NRC FORM 366 (7-77)

U. S. NUCLEAR REGULATORY COMMISSION

# LICENSEE EVENT REPORT

CONTROL BLOCK: | | | | | | | (1) (PLEASE PRINT OR TYPE ALL REQUIRED INFORMATION)

| | | |
|---|---|---|
| 0 1 | Licensee Code (2) | M I D C C 2 |
| | License Number (3) | 0 0 - 0 0 0 0 0 - 0 0 |
| | License Type (4) | 4 1 1 1 1 |
| | CAT (5) | |
| CON'T 0 1 | Report Source (6) | X |
| | Docket Number (7) | 0 5 0 0 0 3 1 6 |
| | Event Date (8) | 1 2 2 7 7 9 |
| | Report Date (9) | 0 1 1 1 8 0 |

EVENT DESCRIPTION AND PROBABLE CONSEQUENCES (10)

0 2 SEE ATTACHMENT.

| | |
|---|---|
| System Code (11) | S F |
| Cause Code (12) | B |
| Cause Subcode (13) | B |
| Component Code (14) | Z Z Z Z Z Z |
| Comp. Subcode (15) | Z |
| Valve Subcode (16) | Z |
| LER/RO Report Number (17) – Event Year | 7 9 |
| Sequential Report No. | 0 5 0 |
| Occurrence Code | 0 1 |
| Report Type | T |
| Revision No. | 0 |
| Action Taken (18) | F |
| Future Action (19) | Z |
| Effect on Plant (20) | A |
| Shutdown Method (21) | A |
| Hours (22) | 0 5 5 2 |
| Attachment Submitted (23) | Y |
| NPRD-4 Form Sub. (24) | N |
| Prime Comp. Supplier (25) | Z |
| Component Manufacturer (26) | Z Z Z Z |

CAUSE DESCRIPTION AND CORRECTIVE ACTIONS (27)

1 0 SEE ATTACHMENT.

| | |
|---|---|
| Facility Status (28) | E |
| % Power (29) | 1 0 0 |
| Other Status (30) | N/A |
| Method of Discovery (31) | D |
| Discovery Description (32) | NRC IE BULLETIN |
| Activity Released (33) | Z |
| Content of Release (34) | Z |
| Amount of Activity (35) | N/A |
| Location of Release (36) | N/A |
| Personnel Exposures Number (37) | 0 0 0 |
| Type (38) | Z |
| Description (39) | N/A |
| Personnel Injuries Number (40) | 0 0 0 |
| Description (41) | N/A |
| Loss of or Damage to Facility Type (42) | Z |
| Description (43) | N/A |
| Publicity Issued (44) | N |
| Description (45) | N/A |

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NRC USE ONLY

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ATTACHMENT TO LER #79-050/01T-0

The ensuing report supplements Mr. D. V. Shaller's letter of December 31, 1979 concerning four (4) significant non-conformances identified in Unit No. 2 during our inspection/evaluation program performed in accordance with IE Bulletin No. 79-14.

Submittal of this report fulfills the reporting requirements of Technical Specification 6.9.1.8.i. The required modifications have been completed and the systems returned to a status which corresponds to the original design criteria. The corresponding piping systems in Unit No. 1 were also inspected and found to have been installed as per the design requirements and, consequently, acceptable.

Accumulator Injection Lines - Loop Nos. 2 and 3

During field inspection, a discrepancy was noted between the "as designed" and the "as-built" location of a seismic support on the injection lines from accumulators 2 and 3. Subsequent computer analysis of the "as-built" piping configurations revealed that, in the OBE and DBE conditions, the support loads were excessive. In the unlikely case that the supports were to fail completely, the piping would be overstressed. The pipe would be overstressed between the accumulator discharge nozzle and the first check valve downstream of the nozzle (SI-166-2 on Loop No. 2 and SI-166-3 on Loop No. 3). Therefore there is no possible issue of breaching of RCS pressure boundary in this significant non-conformance. Modifications of the support system have been completed and all stresses are within the allowable limits of the original design criteria. The post-modification stresses are shown below.

| Load Combination | Calculated Stress After Modification | FSAR Allowable Stress |
|---|---|---|
| DW + Pressure + OBE | 11,222 psi | 19,320 psi |
| DW + Pressure + DBE | 17,255 psi | 28,980 psi |
| Thermal | 18,543 psi | 27,588 psi |

Note: DW = Dead Weight

Upper Volume Containment Spray/Piping

Field inspection of the Containment Spray System (CTS) revealed a significant discrepancy between the "as designed" and the "as-built" piping configuration of one train of the CTS. Subsequent computer

analysis of the "as-built" configuration indicated that the calculated stress levels in the piping were above the code allowable limit during the OBE and during the DBE events. The required modification which consisted of the installation of an additional hanger has been completed and the system meets original design criteria. Calculated stresses for the modified piping system are given below.

| Load Combination | Calculated Stress After Modification | FSAR Allowable Stress |
|---|---|---|
| DW + Pressure + OBE | 14,110 psi | 19,200 psi |
| DW + Pressure + DBE | 27,299 psi | 28,800 psi |
| Thermal | 13,511 psi | 27,438 psi |

The non-conformance discussed above was identified in the upper volume CTS line which is fed from the east CTS pump. The west CTS train, and both redundant trains of RHR upper volume sprays, were found to be acceptable during IEB 79-14 inspections/evaluations.

Temperature Instrumentation - RC Loop No. 3

Field inspection of the sensing lines to and from the RTD manifold on Loop No. 3 revealed a significant discrepancy between the "as-designed" and the "as-built" configuration of the piping system. Subsequent computer analysis of the "as-Built" configuration indicated that the sensing line would have been overstressed for the OBE and DBE loading conditions. The sensing lines to the RTD manifolds are fed from the RCS hot leg (1" Ø nozzle at the loop connection) and the cold leg (2" Ø nozzle at the loop connection). The return lines from the hot and cold leg manifolds feed into a common header which is fed in turn into the crossover leg (3" Ø nozzle at the loop connection). The piping system was reanalyzed with two additional hangers installed and one existing hanger removed and all calculated stresses are within the code allowable limits. The required modifications, installation of two additional hangers and removal of one existing hanger, have been completed and the system meets its original design criteria. The post-modification stresses are shown below.

| Load Combination | Calculated Stress After Modifications | FSAR Allowable Stress |
|---|---|---|
| DW + Pressure + OBE | 10,369 psi | 17,200 psi |
| DW + Pressure + DBE | 17,953 psi | 25,800 psi |
| Thermal | 22,705 psi | 26,980 psi |

Temperature Instrumentation - RC Loop No. 4

Field inspection of the RTD sensing lines on Loop No. 4 revealed a significant discrepancy between the "as designed" and the "as-built" configuration of the piping system. Subsequent computer analysis of the "as-built" configuration indicated that the piping would have been overstressed in the event of an OBE or a DBE. The piping was reanalyzed with an additional hanger and all stresses are within the code allowable limits. The required modification, installation of an additional hanger, has been completed and the system returned to a seismically acceptable condition. The post-modification stresses are given below.

| Load Combination | Calculated Stress After Modification | FSAR Allowable Stress |
|---|---|---|
| DW + Pressure + OBE | 15,468 psi | 17,200 psi |
| DW + Pressure + DBE | 25,478 psi | 25,800 psi |
| Thermal | 24,126 psi | 26,980 psi |

Safety Evaluation

In evaluating overall seismic design safety, it should be noted that the allowable stress values for DBE loads used in the design of the Cook Plant are below those currently given in NC3600 for ASME Class 2 piping, a type of piping comparable to that employed at the Cook Plant for Seismic Class I Systems, by approximately 33% ($1.8S_h$ vs. $2.4S_h$). Today's design analysis of the piping systems involved would also use higher damping factors in both the building and piping which, in turn, would have resulted in lower seismic stresses.

There are three points of importance in discussing the impact of the non-conformances on plant safety. First the earthquake itself at the Cook Plant site is a very unlikely event (no historic record exists of an earthquake of the OBE or DBE magnitudes at the site). Simultaneous or quasi-simultaneous DBE and large LOCA events are even more unlikely. Second, the postulated zero period seismic acceleration for which the plant is designed is typically five times bigger than the biggest earthquake ever experienced in the surrounding areas. Third, exceeding the code allowable values and/or the specified minimum yield limits does not automatically mean loss of system operability.

In summary, a best estimate engineering judgment supports the conviction that the found discrepancies did not endanger the health and safety of the public.