



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

SAFETY EVALUATION BY THE OFFICE OF
NUCLEAR REACTOR REGULATION
ON THE FIRST TEN-YEAR INTERVAL INSERVICE
INSPECTION PROGRAM
ILLINOIS POWER COMPANY
CLINTON POWER STATION UNIT 1
DOCKET NO.: 50-461

INTRODUCTION:

The Technical Specifications for the Clinton Power Station Unit 1 states that the surveillance requirements for inservice inspection and testing of American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code Class 1, 2 and 3 components shall be applicable as follows: Inservice inspection of ASME Code Class 1, 2 and 3 components shall be performed in accordance with Section XI of the ASME Code and applicable Addenda as required by 10 CFR 50, Section 50.55a(g), except where specific written relief has been granted by the Commission pursuant to 10 CFR 50, Section 50.55a(g)(6)(i).

Pursuant to 10 CFR 50.55a(g)(4), ASME Code Class 1, 2 and 3 components (including supports) shall meet the requirements, except the design and access provisions and the preservice examination requirements, set forth in the ASME Code, Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components," to the extent practical within the limitations of design, geometry and materials of construction of the components. The regulations require that inservice examination of components and system pressure tests conducted during the first ten-year interval shall comply with the requirements in the latest edition and addenda of Section XI of the ASME Code incorporated by reference in 10 CFR 50.55a(b) on the date twelve months prior to the date of issuance of the operating license, subject to the limitations and modifications listed therein. The components (including supports) may meet the requirements set forth in subsequent editions and addenda of the ASME Code incorporated by reference in 10 CFR 50.55a(b) subject to the limitations and modifications listed therein.

Pursuant to 10 CFR 50.55a(g)(5), if the licensee determines that conformance to an examination requirement to Section XI of the ASME Code is not practical for his facility, information is submitted to the Commission in support of that determination and a request made for relief from the ASME Code requirement. After evaluation of the determination, pursuant to 10 CFR 50.55a(g)(6)(i), the Commission may grant such relief and may impose such alternative requirements as it determines is authorized by law and will not endanger life or property or the common defense and security and is otherwise in the public interest giving due consideration to the burden upon the licensee that could result if the requirements were imposed.

The Illinois Power Company, the licensee, prepared the Clinton Power Station Unit 1 first Ten-year Interval Inservice Inspection Program to meet the requirements of Section XI of the ASME Boiler and Pressure Vessel Code, 1980 Edition including Winter 1981 Addenda, except in the area of examination of Class 2 piping welds in the Residual Heat Removal, Emergency Core Cooling, and Containment Heat Removal Systems which will meet the requirements of Section XI of the ASME Boiler and Pressure Vessel Code, 1974 Edition including Summer 1975 Addenda. The first inspection interval began April 17, 1987, and ends April 17, 1997.

The licensee submitted the First Ten-Year Interval Inservice Inspection Program on November 7, 1986, with revisions dated June 22, 1987, including requests for relief from certain Section XI, ASME Code requirements that were determined to be impractical for the Clinton Power Station Unit 1. The review and evaluation of the submittals were performed by the staff with assistance from its contractor, Idaho National Engineering Laboratory. In letter dated October 20, 1987, two additional requests for relief from ASME Code Section IX requirements were submitted by the licensee for staff evaluation and approval.

EVALUATION

The determinations addressed by the licensee in the submittals of November 7, 1986, including revisions through June 22, 1987, and the response to the staff's request for additional information that certain ASME Code requirements were impractical to perform at the Clinton Power Station Unit 1 were evaluated. A

summary of our evaluation is shown in Table 1. The staff accepts the detailed evaluation which is attached in the report from our contractor, Idaho National Engineering Laboratory. The two relief requests submitted by the Licensee in the letter dated October 20, 1987, were evaluated by the staff. Our evaluation is shown in Table II.

CONCLUSION

Relief is granted from the ASME Code Section XI requirements in Request Numbers 4002, 4001, and 4003. Relief is not granted from ASME Code Section XI requirements in Request Numbers 5001 and 5002.

We conclude from our evaluation that the First Ten-Year Interval Inservice Inspection Program for the Clinton Power Station Unit 1 is acceptable and in compliance with the requirements of 10 CFR 50.55a(g).

TABLE 1

<u>Request Number</u>	<u>Examination Category</u>	<u>Description</u>	<u>Status</u>
4002	B-J Item 9.11	Class 1 Pressure Retaining Welds in RCIC System	Granted
4001	C-F Item C5.10	Class 2 Open Ended Piping Lines	Granted
4003	F-C	Spring Type Supports Constant Load Type Supports Shock Absorbers, Hydraulic and Mechanical Type Supports	Granted
5001	-	ASME Section III NCA-3866.6 Marking Requirements	Not Granted
5002	-	ASME Section XI Replacement Requirement ASME Section III NA-8000	Not Granted

TABLE II
EVALUATION OF RELIEF REQUESTS NO. 5001 & 5002

RELIEF REQUEST NO. 5001

Component Information:

Replacement bolting material for general use in ASME Section XI component Repair/Replacement activities.

Code Requirement

Section XI requires material to comply with the ASME Code Section III. ASME Code Section III (NCA 3866.6) provides requirements for the marking of completed material. These requirements, in part, are as follows:

(a) Identification of Completed Material

- (1) The identification of completed material shall consist of marking the material with the applicable specification and grade of material,

Relief Request/Justification

Illinois Power Company requests relief from the Code marking requirements described above for "Multi" bolts produced by Cardinal Industrial Products, Inc. The relief is required because it is impractical to meet the specification marking requirements on each bolt because these bolts meet several different specifications.

The head marking used on "Multi" bolts consists of the term MULTI-C or MULTI C where MULTI designates the bolt as meeting the requirements of multiple material specifications and C is the manufacturer code for Cardinal industrial Products, Inc. In addition, a supplemental mark on $\frac{1}{2}$ " up to $\frac{3}{4}$ " diameter bolts and a unique heat code on $\frac{1}{2}$ " and larger diameter bolts appear on each bolt head which provides traceability to the certification. The certification identifies the multiple ASME, ASTM and SAE specifications and grades of bolts for which the "Multi" bolt application is acceptable.

The Multi-C designation is utilized to indicate suitability for replacement of the following material specifications:

<u>ASME Specifications</u>	<u>ASTM Specifications</u>	<u>SAE Specifications</u>
SA193 B7 (1971-1985)	A193 B7 (1971-1985)	GRADE 5 (1971-1985)*
SA354 BC (1971-1985)	A354 BC (1971-1985)	
SA449 (1971-1985)*	A449 (1971-1985)*	
SA320 L7 (1971-1985)	A320 L7 (1971-1985)	
SA325**	A325**	

* For sizes $\frac{1}{2}$ " through 1" diameter

** For $\frac{1}{2}$ " through $1\frac{1}{2}$ " diameter when ordered with structural thread length.

The justification for this relief is that the "Multi" bolt meets all requirements of the material specifications and the ASME Code except for the method of marking the material.

Alternate Testing Proposed

None

EVALUATION

We requested our consultant, EG&G, Idaho, to review and evaluate this relief request. Their evaluation follows:

The Illinois Power Company Relief Request No. 5001 (for the Clinton Power Station) that requested relief from Code marking requirements for bolts manufactured by Cardinal Industrial Products, Inc. has been reviewed.

It is agreed that there is no apparent technical justification for the existence of identical or similar specifications for bolting materials. For example, both ASME SA-193 B7, Specification for Alloy Steel and Stainless Steel Bolting Materials for High Temperature Service, and ASME SA-320-L7, Specification for Alloy Steel Bolting Materials for Low Temperature Service, require the same chemistries and the same tensile properties. The only meaningful difference in these specifications is the requirement for impact testing. Specification SA-193 B7 has an optional requirement for impact testing and Specification SA-320 L7 has a mandatory requirement for impact testing. Further, since ASME Specification SA-320 is identical to ASTM Standard A320 and ASME SA-193 Specification is identical to ASTM Standard A-193, it is questionable if having four specifications with nearly identical requirements is technically justifiable.

It is not agreed that bolts manufactured to ASME SA-325 are equivalent nor meet all the requirements of the other referenced specifications. ASME SA-325, Specification for High-Strength Bolts for Structural Steel Joints defines the requirements for three different types for bolts. The chemistries are not identical for each type or class of bolt. For example, Type 2 bolts contain a minimum of 0.0005% boron and there is no control on boron for either Type 1 or Type 3 bolts. It is questionable if all types and classes of the bolts manufactured to the requirements of ASME SA-325 are interchangeable since considerable controversy exists on the equivalency of the SAE J-429 Grade 8.1, with no control on the boron, and Grade 8.2 with a minimum boron specified content of 0.0005%. It is interesting to note that DOD has recently required that the identification marks for fasteners used in military application be registered with ASME.

Random sampling of bolts by the NRC Vendor Program Branch at other nuclear power plants has revealed significant deficiencies. A major problem with the evaluated bolts is the identification of the specification used to fabricate bolts and the identification of the manufacturer that made the bolts. ASME specifications usually require bolts to be marked but do not require the marks to be registered with a specific agency.

In summary, there are serious problems with threaded fasteners in the U.S., including those that are used in the nuclear industry. These problems are related to the specifications that are being used and the methods used to identify the fasteners. It is agreed that some identical specifications exist for bolting materials, however, it would not be prudent at this time, and would only add to the existing confusion, to introduce a unique and uncontrolled mark or symbol for the bolts that are manufactured by the Cardinal Industrial Products, Inc.

CONCLUSION

We concur with the evaluation provided by our contractor. Therefore, Relief Request No. 5001 is not granted for the reasons stated.

RELIEF REQUEST NO. 5002

Component Information

ASME Section XI replacement parts and components.

Code Requirement

Section XI requires that replacement items meet the requirements of the ASME Code Section III. ASME Code Section III, Subsection NA-8000 requires parts of components to be fabricated by an ASME Certificate Holder and completion of an ASME Code Data Report form.

Relief Request/Justification

Illinois Power Company requests relief from this requirement for parts of components when certified replacement parts can no longer be obtained. This is possible when a supplier has a proprietary design and no longer retains ASME certification.

The use of this relief request shall be limited to parts only and will not apply to complete components or material.

The justification for this relief is that Illinois Power Company will impose sufficient procurement controls on the supplier to insure the replacement parts meet all requirements of the ASME Code Section XI Article IWA 7000, Replacements, and the applicable rules of ASME Code Section III for construction except for Code certification.

Alternate Testing Proposed

The Illinois Power ISI program manual shall document the controls for application of this relief and the controls necessary to be imposed on a part supplier.

The minimum controls shall be as follows:

- ° All other requirements of IWA-7000 other than code certification and stamping shall be met.
- ° The services of an Authorized Inspection Agency (IWA-2000) are used for inspection during fabrication of the component or part. This may be either IP's or the Manufacturer's agency.

- ° IPQA shall qualify the Quality Assurance Program of the manufacturing organization to assure that as a minimum it meets the Quality Assurance Requirements of the specified construction Code except for certification and stamping.
- ° The Manufacturer shall certify that all the requirements of the specified construction Code have been met, excluding the requirements for obtaining a Certificate of Authorization and stamping. Information comparable to that required on a Manufacturer's Code Data Report shall be documented by the Inspector witnessing fabrication.
- ° Nuclear Station Engineering Department shall obtain IP ANII concurrence prior to implementation of these requirements.

EVALUATION

The Licensee requested relief from the requirement of ASME Code Section III, Article NCA-8000, "Certificates of Authorization, Nameplates, Code Symbol Stamping, and Data Reports," requiring that replacement parts for components be fabricated by a manufacturer holding an ASME Code Certificate of Authorization and that a Data Report not be required from the manufacturer for the replacement parts.

The purpose of Article IWA-7000, Section XI, "Replacements", and Article NCA-8000, Section III, of the ASME Code is to ensure that replacement parts for components be manufactured to the Owner's specifications and meet the requirement of the edition of the ASME Construction Code to which the original component or part was fabricated. The Owner and the Authorized Certificate Holder agree with an Independent Inspection Agency to provide inspection and audit services. The ASME Code assures that the Authorized Certificate Holder has a quality assurance program evaluated and accepted by the Society. The Data Report assures ASME Code compliance.

We conclude from our evaluation of this relief request that ASME Code responsibility for quality assurance of fabricated replacement parts for components should not be blanket transferred from the ASME Code to the Licensee. It is the opinion of the staff that granting this relief request is tantamount to conceding a loss of control of quality assurance. Replacement parts may be acquired from a manufacturer not holding an ASME Code Certificate of Authorization on an ad hoc basis without creating a hardship or an additional burden upon the licensee.

CONCLUSION

Relief is not granted for Relief Request No. 5002.