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DAIRYLAND POWER COOPERATIVE

La Crosse, Wisconsin

54601

August 23, 1979

In reply, please
refer to LAC-6483

DOCKET NO. 50-409

Mr. James G. Keppler
Regional Director
U. S. Nuclear Regulatory Commission
Directorate of Regulatory Operations
Region III
799 Roosevelt Road
Glen Ellyn, Illinois 60137

SUBJECT: DAIRYLAND POWER COOPERATIVE
LA CROSSE BOILING WATER REACTOR (LACBWR)
PROVISIONAL OPERATING LICENSE NO. DPR-45
IE BULLETIN NO. 79-02 - PIPE SUPPORT BASE PLATE
DESIGNS USING CONCRETE EXPANSION ANCHOR BOLTS

- Reference: (1) NRC Letter, Keppler to Linder, dated
March 8, 1979, enclosing IE Bulletin
No. 79-02.
(2) NRC Letter, Keppler to Linder, dated
June 21, 1979, enclosing IE Bulletin
No. 79-02, Revision 1.
(3) DPC Letter, Linder to Keppler, LAC-6389,
dated July 6, 1979.

Dear Mr. Keppler:

During the investigation to develop the data necessary for a further response to IE Bulletin No. 79-02, there has been a significant change in the plans as set forth in Reference 3.

The result of our request for information from Sargent and Lundy on the pipe support base plates revealed that calculations of the detail requested by References 1 and 2 were not readily available. Sargent and Lundy did say that the concrete anchor bolts installed at LACBWR had a minimum safety factor of five between the bolt design load and the bolt ultimate static load capacity determined from manufacturer's specifications at the time of design work.*

In parallel with the request for design data from Sargent and Lundy, a load analysis was performed by our consultants which showed that the design loads had a safety factor greater than 5 on the pipe support base plates in question, if the base plates were fabricated according to design. The analysis included base plate flexibility factors.

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* (Item 2 of Reference 2).

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The requirements (Item 3 of Reference 2) which were applied to the design, materials, and construction of all hangers, supports, etc., were to be in accordance with the Code for Pressure Piping, ASA B31.1 where applicable. The pipe supporting elements shall carry the weight of the lines, insulation and the contained fluid. In addition to the weight effects of piping components, consideration shall be given in the design of pipe supports to other load effects introduced by service pressure, wind, earthquake, etc., as defined in ASA B31.1, Design Conditions section. Further information on piping support design and installation is provided in Enclosure 1, excerpted from the LACBWR Reactor Plant Piping Specification, S&L 41-585.

LACBWR is an older plant where Seismic Category I requirements did not exist at the time of licensing nor does the Safeguards Report for Operating Authorization (FSAR) define safety related systems. LACBWR has for the purposes of this bulletin, identified 10 pipe supports which must be addressed with respect to the subject bulletin.

We have performed an inspection on 6 of the 10 pipe hangers pertinent to the subject bulletin; the other 4 are in areas which are restricted to no-entry during reactor operation. The investigation revealed:

1. There are only 10 hanger installations at LACBWR in safety related system which must be addressed with respect to IE Bulletin 79-02. These installations are:
 - (3) recirculation piping
 - (1) main steam piping
 - (3) decay heat piping
 - (2) high pressure core spray piping
 - (1) shutdown condenser return piping
2. These installations are dead weight hangers only and not seismic restraints.
3. Although several minor discrepancies were found between design drawings and actual installations (e.g. two loose bolts, plate and bolt dimensional differences), the six accessible installations were physically sound with no observable distortions. Three installations on the recirculation piping and one on the decay heat piping were not accessible since they are located in a high radiation area.

Based on field investigation and evaluations made by our consultant, NES, we believe that the five safety systems listed above are capable of continued safe operation with the present anchor bolt hangers because of the following:

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1. Although the three anchor bolt installations on the recirculation piping were not examined due to high radiation, these supports are located below the pipe and are primarily in compression. There is a slight uplift force of about 1.0 K on two of the four anchor bolts in each base plate, but each expansion system bolt is capable of carrying 17.6 K in tension.
2. The other six anchor bolt installations which were examined are dead weight hangers which support small loads (2.5 K maximum). Manufacturer's test data shows each bolt in these installations will support an ultimate load of greater than 5.2 K. Again, the field investigation revealed no distortions on these installations.
3. These six accessible anchor bolt hangers are not the only support hangers for their respective piping systems. Even if these anchor bolts hangers completely failed, the small dead weight loads will be supported by adjacent hangers which do not rely on anchor bolts.

Since minor discrepancies between design drawings and actual installations have been found, DPC has elected not to analyze and perform pull tests on the existing installations. Instead, DPC will design and install new hanger installations in accordance with current criteria. This hanger replacement program will commence as early as possible and is scheduled for completion during a scheduled outage in October 1979.

A final report will be prepared upon completion of the installation.

If there are any questions regarding this submittal, please contact us.

Very truly yours,

DAIRYLAND POWER COOPERATIVE



Frank Linder, General Manager

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cc: U. S. Nuclear Regulatory Commission
Office of Inspection and Enforcement
Division of Reactor Operations Inspection
Washington, D. C. 20555

24. PIPING HANGERS AND SUPPORTS

- A. Unless otherwise indicated, Contractor shall furnish and install all special and standard hangers, anchors, supports, guides, braces, etc., complete with all components as required for the entire piping system furnished by him. This shall include all necessary structural steel to connect to Purchaser's steel in place, unless otherwise indicated.
- B. Contractor may design and fabricate the hangers and supports in his own shops, or he may sublet this work to any of the approved hanger manufacturers set forth in the Job Specification.
- C. Hangers, supports, etc., which are detailed on the Sargent & Lundy design drawings shall be fabricated strictly in accordance with these details, unless otherwise approved. Where the details are not given on the design drawings, Contractor's hanger designer shall analyze and determine the piping loads and movements that will exist during all operating conditions and the hangers, supports, etc., shall be designed in accordance therewith; the design, materials and construction of all hangers, supports, etc., shall be in accordance with the Code for Pressure Piping, ASA B31.1, where applicable.
- D. All hangers, anchors, supports, guides, braces, etc., shall be fabricated in a neat and workmanlike manner to the satisfaction of the Consulting Engineers; rough burning of material will not be acceptable in connection with fabrication or erection of these items.
- E. All lugs, plates, saddles, etc., welded to alloy pipe and all straps and clamps attached to alloy pipe shall be of the same material as that specified for the pipe. This requirement also applies to all clips, plates, etc., welded to alloy steel pipe for support of the thermal insulation.
- F. Where it is necessary to weld to the underside of structural steel members to carry pipe hangers, supports, anchors, etc., the welds for securing the plates to the structural members shall in all cases be parallel to the web or length of the structural member.
- G. One pipe shall not be supported from another pipe; however, multiple runs may be supported together on trapeze hangers. Pipes shall not be hung from cable pans. Pipe hanger rods shall not pass through cable pans unless specifically approved by the Consulting Engineers.
- H. Support steel for pipe hangers or supports shall not be cantilevered from building structural beams or channels, except where specifically approved by the Consulting Engineers.
- I. All hangers, supports, etc., in "floating" piping systems, whether constant support, variable support, or rigid types, shall be identified at the shop by means of a metal tag or other permanent material securely attached to the unit with wire. Where hangers and supports are not shipped as assembled units, each component of each hanger or support shall be properly tagged with the item number or other identifying information. Hanger or support number and cold-installed lengths of springs shall be stamped clearly on the tags. Tags shall remain on the units after erection as a permanent record. All parts from any one hanger or support shall be packaged in a single container. Each container shall also be marked with the item number and other identifying information.
- J. All hangers, supports, etc., and their components, including beam clamps, supporting steel, rods, and plates, shall be thoroughly cleaned and painted in the shop with one coat of approved paint.

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K. Spring Hangers:

- a. All springs and special components for constant support type, spring type or other special type shall be of manufacture as specified in the Job Specification.
- b. The following systems shall be supported by constant support or variable spring hangers, except where otherwise indicated: main high-pressure steam reheat steam, boiler feed, condensate, extraction steam, motor drain, boiler blowdown and high-pressure drains.
- c. Hanger loads shown on the design drawings do not include weight of hanger assembly or, for steam piping, the weight of water required for hydrostatic testing.
- d. Unless otherwise indicated on the design drawings, spring hangers shall be designed for the following maximum variations in supporting effect for the total vertical travel between hot and cold positions:
 - (1) 5% for main steam and hot and cold reheat steam.
 - (2) 10% for all other piping having a service temperature of 650 F and higher.
 - (3) 25% for all other piping requiring spring hangers.
- e. Constant support hangers shall have a supporting weight margin of plus or minus 10% from that specified; and an overtravel margin of not less than 20%, but never less than 1".
- f. Variable support hangers shall have enclosed springs and shall have an indicator showing the actual load and movement. Constant support hangers shall have the design load stamped on the casing and shall have an indicator showing hot and cold positions.
- g. Hangers shall be constructed so that periodic lubrication is not required.
- h. All spring hangers shall be calibrated by Contractor and shall be of the type that can be locked during hydrostatic testing of piping systems.
- i. Where constant support type hangers are to be installed out of doors, proper enclosures shall be provided to protect the springs and working parts.
- j. All compression springs shall have ends of springs ground square and shall be provided with suitable guides where necessary to prevent bowing when loaded.
- k. Construction shall be such that the hanger rod or spring compressing rod will be maintained concentric with the spring at all times. Special care shall be taken when adjusting the hangers so that the amount of compression in each spring shall be in accordance with the load to be taken by the hanger or in accordance with data given on the design drawings. After erection is completed, Contractor shall make such readjustment as the Consulting Engineers may deem necessary.

L. Plain Hangers: Plain hangers shall be provided in sufficient quantities to support the piping properly. Hangers shall be of ample strength, made of steel, the type and design being subject to approval. After erection is completed, Contractor shall make such readjustments as the Consulting Engineers may deem necessary.

M. Anchor and Roller Bearings, Etc.:

- a. Anchor bearing saddles shall be machined to fit the curvature of the pipe. Rollers for roller bearings shall be designed so as to prevent any sliding of the pipes at points of contact with the bearings.
- b. All braces which may be required to eliminate piping vibration shall be furnished and installed by Contractor to the full satisfaction of the Consulting Engineers.

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