TOLEDO EDISON
A Centerior Energy Company

DONALD C. SHELTON
Vice President - Nuclear
(419) 249-2300

Docket No. 50-346

License No. NPF-3

Serial No. 1-781

February 16, 1988

Mr. A. B. Davis
Regional Administrator
U. S. Nuclear Regulatory Commission
Region III
799 Roosevelt Road
Glen Ellyn, IL 60137

Subject: Response to NRC Compliance Bulletin No. 87-02

Dear Mr. Davis:

Toledo Edison (TED) hereby submits the information requested by NRC Compliance Bulletin No. 87-02, "Fastener Testing to Determine Conformance with Applicable Material Specifications", dated November 6, 1987 (Log 1-1699). The subject bulletin required that licensees review fastener receipt inspection requirements, and internal material controls; determine through testing, whether stock fasteners meet required specifications and evaluate the safety significance of those fasteners which did not meet the applicable specifications.

TED made a initial response on December 21, 1987, Serial 1-771, indicating that a final response would be submitted by February 15, 1988. TED hereby submits the information necessary to close this bulletin.

TED's evaluation found 45 of the 51 fasteners tested met the applicable specifications. The 6 fasteners which did not meet the required specification were evaluated based on the overall test results and their use in the plant. TED's evaluation determined those fasteners to be acceptable for their intended use.

Sincerely yours,

JCS:bam

cc: Document Control Desk
DB-1 Resident Inspector
A. W. DeAgazio, NRR Project Manager

IE11
1/1

RESPONSE TO NRC BULLETIN 87-02

FOR

DAVIS-BESSE NUCLEAR POWER STATION

UNIT NO. 1

This letter is submitted in conformance with Atomic Energy Act of 1954 Section 182a, in response to NRC Bulletin 87-02 (Log No. 1-1699) "Fastener Testing to Determine Conformance with Applicable Material Specifications".

By _____
D. C. Shelton, Vice President, Nuclear

Sworn and subscribed before me this 16th day of February, 1988.

Patricia L Reader
Notary Public, State of Ohio

My Commission expires 5/18/91

RESPONSE TO NRC COMPLIANCE BULLETIN NO. 87-02

The following sections provide Toledo Edison's response for each of the Bulletin 87-02 action items:

NRC ACTION 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.

TED Response

Receipt inspection and internal controls present at Davis-Besse to ensure appropriate fastener use are:

- Receipt inspections of safety-related fasteners are performed in accordance with TED procedure QA-VQ-01301.07, Receipt Inspection, Vendor Documentation Review and Purchase Order Closure. QA-VO-01301.07 contains guidance for receipt inspection and describes how those attributes are to be inspected when required by the General Material Inspection Checklist (GMIC). These documents provide assurance that the following characteristics are inspected upon material receipt: manufacturer's symbol, grade designation marking, fasteners identification and material certification.

- Davis-Besse Nuclear Group Procedure NG-NP-00400, Materials Management, governs the receipt, storage, and issuance of fasteners. Upon arrival fasteners are inspected for physical damage and to verify description and quantity. Discrepancies are recorded and resolved prior to issuance for installation or use.

- Safety-related materials are segregated and controlled to prevent mixing with nonsafety-related material. Stock material including safety-related items are identified and stored by stock number.

- Materials with the same stock number are purchased to the same requirements (e.g. material grade, material) or similar requirements which have been evaluated as being acceptable.

- Storage of material with different stock numbers in the same location is not permitted.

- It is the responsibility of the end user to identify from design documents the correct bolting material for the application and its corresponding stock number. Materials Control personnel ensure that the stock number issued is the stock number requested.

NRC ACTION 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-235 Types 1, 2 or 3; A-354 grades BB, BC, BD; A-490; A-320 LTM; A-307; A-563; or equivalent.

TED Response

Refer to response for NRC Action 3.

NRC ACTION 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.

TED Response

A total of 51 fasteners (nuts, bolts and studs) were sampled. The majority of these fasteners were selected from the fasteners of particular interest per the bulletin. The NRC Resident Inspectors participated in the sampling. A sample of typical nuts that would be used with each fastener (one-for-one sampling) proved impractical due to the unavailability of items in stock.

NRC ACTION 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.

TED Response

Chemical, mechanical and hardness testing were performed on all of the samples, both safety-related and nonsafety-related fasteners. The testing was performed by a TED approved laboratory qualified for this type of testing. The testing was performed in accordance with ASTM-approved methods required by the fastener's specification, grade and class. Each sample was provided with a unique identification number.

NRC ACTION 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.

TED Response

Results of TED's Bulletin 87-02 testing are presented in Attachment 2, using the format suggested by the bulletin. Results which do not meet the applicable specification requirement are denoted by an asterisk (*).

Attachment 1 contains the Fastener Testing Data Sheets along with a list of the fastener supplier and manufacturer names and addresses.

Two fasteners of stock number DB-15-1793 and four nuts of stock numbers DB-15-4170 and DB-15-4197 did not meet required specifications. A brief description of each and an evaluation of the safety significance is provided below.

1. Sample DB-15-4197 (17 A & B) - consisted of two 1/4"-20 hex nuts made of SA 194 Grade 2H material . The nuts were procured as safety-related fasteners. The Rockwell Hardness test results indicate that the hardness of the nuts was slightly above specification (39 HRC and 40 HRC, specification is 24-38 HRC). All other properties tested met the chemical and physical specification requirements. A review indicates that 51 of these nuts were issued to the field. One nut was issued in a nonsafety-related pipe hanger installation and fifty were used in a non-pressure boundary structural application (grating). Considering the use of the nuts and since all other parameters were in specification, there is no nuclear safety significance to the discrepancy.

2. Sample DB-15-1793 (15 A & B) - consisted of two 9/16" x 1-1/4" bolts made of SAE J429 Grade 5 material. These bolts were procured as nonsafety-related fasteners and it has been verified that none of these bolts were used in a safety application. The Rockwell test results indicate that the hardness was sightly below the specification (both samples were 21 HRC, specification is 25-34 HRC). All other properties tested met the specification requirements. Since these bolts were not used in any safety application, and all other parameters were in specification, there is no nuclear safety significance to the discrepancy.

3. Sample DB-15-4170 (27, 28) - consisted of two 1-1/4" hex nuts, one made of ASTM A194 Grade 2H and the other believed to be SAE J995C Grade 2 material. These nuts were procured as nonsafety-related fasteners and none of these nuts were used in a safety application. The Rockwell test results indicate that the hardness of the ASTM A194 Grade 2H nut was slightly below the specification (23 HRC, specification is 24-38 HRC). The SAE J995C Grade 2 nut, although in specification, had a considerably low hardness (53 HRB, specification is 30 HRC max (108 HRB equivalent)). All other properties tested were in specification. Since these nuts were not used in any safety application, there is no nuclear safety significance to the discrepancy.

The fasteners and nuts from the stock number of the above discrepancies (i.e. DB-15-4170, DB-15-4197, and DB-15-1793) have been removed from the stock system and placed in a QA hold area to be dispositioned as non-conforming items.

NRC ACTION 6: Based on the results of the testing and review of current procedures, described 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.

TED Response

Toledo Edison has revised the receipt inspection procedure to provide for further examination of fasteners to ensure that manufacturer's symbols and grade designations are present on nominal diameters of 1/4" or larger, where specifically required by the material specification or International Fastener Institute (IFI)-122. Based on reviews of current procedures for receipt inspection/material handling, and the bulletin testing program, TED considers no further actions are necessary.

APPENDIX

1. Attachment 1 - Fastener Testing Data Sheets
   - Listing of Suppliers/Manufacturers

SAMPLE IDENTIFICATION NO.

Safety-related Fasteners	Nonsafety-related Fasteners
DB-15-1220	DB-15-1790
DB-15-4302	DB-15-1784
DB-15-4533	DB-15-1797
DB-15-4540	DB-15-1219
DB-15-4314	DB-15-1789
DB-15-4306	DB-15-1242
DB-15-4273	DB-15-1221
DB-15-4256	DB-15-1225
DB-1-87-1182-00	DB-15-1604
DB-15-4197	DB-15-1793
DB-15-4201	DB-15-4170
DB-15-4204	DB-15-4206
DB-15-4214	DB-15-4016
DB-15-4208	DB-15-4017
DB-15-4195	DB-15-4019
DB-15-4199	
DB-15-4209	
DB-15-4259	

2. Attachment 2 - Fastener Data Summary
   Safety-related Fasteners
   Nonsafety-related Fasteners

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Attachment 1

Attachment 1

Fastener Testing Data Sheet

*Sample ID# DB-15-1220

Fastener Description: Bolt, Mach 5/8" x 3 3/4"

Description of Sample Stock Location: U-053-C

Material Specification as Documented by Licensee Records: SA193 GR B7

Head Marking (Specification and Manufacturer): KB7, AWN Grade & Manufacture ID

**Class/Procurement Level: Q, Safety Related

General Plant Application (e.g., Pressure Boundary, Structural) Plant Safety Relate
Systems/Pressure Boundary

Vendor: Chicago Tube & Iron Q000540

QA Requirements Imposed on Vendor: ASME Sect. III 71ED. No Add.

Licensee Representative: M. C. Beier
Engineering Assurance Supervisor, Procurement

Signature _____ Date 2/5/88

*The sample ID# shall have a prefix that contains the licensee facility initials

**If applicable, please provide an explanation for your classification system

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Attachment 1

Fastener Testing Data Sheet

*Sample ID# DB 15-4302

Fastener Description: Stud, 5/8" x 6 1/4"

Description of Sample Stock Location: UH-019

Material Specification as Documented by Licensee Records: SA193 GR B7

Head Marking (Specification and Manufacturer): B7, T Grade & Manufacture

**Class/Procurement Level: 0, Safety Related

General Plant Application (e.g., Pressure Boundary, Structural) Plant Safety Related Systems/Pressure Boundary

Vendor: Hub, Inc. 096267

QA Requirements Imposed on Vendor: ASME Sect. III 71ED No Add.

Licensee Representative: M. C. Beier
Engineering Assurance Supervisor, Procurement

Signature _____ Date 2/5/88

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Attachment 1

Fastener Testing Data Sheet

*Sample ID# DB-15-4533

Fastener Description: Stud, 1/2" x 4"

Description of Sample Stock Location: UG-055

Material Specification as Documented by Licensee Records: SA 193 GR B7

Head Marking (Specification and Manufacturer): KB7, XXZ Grade & Manufacture

**Class/Procurement Level: C, Safety Related

General Plant Application (e.g., Pressure Boundary, Structural) Plant Safety Related Systems/Pressure Boundary

Vendor: Kilbourne Engineering 0004267ST

QA Requirements Imposed on Vendor: ASME Sect. III 71ED. No add.

Licensee Representative: M. C. Beier
Engineering Assurance Supervisor, Procurement

Signature _____ Date 2/5/88

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Fastener Testing Data Sheet

*Sample ID# DB-15-4540

Fastener Description: Stud, 3/4" x 2"

Description of Sample Stock Location: UG-057

Material Specification as Documented by Licensee Records: SA193 GR B7

Head Marking (Specification and Manufacturer): C, B7 Grade & Manufacture ID

**Class/Procurement Level: Q, Safety Related

General Plant Application (e.g., Pressure Boundary, Structural) Plant Safety Related Systems/Pressure Boundary

Vendor: Walter Gogel Company 033945

QA Requirements Imposed on Vendor: ASME Sect. III

Licensee Representative: M. C. Beier
Engineering Assurance Supervisor, Procurement

Signature _____ Date 2/5/88

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Fastener Testing Data Sheet

*Sample ID# DB-15-4314

Fastener Description: Stud, 5/8" x 3 3/4"

Description of Sample Stock Location: UG-027

Material Specification as Documented by Licensee Records: SA193 GR B8

Head Marking (Specification and Manufacturer): AXM, KB8 Grade & Manufacture

**Class/Procurement Level: O, Safety Related

General Plant Application (e.g., Pressure Boundary, Structural) Plant Safety Related Systems/Pressure Boundary

Vendor: Kilbourne Engineering 0005542ST

QA Requirements Imposed on Vendor: ASME Sect. III 71ED No Add.

Licensee Representative: M. C. Beier
Engineering Assurance Supervisor, Procurement

Signature _____ Date 2/5/88

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Fastener Testing Data Sheet

*Sample ID# DB-15-4306

Fastener Description: Stud, 3/4" x 5 3/4"

Description of Sample Stock Location: UJ-019

Material Specification as Documented by Licensee Records: SA193 GR B8

Head Marking (Specification and Manufacturer): AXM, KB8 Grade & Manufacture ID

**Class/Procurement Level: 0, Safety Related

General Plant Application (e.g., Pressure Boundary, Structural) Plant Safety Relate Systems/Pressure Boundary

Vendor: Kilbourne Engineering 0005930

QA Requirements Imposed on Vendor: ASME Sect. III 71ED. No Add.

Licensee Representative: M. C. Beier
Engineering Assurance Supervisor, Procurement

Signature _____ Date 2/5/88

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Fastener Testing Data Sheet

*Sample ID# DB-15-4273

Fastener Description: 7/8" x 5" Hex Head Cap Screw

Description of Sample Stock Location: U-053D

Material Specification as Documented by Licensee Records: ASTM A-307 Gr. B

Head Marking (Specification and Manufacturer): SL

**Class/Procurement Level: Q, Safety Related

General Plant Application (e.g., Pressure Boundary, Structural) Safety Related use/
Non-Pressure Boundary

Vendor: Chicago Tube & Iron 0000540ST

QA Requirements Imposed on Vendor: Procured per ASTM A-307 Gr. B

Licensee Representative: M. C. Beier
Engineering Assurance Supervisor, Procurement

Signature _____ Date 2/5/88

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Fastener Testing Data Sheet

*Sample ID# DB-15-4256

Fastener Description: 3/8" x 1 1/2" Head, Hex

Description of Sample Stock Location: U-H02-1

Material Specification as Documented by Licensee Records: ASTM A-307 GR. B

Head Marking (Specification and Manufacturer): B S

**Class/Procurement Level: O, Safety Related

General Plant Application (e.g., Pressure Boundary, Structural) Safety Related use/ Non-Pressure Boundary

Vendor: All State Fastener 0009885ST

QA Requirements Imposed on Vendor: Procured per ASTM A-307 Gr. B

Licensee Representative: M. C. Beier
Engineering Assurance Supervisor, Procurement

Signature _____ Date 2/5/88

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Fastener Testing Data Sheet

*Sample ID# DB-1-87-1182-00 - BOM #0008, Sample Quantity - 2 each

Fastener Description: Hex HD Cap Screw 1/2" - 13 X 1 1/4"

Description of Sample Stock Location: Non-Stock

Material Specification as Documented by Licensee Records: SAE J429 GR5

Head Marking (Specification and Manufacturer): KS

**Class/Procurement Level: Q, Safety Related

General Plant Application (e.g., Pressure Boundary, Structural) Plant Safety Related Systems/ Non-Pressure Boundary

Vendor: All State Fasteners 00114545T

QA Requirements Imposed on Vendor: Meets requirements of SAE GR.5

Licensee Representative: M. C. Beier
Engineering Assurance Supervisor, Procurement

Signature _____ Date 2/5/88

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Fastener Testing Data Sheet

*Sample ID# DB-15-4197 Sample Quantity - 2 each

Fastener Description: Nut, Hex 1/4"-20

Description of Sample Stock Location: UH-023

Material Specification as Documented by Licensee Records: SA194 GR 2H

Head Marking (Specification and Manufacturer): 2H, T Manufacture, Grade, Process

**Class/Procurement Level: Q, Safety Related

General Plant Application (e.g., Pressure Boundary, Structural) Plant Safety Related Systems/Pressure Boundary

Vendor: Hub, Inc. 0011405

QA Requirements Imposed on Vendor: ASME Sect. III 71Ed., No Add.

Licensee Representative: M. C. Beier
Engineering Assurance Supervisor, Procurement

Signature _____ Date 2/5/88

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Fastener Testing Data Sheet

*Sample ID# DB-15-4201

Fastener Description: Nut, Hex, 5/8"

Description of Sample Stock Location: UG-029

Material Specification as Documented by Licensee Records: ASTM A-307, Gr. B

Head Marking (Specification and Manufacturer): T

**Class/Procurement Level: O, Safety Related

General Plant Application (e.g., Pressure Boundary, Structural) Plant Safety Related Systems/Non-pressure Boundary

Vendor: REC Corp. 044476

QA Requirements Imposed on Vendor: ASTM A-307 Gr. B

Licensee Representative: M. C. Beier
Engineering Assurance Supervisor, Procurement

Signature _____ Date 2/5/88

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Fastener Testing Data Sheet

*Sample ID# DB-15-4204

Fastener Description: Nut, Hex, 3/4" - 10

Description of Sample Stock Location: UJ-029

Material Specification as Documented by Licensee Records: SA307 GR. B

Head Marking (Specification and Manufacturer): JAC T Manufacture ID

**Class/Procurement Level: Q, Safety Related

General Plant Application (e.g., Pressure Boundary, Structural) Plant Safety Related Systems/Pressure Boundary

Vendor: REC Corp. 063687

QA Requirements Imposed on Vendor: ASME Sect. III 1971 ED S. Add., SA307 Gr. B

Licensee Representative: M. C. Beier
Engineering Assurance Supervisor, Procurement

Signature _____ Date 2/5/88

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Fastener Testing Data Sheet

*Sample ID# DB-15-4214

Fastener Description: Nut, Hex - 1"

Description of Sample Stock Location: U-053-D

Material Specification as Documented by Licensee Records: SA 194 GR6

Head Marking (Specification and Manufacturer): 6B, JSH, 5AS Manufacture, Grade, Proce

**Class/Procurement Level: Q, Safety Related

General Plant Application (e.g., Pressure Boundary, Structural) Plant Safety Relate Systems/Pressure Boundary

Vendor: Power & Engineered Products Company 077579

QA Requirements Imposed on Vendor: ASME Sect. III CL.2 1971 Ed. No Add.

Licensee Representative: M. C. Beier
Engineering Assurance Supervisor, Procurement

Signature _____ Date 2/5/88

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Fastener Testing Data Sheet

*Sample ID# DB 15-4208

Fastener Description: Nut, Hex 3/4"-10

Description of Sample Stock Location: UJ-027

Material Specification as Documented by Licensee Records: SA194 GR6

Head Marking (Specification and Manufacturer): A1, 6CF Manufacture, Grade, Process

**Class/Procurement Level: Q, Safety Related

General Plant Application (e.g., Pressure Boundary, Structural) Plant Safety Related Systems/Pressure Boundary

Vendor: Hub 096267

QA Requirements Imposed on Vendor: ASME Sect. III 71ED, No add.

Licensee Representative: M. C. Beier
Engineering Assurance Supervisor, Procurement

Signature _____ Date 2/5/88

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Fastener Testing Data Sheet

*Sample ID# DB-15-4195, Sample Quantity - 2 each

Fastener Description: Nut, Hex 3/8"-16

Description of Sample Stock Location: UH-023

Material Specification as Documented by Licensee Records: SA 194 Gr. 2H

Head Marking (Specification and Manufacturer): K, 2HB Manufacture, Grade, Process

**Class/Procurement Level: Q, Safety Related

General Plant Application (e.g., Pressure Boundary, Structural) Plant Safety Relate Systems/Pressure Boundary

Vendor: Kilbourne Engineering 0004267ST

QA Requirements Imposed on Vendor: ASME Sect. III 71ED, No Add.

Licensee Representative: M. C. Beier
Engineering Assurance Supervisor, Procurement

Signature _____ Date 2/5/88

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Fastener Testing Data Sheet

*Sample ID# DB-15-4199, Sample Quantity - 2 each

Fastener Description: Nut, Hex 1/2" - 13

Description of Sample Stock Location: UH-055

Material Specification as Documented by Licensee Records: SA194 GR 2H

Head Marking (Specification and Manufacturer): 2HB, ARL, K Manufacture, Grade Proces

**Class/Procurement Level: Q, Safety Related

General Plant Application (e.g., Pressure Boundary, Structural) Plant Safety Related Systems/Pressure Boundary

Vendor: Kilbourne Engineering 099970A

QA Requirements Imposed on Vendor: ASME Sect. III 71ED No Add.

Licensee Representative: M. C. Beier
Engineering Assurance Supervisor, Procurement

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Fastener Testing Data Sheet

*Sample ID# DB-15-4209

Fastener Description: Nut, Hex, 7/8"-9

Description of Sample Stock Location: UJ-029

Material Specification as Documented by Licensee Records: A563 GR C or D

Head Marking (Specification and Manufacturer): Three Circumferential Lines, T, JAU

**Class/Procurement Level: Q, Safety Related

General Plant Application (e.g., Pressure Boundary, Structural) Plant Safety Relate Systems/ Pressure Boundar

Vendor: REC Corporation 763687A

QA Requirements Imposed on Vendor: ASME Sect. III 71ED, S. Add.

Licensee Representative: M. C. Beier
Engineering Assurance Supervisor, Procurement

Signature _____ Date 2/5/88

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Fastener Testing Data Sheet

*Sample ID# DB-15-4259

Fastener Description: 1/2" x 2" HH Cap Screw

Description of Sample Stock Location: U-053-E

Material Specification as Documented by Licensee Records: ASTM A-307 Gr. B

Head Marking (Specification and Manufacturer): R

**Class/Procurement Level: Q, Safety Related

General Plant Application (e.g., Pressure Boundary, Structural) Safety Related use, Non-Pressure Boundary

Vendor: REC Corp. 071384A

QA Requirements Imposed on Vendor: Procured per ASTM A-307 Gr. B

Licensee Representative: M. C. Beier
Engineering Assurance Supervisor, Procurement

Signature _____ Date 4/5/88

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Fastener Testing Data Sheet

*Sample ID# DB-15-1790

Fastener Description: 7/16"NF x 2" Hex Bolt

Description of Sample Stock Location: FO-20E

Material Specification as Documented by Licensee Records: Not specified

Head Marking (Specification and Manufacturer): L

**Class/Procurement Level: Non-Q/Non-safety

General Plant Application (e.g., Pressure Boundary, Structural)
Plant Non-Safety Systems, General Use/Non-pressure Boundary

Vendor: Non-Safety Supplier per attached list

QA Requirements Imposed on Vendor: None

Licensee Representative: M. C. Beier
Engineering Assurance Supervisor, Procurement

Signature _____ Date 2/5/88

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Fastener Testing Data Sheet

*Sample ID# DB-15-1784

Fastener Description: 7/16"NF x 3/4" Hex Bolt

Description of Sample Stock Location: F-020-F

Material Specification as Documented by Licensee Records: Not specified

Head Marking (Specification and Manufacturer): 

**Class/Procurement Level: Non-Q/Non-safety

General Plant Application (e.g., Pressure Boundary, Structural)
Plant Non-Safety Systems, General Use/Non-pressure Boundary

Vendor: Non-Safety Supplier per attached list

QA Requirements Imposed on Verdor: None

Licensee Representative: M. C. Beier
Engineering Assurance Supervisor, Procurement

Signature _____ Date 2/5/88

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Attachment 1

Fastener Testing Data Sheet

*Sample ID# DB-15-1797

Fastener Description: 9/16"NC x 2 1/4" Hex Bolt

Description of Sample Stock Location: F-020-C

Material Specification as Documented by Licensee Records: Not specified

Head Marking (Specification and Manufacturer): |
/ \
/ \

**Class/Procurement Level: Non-Q/Non-safety

General Plant Application (e.g., Pressure Boundary, Structural)
Plant Non-Safety Systems, General Use/Non-pressure Boundary

Vendor: Non-Safety Supplier per attached list

QA Requirements Imposed on Vendor: None

Licensee Representative: M. C. Beier
Engineering Assurance Supervisor, Procurement

Signature _____ Date 2/5/88

*The sample ID# shall have a prefix that contains the licensee facility initial

**If applicable, please provide an explanation for your classification system

Docket No. 50-346
License No. NPF-3
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Attachment 1

Fastener Testing Data Sheet

*Sample ID# DB-15-1219

Fastener Description: 5/8" x 3 1/2" Machine Bol. Z/P with Hex Nut

Description of Sample Stock Location: F-018-E

Material Specification as Documented by Licensee Records: Not specified

Head Marking (Specification and Manufacturer): None

**Class/Procurement Level: Non-Q/Non-safety

General Plant Application (e.g., Pressure Boundary, Structural) non-Safety Systems General Use/Non-Pressure Boundary

Vendor: Non-Safety Supplier per attached list

QA Requirements Imposed on Vendor: None

Licensee Representative: M. C. Beier
Engineering Assurance Supervisor, Procurement

Signature _____ Date 2/5/88

*The sample ID# shall have a prefix that contains the licensee facility initials

**If applicable, please provide an explanation for your classification system

Docket No. 50-346
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Fastener Testing Data Sheet

*Sample ID# DB-15-1789

Fastener Description: 7/16"NC x 1 1/2"Hex Bolt

Description of Sample Stock Location: F-020-E

Material Specification as Documented by Licensee Records: Not specified

Head Marking (Specification and Manufacturer): D

**Class/Procurement Level: Non-Q/Non-safety

General Plant Application (e.g., Pressure Boundary, Structural)
Plant Non-Safety Systems, General Use/Non-pressure Boundary

Vendor: Non-Safety Supplier per attached list

QA Requirements Imposed on Vendor: None

Licensee Representative: M. C. Beier
Engineering Assurance Supervisor, Procurement

Signature _____ Date 2/5/88

*The sample ID# shall have a prefix that contains the licensee facility initials

**If applicable, please provide an explanation for your classification system

Docket No. 50-346
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Fastener Testing Data Sheet

*Sample ID# DB-15-1242, Sample Quantity - 2 each

Fastener Description: Machine Bolt, 3/4"x 1 1/2" w/Nut

Description of Sample Stock Location: F-018-C

Material Specification as Documented by Licensee Records: Not specified

Head Marking (Specification and Manufacturer): K on Bolt - No markings on nuts

**Class/Procurement Level: Non-Q/Non-safety

General Plant Application (e.g., Pressure Boundary, Structural)
Plant Non-Safety Systems, General Use/Non-pressure Boundary

Vendor: Non-Safety Supplier per attached list

QA Requirements Imposed on Vendor: None

Licensee Representative: M. C. Beier
Engineering Assurance Supervisor, Procurement

Signature _____ Date 2/5/88

*The sample ID# shall have a prefix that contains the licensee facility initials

**If applicable, please provide an explanation for your classification system

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Fastener Testing Data Sheet

*Sample ID# DB-15-1221, Sample Quantity - 2 each

Fastener Description: Machine Bolt, 5/8" x 4" w/Nut

Description of Sample Stock Location: F-018-D

Material Specification as Documented by Licensee Records: Not specified

Head Marking (Specification and Manufacturer): KS

**Class/Procurement Level: Non-Q/Non-safety

General Plant Application (e.g., Pressure Boundary, Structural) Plant Non-safety Systems General Use, Non-pressure Boundary

Vendor: Non-Safety Supplier per attached list

QA Requirements Imposed on Vendor: None

Licensee Representative: M. C. Beier
Engineering Assurance Supervisor, Procurement

Signature _____ Date 2/5/88

*The sample ID# shall have a prefix that contains the licensee facility initials

**If applicable, please provide an explanation for your classification system

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Fastener Testing Data Sheet

*Sample ID# DB-15-1225, Sample Quantity - 2 each

Fastener Description: Machine Bolt, 5/8" x 5" w/Nut

Description of Sample Stock Location: F-018-D

Material Specification as Documented by Licensee Records: Not specified

Head Marking (Specification and Manufacturer): KS

**Class/Procurement Level: Non-Q/Non-safety

General Plant Application (e.g., Pressure Boundary, Structural)
Plant Non-Safety Systems, General Use/Non-pressure Boundary

Vendor: Non-Safety Supplier per attached list

QA Requirements Imposed on Vendor: None

Licensee Representative: M. C. Beier
Engineering Assurance Supervisor, Procurement

Signature _____ Date 2/5/88

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Fastener Testing Data Sheet

*Sample ID# DB-15-1604, Sample Quantity - 2 each

Fastener Description: Bolt, 1 1/4" x 7"

Description of Sample Stock Location: F 020 F

Material Specification as Documented by Licensee Records: ASTM A490

Head Marking (Specification and Manufacturer): A 490, C

**Class/Procurement Level: Non-Q/Non-safety

General Plant Application (e.g., Pressure Boundary, Structural) Plant Non-safety Systems/General Use, Non-pressure Boundar

Vendor: Non-Safety Supplier per attached list

QA Requirements Imposed on Vendor: None

Licensee Representative: M. C. Beier
Engineering Assurance Supervisor, Procurement

Signature _____ Date 2/5/88

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Attachment 1

Fastener Testing Data Sheet

*Sample ID# DB-15-1793, Sample Quantity - 2 each

Fastener Description: Hex Bolt, 9/16"NC x 1 1/4"

Description of Sample Stock Location F-020-D

Material Specification as Documented by Licensee Records: Not specified

Head Marking (Specification and Manufacturer) Rockford

**Class/Procurement Level: Non-Q/Non-safety

General Plant Application (e.g., Pressure Boundary, Structural)
Plant non-Safety Systems/General Use, Non-pressure Boundary

Vendor: Non-Safety Supplier per attached list

QA Requirements Imposed on Vendor: None

Licensee Representative: M. C. Beier
Engineering Assurance Supervisor, Procurement

Signature _____ Date 2/5/88

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**if applicable, please provide an explanation for your classification system

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Fastener Testing Data Sheet

*Sample ID# DB-15-4170, Sample Quantity - 2 each

Fastener Description: Nut, Hex 1 1/4"

Description of Sample Stock Location: F-022-F

Material Specification as Documented by Licensee Records: Not specified

Head Marking (Specification and Manufacturer): 1 ea. 2H, S. J
1 ea. 

**Class/Procurement Level: Non-Q/Non-safety

General Plant Application (e.g., Pressure Boundary, Structural)
Plant Non-Safety Systems/General Use, Non-pressure Boundary

Vendor: Non-Safety Supplier per attached list

QA Requirements Imposed on Vendor: None

Licensee Representative: M. C. Beier
Engineering Assurance Supervisor, Procurement

Signature _____ Date 2/5/88

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Fastener Testing Data Sheet

*Sample ID# DB-15-4206, Sample Quantity - 2 each

Fastener Description: Nut, Hex, 1 1/4"

Description of Sample Stock Location: FK-018

Material Specification as Documented by Licensee Records: ASTM A194 Gr. 2H

Head Marking (Specification and Manufacturer): Manufacture, Grade, Process 2H, J, S

**Class/Procurement Level: Non-Q/Non-safety

General Plant Application (e.g., Pressure Boundary, Structural) Plant Non-safety Systems, General Use, Non-pressure Boundary

Vendor: Non-Safety Supplier per attached list

QA Requirements Imposed on Vendor: None

Licensee Representative: M. C. Beier
Engineering Assurarce Supervisor, Procurement

Signature _____ Date 2/5/88

*The sample ID# shall have a prefix that contains the licensee facility initials

**If applicable, please provide an explanation for your classification system

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Fastener Testing Data Sheet

*Sample ID# DB-15-4017

Fastener Description: 7/16"NC Hex Nut

Description of Sample Stock Location: F-020-B

Material Specification as Documented by Licensee Records: Carbon Steel

Head Marking (Specification and Manufacturer): None

**Class/Procurement Level: Non-Q/Non-safety

General Plant Application (e.g., Pressure Boundary, Structural)
Plant Non-Safety Systems, General Use/Non-pressure Boundary

Vendor: Non-Safety Supplier per attached list

QA Requirements Imposed on Vendor: None

Licensee Representative: M. C. Beier
Engineering Assurance Supervisor, Procurement

Signature _____ Date 2/5/88

*The sample ID# shall have a prefix that contains the licensee facility initials

**If applicable, please provide an explanation for your classification system

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Fastener Testing Data Sheet

*Sample ID# DB-15-4016

Fastener Description: 7/16NF" Hex Nut

Description of Sample Stock Location: F-020-B

Material Specification as Documented by Licensee Records: Carbon Steel

Head Marking (Specification and Manufacturer): None

**Class/Procurement Level: Non-Q/Non-safety

General Plant Application (e.g., Pressure Roundary, Structural)
Plant Non-Safety Systems, General Use/Non-pressure Boundary

Vendor: Non-Safety Supplier per attached list

QA Requirements Imposed on Vendor: None

Licensee Representative: M. C. Beier
Engineering Assurance Supervisor, Procurement

Signature _____ Date 2/5/88

*The sample ID# shall have a prefix that contains the licensee facility initials

**If applicable, please provide an explanation for your classification system

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Fastener Testing Data Sheet

*Sample ID# DB-15-4019

Fastener Description: 9/16" NC Hex Nut

Description of Sample Stock Location: F-020-B

Material Specification as Documented by Licensee Records: Carbon Steel

Head Marking (Specification and Manufacturer): None

**Class/Procurement Level: Non-Q/Non-safety

General Plant Application (e.g., Pressure Boundary, Structural)
Plant Non-Safety Systems, General Use/Non-pressure Boundary

Vendor: Non-Safety Supplier per attached list

QA Requirements Imposed on Vendor: None

Licensee Representative: M. C. Beier
Engineering Assurance Supervisor, Procurement

Signature _____ Date 2/5/88

*The sample ID# shall have a prefix that contains the licensee facility initials

**If applicable, please provide an explanation for your classification system

Docket No. 50-346
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Supplement to Bulletin 87-02
Attachment #1
Suppliers/Manufacturers and Addresses

"Q"/Safety Related

REC Corporation
10 Beach Street
Mount Vernon, NY 10550

All State Fastener
P.O. Box 356
14495 Eight Mile Road
East Detroit, MI 48021

Chicago Tube & Iron
2531 W. 48th Street
Chicago, IL 60632

Kilbourne Engineering
P.O. Box 25344
9226 W. Flagg Avenue
Milwaukee, WI 53225

Hub, Inc.
P.O. Box 125
2146 Flintstone Drive
Tucker, GA 30084

Non-Q/Non-Safety

Walter Gogel Company
1819 13th Street
Toledo, OH 43624

Bostwick Braun Co.
P.O. Box 912
Toledo, OH 43692

Freedom Fasteners Inc.
30311 Clemens Road
Westlake, OH 44145

Attachment 2

Docket No. 50-346
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NON SAFETY-RELATED FASTENER DATA SUMMARY

ID #	Mechanical Analysis			Chemical Analysis[1]						
	HARDNESS	UTS	0.2% YS	C	Mn	P	S	Si	Mo	Cr
DB-15-1790	28Rc	-	-	0.34	0.73	0.023	0.015	0.25	<0.01	0.02
DB-15-1784	29Rc	-	-	0.36	0.71	0.030	0.028	0.23	<0.01	0.02
DB-15-1797	31Rc	-	-	0.32	0.87	0.016	0.015	0.18	<0.01	0.07
DB-15-1219	96Rb	-	-	0.097	0.44	0.020	0.022	0.32	<0.01	0.01
DB-15-1789	30Rc	-	-	0.34	0.78	0.015	0.024	0.24	0.01	0.07
DB-15-1242 (11A)	83Rb	-	-	0.12	0.45	0.027	0.019	<0.01	<0.01	0.04
DB-15-1242 (11B)	84Rb	-	-	0.12	0.44	0.027	0.019	<0.01	<0.01	0.04
DB-15-1221 (12A)	26Rc	-	-	0.32	0.82	0.016	0.017	0.25	0.01	0.10
DB-15-1221 (12B)	28Rc	-	-	0.33	0.82	0.014	0.019	0.25	0.01	0.10
DB-15-1225 (13A)	33Rc	-	-	0.34	0.78	0.021	0.039	0.22	0.02	0.09
DB-15-1225 (13B)	33Rc	-	-	0.33	0.82	0.020	0.024	0.23	0.02	0.10
DB-15-1604 (14A)	33Rc	-	-	0.41	0.80	0.011	0.019	0.24	0.21	0.77
DB-15-1604 (14B)	33Rc	-	-	0.40	0.83	0.011	0.023	0.25	0.22	0.79
DB-15-1793 (15A)	*21Rc	-	-	0.29	0.82	0.011	0.021	0.20	<0.01	0.03
DB-15-1793 (15B)	*21Rc	-	-	0.29	0.79	0.011	0.020	0.19	<0.01	0.03
DB-15-4170 (27)	*23Rc	-	-	0.50	0.83	0.015	0.022	0.25	<0.01	0.04
DB-15-4170 (28)	*53Rb	-	-	0.094	0.47	0.013	0.011	0.08	0.02	0.13
DB-15-4206 (29A)	28Rc	-	-	0.50	0.81	0.014	0.020	0.24	<0.01	0.04
DB-15-4206 (29B)	27Rc	-	-	0.50	0.81	0.016	0.024	0.26	<0.01	0.04
DB-15-1242 (30A)	95Rb	-	-	0.031	0.41	0.025	0.018	0.03	<0.01	0.03
DB-15-1242 (30B)	93Rb	-	-	0.019	0.54	0.017	0.018	0.07	<0.01	0.05
DB-15-1221 (31A)	91Rb	-	-	0.11	0.45	0.021	0.011	0.02	<0.01	<0.01
DB-15-1221 (31B)	94Rb	-	-	0.11	0.45	0.021	0.010	0.02	<0.01	<0.01
DB-15-1225 (32A)	92Rb	-	-	0.062	0.29	0.012	0.005	<0.01	<0.01	<0.01
DB-15-1225 (32B)	91Rb	-	-	0.11	0.45	0.021	0.010	0.02	<0.01	<0.01
DB-15-1219	94Rb	-	-	0.042	0.40	0.017	0.009	0.01	<0.01	0.02
DB-15-4016	93Rb	-	-	0.15	0.83	0.007	0.024	0.22	<0.02	0.10
DB-15-4017	98Rb	-	-	0.071	0.40	0.020	0.018	0.04	0.02	0.04
DB-15-4019	92Rb	-	-	0.11	0.43	0.006	0.009	<0.01	<0.01	0.02

Note: UTS-ultimate tensile strength; YS-yield strength; C-carbon; Mn-Manganese; P-Phosphorous; S-Sulfur Si-Silicon; Mo-Molybdenum; Cr- Chromium.

[1]The elements listed apply to ASTM A193 B7 or SA193 B7 material. The elements to be reported for other materials tested, shall conform to those reported in the applicable material specification.

*Properties found out of specification.

Docket No. 50-346
License No. NPF-3
Serial No. 1-781
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SAFETY-RELATED FASTENER DATA SUMMARY

	Mechanical Analysis			Chemical Analysis[1]							
ID #	HARDNESS	UTS	0.2% YS	C	Mn	P	S	Si	Mo	Cr	Ni
DB-15-1220	32Rc	148500	137100	0.42	0.89	0.009	0.032	0.22	0.21	1.01	-
DB-15-4302	33Rc	151100	115200	0.44	0.90	0.005	0.026	0.22	0.18	0.98	-
DB-15-4533	34Rc	153800	141900	0.43	0.89	0.011	0.025	0.23	0.15	1.00	-
DB-15-4540	28Rc	133100	117000	0.39	0.85	0.010	0.021	0.27	0.13	0.94	-
DB-15-4314	82Rb	87400	41900	0.056	1.58	0.024	0.016	0.41	0.21	18.31	8.8
DB-15-4306	96Rb	86700	42700	0.053	1.64	0.034	0.026	0.46	0.22	18.43	9.3
DB-15-4273	94Rb	86800	83900	0.21	0.73	0.009	0.018	0.19	<0.01	0.02	-
DB-15-4256	95Rb	92500	80800	0.20	0.86	0.007	0.023	0.06	<0.01	0.08	-
DB-1-87-1182-00 (10A)	26Rc	137400	-	0.34	0.74	0.013	0.013	0.25	0.02	0.09	-
DB-1-87-1182-00 (10B)	27Rc	139200	-	0.33	0.77	0.013	0.015	0.26	0.02	0.09	-
DB-15-4197 (17A)	*39Rc	-	-	0.43	0.82	0.018	0.029	0.24	0.02	0.10	-
DB-15-4197 (17B)	*40Rc	-	-	0.43	0.78	0.020	0.035	0.22	0.02	0.10	-
DB-15-4201	92Rb	-	-	0.057	0.39	0.014	0.011	<0.01	<0.01	0.04	-
DB-15-4204	28Rc	-	-	0.48	0.79	0.008	0.023	0.24	<0.01	0.07	-
DB-15-4214	23Rc	-	-	0.10	0.40	0.036	0.004	0.46	0.02	13.06	-
DB-15-4208	26Rc	-	-	0.14	0.71	0.034	0.008	0.33	0.08	11.74	-
DB-15-4195 (22A)	30Rc	-	-	0.42	0.95	0.011	0.029	0.29	0.21	1.00	-
DB-15-4195 (22B)	30Rc	-	-	0.42	0.95	0.011	0.029	0.29	0.21	1.00	-
DB-15-4199 (24A)	26Rc	-	-	0.48	0.70	0.011	0.034	0.26	<0.01	0.04	-
DB-15-4199 (24B)	27Rc	-	-	0.48	0.71	0.012	0.032	0.26	<0.01	0.04	-
DB-15-4209	31Rc	-	-	0.42	0.75	0.011	0.020	0.26	0.01	0.02	-
DB-15-4259	95Rb	99400	-	0.12	0.71	0.028	0.039	0.22	<0.01	0.06	-

Note: UTS-ultimate tensile strength; YS-yield strength; C-carbon; Mn-Manganese; P-Phosphorous; S-Sulfur Si-Silicon; Mo-Molybdenum; Cr- Chromium; Ni-Nickel.

[1]The elements listed apply to ASTM A193 B7 or SA193 B7 material. The elements to be reported for other materials tested, shall conform to those reported in the applicable material specification.

*Properties found out of specification.

NLD-88-05080

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Serial No. 1-781

February 16, 1988

bcc:	D. C. Shelton	3080
	L. F. Storz	2103
	P. C. Hildebrandt	3095
	T. J. Myers	3065
	L. O. Ramsett	3387
	M. L. Stewart	5175
	S. C. Jain	3105
	J. K. Wood	1056
	G. A. Gibbs	3085
	E. M. Salowitz	1045
	R. W. Schrauder	3065
	J. E. Silberg	
	J. M. Mallernee	3065
	STA	2103
	SAR-Up	3065
	CNRB	3030
	D. Amerine (Centerior)	IND-318
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