



Nebraska Public Power District

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NLS8800014
January 11, 1988

Mr. R. D. Martin, Regional Administrator
U. S. Nuclear Regulatory Commission
Region IV
611 Ryan Plaza Drive, Suite 1000
Arlington, TX 76001

Subject: Response to NRC Compliance Bulletin No. 87-02
Cooper Nuclear Station, NRC Docket No. 50-298, DPR-46

Reference: NRC Compliance Bulletin No. 87-02, "Fastener
Testing to Determine Conformance with Applicable
Material Specifications"

Gentlemen:

In accordance with the requirements of the Reference, the Nebraska Public Power District is submitting the attached information concerning the conformance of fasteners to applicable material specifications. Attachment 1 contains a description of the actions taken and results achieved. The results of the testing performed on the fasteners are enclosed in the format required by Bulletin 87-02. Attachment 2 is an excerpt from District Quality Assurance Instruction, QAI-9, which provides an explanation of the classification system at Cooper Nuclear Station.

If you have any questions, or require further information, please contact this office.

L. G. Kunc1
Nuclear Power Group Manager

LGK/MTB:cb18/1(NLSC1)

cc: US Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555

NRC Senior Resident Inspector
Cooper Nuclear Station

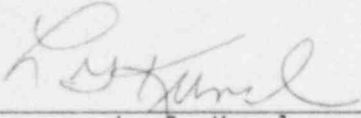
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L. G. Kunc1, being first duly sworn, deposes and says that he is an authorized representative of the Nebraska Public Power District, a public corporation and political subdivision of the State of Nebraska; that he is duly authorized to submit this response on behalf of Nebraska Public Power District; and that the statements contained herein are true to the best of his knowledge and belief.



L. G. Kunc1

Subscribed in my presence and sworn to before me this 11th day of January, 1988.



NOTARY PUBLIC



Response to Bulletin 87-02

Each of the actions required by NRC Compliance Bulletin No. 87-02 is repeated below, followed by the District response.

1. Describe a) the characteristics currently examined during receipt inspection of fasteners (i.e., head markings for grade and manufacturer symbols, review of certified material test report or certificate of conformance), and b) internal controls utilized during storage and issuance from stock to assure the appropriate use of fasteners.

Response:

Current CNS procedures for receipt inspection require a physical inspection and a technical data review. For fasteners, the physical receipt inspection consists of a check for head markings, dimensional and thread verification, quantity, and physical condition of the fasteners. The technical data review verifies that the data received (Certified Material Test Report or Certificate of Conformance) conforms to the purchasing document requirements and that the data is complete and accurate.

If a discrepancy is found at any point in the receipt inspection process, or if further review becomes necessary, the fasteners involved are placed in "HOLD" until the discrepancy is resolved. When there are no discrepancies, the fasteners are tagged and moved to a designated storage area. Access to the storage area is controlled and limited to authorized personnel. When fasteners are issued from storage for essential work, an issue ticket is prepared indicating the work document they are to be installed under which in turn indicates where the fasteners are to be used. This issue ticket, when the work is complete, is attached to the work document which is subsequently processed as a quality record.

2. Select a minimum sample of ten (10) non-safety related fasteners (studs, bolts, and/or cap screws), and ten (10) safety-related fasteners (studs, bolts, and/or cap screws) from current, in use, stock. The sample is to be obtained by the licensee with the participation of an NRC inspector. Fasteners procured to meet the following chemical and mechanical properties are of interest: A-193 grades B7, B8, and B16; SAE J429 grades 5 and 8; A-449; A-325 Types 1, 2, or 3; A-354 grades BB, BC, BD; A-490; A-320 LTM; A-307; A-563; or equivalent.

Response

A sample of ten (10) non-safety related (non-essential) fasteners and ten (10) safety-related (essential) fasteners was selected by Cooper Nuclear Station (CNS) Engineering and Quality Assurance personnel, with the assistance of the NRC Senior Resident Inspector. The fasteners chosen were those purchased to the material specifications of interest identified in the Bulletin, to the maximum extent practical. The material specification for each fastener in the sample is identified on the attached data sheets.

3. For the selected sample of fasteners in Item 2, include a sample of typical nuts that would be used with each fastener (one-for-one). In particular, nuts purchased to the chemical and mechanical specifications of A-194 are of interest.

Response

For each fastener, one corresponding nut was selected for testing. There were a total of twenty (20) nuts selected on a one-for-one basis with the fastener, ten essential and ten non-essential. These were also selected by CNS Engineering and QA personnel, with the assistance of the NRC Senior Resident Inspector. Several of the sample nuts were purchased to the chemical and mechanical specifications of A-194 as requested by the Bulletin.

4. Chemical testing shall be performed on all samples. Mechanical testing shall be performed on each safety-related fastener. Hardness testing shall be performed on each nut and non-safety-related fastener. All testing shall be performed by a laboratory which the licensee has qualified for this type of testing and appears on the licensee's approved vendor list. Testing performed shall be done in accordance with the requirements of the fastener's specification, grade, and class, and the test shall evaluate the ultimate tensile strength, hardness, and chemical properties as required by the fastener's specification, grade, and class. Each sample shall be tagged with the sample's ID number.

Response

The District selected a laboratory to conduct the chemical, mechanical, and hardness testing as specified in Item 4 above. The laboratory chosen was Metals Engineering and Testing Laboratories (METL) of Phoenix, Arizona. The chemical testing was performed using spectrographic analysis conducted in accordance with ASTM E-415. Rockwell Hardness Testing was conducted in accordance with ASTM E-18. The mechanical testing was performed on specimens reduced per ASTM A-370 and tested per ASTM E-8. The material specification for each fastener and nut was reviewed to ensure that the appropriate chemical, mechanical, and hardness specifications were identified for testing on the Purchase Order to METL. The samples were numbered, tagged, and shipped to METL for testing.

At the time of the issuance of NRC Compliance Bulletin 87-02, the District's QA Department was in the process of performing the evaluation to include Metals Engineering and Testing Laboratories (METL) on the CNS Approved Suppliers List. There was no laboratory on the Approved Suppliers List at that time approved to conduct this testing. This evaluation was underway as the result of a separate metallurgical testing project in progress for the District. When it was learned that METL had been contracted by another licensed nuclear facility to conduct the fastener testing, the decision was made to select METL to fulfill the District's testing requirements.

District QA personnel observed portions of the fastener testing and audited the METL facility, procedures, QA Program, and personnel during the week of December 7, 1987. The testing set-up, facility, procedures, and personnel were determined to be adequate. District QA placed METL on the Approved Suppliers List with a limitation that in order to use METL for future safety-related work, verification of proper QA controls, or set-up, would be required.

5. The results of all tests, together with supporting information, are to be reported to the NRC utilizing the format shown in Attachments 1 and 2 of this bulletin. Include the names and addresses of suppliers and manufacturers of safety-related fasteners and, to the extent possible, of non-safety-related fasteners. For any fastener found out of specification, provide an evaluation of the safety significance including consideration of the most limiting application.

Response

The results of the testing, and supporting information, for each fastener and nut are tabulated on the enclosed data sheets (Attachments 1 and 2 of Bulletin 87-02).

Each of the chemical and mechanical tests showed the fasteners and nuts were within the required specifications. The initial Rockwell Hardness Testing indicated that one nut, Sample ID No. CNS-38, failed to meet the hardness requirement of SA 194, Grade 7. This is a 1-1/8" heavy hex nut, manufactured by Texas Bolt Company and purchased as essential commercial grade. All other hardness tests were within the required specifications.

Texas Bolt Company was contacted regarding the failure of CNS-38. It was postulated that the flat of the nut which had been tested had not been ground down far enough to remove all decarburization which forms during the manufacturing heat treatment process. Therefore, METL was requested to reperform the hardness test on CNS-38, after grinding to remove the decarburized zone. The retest indicates that the hardness of CNS-38 was indeed within the required specifications of SA-194. The results of the retest are appended to the data sheet for sample CNS-38.

Based on the satisfactory retest of sample number CNS-38, no out-of-specification fasteners were found.

6. Based on the results of the testing and review of current procedures, describe any further actions being taken to assure that fasteners used in the plant meet the requisite specifications and requirements and that the operability of safety-related plant components is not affected.

Response

Based on the test results (initial and retest on sample number CNS-38) and review of existing procedures, no further action is necessary to assure that essential fasteners meet specifications and that their issuance is properly controlled.

TABLE 3.1-1
QUALITY CLASSIFICATION CATEGORIES

UNCONTROLLED

ESSENTIAL

Items which must be assured the highest feasible level of quality, consistent with the importance of the safety function to be performed. This category includes those items of the plant which are essential to the prevention of accidents which could affect the public health and safety by the release of substantial quantities of radioactivity or which are required in the mitigation of the consequences of such accidents.

ESSENTIAL-COMMERCIAL GRADE

Are essential items that are not subject to design or specification requirements which are unique to nuclear facilities or activities, are used in applications other than nuclear facilities or activities, and are to be ordered from the manufacturer's published product description, e.g., catalog, as off-the-shelf items. Examples include, but are not limited to:

- a. Mechanical components, belts, screws, nuts, seals, washers, and gaskets which have been accepted for use in essential assemblies.
- b. Electrical components, resistors, diodes, capacitors, transistors, wire, fuses, terminal blocks, and lights which have been accepted for use in essential assemblies.

NON-ESSENTIAL

Any structures, equipment and components which are important to reactor operation, but are not essential for preventing an accident which would endanger the public health and safety, and are not essential for the mitigation of the consequences of these accidents.