CP&L

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March 22, 1990

FILE: B09-13510C
SERIAL: BSEP/90-0244

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555

BRUNSWICK STEAM ELECTRIC PLANT UNITS 1 AND 2
DOCKET NOS. 50-324 & 50-325
LICENSE NOS. DPR-62 & DPR-71
RESPONSE TO NRC IFI 50-325/88-36-02 AND 50-324/88-36-02

Gentlemen:

The Final Summary Report for IE Bulletin 79-02 is submitted in response to NRC Inspection Report 50-325/88-36 and 50-324/88-36, dated November 3, 1988. Item 4 of this inspection report closed Pipe Support Base Plate Designs Using Concrete Expansion Anchor Bolts - IEB 79-02, and opened Inspector Follow-up Items 50-325/88-36-02 and 50-324/88-36-02, which stated that CP&L would submit a Final Summary Report summarizing the bulletin requirements and BSEP's response. The review of Hilti Bolt allowables (Inspector Follow-up Item 50-325/88-36-03 and 50-324/88-36-03) will be addressed at a later date.

IE Bulletin 79-02 requirements coupled with appropriate CP&L actions are as follows:

1. Verify that pipe support base plate flexibility was accounted for in the calculation of anchor bolt loads.

   CP&L action is as follows:

   References:

   a. Details of NRC Exit Interview (dated 8/7/80) which reference LER 2-80-55
   b. Letter BSEP/81-0440 (dated 2/25/81)
   c. Letter BSEP/82-1616 (dated 7/26/82)

   which provides a chronological account of CP&Ls actions taken to assure compliance of already installed base plates to the bulletin flexibility position.

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Relative to new design, in order to ensure that new base plate designs took into account the flexibility position, Attachment 1 to CP&L Letter, Serial: GD-79-1739 was adopted and issued as a part of Power Discipline Technical Bulletin 7B to be used as a design guideline for base plate design. This was later included in UE&C's M-21 evaluation criteria and later in the Brunswick Engineering Support Unit's (BESU) Structural Design Guides 2 and 7 which are the on-site guideline for pipe support design.

2. Verify that the concrete expansion anchor bolts have the following minimum factor of safety between the bolt design load and the bolt ultimate capacity determined from static tests which simulate the actual conditions of installation.

CP&L action is as follows:

References:

a. Letter GD-79-1739 (dated 7/12/79)
b. Letter GD-79-3130 (dated 12/6/79)
c. Letter BSEP/80-2139 (dated 12/30/80)
d. Letter BSEP/81-0440 (dated 2/25/81)
e. Letter BSEP/82-1616 (dated 7/26/82)
f. Letter NLS 84-214 (dated 11/26/84)

which discuss in detail CP&L's anchor bolt testing and reanalysis programs which assure compliance of "in place" anchor bolts relative to the accepted factors of safety.

Power Discipline Technical Bulletin 7B covers the new design and was written to include the factors of safety provided by Bulletin 79-02. As stated before this information was used in UE&C's M-21 evaluation criteria and in BESU's Structural Design Guides 2 and 7.

3. Describe the design requirements, if applicable, for anchor bolts to withstand cyclic loads such as seismic loads and high cycle operating loads.

CP&L action is as follows:

References:

a. Letter GD-79-1739 (dated 7/12/79)
b. Letter BSEP/82-1616 (dated 7/26/82)
c. Letter NLS-84-214 (dated 11/26/84)

which explain the position taken by CP&L relative to cyclic loading and the torquing program that was adopted to ensure that existing expansion anchors could withstand such loading.

To ensure that any design is acceptable relative to cyclic loading the same series of design documents listed under requirements 1 and 2 above were updated with the new pretensioning loads relative to the design allowable as mentioned in CP&L's torquing program.

4. Verify from existing QC documentation that design requirements have been met for anchor bolts relative to cyclic loading and bolt size and type.

   CP&L's compliance with this part of Bulletin 79-02 is covered by the testing program as described in the letters referenced in Section 1 above. That test program was used to check for indication of incorrect preload and incorrect bolt size, type, and embedment.

   For new design work QC hold points were established as a part of site installation specification BSEP 248-107, to ensure that these requirements were met.

5. Determine the extent that expansion anchor bolts were used in concrete block (masonry) walls to attach piping supports in Seismic Category 1/Safety Related systems.

   CP&L did not use expansion anchors to attach safety-related systems to concrete block walls.

6. Determine the extent that pipe supports with expansion anchor bolts used structural steel shapes instead of base plates.

   As stated in CP&L Letter GD-79-3130, supports meeting this criteria were included in the inspection and reanalysis program which was established at the beginning of the bulletin compliance effort and continued until program completion.

   Relative to new design work the same criteria established in the design documents in Sections 1, 2, and 3 above applies to supports with standard structural steel shapes used in lieu of base plates, although base plates are used almost exclusively for new design on safety-related systems.

The remainder of the requirements listed in IE Bulletin 79-02 refer to the scheduling of requirement completion.

Attachment 1 provides a short synopsis of those correspondences referred to in this letter.

This report summarizes the correspondence between the Brunswick Steam Electric Plant and the NRC pertaining to the requirements of IE Bulletin 79-02.

Please refer any questions regarding this submittal to Mr. J. W. Moyer at (919) 457-2404.

Very truly yours,

J. L. Harness, General Manager
Brunswick Nuclear Project

TMJ/mcg

Enclosure

cc: Mr. S. D. Ebneter
Mr. E. G. Tourigny
BSEP NRC Resident Office

ATTACHMENT 1

The following list is composed of pertinent letters and memorandums dealing with the BSEP closure of IEB 79-02 along with the appropriate actions taken to resolve any open items. Note that this list is intended to deal with IEB 79-02 only, even though much of the information included references IEB 79-07 and IEB 79-14.

1. Letter GD-79-1739, CP&L to NRC, dated July 12, 1979

   This letter explained, item by item, CP&L's current position regarding each facet of IEB 79-02. Safety-related piping base plates were reanalyzed for new loads per the new IEB 79-07 guidelines. This was done by BSEP Plant Modifications 79-123 and 79-124. Work was ongoing to comply with the new safety factors for expansion anchors. The nuts on expansion anchors were to be retorqued to satisfy the requirements for cyclic loading. An expansion anchor test program was initiated at BSEP, the results of which would be maintained on site for NRC inspection.

2. Letter GD-79-3130, CP&L to NRC, dated December 6, 1979

   This letter stated that the requirements of IEB 79-02 had been satisfied by CP&L. A few inaccessible hangers were noted, but scheduled for completion during the next outage. Appropriate documentation was in the plant vault available for NRC review.

3. Details of NRC Exit Interview, dated August 7, 1980

   Due to LER 2-80-55, it was realized that the CRD line base plates were not included in the base plate flexibility reanalysis. Because of this, the Bulletin would remain open. A completion commitment date of December 31, 1980, was given by CP&L.

4. Letter BSEP/80-2139, CP&L to NRC, dated December 30, 1980

   CP&L stated that approximately 300 additional supports per unit had been identified for expansion anchor testing requiring that the final IEB 79-02 schedule be pushed forward. The final schedule would be presented February 25, 1981.

5. Letter BSEP/81-0440, CP&L to NRC, dated February 25, 1981

   Flexure analysis was completed for the essential CRD base plates. Completion of base plate flexibility testing relative to piping not essential to safe shutdown was scheduled as a part of the Phase II program (March 31, 1982). Testing of the accessible portion of the 600 additional supports (see above) was scheduled for completion by July 31, 1981.

6. Letter BSEP 82-1616, CP&L to NRC dated July 26, 1982

   CP&L stated that nonessential portions of the CRD system (Phase II) are not safety related and, therefore, reanalysis is not required. Also stated was the fact that the additional BSEP-2 support testing was completed. BSEP-1 testing is essentially complete with the few remaining supports to be finished during the upcoming September 1982 outage.

7. Letter NLS 84-214, CP&L to NRC, dated November 26, 1984

   This was the last submittal concerning IEB 79-02. It stated that the expansion anchor testing was completed. The BSEP-1 CRD support fixes were completed and BSEP-2 CRD supports are to be completed pending redesign of the Reactor Pressure Vessel foundation wall window supports.

The remaining work to complete the obligation in Letter NLS 84-214 (Item 7 above) was done by Plant Modification 82-147. This documents the completion of the Brunswick Steam Electric Plant work pertinent to IE Bulletin 79-02. Based on the information provided to the NRC relative to this Bulletin, we request the closure of IEB 79-02.