

50-286

RESPONSE TO NRC COMPLIANCE BULLETIN 87-002

Docket # *50-286*

Control # *8802220250*

Date *2/11/88* of Document

REGULATORY DOCKET FILE

ATTACHMENT A

**Response to Bulletin No. 87-02
"Fastener Testing to Determine Conformance
with Applicable Material Specifications"**

New York Power Authority
Indian Point 3
Docket No. 50-286
February, 1988

Response to Bulletin No. 87-02

Safety related fasteners received at Indian Point 3 are subject to a receipt inspection that includes a verification and review of requested documentation and physical inspection.

Documentation review includes: 1) Certification of Conformance/Compliance 2) Chemical and Physical Test Reports 3) Manufacturing Documentation and 4) Any special documentation required by the purchase order. Chemical and Mill test Reports are compared to the applicable standard.

Physical sample quantity, depending on the amount ordered and end use, is determined per Military Specifications 105D. For fasteners physical inspection would include dimensional verification, including diameter, length of point, overall length, finish, shape, threads, identification/markings and physical damage.

Following receipt inspection and acceptance by Quality Control, all safety related fasteners are identified with certification numbers and "Cert Tags". Certification numbers are unique numbers assigned by Quality Control and allow traceability of a part within the Authority system. Cert Tags contain the certification number and stock number. Safety related fasteners are then stored in a level B warehouse located on the Authority's Indian Point 3 site.

The assigning of a certification number allows the issuance of a safety related fastener for use in the plant. When the need for a fastener arises through either a maintenance action or a modification, a maintenance engineer will review a computerized parts list and match part descriptions with the engineering requirements for the job. A requisition is issued to warehouse personnel who select the fastener from the appropriate bin and deliver it for use with the work package. The Cert Tag number is listed on the requisition. The Cert Tag of the fastener will also be listed on the workshop list as it is used during performance of a work package.

Non-safety related fasteners are purchased on rolling or stock purchase orders. These fasteners are stored in separate, segregated bins onsite and are not receipt inspected.

Ten non-safety related fasteners and ten safety related fasteners were selected for testing from warehouse stock. Included in this was a sample of nineteen nuts that would be typically used with these fasteners. The Senior Resident Inspector, Mr. Peter Koltay participated in the sample selection.

The services of Lucius Pitkin, Inc., which is on the Authority's approved vendor list, were employed for the testing. The results of the testing are provided in tables 1 and 2. The Fastener Testing Data Sheets are provided in Attachment B.

In regards to the chemical testing results provided in Table 2, three minor chemistry deviations were noted. However, none of the deviations can be considered significant in terms of their effect on mechanical properties. The three items were:

Item #14 Nickel tested 7.95% (A194 grade 8 - 8.00% Ni min.) This is metallurgically acceptable because the amount of Nickel will not affect the corrosion resistance and the mechanical properties are acceptable.

Item #23 was ordered A 194 Gr 2H (0.40% carbon). The test reported 0.34% carbon which is A 194 Gr 1. This is metallurgically acceptable based on acceptable Grade 2H mechanical properties.

Item #27 was ordered A 194 Gr 2H (0.40% carbon). The test reported 0.08% carbon. This is metallurgically acceptable based on acceptable Grade 2H mechanical properties.

Based on satisfactory test results and review of receipt inspection and control procedures for fasteners, no further action is planned by the Authority in this area.

ATTACHMENT B

Fastener Testing Data Sheets

New York Power Authority
Indian Point 3
Docket No. 50-286
February, 1988

Attachment 1

Fastener Testing Data Sheet

*Sample ID# 1 (IP-3-1)

Fastener Description: Bolt, 7/8" X 2 1/2"

Description of Sample Stock Location: 82-16-030/CERT #I-1091/86-IP-3743

Material Specification as Documented by Licensee Records: A-325, TYPE L

Head Marking (Specification and Manufacturer): A-325 UNY; face

**Class/Procurement Level: CAT I

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

Vendor: DIVSPEC/86-IP-3743

QA Requirements Imposed on Vendor: Ship Pack, Handle per ANSI N45.2.2, Certificate of Compliance, Mill Test Reports, Marking, per Spec.

Licensee Representative:

Signature Robert Oliver Date 2/10/88

*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# 2 (IP-3-2)

Fastener Description: NUT, 7/8"

Description of Sample Stock Location: 82-16-031/CERT #J-1105

Material Specification as Documented by Licensee Records: A-325, TYPE 1

Head Marking (Specification and Manufacturer): BIS ; Face

**Class/Procurement Level: CAT I

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

Vendor: Threaded Specialties/87-IP-3436

QA Requirements Imposed on Vendor: Ship, Pack & Handle per ANSI N45.2.2, ID to P.O. Certificate of Compliance, Marked per spec.

Licensee Representative:

Signature



Date



*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# 3 (IP-3-3)

Fastener Description: Stud 1-1/8 X 5-1/2

Description of Sample Stock Location: 03-01-114/Cert #J-1351

Material Specification as Documented by Licensee Records: A-193, GRD.B7

Head Marking (Specification and Manufacturer): B7; Butt End

**Class/Procurement Level: CAT I

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

Vendor: COPES VULCAN/87-IP-4020

QA Requirements Imposed on Vendor: Ship, Pack & Handle per ANSI N45.2.2,
Item marked for positive ID, Certified to Copes Vulcan Dwg. L-138194, Rev. 1

Licensee Representative:

Signature

Robert Oleva

Date

2/11/88

*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# IP-3-3A

Fastener Description: NUT, 1-1/8

Description of Sample Stock Location: 03-01-114/Cert #J-1351

Material Specification as Documented by Licensee Records: A-194-2H

Head Marking (Specification and Manufacturer): 2H V; Face

**Class/Procurement Level: CAT I

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

Vendor: Copes Vulcan/87-IP-4020

QA Requirements Imposed on Vendor: See Item #IP-3-3

Licensee Representative:

Signature Robert Pliva Date 2/11/88

*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# IP-3-4

Fastener Description: Bolt, 1"-8X4"

Description of Sample Stock Location: 82-16-014/F-777

Material Specification as Documented by Licensee Records: A-193,B7

Head Marking (Specification and Manufacturer): BIS B7; Head

**Class/Procurement Level: CAT I

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

Vendor: Threaded Specialties/84-IP-2863

QA Requirements Imposed on Vendor: Ship, Pack and Handle per ANSI N45.2.2, ID to PO, Certificate of Compliance, Mill Test Reports.

Licensee Representative:

Signature Robert Oliva Date 2/11/88

*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# IP-3-5

Fastener Description: Nut, 1" N.C.

Description of Sample Stock Location: 82-10-018/J-1119-2

Material Specification as Documented by Licensee Records: A-194, 2H

Head Marking (Specification and Manufacturer): Δ 2H; Face

**Class/Procurement Level: CAT I

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

Vendor: D-Bolt/87-IP3704

QA Requirements Imposed on Vendor: Ship, Pack, Handle per N45.2.2, ID to P.O. Certificate of Compliance, Mill Test Reports.

Licensee Representative:

Signature

Robert Olson

Date

2/1/88

*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# IP-3-6

Fastener Description: Stud, 1 1/4" X 8 1/2"

Description of Sample Stock Location: 82-10-155/J-1337-4

Material Specification as Documented by Licensee Records: A-193, B7

Head Marking (Specification and Manufacturer): J B7; Butt end

**Class/Procurement Level: CAT I

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

Vendor: Almor Steel/87-IP-4303

QA Requirements Imposed on Vendor: Ship, Pack, Handle per ANSI N45.2.2, ID to P.O., Certificate of Compliance, Mill Test Reports.

Licensee Representative:

Signature Robert Oliva Date 2/11/88

*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# IP-3-7

Fastener Description: Nut, 1 1/4"

Description of Sample Stock Location: 82-10-022/D-631

Material Specification as Documented by Licensee Records: A-194, 2H

Head Marking (Specification and Manufacturer): 2H V; Face

**Class/Procurement Level: CAT I

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

Vendor: Threded Specialties/82-IP-3316

QA Requirements Imposed on Vendor: Ship, Pack, Handle per ANSI N45.2.2, Certificate of Conformance to Referenced Material Spec.

Licensee Representative:

Signature

Robert Oliva

Date

2/11/88

*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# IP-3-8

Fastener Description: Bolt, 5/8" X 6 1/2"

Description of Sample Stock Location: 82-16-751/F-777

Material Specification as Documented by Licensee Records: A-193,B7

Head Marking (Specification and Manufacturer): J B7; Head

**Class/Procurement Level: CAT I

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

Vendor: Threaded Specialties/84-IP-2863

QA Requirements Imposed on Vendor: Ship, Pack, Handle per ANSI N45.2.2, ID to P.O. Certificate of Compliance, Mill Test Reports

Licensee Representative:

Signature

Robert Oliva

Date

2/11/88

*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# IP-3-9

Fastener Description: Nut, 5/8"

Description of Sample Stock Location: 82-10-012/J-1131-5

Material Specification as Documented by Licensee Records: A-194, 2H

Head Marking (Specification and Manufacturer): 2H V; Face

**Class/Procurement Level: CAT I

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

Vendor: Almor Steel/87-IP-4100

QA Requirements Imposed on Vendor: Ship, Pack, Handle per N45.2.2, ID to P.O., Certificate of Conformance to Material Spec.

Licensee Representative:

Signature Robert Olson Date 2/11/88

*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# IP-3-10

Fastener Description: Bolt, 5/8" X 2 3/4"

Description of Sample Stock Location: 82-16-012/J-226-1

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

Head Marking (Specification and Manufacturer): Δ ; Head

**Class/Procurement Level: CAT I

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

Vendor: Almor Steel/87-IP-0757

QA Requirements Imposed on Vendor: Ship, Pack, Handle per ANSI, N45.2.2, ID to P.O., Certificate of Compliance, Mill Test Reports

Licensee Representative:

Signature Robert Oliva Date 2/11/88

*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# IP-3-11

Fastener Description: Bolt, 1 1/2 X 2"

Description of Sample Stock Location: 82-16-010/A-388

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

Head Marking (Specification and Manufacturer): BIS; Head

**Class/Procurement Level: CAT I

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

Vendor: Ruskins Hardware/78-IP-3144

QA Requirements Imposed on Vendor: Ship, Pack, & Handle per ANSI N-45.2.2,
Certificate of Compliance, Mill Test Reports

Licensee Representative:

Signature Robert Oliva Date 2/11/88

*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# IP-3-12

Fastener Description: Nut, 1/2"

Description of Sample Stock Location: 82-16-020/A-388

Material Specification as Documented by Licensee Records: A-194, 2H

Head Marking (Specification and Manufacturer): 2H; Head

**Class/Procurement Level: CAT I

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

Vendor: Ruskins Hardware/78-3144

QA Requirements Imposed on Vendor: Ship, Pack & Handle per ANSI N45.2.2, Certificate of Compliance, Mill Test Reports.

Licensee Representative:

Signature Robert Olari Date 2/11/88

*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# IP-3-13

Fastener Description: Bolt, 7/8" X 3 1/2"

Description of Sample Stock Location: 01-84-103/H-447

Material Specification as Documented by Licensee Records: A-303(A-582-80)

Head Marking (Specification and Manufacturer): C 303; Face

**Class/Procurement Level: CAT I

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

Vendor: Aurora Pump/85-1307

QA Requirements Imposed on Vendor: Ship, Pack, Handle per ANSI N45.2.2, Marked for Positive ID, Certificate of Compliance to Ref. Dwgs. & Specs.

Licensee Representative:

Signature Robert O'Leary Date 2/11/88

*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# IP-3-14

Fastener Description: Nut, 7/8"

Description of Sample Stock Location: 01-84-129/H-446

Material Specification as Documented by Licensee Records: A-304 (A-194-80A)

Head Marking (Specification and Manufacturer): 304 C A62; Face

**Class/Procurement Level: CAT I

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

Vendor: Aurora Pump/85-IP-0634

QA Requirements Imposed on Vendor: Ship, Pack, & Handle per ANSI N45.2.2, Certificate of Compliance, Mill Test Reports.

Licensee Representative:

Signature

Robert O'Leary

Date

2/11/88

*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# IP-3-15

Fastener Description: Nut, 5/8"

Description of Sample Stock Location: 01-84-128/G-407

Material Specification as Documented by Licensee Records: A-276, 304

Head Marking (Specification and Manufacturer): 8B☆; Face

**Class/Procurement Level: CAT I

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

Vendor: Threaded Specialties/85-0967

QA Requirements Imposed on Vendor: Ship, Pack, & Handle per N45.2.2, Certificate of Compliance to Referenced Spec.

Licensee Representative:

Signature

Robert Oliva

Date

2/11/88

*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# IP-3-16

Fastener Description: Bolt, 5/8' X 1 3/4'

Description of Sample Stock Location: 01-84-106/G-865

Material Specification as Documented by Licensee Records: A-307

Head Marking (Specification and Manufacturer): BIP; Face

**Class/Procurement Level: CAT I

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

Vendor: Aurora Pump/85-IP-0516

QA Requirements Imposed on Vendor: Ship, Pack, & Handle Certificate of Compliance to Ref. Material Specs. and Dwg. #0330201000 Rev. L.

Licensee Representative:

Signature

Robert Oliva

Date

2/11/88

*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# IP-3-17

Fastener Description: Stud, 1 1/8" X 3 1/2"

Description of Sample Stock Location: 01-84-104/E-549

Material Specification as Documented by Licensee Records: A-36

Head Marking (Specification and Manufacturer): None

**Class/Procurement Level: CAT I

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

Vendor: Aurora Pump/83-IP-1364

QA Requirements Imposed on Vendor: Ship, Pack & Handle per ANSI N45.2.2, ID to P.O., Certificate of Compliance to Aurora Dwg. 0330201000 Rev. K, Mill Test Reports.

Licensee Representative:

Signature

Robert Oliva

Date

2/11/88

*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# IP-3-18

Fastener Description: Nut, 1 1/8 X 7

Description of Sample Stock Location: 01-84-130/D-87

Material Specification as Documented by Licensee Records: 194 GRD 1

Head Marking (Specification and Manufacturer): None

**Class/Procurement Level: CAT I

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

Vendor: Threaded Specialties/82-IP-0589

QA Requirements Imposed on Vendor: Ship, Pack, Handle per ANSI N 45.2.2,
Certificate of Compliance to Ref. Material Spec.

Licensee Representative:

Signature Robert Oliva Date 2/11/88

*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# IP-3-19

Fastener Description: Stud, 5/8" X 6"

Description of Sample Stock Location: 82-15-087

Material Specification as Documented by Licensee Records: A-193,B7

Head Marking (Specification and Manufacturer): B7 Butt End

**Class/Procurement Level: NON-CAT I

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

Vendor:

QA Requirements Imposed on Vendor: N/A

Licensee Representative:

Signature

Robert Olson

Date

2/11/88

*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# IP-3-20

Fastener Description: Nut, 5/8"

Description of Sample Stock Location: 82-01-515

Material Specification as Documented by Licensee Records: A-194, 2H

Head Marking (Specification and Manufacturer): 2H FACC

**Class/Procurement Level: NON-CAT I

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

Vendor: Threaded Specialties/86-IP-2821

QA Requirements Imposed on Vendor: N/A

Licensee Representative:

Signature

Robert Clark

Date

2/11/88

*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# IP-3-21

Fastener Description: Bolt, 1" X 4"

Description of Sample Stock Location: 10-20-300

Material Specification as Documented by Licensee Records: A-540, B23

Head Marking (Specification and Manufacturer): SB 23; Face

**Class/Procurement Level: NON-CAT I

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

Vendor: Threaded Specialties/86-IP-3378

QA Requirements Imposed on Vendor: N/A

Licensee Representative:

Signature Robert Allen Date 2/10/88

*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# IP-3-22

Fastener Description: Stud, 3/4" X 4"

Description of Sample Stock Location: 82-15-089

Material Specification as Documented by Licensee Records: A-193, B7

Head Marking (Specification and Manufacturer): B7 Buttend

**Class/Procurement Level: NON-CAT I

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

Vendor: Almor Steel/87-IP-0685

QA Requirements Imposed on Vendor:

Licensee Representative:

Signature

Robert Alva

Date

2/11/88

*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# IP-3-23

Fastener Description: Nut, 3/4"

Description of Sample Stock Location: 82-01-518

Material Specification as Documented by Licensee Records: A-194, 2H

Head Marking (Specification and Manufacturer): None

**Class/Procurement Level: NON-CAT I

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

Vendor: Threaded Specialties/83-IP-3556

QA Requirements Imposed on Vendor: N/A

Licensee Representative:

Signature

Robert Oliva

Date

2/11/88

*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# IP-3-24

Fastener Description: Stud, 7/8" X 4"

Description of Sample Stock Location: 82-15-093

Material Specification as Documented by Licensee Records: A-103, B7

Head Marking (Specification and Manufacturer): B7☆ ; Buttend

**Class/Procurement Level: NON-CAT I

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

Vendor:

QA Requirements Imposed on Vendor: N/A

Licensee Representative:

Signature

Robert Owen

Date

2/11/88

*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# IP-3-25

Fastener Description: Nut, 7/8"

Description of Sample Stock Location: 82-15-021

Material Specification as Documented by Licensee Records: A-194, 2H

Head Marking (Specification and Manufacturer): 2H; Face

**Class/Procurement Level: NON-CAT I

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

Vendor: Threaded Specialties/85-IP-3441

QA Requirements Imposed on Vendor: N/A

Licensee Representative:

Signature

Robert Allen

Date

2/10/88

*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# IP-3-26

Fastener Description: Stud, 3/4" X 6"

Description of Sample Stock Location: 82-15-091

Material Specification as Documented by Licensee Records: A-193, B7

Head Marking (Specification and Manufacturer): B7; Buttend

**Class/Procurement Level: NON-CAT I

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

Vendor:

QA Requirements Imposed on Vendor: N/A

Licensee Representative:

Signature

Robert Alva

Date

2/11/88

*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# IP-3-27

Fastener Description: Nut, 3/4"

Description of Sample Stock Location: 82-01-518

Material Specification as Documented by Licensee Records: A-194, 2H

Head Marking (Specification and Manufacturer): None

**Class/Procurement Level: NON-CAT I

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

Vendor: Threaded Specialties/83-IP-3556

QA Requirements Imposed on Vendor: N/A

Licensee Representative:

Signature Robert Klein Date 2/11/88

*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# IP-3-28

Fastener Description: Bolt, 5/8" X 2"

Description of Sample Stock Location: 82-01-460

Material Specification as Documented by Licensee Records: A-307 GRDA

Head Marking (Specification and Manufacturer): None

**Class/Procurement Level: NON-CAT I

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

Vendor:

QA Requirements Imposed on Vendor: N/A

Licensee Representative:

Signature

Robert Alva

Date

2/11/88

*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# IP-3-29

Fastener Description: Nut, 5/8"

Description of Sample Stock Location: 82-01-515

Material Specification as Documented by Licensee Records: A-194, 2H

Head Marking (Specification and Manufacturer): 2H; Face

**Class/Procurement Level: NON-CAT I

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

Vendor: Threaded Specialties/86-IP-2821

QA Requirements Imposed on Vendor: N/A

Licensee Representative:

Signature

Robert Alva

Date

2/11/88

*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# IP-3-30

Fastener Description: Bolt, 5/8" X 3"

Description of Sample Stock Location: 82-01-465

Material Specification as Documented by Licensee Records: A-307 GRD A/B

Head Marking (Specification and Manufacturer): None

**Class/Procurement Level: NON-CAT I

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

Vendor: Almor Steel/87-IP-0725

QA Requirements Imposed on Vendor: N/A

Licensee Representative:

Signature

Robert Alva

Date

2/11/88

*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# IP-3-31

Fastener Description: Bolt, 1/2 X 2 1/4

Description of Sample Stock Location: 82-01-450

Material Specification as Documented by Licensee Records: A-307 A

Head Marking (Specification and Manufacturer): None

**Class/Procurement Level: NON-CAT I

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

Vendor: D Bolt/87-IP-3702

QA Requirements Imposed on Vendor: N/A

Licensee Representative:

Signature Robert Oliva Date 2/11/88

*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# IP-3-32

Fastener Description: Nut, 1/2"

Description of Sample Stock Location: 82-01-512

Material Specification as Documented by Licensee Records: Not Listed A-194 GRD 1

Head Marking (Specification and Manufacturer) None

**Class/Procurement Level: NON-CAT I

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

Vendor: Threaded Specialties/86-IP-2004

QA Requirements Imposed on Vendor: N/A

Licensee Representative:

Signature Robert Owen Date 2/11/88

*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# IP-3-33

Fastener Description: Bolt, 1/2" X 1 1/2"

Description of Sample Stock Location: 82-01-445

Material Specification as Documented by Licensee Records: Not Listed A307 A/B

Head Marking (Specification and Manufacturer): None

**Class/Procurement Level: NON-CAT I

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

Vendor: D Bolt/87-IP-3702

QA Requirements Imposed on Vendor: N/A

Licensee Representative:

Signature

Robert Oliva

Date

2/11/88

*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# IP-3-34

Fastener Description: Bolt, 5/8 X 1

Description of Sample Stock Location: 82-01-455

Material Specification as Documented by Licensee Records: A-307 A/B

Head Marking (Specification and Manufacturer): None

**Class/Procurement Level: NON-CAT I

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

Vendor:

QA Requirements Imposed on Vendor: N/A

Licensee Representative:

Signature

Robert Alva

Date

2/11/88

*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# IP-3-35

Fastener Description: Nut

Description of Sample Stock Location: 03--1-114A

Material Specification as Documented by Licensee Records: Not Listed 194 2H

Head Marking (Specification and Manufacturer): 2H V; Face

**Class/Procurement Level: ~~XXX~~-CAT I

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

Vendor: Copes Vulcan/87-IP-4020

QA Requirements Imposed on Vendor: ~~N/A~~ See Item #3

Licensee Representative:

Signature Robert Oliva Date 2/11/88

*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# IP-3-36

Fastener Description: Nut, 5/8"

Description of Sample Stock Location: 82-01-515

Material Specification as Documented by Licensee Records: 194 2H

Head Marking (Specification and Manufacturer): 2H; Face

**Class/Procurement Level: NON-CAT I

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

Vendor: Threaded Specialties/86-IP-2821

QA Requirements Imposed on Vendor: N/A

Licensee Representative:

Signature

Robert Oliva

Date

2/11/88

*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# IP-3-37

Fastener Description: Nut, 5/8"

Description of Sample Stock Location: 82-01-515

Material Specification as Documented by Licensee Records: A194 2H

Head Marking (Specification and Manufacturer): 2H; Face

**Class/Procurement Level: NON-CAT I

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

Vendor: Threaded Specialties/86-IP-2821

QA Requirements Imposed on Vendor: N/A

Licensee Representative:

Signature Robert Alva Date 2/11/88

*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# IP-3-38

Fastener Description: Nut, 1/2"

Description of Sample Stock Location: 82-01-512

Material Specification as Documented by Licensee Records: 194 GRD 1 & 2H

Head Marking (Specification and Manufacturer): None

**Class/Procurement Level: NON-CAT I.

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

Vendor: Threaded Specialties/86-IP-2004

QA Requirements Imposed on Vendor: N/A

Licensee Representative:

Signature

Robert Olson

Date

2/11/88

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

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

TABLE 1

Fastener and Nut Mechanical Properties

New York Power Authority
Indian Point 3
Docket No. 50-286
February, 1988

Lucius Pitkin
incorporated

New York Power Authority
Attn: Mr. W. Spataro

February 9, 1988
M-9419

TABLE I

FASTENER AND NUT MECHANICAL PROPERTIES

Item No.	Stock Number	Description	Issue Information		Spec.	Hardness	Bolt or Stud		Nut, Proof Load, lbs.	Compliance With Spec.
			Cert. No.	Log			Full-Size Specimen Strength, lbs.	Machined Tensile Specimen		
1	82-16-030	Bolt 7/8x9x2-1/2	I 1091	1575 E	A 325 Type 1	RC 30-31	67,500	-	-	Yes
2	82-16-031	Nut 7/8x9x55/64	J 1105	1575 E	A 194 Grade 1 or 2	RB 98-100	-	-	-	Yes
3	03-01-114	Stud 1-1/8x8x5-1/2	J 1351	1576 J	A 193 Grade B7	RC 28	-	UTS-142,300psi YS -126,600psi EL -18% RA -58%	-	Yes
3a	Duplicate of 35 03-01-114	Nut 1-1/8x8x1-1/8	J 1351	1576 J	A 194 Grade 2H	RC 28-30	-	-	Passed min. 118,500lbs.	Yes
4	82-16-014	Bolt 1x8x4	F 777	1575 D	A 193 Grade B7	RC 34	-	UTS-154,800psi YS -143,700psi EL.-18% RA -58%	-	Yes
5	82-10-018	Nut 1x8x63/64	J 1119	1576 F	A 194 Grade 2H	RC 30-33	-	-	Passed min. 90,900lbs.	Yes
6	82-10-155	Stud 1-1/4x8x9	J 1337	1575 J	A 193 Grade B7	RC 28-30	-	UTS-139,000psi YS- 120,000psi EL -20% RA -59%	-	Yes

Continued

Lucius Pitkin
incorporated

New York Power Authority
Attn: Mr. W. Spataro

February 9, 1988
M-9419

TABLE I (CONTINUED)

FASTENER AND NUT MECHANICAL PROPERTIES

Item No.	Stock Number	Description	Issue Information		Spec.	Hardness	Bolt or Stud		Nut, Proof Load, lbs.	Compliance With Spec.
			Cert. No.	Log			Full-Size Specimen Strength, lbs.	Machined Tensile Specimen		
7	82-10-022	Nut 1-1/4x8x1-13/64	D 631	1576 G	A 194 Grade 2H	RC 29-30	-	-	Passed min. 150,000lbs.	Yes
8	82-16-751	Bolt 5/8x11x7-1/2	F 777	1575 J	A 193 Grade B7	RC 25-27	-	UTS-147,500psi YS -136,400psi EL -20% RA -61%	-	Yes
9	82-10-012	Nut 5/8x11x39/64	J 1131	1576 F	A 194 Grade 2H	RC 29-30	-	-	Passed min. 33,900lbs.	Yes
10	82-16-012	Bolt 5/8x11x2-11/16	J 226	1575 D	A 307 Grade A	RB 92-93	17,400	-	-	Yes
11	82-16-010	Bolt 1/2x13x2	A 388	1575 E	A 307 Grade A	RB 100+	13,300	-	-	Yes
12	82-16-020	Nut 1/2x13x31/64	A 388	1575 E	A 194 Grade 2H	RC 25-27	-	-	Passed min. 21,280 lbs.	Yes
13	01-84-103	Bolt 7/8x9x3-1/2	H 447	1309 F	A 582 Grade 303	RB 98-100	-	-	-	Yes
14	01-84-129	Nut 7/8x9x55/64	H 446	1309 F	A 194 Grade 304	RB 100+	-	-	Passed min. 39,960 lbs.	Yes

Continued....

Lucius Pitkin
incorporated

New York Power Authority
Attn: Mr. W. Spataro

February 9, 1988
M-9419

TABLE I (CONTINUED)

FASTENER AND NUT MECHANICAL PROPERTIES

Item No.	Stock Number	Description	Issue Information		Spec.	Hardness	Bolt or Stud		Nut, Proof Load, lbs.	Compliance With Spec.
			Cert. No.	Log			Full-Size Specimen Strength, lbs.	Machined Tensile Specimen		
15	01-84-128	Nut 5/8x11x39/64	G 407	1309 F	A 276 Type 304	RC 29-30	-	-	-	Hardness not specified
16	01-84-106	Bolt 5/8x11x1-3/4	G 865	1309 F	A 307, J429 Grade 2	RC 26-27	24,200	-	-	Meets A 193 requirements
17	01-84-104	Stud 1-1/8x7x3-1/2	E 549	1309 F	J 429 Grade 2	RB 90-92		UTS-60,000psi YS -36,000psi EL -18% RA -35%	-	Yes
18	01-84-130	Nut 1-1/8x7x1-7/64	D 87	1309 F	A 194 Grade 1	RB 77-79	-	-	-	Yes
19	82-15-087	Stud 5/8x11x6	-	1725 B	A 193 Grade B7	RC 30-32	-	-	-	Hardness not specified
20	82-01-515	Nut 5/8x11x39/64	-	1732 D	A 194 Grade 2H	RC 28-29	-	-	-	Yes
21	10-20-300	Bolt 1x8x4	-	1733 C	A 540 Grade 23 Class 1,2,or 3	RC 37-38	-	-	-	Yes
22	82-15-089	Stud 3/4x10-4-1/8	-	1725 C	A 193 Grade B7	RC 30-31	-	-	-	Hardness not specified
23	82-01-518	Nut 3/4x10x41/64	-	1732 D	A 194 Grade 2	RB 90-93	-	-	-	Yes

Lucius Pitkin
incorporated

New York Power Authority
Attn: Mr. W. Spataro

February 9, 1988
M-9419

TABLE I

FASTENER AND NUT MECHANICAL PROPERTIES

Item No.	Stock Number	Description	Issue Information		Spec.	Hardness	Bolt or Stud		Nut, Proof Load, lbs.	Compliance With Spec.
			Cert. No.	Log			Full-Size Specimen Strength, lbs.	Machined Tensile Specimen		
24	82-15-093	Stud 7/8x9x 4-1/4	-	1725 E	A 193 Grade B7	RB 28-30	-	-	-	Hardness no specified
25	82-15-021	Nut 7/8x9x55/64	-	1766 B	A 194 Grade 2H	RC 28	-	-	-	Yes
26	82-15-091	Stud 3/4x10x6-1/2	-	1725 D	A 193 Grade B7	RC 28-30	-	-	-	Hardness no specified
27	82-01-578	Nut 3/4x10x41/64	-	1732 D	A 194 Grade 2	RC 95-96	-	-	-	Yes
28	82-01-460	Bolt 5/8x11x2	-	1730 F	No information	RB 99-100	-	-	-	Meets A 307 Grade A
29	82-01-515	Nut 5/8x11x39/64	- -	1732 D	A 194 Grade 2H	RC 27	-	-	-	Yes
30	82-01-465	Bolt 5/8x11x3	-	1732 B	No information	RB 100	-	-	-	Meets A 307 Grade A
31	82-01-450	Bolt 1/2x13x2-1/4	-	1731 E	No information	RB 97-98	-	-	-	Meets A 307 Grade A
32	82-01-512	Nut 1/2x13x7/16	-	1731 E	No information	RB 94-96	-	-	-	Meets A 194 Grade 1&2

Continued....

Lucius Pitkin
incorporated

New York Power Authority
Attn: Mr. W. Spataro

February 9, 1988
M-9419

TABLE I (CONTINUED)

FASTENER AND NUT MECHANICAL PROPERTIES

Item No.	Stock Number	Description	Issue Information		Spec.	Hardness	Bolt or Stud		Nut, Proof Load, lbs.	Compliance With Spec.
			Cert. No.	Log			Full-Size Specimen Strength, lbs.	Machined Tensile Specimen		
33	82-01-445	Bolt 1/2x13x1-1/2	-	1731 E	No infor- mation	RB 90-94	-	-	-	Meets A 307 Grade A&F
34	82-01-455	Bolt 5/8x11x1	-	1732 A	No infor- mation	RB 98	-	-	-	Meets A 307 Grade A
35	03-01-114A	Nut 1-1/8x8x1-1/8	-	-	A 194 Grade 2H	RC 28-30	-	-	Passed min. 118,500 lbs.	Yes
36	82-01-515	Nut 5/8x11x39/64	-	-	A 194 Grade 2H	RC 30	-	-	-	Yes
37	82-01-515	Nut 5/8x11x39/64	-	-	A 194 Grade 2H	RC 29-29	-	-	-	Yes
38	82-01-512	Nut 1/2x13x7/16	-	-	No infor- mation	RB 98	-	-	-	Meets A 194 Grade 1&2

TABLE 2

Quantitative Chemical and Qualitative Spectrographic Analyses

New York Power Authority
Indian Point 3
Docket No. 50-286
February, 1988

Lucius Pitkin
incorporated

New York Power Authority
Attn.: Mr. W. Spataro

February 10, 1988

BY QUANTITATIVE CHEMICAL AND QUALITATIVE SPECTROGRAPHIC ANALYSES

Item	Stock No.	C	Mn	P	S	Si	Ni	Cr	Mo	Cu	Al	V	Compliance
1. Bolt	82-16-030	0.34	0.77	0.028	0.018	0.X	0.OX	0.0X	0.0X low	0.0X	0.0X low	0.00X	A 325 Type 1
2. Nut	82-16-031	0.48	0.X	0.014	0.017	0.00X	0.0X	0.0X	0.0X low	0.0X high	0.0X low	0.00X	A 194 Grade 1 or 2
3. Stud	03-01-114	0.42	1.09	0.034	0.023	0.20	0.0X high	0.93	0.21	0.0X high	0.0X high	0.0X low	A 193 Grade B7
4. Bolt	82-16-014	0.42	1.08	0.005	0.020	0.16	0.0X	1.04	0.20	0.0X low	0.0X high	0.0X low	A 193 Grade B7
5. Nut	82-10-018	0.46	0.X	0.017	0.011	0.X	0.0X	0.0X	0.0X low	0.X low	0.0X	0.00X	A 194 Grade 2H
6. Stud	82-10-155	0.41	1.01	0.023	0.020	0.24	0.0X high	0.92	0.24	0.0X high	0.0X	0.0X low	A 193 Grade E7
7. Nut	82-10-022	0.45	0.X	0.027	0.018	0.X	0.0X	0.0X	0.0X low	0.0X low	0.0X high	0.00X	A 194 Grade 2H
8. Bolt	82-16-751	0.38	1.06	0.011	0.021	0.21	0.0X high	0.90	0.24	0.0X high	0.0X high	0.0X low	A 193 Grade B7
9. Nut	82-10-012	0.46	0.X	0.031	0.017	0.X	0.0X	0.0X	0.0X low	0.X low	0.0X	0.00X	A 194 Grade 2H
10. Bolt	82-16-012	-	0.X	0.007	0.010	0.0X high	0.0X low	0.0X low	0.0X low	0.0X low	0.0X	0.0X low	A 307 Grade A and B
11. Bolt	82-16-010	-	0.X	0.006	0.023	0.0X low	0.0X high	0.0X	0.0X	0.X low	0.0X	0.0X low	A 307 Grade A and B
12. Nut	82-16-020	0.41	0.X	0.018	0.028	0.X	0.0X	0.0X	0.0X low	0.0X low	0.X low	0.00X	A 194 Grade 2H
13. Bolt	01-84-103	0.05	1.72	0.021	0.59	0.50	9.43	17.39	0.X low	0.X	0.0X low	0.X low	A 582 Grade 303
14. Nut	01-84-129	0.07	0.X high	0.040	0.010	0.58	7.95	18:29	0.0X high	0.X low	0.0X low	0.X low	A 194 Grade 304
15. Nut	01-84-128	0.06	1.11	0.009	0.011	0.33	9.95	18.42	0.X low	0.X low	0.0X low	0.X low	A 276, Type 304.
16. Bolt	01-84-106	0.21	0.X	0.021	0.036	0.00X	0.0X high	0.0X	0.0X low	0.X low	0.0X low	0.00X	J 429 Grade 4.

NOTE: Major = above 5% estimated. Minor = 1.5% estimated. .X, .OX, .OOX, etc. = concentration of the elements estimated to the nearest decimal place - e.g. .OX = .01-.09% estimated. * = less than. NF = not found. The numbers in parenthesis indicate the estimated relative concentration of the element among the various samples. Detectability varies considerably among the elements and also depends upon the amount and nature of the sample, therefore, "Not Found" or NF means not detected in the particular sample by the technique employed.

Lucius Pitkin
incorporated

New York Power Authority
Attn.: Mr. W. Spataro

February 10, 1988

BY QUANTITATIVE CHEMICAL AND QUALITATIVE SPECTROGRAPHIC ANALYSES

<u>Item</u>	<u>Stock No.</u>	<u>C</u>	<u>Mn</u>	<u>P</u>	<u>S</u>	<u>Si</u>	<u>Ni</u>	<u>Cr</u>	<u>Mo</u>	<u>Cu</u>	<u>Al</u>	<u>V</u>	<u>Compliance</u>
17.Stud	01-84-104	0.11	0.Xhigh	0.025	0.050	0.X low	0.0X high	0.0X	0.0X	0.X	0.0X low	0.00X	J 429 Grade 2
18.Nut	01-84-130	0.15	0.X	0.022	0.023	0.X	0.0X	0.0X	0.0X low	0.0X	0.0X low	0.00X	A 194 Grade 1
19.Stud	82-15-087	0.45	0.99	0.027	0.033	0.35	0.0X high	1.12	0.24	0.0X	0.0X	0.00X	A 193 Grade B7
20.Nut	82-01-515	0.40	0.X	0.019	0.040	0.X	0.0X high	0.0X	0.X low	0.0X	0.0X	0.00X	A 194 Grade 2H
21.Bolt	10-20-300	0.46	0.83	0.014	0.007	0.19	1.79	0.78	0.X low	0.X low	0.0X high	0.00X	A 540 Grade 23
22.Stud	82-15-089	0.43	0.97	0.021	0.025	0.23	0.0X high	1.06	0.24	0.0X	0.0X high	0.00X	A 193 Grade B7
23.Nut	82-01-518	0.34	0.X	0.03	0.024	0.0X	0.0X low	0.0X	0.0X low	0.00X	0.0X high	0.00X	A 194 Grade 1 and 2
24.Stud	82-15-093	0.44	0.95	0.011	0.039	0.25	0.0X high	0.96	0.22	0.0X high	0.0X high	0.00X	A 193 Grade B7
25.Nut	82-15-021	0.43	0.Xhigh	0.025	0.032	0.X	0.0X	0.0X	0.0X low	0.X low	0.0X low	0.00X	A 194 Grade 2H
26.Stud	82-15-091	0.40	0.74	0.021	0.034	0.29	0.0X high	1.01	0.20	0.0X high	0.0X high	0.00X	A 193 Grade B7
27.Nut	82-01-578	0.08	0.X	0.025	0.034	0.00X	0.0X low	0.0X	0.0X low	0.00X	0.0X low	0.00X	A 194 Grade 2H
28.Bolt	82-01-460	0.18	0.X	0.011	0.022	0.00X	0.0X	0.0X	0.0X low	0.00X	0.0X low	0.00X	A 307, Grade A.
29.Nut	82-01-515	0.41	0.X	0.034	0.046	0.X	0.0X high	0.0X	0.0X low	0.0X	0.0X	0.00X	A 194 Grade 2H
30.Bolt	82-01-465	-	0.X	0.022	0.033	0.X low	0.0X high	0.0X	0.0X low	0.0X	0.0X low	0.00X	A 307 Grade A and B

NOTE: Major = above 5% estimated. Minor = 1.5% estimated. .X, .OX, .OOX, etc. = concentration of the elements estimated to the nearest decimal place - e.g. .OX = .01-.09% estimated. * = less than. NF = not found. The numbers in parenthesis indicate the estimated relative concentration of the element among the various samples. Detectability varies considerably among the elements and also depends upon the amount and nature of the sample, therefore, "Not Found" or NF means not detected in the particular sample by the technique employed.

Lucius Pitkin
incorporated

February 10, 1988

New York Power Authority
Attn.: Mr. W. Spataro

BY QUANTITATIVE CHEMICAL AND QUALITATIVE SPECTROGRAPHIC ANALYSES

<u>Item</u>	<u>Stock No.</u>	<u>C</u>	<u>Mn</u>	<u>P</u>	<u>S</u>	<u>Si</u>	<u>Ni</u>	<u>Cr</u>	<u>Mo</u>	<u>Cu</u>	<u>Al</u>	<u>V</u>	<u>Compliance</u>
31.Bolt	82-01-450	-	0.X	0.030	0.060	0.00X	0.0X high	0.0X	0.0X high	0.0X	0.0X low	0.00X	A 307 Grade A
32.Nut	82-01-512	0.24	0.X	0.025	0.626	0.X low	0.0X	0.0X	0.0X low	0.00X	0.0X low	0.00X	A 194 Grade 1
33.Bolt	82-01-445	-	0.X	0.014	0.018	0.X low	0.0X	0.0X	0.0X low	0.0X	0.0X low	0.00X	A 307 Grade A and B
34.Bolt	82-01-455	-	0.X	0.017	0.018	0.00X	0.0X	0.0X	0.0X low	0.00X	0.0X low	0.00X	A 307 Grade A and B
35.Nut	03-01-114A	0.47	0.X	0.005	0.017	0.X	0.0X	0.0X	0.0X low	0.0X low	0.0X high	0.00X	A 194 Grade 2H
36.Nut	82-01-515	0.38	0.X	0.034	0.045	0.X	0.0X high	0.0X	0.0X low	0.0X	0.0X	0.00X	A 194 Grade 2H
37.Nut	82-01-515	0.39	0.X	0.036	0.042	0.X	0.0X high	0.0X	0.0X low	0.0X	0.0X	0.00X	A 194 Grade 2H
38.Nut	82-01-512	0.15	0.X	0.048	0.020	0.X low	0.0X	0.0X	0.0X low	0.00X	0.0X	0.00X	A 194 Grade 1

NOTE: Major = above 5% estimated. Minor = 1.5% estimated. .X, .OX, .OOX, etc. = concentration of the elements estimated to the nearest decimal place - e.g. .OX = .01-.09% estimated. * = less than. NF = not found. The numbers in parenthesis indicate the estimated relative concentration of the element among the various samples. Detectability varies considerably among the elements and also depends upon the amount and nature of the sample, therefore, "Not Found" or NF means not detected in the particular sample by the technique employed.