

Bechtel Associates Professional Corporation

Attachment to BLC-7767

SUBJECT: MCAR 29

INTERIM REPORT 1

DATE: June 13, 1979

PROJECT: Consumers Power Company
Midland Plant Units 1 & 2
Bechtel Job 7220

Description of Discrepancy

Nine pipe spools, fabricated from ASME SA106, Gr B pipe, Heat N32762, failed to meet the physical impact requirements for the material in accordance with ASME Section III code criteria. The NRC identified these spools during a review of Grinnell documentation. Grinnell subsequently notified Bechtel of the potentially reportable problem.

Potential Safety Implication

A potential safety problem would exist if inadequate material impact toughness properties at low feedwater temperatures resulted in, or contribute to, a main feedwater line break.

Investigation

During an NRC audit of Grinnell on February 26, 1979 through March 1, 1979, it was discovered that ASME Charpy impact test procedures were not followed for Heat N32762 and, therefore, the results are not acceptable. The specific code requirements are as follows:

In accordance with NB 2332(1) of ASME Section III, test three Cv specimens at a temperature lower or equal to the lowest service temperature. All three specimens shall meet the requirements of Table NB 2332-1.

According to Table NB 2332-1, the required Cv (Charpy V notch test) values for piping are as follows:

Nominal wall thickness

Lateral expansion (mils)

5/8" or less
Over 5/8" to 3/4" (inclusive)
Over 3/4" to 1-1/2" (inclusive)
Over 1-1/2" to 2-1/2" (inclusive)

No test required
20
25
40

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Subarticle NB-2350 of ASME Section III permits one Charpy V-notch impact retest (consisting of two additional specimens taken as near as practicable to the failed specimens) at the same temperature to be conducted, provided the following.

- a) The average value of the test meets the minimum requirements.
- b) Not more than one specimen per test is below minimum.
- c) The specimen not meeting the requirement is not lower than 10 ft-lb or 5 mils below specification requirements.

Contrary to the above, for Heat 32762, Grinnell had performed four separate tests as identified below:

- a) 19151: Test voided because specimen oriented incorrectly
- b) 19676-1 Results: 21, 40, and 45 mils (The minimum requirement is 25 mils for a material with a nominal wall thickness of 0.937 inches.)
- c) 19676-3 Results: 21, 40, 45, 25, and 18. The last two were not noted as a retest, which was permissible, though Test 19676-1 indicated that only three samples were tested.

The failing 18 mils value precludes a further test at the same temperature.

- d) A subsequent test was performed by the ITT Grinnell test laboratory with passing values at 29, 30, and 32 mils. This was a third test of the heat which is not allowed by the Code. This test was accepted by ITT Grinnell Industrial Pipe Inc.

Corrective Action

The following actions have been initiated or completed to resolve this situation.

- 1) Bechtel and CPCo will review all impact tested material documentation at Grinnell on June 14, 1979.

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- 2) In response to the recommended action item, Grinnell stated at a meeting with Bechtel and CPCo on May 31, 1979, that it would recommend SA333 in lieu of SA106B for services that require low impact temperature material in all future orders.
- 3) Additional data obtained by Grinnell indicate that there may be regions of heat-effected zone on hot-bend sections of the pipe which will not meet the minimum Charpy test requirements. This spool has not been shipped from Grinnell. Grinnell has tested samples removed from the bend area itself during qualifications of the hot bend procedure which exceeded our minimum Charpy test requirements. Bechtel is pursuing this matter with Grinnell and will provide an update in the next interim report.
- 4) Bechtel originally specified that the feedwater pipe be supplied with a minimum Charpy test temperature of 30F. Bechtel has reviewed the minimum Charpy test temperature required for the specific heat-related spools. In accordance with Code definitions of minimum service temperature and the operating criteria for the applicable portion of the system, a minimum service temperature of 70F is required. A minimum service temperature of 30F was originally specified, based on the minimum expected service temperature for any fluid piping system within the plant. This conservative value was specified for feedwater piping for ease and consistency in contract administration.

Based on additional test data available at Grinnell for these specific heats, the material would exceed Charpy test requirements except for hot bend sections. Therefore, we believe that the reportable condition of the pipe is indeterminate at this time because the acceptability of the hot bend sections is uncertain.

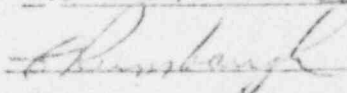
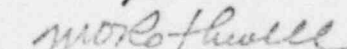
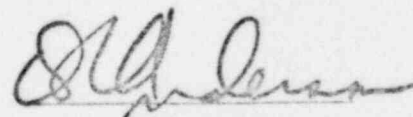
Forecast Data for Investigation and Corrective Action

Our next interim report is scheduled for July 15, 1979.

Submitted by:

Approved by:

Concurrence by:



FMM/bob
6/18/2

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