Take pipe line

Original routed to:
1. Prescott
2. Eng Div.

Barlow Report

August 17, 1954

District Engineer
Alaska District
Corps of Engineers, U S Army
Anchorage, Alaska

Subject: Welding Inspection, Haines-Fairbanks Pipeline System

Gentlemen:

This is to report on my activities during the tour of the Haines-Fairbanks Pipeline starting August 9, 1954.

Pumping Stations

Welding at all stations except Haines was inspected on passing the station sites. All welding appeared to be sound and of acceptable quality. Reports of radiographs taken of these welds indicated a relatively small number of rejects and generally clean welds.

Spread No. 1. - Alaska

Field inspection of welding on this Spread showed all welds to be of reasonably good quality - far superior to the welding on Spread 2. A pattern of pits was noted in the second pass. This was called to the attention of both the inspector and the welding foreman, and immediate steps were taken to correct the condition before the pattern became serious. Both the visual and radiographic inspectors were warned that very close inspection is mandatory and that any pattern tending to lower the quality of welding must be corrected as soon as such a development is noted.

Spread No. 1 is operating a lead crew welding on straight-of-way and is averaging approximately 380 welds per day.

Spread No. 2 - Yukon

This spread was temporarily halted at the time of this visit because of very poor welding in the immediate past. The entire crew was removing rejected welds and rewelding the line. Radiographs taken of past welds showed between sixty and ninety percent rejects. The radiographic inspection was back-tracking 100% of all welds made during the past several days. Considerable conversation was had with both inspectors and welding foremen on the possible causes and remedies of this welding condition. It was agreed that both the pipe and the welding rod are of weldable quality and that the entire fault lay with the welding operators.

To this should be added that a more thorough cleaning and preparation between beads would ease the situation considerably. The most reasonable theory advanced in this situation was that there exists a psychological differential between the American stringer bead welders and the Canadian hot-pass welders and also that both are fighting an unknown fear for the English pipe. Of course this fear is unfounded, but it has been proven in the past that such barriers can exist and are very hard to break. This will be the special problem of the contractor.

Conversation also revealed that there existed a certain amount of confusion as to the extent of authority of the inspectors. It is believed that Col. England has definitely cleared this situation. Mr. Elmer Smith, the newly appointed Chief Inspector for Isotope, stated that he would make a very definite effort to bring the inspection to the standard required by the specifications. He appears to be sincerely interested in improving quality and realizes the importance of closer inspection.

The contractor has to date apparently disregarded his welding difficulty in favor of production at any cost. Previous recommendations have either been disregarded or given only token recognition. Here also an apparent change of thought is taking place. This is shown by the attention paid to recommendations made during the visit. Whether direct action will be taken in this matter remains to be seen.

The Tulsa Office of the contractor has sent Mr. Grand of the Tulsa Testing Laboratory to the field to study the condition and report his findings. Mr. Grand is in apparent agreement with recommendations made to improve the welding.

Examination of Radiographs - Tok Junction

The writer examined a number of radiographs of late production at Station 3 and also took a number from each spread for further examination on return to Chicago. Accepted films are within the specified limits better than 90% of the time with the remaining considered borderline cases. With regard to the judgement of defect size, the writer recommended to Mr. Smith that each radiographic inspector be supplied with a six inch scale so that such borderline cases may be better judged.

Conference - Tok Junction

A conference was held in the office of Col. England on Thursday morning at which Contractor and District personnel were present. The entire welding problem, as well as other construction problems, were discussed at great length. The contractor expressed deep concern in the welding quality and in particular with the directive to reinspect all welds in Canada. He expressed a desire to have defect restrictions lifted to the level of the API Std. 1104. It is the writers opinion that such a change would not be of great benefit to him unless the welding was greatly improved, since nearly all rejected welds contain defects even greater than allowed by the above standard. It is also the writer's opinion, based on the work done by the Alaska spread, that the requirements as now written, can be met. The requirements regarding the size of individual gas pockets and individual slag inclusions might be raised to API requirements, but no other changes should be considered.

Recommendations

Recommendations made in past reports should be strictly adherred to. Special emphasis should be placed on the following reiterations:

a. Cleaning and preparation before and between welding is of extreme importance. Tar type mill coating should be washed with a solvent to be completely removed for a distance of at least four inches. Nicks in the beveled ends should be filed smooth. Rust and dirt should be removed. Pockets and depressions in each bead must be cleaned and opened before the next bead is applied. It is absolutely necessary to use ice picks and diamond pointed chisels for this purpose, particularly in the first and second passes. The wire brushes now being used will not do a satisfactory job unless supplemented by these other tools. wthe weld Cleaners should be impressed with the importance of their duties. Any delay caused by better preparation will be well compensated for in better quality welding.

b. Visual inspectors should be encouraged to increase their vigilance on every weld. The first two beads should be examined after cleaning and before succeeding beads are applied. The inspection and control by these inspectors can be a decided factor in welding quality. The condition that now exists on Spread 2 should have been eliminated if proper inspection had been accorded these welds. Poor inspection can hurt the contractor as much as it will hurt the quality of the finished line. Unless this condition is corrected immediately, it is recommended that a change in inspectors be effected.

c. Radiographic inspection has improved since the last visit. Film are being interpreted more closely, but here also the inspectors should be encouraged to comply strictly with specification requirements. It should again be pointed out that Type A film of both Eastman and Ansco will give a finer grain and greater definition than the film now being used. Greater definition will aid in interpretation accuracy. This type of film is required by the specifications, and the contractor has received information of this requirement prior to start of construction and there is no valid excuse for not using the same.

Conclusion

While progress in the laying of this line is quite satisfactory, the contractor, especially on the Yukon Spread, appears to disregard all specific requirements which will make the line complete and final. Progress has been made at the expense of welding quality and final completion. A considerable amount of right-of-way cleaning and line placement is still necessary. At many points additional slack in the line is necessary and grading will be required to have the pipe fit the ground contour. It also appears that the Spread is working at too great a spread for proper control. The final clean-up should be brought closer to the head end so that some claim to completion can be made.

The writer wishes to extend his appreciation to Col. England, Capt. Trimble, and all other members of Tok Junction staff for the assistance and cooperation extended during this visit.

Very truly yours,

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A. G. Barkow

cc RE, ALCANGC
Mr. George
Eng, Alaska Gen