth welds now contains any defect.

The OPSO has also noted that since these girth welds are in the network of terminal piping, flow in these lines can easily be diverted to other lines in the event of a failure, thereby facilitating the repair of such leaks.

It is also appropriate to point out that the OPSO has recently granted to Michigan-Wisconsin Pipeline Company (Michigan-Wisconsin) a waiver from the regulations regarding the removal of cracks in girth welds. In evaluating the petition for that waiver, OPSO concluded that the extensive testing conducted by Michigan-Wisconsin established that cracks can be adequately repaired by following the repair procedures called for in API 1104, Section 7. The repair procedures followed by Alyeska in repairing the 13 welds for which this waiver is requested are essentially those employed by Michigan-Wisconsin.

After review and deliberation of all the information submitted by Alyeska, and other relevant information, MTB finds that a waiver from the applicable provisions of 49 CFR 195.230 and 195.232 for the 13 welds in question is appropriate and consistent with pipeline safety for the following reasons:

1. With regard to all 13 girth welds:

(a) The existing welds have been found by ERDA radiographic experts to be free of defects;

(b) The welds have withstood a hydrostatic test without leakage or failure at pressures far in excess of what they will be subjected during operation; and

(c) The repairs to the welds were made under closely controlled conditions with various levels of inspection by the contractor, Alyeska, and the Federal government further assuring established procedures were followed during repair and sound welds exist.

2. With specific regard to the girth welds that connect two fittings or a fitting to a valve (weld numbers 743, 946, 948, 1039, 1043, and 1051).

(a) If the weld was removed and a new weld made, the problems with proper lineup, excessive space to be filled with weld metal, and destruction of the original joint design by rebeveling would result in a weld not as safe as the existing one; and

(b) The excessive cost involved in replacing the valves or fittings is not justified for the reasons cited in paragraphs (1) and (2)(a) above.

3. With specific regard to girth weld number 622, which connects one pipe with another and is buried, the costly 25-foot excavation to reach that girth weld for replacement is not justified for the reasons cited in paragraph (1) above.

4. With specific regard to the other girth welds that connect one pipe to another pipe (weld numbers 121C, 203, 327, 723, 963, and 1121), even in the unlikely event of a leak in any of these welds, the spillage would be contained and not create an environmental problem or safety hazard since each weld is located within a diked area.

Accordingly, effective immediately, the Alyeska Pipeline Service Company is hereby granted a waiver from compliance with the requirements of 49 CFR 195.230(a) and 49 CFR 195.232(a) and (c) for the 13 girth welds listed in Table 1.

(18 U.S.C. 831–835; 49 CFR 1.53 (g).)

Issued in Washington, D.C., on June 3, 1977.

JAMES T. CURTIS, Jr.,
Director, Materials Transportation Bureau.

[FR Doc. 77–16346 Filed 6–8–77; 8:45 am]