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ALEXICH,M.P. Indiana & Michigan Electric Co.
RECIP.NAME RECIPIENT AFFILIATION
DENTON,H.R. Office of Nuclear Reactor Regulation, Director

SUBJECT: Requests relief from ASME Section XI-1974 IWC-5220(a), inservice insp requirements re hydrostatic testing of Class 2 sys & from previous of IWA-5210 re maint of pressure & temp for noninsulated sys.

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July 23, 1984
AEP:NRC:0070-0

Donald C. Cook Nuclear Plant Unit Nos. 1 and 2
Docket Nos. 50-315 and 50-316
License Nos. DPR-48 and DPR-74
INSERVICE INSPECTION PRESSURE TEST - CODE RELIEF

Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D. C. 20555

Dear Mr. Denton:

This submittal is made pursuant to Title 10 of the Code of Federal Regulations, Part 50.55a (g) (6) (i). Code relief is requested from provisions of (1) ASME Section XI - 1974 IWC-5220(a), which requires that Class 2 systems be hydrostatically tested at a temperature not less than 100°F; and (2) for noninsulated systems, from provisions of IWA-5210 which requires that the pressure and temperature be maintained for at least four hours prior to the performance of the examination. We request relief to use the applicable paragraphs of the 1980 Section XI edition. The paragraphs to be used are IWC-5230 (b) covering test temperature and IWA-5213 (d) covering holding time at pressure.

The basis for requesting code relief from the temperature requirements is that heating these systems to, and maintaining 100°F minimum test temperature will be impractical, extremely difficult and costly to achieve. We believe the 100°F minimum temperature as specified by the 1974 code edition does not have a firm technical basis. The 100°F temperature was chosen as a rounded-off number that would be substantially above the ductile to brittle transition temperature of ferritic steels used in nuclear piping systems. In subsequent editions of Section XI, including the 1980 edition through 1981 winter addenda which has been adopted by 10 CFR 50.55 for plants currently starting their next ten-year interval, the 100°F minimum test temperature limit has been dropped for Class 2 systems. In the 1980 edition through 1981 winter addenda, IWC-5230 (b) states that in systems containing ferritic steel components for which fracture toughness requirements were neither specified nor required in the construction of the components, the system test temperature shall be determined by the owner.

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Since later codes permit the owner to select the hydrostatic test temperature for those plants (such as the Donald C. Cook Plant) that have not been constructed with fracture toughness requirements, the minimum temperature that Indiana & Michigan generally proposes to test Class 2 system is 60°F. This temperature will provide adequate assurance against brittle fracture. Materials used in construction of the Donald C. Cook Plant piping systems have a silicon content specified in the ASME SA material standards. This silicon content indicates that semi-killed or killed ingots were used as the starting material, and that the ductile to brittle transition temperature would be below 60°F.

The only materials used in construction of the Cook Plant piping systems subject to ISI that do not have a specified silicon content are SA-181 and SA-333. SA-181 material is used as flanges primarily on two systems - service water and component cooling water. Service water operates at ambient temperature which is close to the temperature of Lake Michigan and during winter months has been as low as 34°F. Since this system is subject to low temperatures for a substantial part of the year, we propose to test this system at the ambient temperature at the time of testing. Component cooling water, and any other systems with SA-181 flanges, are relatively low-pressure systems (less than 150 psig), and the probability of brittle failure is remote at whatever temperature is used for the pressure test. These systems, or segments of systems, will be individually evaluated and an appropriate temperature specified for the pressure test.

The ice condenser glycol piping was constructed from material that is intended for use at low temperature, including SA-333, and therefore, testing at ambient temperature is satisfactory.

Further assurance that 60°F minimum is acceptable is that pressure testing during initial construction was done at ambient temperatures with no deleterious effect. Many systems are below six-inch nominal pipe size or below 5/8-inch nominal thickness which the ASME B&PV Code Section III considers to be of such a size that brittle fracture is not possible and, therefore, excludes these sizes from fracture toughness requirements.

In the second relief request covering holding time at pressure, the basis for the 4 hour holding time at pressure is that an insulated system requires sufficient time to permit the fluid from a leak to saturate the insulation and be detectable. Since this requirement is not applicable to noninsulated systems, we propose that the time at pressure be 10 minutes which is in accordance with the 1980 edition of Section XI, IWC-5213(d). We will maintain the pressure (and temperature) for four-hours on insulated systems.

We believe this to be a reasonable code relief request that will not endanger the plant or the health and safety of the public. Because of the extensive preparation work required, we are proceeding on the assumption that relief will be granted. We are writing our hydrostatic pressure test procedures using minimum test temperature of 60°F. Systems previously noted and other systems where the 60°F

may be impractical, will be tested at a temperature based on sound engineering judgement. These procedures will also specify the later code requirement of 10 minutes holding time for noninsulated system. We are requesting a response by the NRC by September, 1984. In the event that this code relief request is not granted, some systems will have to be heated. This may require that some piping components or heat exchanges be procured for this purpose. The outage during which these tests will be conducted is presently scheduled to begin March 1985.

In accordance with 10 CFR 170.22, I&M Electric interprets this relief request as a Class III Amendment ($4,000.00) and a Class I duplicate Amendment ($400.00). As such, a check in the amount of $4400.00 is attached with this letter for the NRC processing of the aforementioned requests.

This document has been prepared following Corporate procedures which incorporate a reasonable set of controls to insure its accuracy and completeness prior to signature by the undersigned.

Very truly yours,

M. P. Alexich
Vice President 7/23/84

RFH/cm

Attachments

cc: John E. Dolan
W. G. Smith, Jr. - Bridgman
R. C. Callen
G. Charnoff
E. R. Swanson, NRC Resident Inspector - Bridgman