

YANKEE ATOMIC ELECTRIC COMPANY



1671 Worcester Road, Framingham, Massachusetts 01701

January 11, 1988
FYR 88-06

United States Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555

References: (a) License No. DPR-3 (Docket No. 50-29)
(b) USNRC Compliance Bulletin 87-02, dated November 6, 1987

Subject: Response to NRC Compliance Bulletin 87-02

Dear Sir:

The following information is provided in response to NRC Compliance Bulletin 87-02, "Fastener Testing to Determine Conformance with Applicable Material Specifications," Reference (b).

Action Items 1.a and 1.b, "Fastener Receipt Inspection, Storage and Control Activities"

Common to any material procured for use in safety-related applications, fasteners are subjected to a rigorous On-Site Receipt Inspection Program. These inspections are conducted in accordance with an approved plant procedure which contains a minimum required sampling plan, equivalent to an Acceptable Quality Level II (modified).

During the receipt inspection process the following characteristics are considered:

- Vendor Compliance with Shipping Instructions
- Indication of Shipping Damage
- Acceptability of Container Marking
- Adequacy of Packaging
- Verification of Material Origin
- Proper Identification and Marking
- Physical Properties
- Indication of Fraudulent Practices
- Workmanship Quality
- Documentation Review to Purchase Order, Material Specification, etc. (including CMTRs and C of Cs as required)

8801200058 880111
PDR ADOCK 05000029
Q DCD

IE 11
1/1

Following an acceptable receipt inspection, safety-related fasteners are segregated into bins by size and purchase order number. In addition, each storage bin contains a material identification tag which identifies the contents of each bin. The material identification tag is utilized to maintain traceability and contains the following information:

- Item Description
- Material Purchase Request Number
- Safety Classification of Component
- Heat Number (when applicable)
- Serial or Mark Number (when applicable)
- Supplier or Manufacturer
- Date Received
- Job Order Number (when applicable)
- ANSI Level of Storage
- Shelf Life (if applicable)

Once issuance of the fasteners is required, a Material Issue Slip (MI slip) is generated. This slip maintains traceability of the stock when removed from storage and documents the following information:

- Date
- Job Number
- Job Description
- Material Purchase Request Number
- Description of Material (type, serial number, or heat number, as applicable)
- Quantity, Size, or Amount Removed
- Stock Code Number
- Person Drawing Material from Storage
- Department Material is Issued To

Receipt inspection and traceability of threaded rod are accomplished similarly with the exception of its storage. Since threaded rod is too large to store in bins, each rod (or bundle of rods) is affixed with a material identification tag containing the same information as the smaller fasteners.

When threaded rod is issued from stock and subdivided into several sections, marking from the original length of rod is transferred to each section to ensure traceability. Issuance of the threaded rod is accomplished by the same manner as the smaller fasteners (i.e., material issue slip generation).

Action Items 2 and 3

With participation from the Resident NRC Inspector, plant personnel selected a sample stock of safety-related and non-nuclear safety fasteners and nuts. Since the stock of non-nuclear safety nuts were unmarked and purchased without certifications, as requested by the Resident NRC Inspector, the nuts selected for testing included only safety-related samples.

Action Item 4

As required by Action Item 4, the fasteners and nuts selected for testing were subjected to mechanical and chemical analysis by a qualified laboratory in accordance with the requirements of the fastener or nut material specification grade and class.

Mechanical and chemical testing performed consisted of the following:

- Chemical and Hardness Testing of all (20) Safety-Related Nuts
- Tensile Strength, Yield Strength, Elongation, Hardness, and Chemical Analysis of all (10) Safety-Related Fasteners
- Tensile Strength, Hardness, Yield Strength (where applicable), and Chemical Analysis of all (10) Non-Nuclear Safety Fasteners

In addition as required by Action Item 4, each sample was tagged with an identification number. These numbers are contained in Attachments 1 and 2.

Action Item 5

As required by Action Item 5, the results of all preliminary testing is contained in Attachment 2. The testing of the (40) samples yielded one non-nuclear safety fastener and one safety-related nut which did not meet the material specification tolerances. An evaluation of the safety significance for the out-of-tolerance fasteners has been performed and is contained in Attachment 3.

Additional testing of nuts from the same heat number as the out-of-tolerance nut will be performed. This testing will include proof load testing performed in accordance with ASTM Specification A370, S14. At that time safety significance and limiting application will be determined. The results of the proof load testing as well as the safety significance and application limits will be provided by March 11, 1988.

Until the final evaluation is completed, the material in question will be placed on hold. In addition, to determine the extent of nonconforming fasteners from this vendor, further sampling and testing are being conducted. The results of this testing will be provided by March 11, 1988.

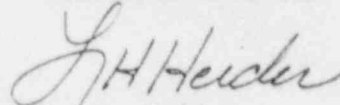
Action Item 6

Procedure revisions for procurement, receipt inspection, and testing are being formulated and evaluated based on the results of the recent testing. The necessary changes will be reported by March 11, 1988.

We trust that you will find this submittal satisfactory. However, if you have any questions, please contact us.

Very truly yours,

YANKEE ATOMIC ELECTRIC COMPANY



L. H. Heider

Vice President and Manager of Operation

LH/15.419

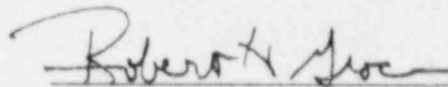
Attachments

COMMONWEALTH OF MASSACHUSETTS)

)ss

MIDDLESEX COUNTY)

Then personally appeared before me, L. H. Heider, who, being duly sworn, did state that he is Vice President and Manager of Operations of Yankee Atomic Electric Company, that he is duly authorized to execute and file the foregoing document in the name and on the behalf of Yankee Atomic Electric Company and that the statements therein are true to the best of his knowledge and belief.



Robert H. Groce

Notary Public

My Commission Expires

August 29, 1991

cc: USNRC Region I
USNRC Resident Inspector - YNPS

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: YR87-02-1SR-F

Fastener Description:

1/2-13 UNC x 2" hex bolt
85-6Q/A11

Description of Sample Stock Location:

Stores Q/A Storage Location: V85

Material Specification as Documented by Licensee Records:

SA193-B7

Head Marking (Specification and Manufacturer):

B7 Cardinal
L7 C U

**Class/Procurement Level:

SC 1
Level C ANSI N45.2.2

General Plant Application (e.g., Pressure Boundary, Structural)

Pressure Boundary

Vendor: Cardinal Industrial Products Corp.
3873 West Oquendo
Las Vegas, NV 89118

QA Requirements Imposed on Vendor

Provide C of C to PD
Apply ASME approved Q/A Program

Licensee Representative:

Signature RE Dugley / A. L. Henderson Date 1/6/88

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

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

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: YR87-02-2SR-F

Fastener Description:

3/4-10 x 4" hex bolt
E5-6Q/A11

Description of Sample Stock Location:

Stores Q/A Storage Location: V87

Material Specification as Documented by Licensee Records:

SA193-B7

Head Marking (Specification and Manufacturer):

B7 C
7-C-12

**Class/Procurement Level:

SC 1
Level C ANSI N45.2.2

General Plant Application (e.g., Pressure Boundary, Structural)

Pressure Boundary

Vendor: Cardinal Industrial Products Corp.
3873 West Oquendo
Las Vegas, NV 89118

QA Requirements Imposed on Vendor:

Provide C of C to PO
Apply ASME approved Q/A Program

Licensee Representative:

Signature RE Dwyer / N. L. Hudson

Date 1/6/88

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

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

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: YR87-02-3SR-F

Fastener Description:

7/8-9 x 1-1/2" hex bolt
85-6Q/A11

Description of Sample Stock Location:

Stores Q/A Storage Location: V88

Material Specification as Documented by Licensee Records:

SA193-B7

Head Marking (Specification and Manufacturer):

B7
C
C
L7

**Class/Procurement Level:

SC 1
Level C ANSI N45.2.2

General Plant Application (e.g., Pressure Boundary, Structural)

Pressure Boundary

Vendor: Cardinal Industrial Products Corp.
3873 West Oquendo
Las Vegas, NV 89118

QA Requirements Imposed on Vendor:

Provide C of C to PD
Apply ASME approved Q/A Program

Licensee Representative:

Signature RE Dwyer / J. S. Hutton Date 1/6/88

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

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

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: YR87-02-4SR-F

Fastener Description:

1/4-20 x 1-1/2" hex bolt
B0-9Q/A44

Description of Sample Stock Location:

Stores Q/A Storage Location: V82

Material Specification as Documented by Licensee Records:

SA193-68 GR B7

Head Marking (Specification and Manufacturer):

B7
C
A1

**Class/Procurement Level:

Safety Class
Level B ANSI N45.2.2

General Plant Application (e.g., Pressure Boundary, Structural)

Pressure Boundary

Vendor: Commercial Fasteners Corp.
18-35 38th Street
Long Island City, NY 11105

QA Requirements Imposed on Vendor:

Provide C of C to Material Spec.

Licensee Representative:

Signature RE Dwyer / J. K. Hewson Date 1/6/98

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

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

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: YR87-02-SSR-F

Fastener Description:

3/8-16 x 1-1/4" hex bolt
85-5Q/A5

Description of Sample Stock Location:

Stores Q/A Storage Location: V84

Material Specification as Documented by Licensee Records:

A193 B7

Head Marking (Specification and Manufacturer):

I
B S
B7

**Class/Procurement Level:

SC 1
Level D ANSI N45.2.2

General Plant Application (e.g., Pressure Boundary, Structural)

Pressure Boundary

Vendor: Alloy Pipe & Fittings Corp.,
171 Murphy Road
Hartford, CT

QA Requirements Imposed on Vendor:

Provide C of C to PO

Licensee Representative:

Signature R. D. Dwyer / J. L. Lelander Date 1/4/88

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

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

Fastener Testing Data Sheet

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

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: YR87-02-7SR-F

Fastener Description:

5/8-11 x 1-3/4" hex bolt
B1-3Q/A50

Description of Sample Stock Location:

Stores Q/A Storage Location: Level B

Material Specification as Documented by Licensee Records:

A193 B7

Head Marking (Specification and Manufacturer):

B7
T B

**Class/Procurement Level:

Safety Class
Level C ANSI N45.2.2

General Plant Application (e.g., Pressure Boundary, Structural)

Pressure Boundary

Vendor: New England Bolt Co.
9 Charlton Street
Everett, MA 02149

QA Requirements Imposed on Vendor:

Provide C of C to Material Spec.

Licensee Representative:

Signature R. E. Dwyer / J. W. Lathen Date 1/6/88

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

**1. applicable, please provide an explanation for your classification system.

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: YR87-02-8SR-F

Fastener Description:

1/4-20 x 1" hex bolt
85-8Q/A9

Description of Sample Stock Location:

Stores Q/A Storage Location: V82

Material Specification as Documented by Licensee Records:

SA193-B7

Head Marking (Specification and Manufacturer):

B7
C
A1

**Class/Procurement Level:

Safety Class
Level C ANSI N45.2.2

General Plant Application (e.g., Pressure Boundary, Structural)

Pressure Boundary

Vendor: Cardinal Industrial Products Corp.
3873 West Oquendo
Las Vegas, NV 89118

QA Requirements Imposed on Vendor:

Provide C of C to PO

Licensee Representative:

Signature RO Dwyer / J. L. Hester Date 1/6/88

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

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

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: YR87-02-9SR-F

Fastener Description:

7/8-9 threaded rod
78-11Q/A29

Description of Sample Stock Location:

Stores Q/A Storage Location: Storeroom

Material Specification as Documented by Licensee Records:

A193 B7

Head Marking (Specification and Manufacturer):

A

**Class/Procurement Level:

SC 1
Level D ANSI N45.2.2

General Plant Application (e.g., Pressure Boundary, Structural)

Pressure Boundary

Vendor: New England Bolt Co.
9 Charlton Street
Everett, MA 02149

QA Requirements Imposed on Vendor:

Chemical & Physical Test Report
C of C to Material Spec.

Licensee Representative:

Signature RE Dunphy / J. L. L. L. Date 1/6/88

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

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

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: YR87-02-10SR-F

Fastener Description:

1/2-13 threaded rod
B1-7Q/A8

Description of Sample Stock Location:

Stores Q/A Storage Location: Warehouse

Material Specification as Documented by Licensee Records:

A193-77A GR B7

Head Marking (Specification and Manufacturer):

None

**Class/Procurement Level:

Safety Class
Level D ANSI N45.2.2

General Plant Application (e.g., Pressure Boundary, Structural)

Pressure Boundary

Vendor: NPS Industries
300 Harmon Meadow Blvd.
Seacaucus, NJ 07094

QA Requirements Imposed on Vendor:

Chemical & Physical Test Report

Licensee Representative:

Signature RE Durfy / An Seethu Date 1/6/00

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

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

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: YR87-02-1SR-N

Fastener Description:

1/2-13 hex nut
85-6Q/A11

Description of Sample Stock Location:

Stores Q/A Storage Location: V85

Material Specification as Documented by Licensee Records:

SA194 2H

Head Marking (Specification and Manufacturer):

2H

**Class/Procurement Level:

SC 1
Level D ANSI N45.2.2

General Plant Application (e.g., Pressure Boundary, Structural)

Pressure Boundary

Vendor: Cardinal Industrial Products Corp.
3873 West Oquendo
Las Vegas, NV 89118

QA Requirements Imposed on Vendor:

Provide C of C to PO
Apply ASME approved Q/A Program

Licensee Representative:

Signature RE Dwyer / Au Lettner Date 1/6/99

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

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

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: YR87-02-2SR-N

Fastener Description:

3/4-10 hex nut
82-9Q/A20

Description of Sample Stock Location:

Stores Q/A Storage Location: V28

Material Specification as Documented by Licensee Records:

SA194 2H

Head Marking (Specification and Manufacturer):

2H

**Class/Procurement Level:

SC 1
Level D ANSI N45.2.2

General Plant Application (e.g., Pressure Boundary, Structural)

Pressure Boundary

Vendor: Cardinal Industrial Products Co.
3873 West Oquendo
Las Vegas, NV 89118

QA Requirements Imposed on Vendor:

Provide C of C to PD
Apply ASME approved Q/A Program

Licensee Representative:

Signature RS Durfy / A. Lethers Date 1/6/88

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

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

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: YR87-02-3SR-N

Fastener Description:

7/8-9 hex nut
B1-7Q/A8

Description of Sample Stock Location:

Stores Q/A Storage

Material Specification as Documented by Licensee Records:

A194-7B GR 2H

Head Marking (Specification and Manufacturer):

2H

**Class/Procurement Level:

SC 1
Level D ANSI N45.2.2

General Plant Application (e.g., Pressure Boundary, Structural)

Pressure Boundary

Vendor: NPS Industries, Inc.
300 Harmon Meadow Blvd
Secaucus, NJ 07094

QA Requirements Imposed on Vendor:

Provide C of C to Material Spec.

Licensee Representative:

Signature RE Dwyer / J. Lethew Date 1/6/88

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

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

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: YR87-02-4SR-N

Fastener Description:

1/4-20 hex nut
82-10Q/A7

Description of Sample Stock Location:

Stores Q/A Storage Location: V82

Material Specification as Documented by Licensee Records:

SA194-80 GR 2H

Head Marking (Specification and Manufacturer):

2H

**Class/Procurement Level:

SC
Level B ANSI N45.2.2

General Plant Application (e.g., Pressure Boundary, Structural)

Pressure Boundary

Vendor: Commercial Fasteners
18-35 38th Street
Long Island City, NY 11105

QA Requirements Imposed on Vendor:

Provide C of C to Material Spec.

Licensee Representative:

Signature FE Duffy / A. Lelander Date 1/6/88

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

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

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: YR87-02-SSR-N

Fastener Description:

3/8-16 hex nut
80-9Q/A51

Description of Sample Stock Location:

Stores Q/A Storage Location: V84

Material Specification as Documented by Licensee Records:

A194 GR 2H

Head Marking (Specification and Manufacturer):

2H

**Class/Procurement Level:

SC 1
Level D ANSI N45.2.2

General Plant Application (e.g., Pressure Boundary, Structural)

Pressure Boundary

Vendor: New England Bolt Co.
9 Charlton Street
Everett, MA 02149

QA Requirements Imposed on Vendor:

Chemical & Physical Test Report
C of C to Material Spec.

Licensee Representative:

Signature RE Dwyer / A. C. Hersh Date 1/6/88

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

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

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: YR87-02-6SR-N

Fastener Description:

5/8-11 hex nut
81-7Q/A8

Description of Sample Stock Location:

Stores Q/A Storage Location: V29

Material Specification as Documented by Licensee Records:

A194 GR 2H

Head Marking (Specification and Manufacturer):

2H

**Class/Procurement Level:

SC 1
Level D ANSI N45.2.2

General Plant Application (e.g., Pressure Boundary, Structural)

Pressure Boundary

Vendor: NPS Industries
300 Harmon Meadow Blvd.
Seacaucus, NJ 07094

QA Requirements Imposed on Vendor:

Provide C of C to Material Spec.

Licensee Representative:

Signature Robert Murphy / J. L. Lohr Date 1/6/88

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

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

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: YR87-02-7SR-N

Fastener Description:

5/8-11 hex nut
81-3Q/A50

Description of Sample Stock Location:

Stores Q/A Storage Location: Level B

Material Specification as Documented by Licensee Records:

A.94 GR 2H

Head Marking (Specification and Manufacturer):

2H

**Class/Procurement Level:

Safety Related
Level C ANSI N45.2.2

General Plant Application (e.g., Pressure Boundary, Structural)

Pressure Boundary

Vendor: New England Bolt Co.
9 Charlton Street
Everett, MA 02149

QA Requirements Imposed on Vendor:

Provide C of C to Material Spec.

Licensee Representative:

Signature RE Duffy / Au Lohman Date 1/6/88

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

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

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: YRB7-02-BSR-N

Fastener Description:

1/4-20 hex nut
82-10Q/A7

Description of Sample Stock Location:

Stores Q/A Storage Location: V82

Material Specification as Documented by Licensee Records:

SA194-80 GR 2H

Head Marking (Specification and Manufacturer):

2H

**Class/Procurement Level:

Safety Class
Level B ANSI N45.2.2

General Plant Application (e.g., Pressure Boundary, Structural)

Pressure Boundary

Vendor: Commercial Fasteners
18-35 38th Street
Long Island City, NY 11105

QA Requirements Imposed on Vendor:

Provide C of C to Material Spec.

Licensee Representative:

Signature RE Durfee / A. L. Lethen Date 1/6/88

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

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

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: YR87-02-9SR-N

Fastener Description:

7/8-9 hex nut
81-7Q/A8

Description of Sample Stock Location:

Stores Q/A Storage Location: V29

Material Specification as Documented by Licensee Records:

A194-78 GR 2H

Head Marking (Specification and Manufacturer):

2H

**Class/Procurement Level:

SC 1
Level D ANSI N45.2.2

General Plant Application (e.g., Pressure Boundary, Structural)

Pressure Boundary

Vendor: NPS Industries
300 Harmon Meadow Blvd.
Seacaucus, NJ 07094

QA Requirements Imposed on Vendor:

Provide C of C to Material Spec.

Licensee Representative:

Signature Bob Dwyer / An Lethbridge Date 1/6/88

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

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

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: YR87-02-10SR-N

Fastener Description:

1/2-13 hex nut

Description of Sample Stock Location:

Stores Q/A Storage Location: V85

Material Specification as Documented by Licensee Records:

SA194 2H

Head Marking (Specification and Manufacturer):

2H

**Class/Procurement Level:

SC 1

Level D ANSI N45.2.2

General Plant Application (e.g., Pressure Boundary, Structural)

Pressure Boundary

Vendor: Cardinal Industrial Products Corp.
3873 West Oquendo
Las Vegas, NV 89118

QA Requirements Imposed on Vendor:

Provide C of C to PD
Apply ASME approved Q/A Program

Licensee Representative:

Signature RE Duffy / J. L. Letherer Date 11/6/98

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

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

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: YR87-02-1NNS-F

Fastener Description:

1/2-13 x 1-1/2 hex bolt

Description of Sample Stock Location:

Stores NNS

Material Specification as Documented by Licensee Records:

None

Head Marking (Specification and Manufacturer):

I
B S
A325

**Class/Procurement Level:

None

General Plant Application (e.g., Pressure Boundary, Structural)

General Use

Vendor: Misc. Industrial Suppliers

QA Requirements Imposed on Vendor:

None

Licensee Representative:

Signature RE Durfee / Na Lettenbach Date 1/6/98

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

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

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: YR87-02-2NNS-F

Fastener Description:

1/2-13 x 1-1/2 hex bolt

Description of Sample Stock Location:

Stores NNS

Material Specification as Documented by Licensee Records:

None

Head Marking (Specification and Manufacturer):

;
/NB\

**Class/Procurement Level:

None

General Plant Application (e.g., Pressure Boundary, Structural)

General Use

Vendor: Misc. Industrial Suppliers

QA Requirements Imposed on Vendor:

None

Licensee Representative:

Signature

RE Dwyer / A. Tetterton

Date

1/6/88

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

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

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: YRB7-02-3NNS-F

Fastener Description:

3/4-10 x 2-1/2 hex bolt

Description of Sample Stock Location:

Stores NNS

Material Specification as Documented by Licensee Records:

None

Head Marking (Specification and Manufacturer):

A325

S

**Class/Procurement Level:

None

General Plant Application (e.g., Pressure Boundary, Structural)

General Use

Vendor: Misc. Industrial Suppliers

QA Requirements Imposed on Vendor:

None

Licensee Representative:

Signature RE Dwyer / A. L. Hender Date 1/6/88

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

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

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: YR87-02-4NNS-F

Fastener Description:

1/2-13 x 2-1/2 hex bolt

Description of Sample Stock Location:

Stores NNS

Material Specification as Documented by Licensee Records:

None

Head Marking (Specification and Manufacturer):

;
KS
/ \

**Class/Procurement Level:

None

General Plant Application (e.g., Pressure Boundary, Structural)

General Use

Vendor: Misc. Industrial Suppliers

QA Requirements Imposed on Vendor:

None

Licensee Representative:

Signature R. E. Durfee / J. L. Hansen Date 1/6/88

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

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

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: YR87-02-5NNS-F

Fastener Description:

7/16-14 x 3-1/2 hex bolt

Description of Sample Stock Location:

Stores NNS

Material Specification as Documented by Licensee Records:

None

Head Marking (Specification and Manufacturer):

S I S
5
/ C \

**Class/Procurement Level:

None

General Plant Application (e.g., Pressure Boundary, Structural)

General Use

Vendor: Misc. Industrial Suppliers

QA Requirements Imposed on Vendor:

None

Licensee Representative:

Signature RE Durley / N. Lethers Date 1/6/88

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

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

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: YR87-02-6NNS-F

Fastener Description:

5/16-18 x 5 hex bolt

Description of Sample Stock Location:

Stores NNS

Material Specification as Documented by Licensee Records:

None

Head Marking (Specification and Manufacturer):

1
/Δ\

**Class/Procurement Level:

None

General Plant Application (e.g., Pressure Boundary, Structural)

General Use

Vendor: Misc. Industrial Suppliers

QA Requirements Imposed on Vendor:

None

Licensee Representative:

Signature RE Dwyer / M. L. Henderson Date 1/6/88

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

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

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: YR87-02-7NNS-F

Fastener Description:

1"-8 x 5-3/4 hex bolt

Description of Sample Stock Location:

Stores NNS

Material Specification as Documented by Licensee Records:

None

Head Marking (Specification and Manufacturer):

J B7

**Class/Procurement Level:

None

General Plant Application (e.g., Pressure Boundary, Structural)

General Use

Vendor: Misc. Industrial Suppliers

QA Requirements Imposed on Vendor:

None

Licensee Representative:

Signature ROD Duffey / An Seikhester Date 1/6/88

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

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

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: YR87-02-8NNS-F

Fastener Description:

1/2-13 x 5 hex bolt

Description of Sample Stock Location:

Stores NNS

Material Specification as Documented by Licensee Records:

None

Head Marking (Specification and Manufacturer):

1
S
/ \

**Class/Procurement Level:

None

General Plant Application (e.g., Pressure Boundary, Structural)

General Use

Vendor: Misc. Industrial Suppliers

QA Requirements Imposed on Vendor:

None

Licensee Representative:

Signature RE Dwyer / Nu-Lethers Date 1/6/08

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

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

Fastener Testing Data Sheet

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

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: YR87-02-10NNS-F

Fastener Description:

5/8-11 x 4 hex bolt

Description of Sample Stock Location:

Stores NNS

Material Specification as Documented by Licensee Records:

None

Head Marking (Specification and Manufacturer):

I
KS
/ \

**Class/Procurement Level:

None

General Plant Application (e.g., Pressure Boundary, Structural)

General Use

Vendor: Misc. Industrial Suppliers

QA Requirements Imposed on Vendor:

None

Licensee Representative:

Signature RED Dwyer / A. Lethen Date 1/6/98

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

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

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: YR87-02-11SR-N

Fastener Description:

1/2-13 x 1-1/2 hex nut
85-6Q/A11

Description of Sample Stock Location:

Stores Q/A Storage Location: V85

Material Specification as Documented by Licensee Records:

SA194 2H

Head Marking (Specification and Manufacturer):

2H

**Class/Procurement Level:

SC 1
Level D ANSI N45.2.2

General Plant Application (e.g., Pressure Boundary, Structural)

Pressure Boundary

Vendor: Cardinal Industrial Products Corp.
3873 West Oquendo
Las Vegas, NV 89118

QA Requirements Imposed on Vendor:

Provide C of C to PQ
Apply ASME Approved Q/A Program

Licensee Representative:

Signature R. E. Dwyer / J. L. Lohmeyer Date 1/6/88

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

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

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: YR87-02-12SR-N

Fastener Description:

1/2-13 hex nut
85-6Q/A11

Description of Sample Stock Location:

Stores Q/A Storage Location: V85

Material Specification as Documented by Licensee Records:

SA194 2H

Head Marking (Specification and Manufacturer):

2H

**Class/Procurement Level:

SC 1
Level D ANSI N45.2.2

General Plant Application (e.g., Pressure Boundary, Structural)

Pressure Boundary

Vendor: Cardinal Industrial Products Corp.
3873 West Oquendo
Las Vegas, NV 89118

QA Requirements Imposed on Vendor:

Provide C of C to PO
Apply ASME Approved Q/A Program

Licensee Representative:

Signature RE Dwyer / J. Salas Date 1/6/88

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

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

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: YR87-02-13SR-N

Fastener Description:

3/4-10 hex nut
B2-9Q/A20

Description of Sample Stock Location:

Stores Q/A Storage Location: V28

Material Specification as Documented by Licensee Records:

A194 GR 2H

Head Marking (Specification and Manufacturer):

2H

**Class/Procurement Level:

Safety Class
Level C ANSI N45.2.2

General Plant Application (e.g., Pressure Boundary, Structural)

Pressure Boundary

Vendor: New England Bolt Co.
9 Charlton Street
Everett, MA 02149

QA Requirements Imposed on Vendor:

Provide C of C to Material Spec.

Licensee Representative:

Signature RE Dwyer / Au Seltowski Date 1/6/88

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

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

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: YR87-02-14SR-N

Fastener Description:

1/2-13 hex nut
85-6Q/A11

Description of Sample Stock Location:

Stores Q/A Storage Location: V85

Material Specification as Documented by Licensee Records:

SA194 2H

Head Marking (Specification and Manufacturer):

2H

**Class/Procurement Level:

SC 1
Level D ANSI N45.2.2

General Plant Application (e.g., Pressure Boundary, Structural)

Pressure Boundary

Vendor: Cardinal Industrial Products Corp.
3873 West Oquendo
Las Vegas, NV 89118

QA Requirements Imposed on Vendor:

Provide C of C to PO
Apply ASME Approved Q/A Program

Licensee Representative:

Signature RE Duffy / Au Telleman Date 1/6/88

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

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

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: YR87-02-15SR-N

Fastener Description:

7/16-14 hex nut
B2-10Q/A16

Description of Sample Stock Location:

Stores Q/A Storage Location: V28

Material Specification as Documented by Licensee Records:

A194 GR 2H

Head Marking (Specification and Manufacturer):

2H

**Class/Procurement Level:

Safety Class
Level D ANSI N45.2.2

General Plant Application (e.g., Pressure Boundary, Structural)

Pressure Boundary

Vendor: New England Bolt Co.
9 Charlton Street
Everett, MA 02149

QA Requirements Imposed on Vendor:

Provide C of C to PG

Licensee Representative:

Signature RE Dwyer / A. Lethbridge Date 1/6/88

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

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

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: YR87-02-16SR-N

Fastener Description:

5/16-18 hex nut
82-10Q/A7

Description of Sample Stock Location:

Stores Q/A Storage Location: V83

Material Specification as Documented by Licensee Records:

SA194-80 GR 2H

Head Marking (Specification and Manufacturer):

2H

**Class/Procurement Level:

Safety Class
Level B ANSI N45.2.2

General Plant Application (e.g., Pressure Boundary, Structural)

Pressure Boundary

Vendor: Commercial Fasteners
18-35 38th Street
Long Island City, NY 11105

QA Requirements Imposed on Vendor:

Provide C of C to Material Spec.

Licensee Representative:

Signature RE Dwyer / Au Gellman Date 1/6/88

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

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

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: YR87-02-17SR-N

Fastener Description:

1"-8 hex nut
85-6Q/A11

Description of Sample Stock Location:

Stores Q/A Storage Location: V89

Material Specification as Documented by Licensee Records:

SA194 2H

Head Marking (Specification and Manufacturer):

2H

**Class/Procurement Level:

SC 1
Level D ANSI N45.2.2

General Plant Application (e.g., Pressure Boundary, Structural)

Pressure Boundary

Vendor: Cardinal Industrial Products Corp.
3873 West Oquendo
Las Vegas, NV 89118

QA Requirements Imposed on Vendor:

Provide C of C to PD
Apply ASME Approved Q/A Program

Licensee Representative:

Signature RC Duffey / Ann Letkurda Date 1/6/88

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

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

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: YR87-02-1BSR-N

Fastener Description:

1/2-13 hex nut
85-6Q/A11

Description of Sample Stock Location:

Stores Q/A Storage Location: V85

Material Specification as Documented by Licensee Records:

SA194 2H

Head Marking (Specification and Manufacturer):

2H

**Class/Procurement Level:

SC 1
Level D ANSI N45.2.2

General Plant Application (e.g., Pressure Boundary, Structural)

Pressure Boundary

Vendor: Cardinal Industrial Products Corp.
3873 West Oquendo
Las Vegas, NV 89118

QA Requirements Imposed on Vendor:

Provide C of C to PD
Apply ASME Approved Q/A Program

Licensee Representative:

Signature

R. E. Dwyer / A. L. Lethers

Date

1/6/89

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

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

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: YR87-02-19SR-N

Fastener Description:

5/8-11 hex nut
81-3Q/A50

Description of Sample Stock Location:

Stores Q/A Storage Location: Level B

Material Specification as Documented by Licensee Records:

A194 GR 2H

Head Marking (Specification and Manufacturer):

2H

**Class/Procurement Level:

Safety Related
Level C ANSI N45.2.2

General Plant Application (e.g., Pressure Boundary, Structural)

Pressure Boundary

Vendor: New England Bolt Co.
9 Charlton Street
Everett, MA 02149

QA Requirements Imposed on Vendor:

Provide C of C to Material Spec.

Licensee Representative:

Signature RE Dwyer / Qu Lellwede Date 10/98

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

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

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: YR87-02-20SR-N

Fastener Description:

5/8-11 hex nut
81-3Q/A50

Description of Sample Stock Location:

Stores Q/A Storage Location: Level B

Material Specification as Documented by Licensee Records:

A194 GR 2H

Head Marking (Specification and Manufacturer):

2H

**Class/Procurement Level:

Safety Related
Level C ANSI N45.2.2

General Plant Application (e.g., Pressure Boundary, Structural)

Pressure Boundary

Vendor: New England Bolt Co.
9 Charlton Street
Everett, MA 02149

QA Requirements Imposed on Vendor:

Provide C of C to Material Spec.

Licensee Representative:

Signature

R. E. Dwyer / A. L. Lefkowitz

Date

1/6/98

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

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

Attachment 2

Data Summary

SAFETY RELATED FASTENERS

<u>ID #</u>	<u>Mechanical Analysis</u>		<u>Chemical Analysis¹</u>							
	<u>Hardness</u>	<u>UTS</u>	<u>0.2% YS</u>	<u>C</u>	<u>Mn</u>	<u>P</u>	<u>S</u>	<u>Si</u>	<u>Mo</u>	<u>Cr</u>
YR-87-02-1SR-F	HRC-27.0	130.5 KSI	115.8 KSI	.40	.82	.030	.021	.21	.17	1.00
YR-87-02-2SR-F	HRC-33.0	157.3 KSI	150.3 KSI	.43	.88	.021	.010	.25	.15	1.07
YR-87-02-3SR-F	HRC-33.5	150.0 KSI	136.9 KSI	.40	.81	.023	.012	.23	.16	0.95
YR-87-02-4SR-F	HRC-31.5	143.8 KSI	138.0 KSI	.39	.78	.025	.019	.27	.17	1.03
YR-87-02-5SR-F	HRC-35.0	154.2 KSI	145.7 KSI	.38	.79	.010	.017	.18	.19	0.91
YR-87-02-6SR-F	HRC-31.5	152.1 KSI	138.0 KSI	.40	.83	.014	.016	.25	.18	1.03
YR-87-02-7SR-F	HRC-28.5	133.5 KSI	121.7 KSI	.36	.84	.017	.013	.24	.20	0.98
YR-87-02-8SR-F	HRC-31.0	144.6 KSI	133.5 KSI	.40	.85	.011	.013	.23	.21	0.95
YR-87-02-9SR-F	HRC-33.0	152.6 KSI	135.8 KSI	.45	.89	.023	.028	.28	.18	1.10
YR-87-02-10SR-F	HRC-31.0	143.1 KSI	126.2 KSI	.39	.95	.010	.023	.24	.21	1.04

Note: UTS-ultimate tensile strength; YS-yield strength; C-carbon; Mn-Manganese; P-Phosphorus; 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 shall be noted with an asterisk.

Attachment 2

Data Summary

NON SAFETY RELATED FASTENERS

ID #	<u>Mechanical Analysis</u>		<u>Chemical Analysis¹</u>							
	<u>Hardness</u>	<u>UTS</u>	<u>0.2% YS</u>	<u>C</u>	<u>Mn</u>	<u>P</u>	<u>S</u>	<u>Si</u>	<u>Mo</u>	<u>Cr</u>
YR-87-02-1NNS-F	HRC-29.0	139.5 KSI		.42	.80	.004	.013	.20	.02	.03
YR-87-02-2NNS-F	HRC-33.0	156.5 KSI	147.8 KSI	.34	1.36	.019	.012	.20	.01	.14
YR-87-02-3NNS-F	HRC-29.0	141.0 KSI		.36	.79	.019	.017	.29	.01	.12
YR-87-02-4NNS-F	HRC-31.5	150.3 KSI	144.0 KSI	.35	.74	.011	.013	.20	.02	.07
YR-87-02-5NNS-F	HRC-32.5	155.6 KSI	153.4 KSI	.40	.98	<.002	.024	.16	.04	.21
YR-87-02-6NNS-F	HRC-31.5	151.3 KSI	142.6 KSI	.35	.76	.011	.046	.19	.02	.11
YR-87-02-7NNS-F	HRC-29.5	143.5 KSI	126.5 KSI	.39	.81	.014	.015	.19	.18	.99
YR-87-02-8NNS-F	HRC-26.0	133.3 KSI	123.1 KSI	.29	.77	.017	.016	.20	.02	.16
YR-87-02-9NNS-F	*HRC-24.0	121.1 KSI	92.3 KSI	.34	.79	.014	.012	.05	.01	.35
YR-87-02-10NNS-F	HRC-26.0	143.1 KSI	124.7 KSI	.33	.83	.021	.015	.21	.02	.06

Note: UTS-ultimate tensile strength; YS-yield strength; C-carbon; Mn-Manganese; P-Phosphorus; 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 shall be noted with an asterisk.

Attachment 2

Data Summary

SAFETY RELATED NUTS

ID #	<u>Mechanical Analysis</u>		<u>Chemical Analysis¹</u>							
	<u>Hardness</u>	<u>UTS</u>	<u>0.2% YS</u>	<u>C</u>	<u>Mn</u>	<u>P</u>	<u>S</u>	<u>Si</u>	<u>Mo</u>	<u>Cr</u>
YR-87-02-1SR-N	HRC-29.0			.46	.74	.023	.021	.17	.01	.13
YR-87-02-2SR-N	HRC-26.0			.48	.82	.019	.018	.28	.01	.08
YR-87-02-3SR-N	HRC-32.0			.49	.72	.011	.017	.18	.01	.01
YR-87-02-4SR-N	HRC-26.0			.37	.73	.005	.029	.20	.01	.08
YR-87-02-5SR-N	HRC-20.0			.46	.74	.022	.015	.24	.01	.07
YR-87-02-6SR-N	HRC-28.0			.39	.80	.014	.015	.22	.01	.03
YR-87-02-7SR-N	HRC-29.0			.43	.70	.014	.012	.22	.01	.01
YR-87-02-8SR-N	HRC-30.0			.37	.76	.012	.029	.20	.01	.08
YR-87-02-9SR-N	HRC-36.0			.52	.71	.009	.017	.18	.01	.01
YR-87-02-10SR-N	HRC-29.5			.46	.73	.023	.020	.18	.01	.13
YR-87-02-11SR-N	HRC-29.5			.47	.74	.028	.021	.18	.01	.13
YR-87-02-12SR-N	HRC-29.5			.46	.74	.029	.020	.16	.01	.14
YR-37-02-13SR-N	HRC-26.0			.47	.82	.029	.017	.29	.01	
YR-87-02-14SR-N	HRC-29.0			.47	.73	.027	.021	.18	.01	.13

Attachment 2

Data Summary

SAFETY RELATED NUTS

<u>ID #</u>	<u>Mechanical Analysis</u>		<u>Chemical Analysis¹</u>							
	<u>Hardness</u>	<u>UTS</u>	<u>0.2% YS</u>	<u>C</u>	<u>Mn</u>	<u>P</u>	<u>S</u>	<u>Si</u>	<u>Mo</u>	<u>Cr</u>
YR-87-02-15SR-N	HRC-35.5			.47	.75	<.002	.033	.08	.01	.03
YR-87-02-16SR-N	HRC-25.5			*.31	.69	.006	.028	.18	.02	.06
YR-87-02-17SR-N	HRC-25.5			.40	.68	.017	.008	.20	.02	.14
YR-87-02-18SR-N	HRC-28.5			.47	.74	.025	.020	.18	.01	.13
YR-87-02-19SR-N	HRC-29.0			.42	.70	.025	.016	.21	.01	<.01
YR-87-02-20SR-N	HRC-29.5			.44	.74	.025	.013	.22	.01	.01

Note: UTS-ultimate tensile strength; YS-yield strength; C-carbon; Mn-Manganese; P-Phosphorus; 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 shall be noted with an asterisk.

ATTACHMENT 3

Sample Identification No.: YR-87-02-9NNS-F

Description: 5/8" - 11 SAE J429 Grade 5 Bolt

Discrepancy: SAE J429 requires a minimum Rockwell C hardness of 25 for grade 5 material. Actual Rockwell C hardness was determined to be 24.

Evaluation: Sample No. YR-87-02-9NNS-F met all specification chemical and physical requirements with the exception of the Rockwell C hardness.

The Rockwell C hardness test is a qualitative test. Actual material strength is determined by the tension test. Since this sample meets SAE J429 tensile requirements, the low Rockwell C hardness value does not limit application of this item.

In addition it should be noted that this item is designated for non-nuclear safety applications and was purchased without specific physical and chemical requirements.

ATTACHMENT 3

Sample Identification No.: YR-87-02-16SR-N

Description: 5/16" - 18 ASTM A194 Grade 2H Nut

Discrepancy: ASTM specification A194 2H requires a minimum carbon content of .40%. Actual carbon content was determined to be .31%.

Evaluation: Carbon content will generally affect two material properties, strength and ductility. Usually a lower carbon content will provide less strength but greater ductility. Therefore, sufficient ductility is not a concern for this sample.

Strength of the material is approximated using the results of the Rockwell C hardness test. Since this item meets the hardness requirements it is expected that the strength requirement will be met also.

In order to quantitatively determine the strength of this item, additional testing of nuts from the same heat number will be conducted which will include a proof load test in accordance with ASTM specification A370, S14. At that time the limiting application and safety significance of the low carbon content will be determined. The results of the proof load testing along with an evaluation of the safety significance and application limits will be provided by March 13, 1988.

Until the final evaluation is completed the material in question will be placed on hold. In addition, to determine the extent of nonconforming fasteners from this vendor, further sampling and testing is being conducted. The results of this testing will be provided by March 13, 1988.