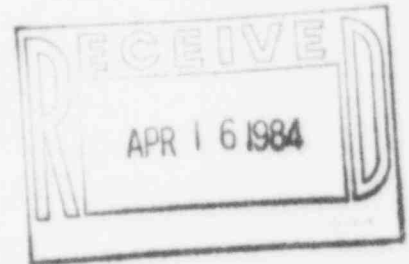


Omaha Public Power District
1623 Harney Omaha, Nebraska 68102
402/536-4000

April 13, 1984
LIC-84-045

Mr. J. T. Collins
Regional Administrator
U. S. Nuclear Regulatory Commission
Region IV
611 Ryan Plaza Drive, Suite 1000
Arlington, Texas 76011



Reference: Docket No. 50-285

Dear Mr. Collins:

IE Bulletin 83-06
Non-Conforming Materials Supplied
by the Tube-Line Corporation

In a letter dated December 16, 1983, the Omaha Public Power District responded to the subject bulletin. In that response, the District stated its plans to demonstrate that the four (4) four-inch by three-inch concentric reducers furnished by the Tube-Line Corporation are suitable for their intended service.

The District provided the following justification for continued operation until replacement (if necessary) of these reducers is undertaken:

- (1) The reducers in question were installed as a part of a modification completed in November, 1981. The system has been in operation over two years with no problems.
- (2) "Normal" operating conditions for the system would subject the reducers to a pressure of approximately 51 psig.
- (3) Under the abnormal condition of the raw water pumps pumping against a closed header, these Schedule 40 reducers would be subjected to a pressure of only 90 psig.
- (4) After installation, the system was hydrotested at 190 psig with no leakage.

The procedure under which these reducers were installed originally called for hydrotesting at 190 psig. However, contrary to statement (4), during installation it became apparent that a 190 psig hydrotest was not possible. Instead, a procedure change was initiated and approved by the Plant Review Committee which replaced

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the 190 psig hydrotest with a radiographic examination of the welds. One of the four reducers (the one associated with valve RW-216) was able to be removed and hydrotested, but the remaining three were not.

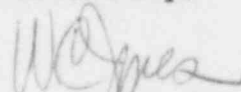
The discrepancy regarding the 190 psig hydrotest was discovered during a subsequent review. The District believes that adequate testing measures were taken after installation; the previous submittal simply did not accurately reflect these measures. Therefore, item (4) of the December 16, 1983 letter should read as follows:

- (4) After installation, the reducer associated with valve RW-216 was hydrotested to 190 psig. The welds associated with the remaining three reducers were radiographed. The system was returned to service and observed for leakage.

In addition, the District has completed its program for demonstrating that the reducers are suitable for their intended service. This program was discussed in the December 16, 1983 letter and consisted of performing a Brinell hardness test and a chemical composition analysis on the four reducers. The results of these tests are attached (Attachments 1, 2, and 3).

Attachment 4 contains a compilation of the estimated cost and man-hours to implement this bulletin.

Sincerely,



W. C. Jones
Division Manager
Production Operations

WCJ/DJM:jmm

cc: U. S. Nuclear Regulatory Commission
Document Control Desk
Washington, D.C. 20555

LeBoeuf, Lamb, Leiby & MacRae
1333 New Hampshire Avenue, N.W.
Washington, D.C. 20036

Mr. E. G. Tourigny, Project Manager
Mr. L. A. Yandell, Senior Resident
Inspector

Attachment 1

The District has concluded its qualification program of Tube-Line Corporation fittings at the Fort Calhoun Station. These fittings consist of four (4) four-inch by three-inch concentric reducers on the raw water drain lines from the four (4) component cooling heat exchangers.

Testing consisted of Brinell hardness readings for correlation with ultimate tensile strength and sample filings for analysis of proper chemical composition. Acceptance criteria used were from ASME Boiler and Pressure Vessel Code, Section II, Material Specifications for SA-106, Grade B, carbon steel pipe, for chemical composition and minimum ultimate strength and SA-234, carbon steel pipe fittings, for maximum Brinell hardness.

Criteria for testing and results can be found on Attachment 2 (BHN) and Attachment 3 (chemical composition). Based on the results of the testing, the District will keep the four (4) reducers in service and sees no reason for them to be replaced.

For Brinell hardness, three (3) impressions were made on each reducer. With the dimensions of each impression, three (3) hardnesses were calculated and the arithmetic mean of the three (3) hardnesses served as the Brinell hardness for that particular reducer. SA-234 specifies a maximum BHN of 197 for this material and SA-106 specifies a minimum ultimate tensile strength of 60,000 psi which, according to ASTM A-370-77, correlates with a BHN of 123. Of the four (4) reducers, only one (1) (near drain valve RW-215) had an average BHN which did not fall within the 197-123 BHN range. This reducer had an average BHN of 204.

Maximum hardness is specified so as to preclude a material which is too brittle. Brittleness implies that a material's tensile strength is not much more than its yield strength. In the case at hand, the reducer's yield strength, as required by SA-106, Grade B, is 35,000 psi. The concern that the one (1) fitting is too brittle should be dismissed based on the negligible loading and the expected yield strength. The initial concern as to whether the fittings are strong enough is more than adequately addressed by the favorable results of the hardness testing.

All four (4) reducers fall well within the material specification for chemical composition of SA-106, Grade B, carbon steel piping.

ATTACHMENT 2

Reducer Near Drain
Valve Tag No.:

BHN:

Average BHN:

213

151

150

157

143

214

193

181

174

176

215

194

204

206

211

216

153

156

151

163

ACCEPTANCE CRITERION:

$123 \leq \text{BHN} \leq 197$

ANALYTICAL CHEMISTRY LABORATORY, INC.

8045 BLONDO ST.

OMAHA, NEBRASKA 68134

(402) 397-7738

February 13, 1984
Method: ASTM
Report No. 020-13-024

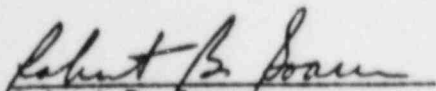
Report For: OPPD
Jones Street Station
4th & Marcy Street
Omaha, Nebraska 68102
Attn: Rich Heidel

Report On: Analyses on 4 Steel Samples received
February 8, 1984.

Test Results: Test	<u>ACCEPTANCE *</u> <u>CRITERIA:</u>			
	#213	#214	#215	#216
Carbon, C	0.30, max 0.26 %	0.29 %	0.25 %	0.27 %
Manganese, Mn	0.29-1.06 0.80 %	0.76 %	0.91 %	0.89 %
Sulfur, S	0.058, max 0.027 %	0.031 %	0.029 %	0.026 %
Phosphorus, P	0.048, max 0.015 %	0.011 %	0.027 %	0.030 %
Silicon, Si	0.10, min 0.22 %	0.24 %	0.20 %	0.29 %

* ACCEPTANCE CRITERIA FROM ASME CODE, SECTION II,
SA-106, GRADE B, SMKS. CARBON STEEL PIPE
SPECIFICATION. ADDED BY RICHARD HEIDEL, OTSS,
TO THIS REPORT ON 21 FEB 1984.

Richard R. Heidel


Robert B. Soares
President

RBS/ps
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ATTACHMENT 3

Attachment 4

As requested in the bulletin, the following is a compilation of the cost and estimated manhours expended for this resolution:

Research and Evaluation:

Engineer	157.7 hours	Approximately \$2,300
Supervisor	37 hours	Approximately \$740

Material Testing:

Engineer	20 hours	Approximately \$290
Fitters	40 hours	Approximately \$480
QC	4 hours	Approximately \$60

Lab Fees:		\$259.20
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Approximate Totals:	258.7 manhours	Approximately \$4,129.20
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