



Duquesne Light

Nuclear Group
P.O. Box 4
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February 12, 1988

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

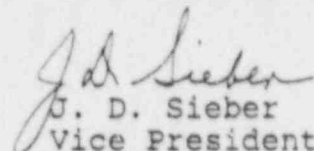
Reference: Beaver Valley Power Station, Unit No. 1 and No. 2
BV-1 Docket No. 50-334, License No. DPR-66
BV-2 Docket No. 50-412, License No. NPF-73
NRC Compliance Bulletin 87-02

Gentlemen:

We have reviewed NRC Compliance Bulletin 87-02 "Fastener Testing to Determine Conformance with Applicable Material Specifications". Enclosed is the information requested by Items 1 through G of the Bulletin.

If there are any questions concerning this response, please contact my office.

Very truly yours,


J. D. Sieber
Vice President, Nuclear

Enclosure

cc: Mr. J. Beall, Sr. Resident Inspector
Mr. W. T. Russell, NRC Region I Administrator
Mr. P. Tam, Project Manager
Director, Safety Evaluation & Control (VEPCO)

8802220317 880212
PDR ADOCK 05000334
Q DCD

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11

COMMONWEALTH OF PENNSYLVANIA)

) SS:

COUNTY OF BEAVER)

On this 19th day of February, 1988,
before me, Shirley M. Fattore, a Notary Public in and for said
Commonwealth and County, personally appeared J. D. Sieber, who being
duly sworn, deposed, and said that (1) he is Vice President of
Duquesne Light, (2) he is duly authorized to execute and file the
foregoing Submittal on behalf of said Company, and (3) the statements
set forth in the Submittal are true and correct to the best of his
knowledge, information and belief.

Shirley M. Fattore

SHIRLEY M. FATTORÉ, NOTARY PUBLIC
SHEPPARDSTOWN, BEAVER COUNTY
BY COMMISSION EXPIRING JULY 23, 1989
Shirley M. Fattore, Notary Public, Association of Notaries

DUQUESNE LIGHT COMPANY
Nuclear Group
Beaver Valley Power Station, Units 1 and 2

RESPONSE TO NRC COMPLIANCE BULLETIN 87-02

Item 1.a

Describe the characteristics currently examined during receipt inspection of fasteners.

Response

All safety-related items are receipt inspected. Non-safety related materials are receipt inspected when documentation is required. Fastener materials are inspected to the requirements of the purchase order and reference material specifications. Typical inspection attributes include the following:

- (1) Verification of specific packaging and shipping requirements.
- (2) Visual inspection for damage.
- (3) Random verification of selected dimensions.
- (4) Verification of suppliers' documents for compliance to the designated procurement document quality requirements.
- (5) Verification of identification and markings such as ASME/ASTM head markings for grade, manufacturers' symbols and heat number/code, to CMTRs.
- (6) Verification of the chemical/physical testing data on CMTRs to ASME/ASTM requirements when applicable.

Item 1.b

Describe internal controls utilized during storage and issuance from stock to assure the appropriate use of fasteners.

Response

- (1) Receipt inspected fasteners are identified with an OQC Accept Tag containing the safety category, class level, purchase order number, stock number if applicable, and date of receipt.
- (2) Stock fasteners are stored with an additional identifying, color-coded bin tag. The information on the tag consists of the stock number, a description of the item, and the reorder point. The color coding designates the safety category and quality level.

- (3) Safety related stock fasteners and non-safety related fasteners with documentation are issued with the OQC Accept Tag attached. These tags are inspected as part of the maintenance monitoring activities in the field.
- (4) Unit 2 Construction fastener requisition is monitored by QC for OQC accepted lot subdivisions. All non-stock safety related fasteners are issued against requisition forms (521 form, Staging Area Release Form), which maintain material traceability and are field monitored by QC.

Items 2 and 3

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

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

Response

Description of BVPS Warehouse System

There are three warehouses at BVPS, all of which operate under the same QA plan:

Unit 1 Construction Warehouse #1

Unit 2 Construction Warehouse D

Operations Stores Warehouse - which stocks spare parts for both units

Both construction warehouses stock only Category 1 safety related fasteners. These fasteners are used in both safety and non-safety related applications.

The Construction Warehouse for Unit 1 stocks only a small variety of fastener material types. All of the nuts from this warehouse are a ASTM A-194 GR 2H. Therefore, fewer samples were selected from this source.

The Construction Warehouse D for Unit 2 stocks a larger variety of fastener materials (still all Category 1 - safety related); therefore, more samples were selected from this source.

The only source for non-safety related fasteners is the Operations Stores Warehouse, and it is used for stocking spare parts for both units. The fasteners in the warehouse are generally purchased and controlled relative to the component of which they are a piece-part.

Sample Selection Process

A mix of fastener material types and sizes was selected from the computer summary lists supplied for both of the construction warehouses. Additionally, samples from various purchase orders were selected where possible, in an attempt to obtain a mix of suppliers.

Safety related and non-safety related samples for both units were selected from the Operations Stores computer file. The samples from this source were also chosen to obtain a mix of material type, sizes, and suppliers available.

Beaver Valley Unit 1 Sample Summary

- 8 Safety related fasteners from Construction Warehouse #1, each with nut.
- 3 Safety related fasteners from Operations Stores Warehouse, each with nut.
- 2 Non-safety related fasteners from Operations Stores Warehouse, each with nut.
- 13 Total fasteners with nuts or 26 TOTAL SAMPLES from Unit 1.

Beaver Valley Unit 2 Sample Summary

- 21 Safety related fasteners from Construction Warehouse D, each with nut.
- 2 Safety related fasteners from Operations Stores Warehouse, each with nut.
- 4 Non-safety related fasteners from Operations Stores Warehouse, each with nut.
- 27 Total fasteners with nuts or 54 TOTAL SAMPLES from Unit 2.

All of the samples were obtained with the participation of the NRC Senior Resident Inspector at BVPS. In two cases, samples BVPS-1-11 and BVPS-1-26, there were bolts/nuts with different markings in the same stock location. In each case, an additional sample (alternate marking) was withdrawn at the request of the NRC inspector. This increased the total number of samples to eighty-two (82).

All samples were identified with the unit number and a unique sequential number: i.e., BVPS-1-4, BVPS-2-24, etc.

The individual sample description sheets, Attachment 1 of NRC Bulletin 87-02, are included as an attachment to this report.

Item 4

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

Response

The eighty-two samples of fasteners from Beaver Valley Power Stations 1 and 2 were supplied to Westmoreland Mechanical Testing and Research, Inc. (WMTR) for the purpose of evaluating mechanical properties and chemical composition per NRC Compliance Bulletin 87-02 and B&W Specification 19-1171114-00, "Fastener Testing Requirements for Compliance with NRC Bulletin 87-02". Testing was performed in accordance with an approved quality assurance plan, and traceability of all samples was maintained at all times.

The following types of materials were tested: (1) ASTM A 193 and ASME SA-193, (2) ASTM A 194 and ASME SA-194, (3) ASTM 325 and ASME SA-325, and (4) ASTM A 490. Both safety and non-safety related fasteners were tested. Bolts, cap screws, studs, and threaded rods designated as safety related were tested for chemical composition, mechanical properties, and hardness. Bolts, cap screws, studs and threaded rods designated as non-safety related were tested for chemical composition and hardness. All nuts, whether safety or non-safety related were tested for chemical composition and hardness.

Item 5

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

Response

Attachment 1 provides a fastener testing data sheet for each of the eighty-two (82) samples. Attachment 2 provides a tabular listing of the results of the fastener testing for each of the material types tested. Properties which were found to be out of specification are noted by an asterisk.

The results indicate that four (4) nuts had properties that did not meet the applicable specification. Two (2) of the nuts, sample numbers BVPS-1-12 and BVPS-2-4 were procured as safety related. The other two (2) nuts, sample numbers BVPS-1-26A and BVPS-1-26B were procured as non-safety related.

All four (4) nuts were ordered to ASTM A 194 Grade 2H requirements. ASTM A 194 Grade 2H nuts are made of quenched and tempered carbon steel. The chemical composition requirements for ASTM A 194 Grade 2H nuts are: Carbon - 0.40 min., Sulfur - 0.050 max., and Phosphorus - 0.040 max. The hardness requirements are HRC 24-38.

Technical Evaluation of Out of Specification Samples

Nuts are usually machined from bar stock but may be forged. They could be cold formed or hot formed and do not necessarily need to be from the same material as that required of associated bolts. Size and configuration are usually more important than the material from which the nuts are made.

Nuts are typically evaluated according to proof stress (proof load). The proof stress of a nut is determined by assembling it on a hardened and threaded mandrel or on a test bolt conforming to the particular specification. A load axial with the mandrel or bolt and equal to the specified proof load of the nut is applied. To demonstrate acceptable proof stress, the nut must resist the specified proof load without failure by stripping or rupture and must be removable from the mandrel or test bolt by hand after initial loosening. Therefore, in order to meet the required proof load, the material's strength must be adequate to resist any permanent set during test, i.e., the proof stress is dependent on the material's yield strength.

Since the material's yield strength is therefore the most important factor when determining the function of a nut, the yield strength for all of the out of specification nuts was evaluated for compliance with the applicable specification. Three sources were used for conversion of available hardness properties (actually measured) to tensile and yield strengths of quenched and tempered carbon steel material (References 1, 2 & 3). Since the hardness of nut BVPS-1-26B was out of range for quenched and tempered steel (i.e., the microstructure was not tempered martensite), a different conversion was used to determine yield and tensile strengths for this particular nut. A reference was found utilizing the relationship of carbon content (at percentages from 0.1 to 1.5) for plain carbon steels in the as-rolled condition. These conversions from hardness to tensile strength and yield strength (per reference) are tabulated below in Tables 1 and 2 respectively.

TABLE 1

Tensile Strength (KSI)

<u>MATERIAL/NUT ID</u>	<u>HARDNESS</u>	<u>REF. 1</u>	<u>REF. 2</u>	<u>REF. 3</u>
A 194 Grade 2H (Specification)	HRC 24-38	119-171	119-172	119-171
BVPS-1-12	HRC 26	125	123	125
BVPS-1-26A	HRC 19.9-21.8	110-115	108-110	110-114
BVPS-1-26B	HRB 55.1-54.8	<50	<50	-----
BVPS-2-4	HRC 31.1	141	144	142

TABLE 2

Yield Strength (KSI)

<u>MATERIAL/NUT ID</u>	<u>REF. 2</u>	<u>REF. 3</u>
A 194 Grade 2H (Specification)	105-155	100-154
BVPS-1-12	108	105
BVPS-1-26A	90-95	92-95
BVPS-1-26B	<30	-----
BVPS-2-4	129	123

As can be seen from Tables 1 and 2, the mechanical properties of the two safety related nuts, BVPS-1-12 and BVPS-2-4, fall within the required specification range for A 194 Grade 2H nuts. Although the carbon content of these two nuts is lower than the specified range, they will meet the intended form, fit, and function of A 194 Grade 2H nuts.

The mechanical properties of the two non-safety related nuts BVPS-1-26A and BVPS-1-26B are not within the specified range. Nut BVPS-1-26A has an estimated yield strength of 90-95 KSI, slightly below the required yield strength of 105-155 KSI, probably due to an improper heat treatment. Therefore, this nut may not perform as intended if the application requires the full load carrying capability of an A 194 Grade 2H nut. It may be acceptable for applications which do not require the higher yield strength.

Nut BVPS-1-26B has significantly decreased mechanical properties. This nut does not have the proper tempered martensite microstructure due to its extremely low carbon content and would not have hardened to a proper level if the proper heat treatment had been performed. The yield strength of this nut is probably below 30 KSI and would not be acceptable in applications which require the use of A 194 Grade 2H nuts.

Samples BVPS-1-26A and BVPS-1-26B are requisitioned, purchased, stored, issued, and installed in non-safety related applications only. Failure of this item would not compromise or degrade the safety function of the plant nor produce a substantial safety hazard. However, to insure personnel safety and equipment safety and operability, the material (nuts) from this stock location have been purged from the Warehouse.

Item 6

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

Response

Beaver Valley Power Station had currently been evaluating the consolidation of inventory and procurement requirements to reduce the number of stock items and further ensure required quality levels. This effort will continue with the recommendation that bulk non-safety related stock fasteners be included.

REFERENCES

1. ASTM Standard A 370, "Mechanical Testing of Steel Products", American Society of Testing and Materials, Philadelphia, PA Table 3 - Approximate Hardness Conversions for Non-austenitic Steels
2. The Making, Shaping, and Treating of Steel, Ninth Edition, Harold E. McGannon, Ed., United States Steel Corporation, Pittsburgh, PA, Figure 40-27. The properties of tempered martensite, Figure 41-1. Variations in average mechanical properties of as-rolled, one-inch diameter bars of plain carbon steel, as a function of carbon content.
3. R. C. Cipolla, R. L. Cargill, and J. M. Bersin, "Assessment of Stud Integrity for the Reactor Coolant Pump Snubber Anchor Bolting", Aptech Engineering Services, May 1982, Figure 4-2. Yield Strength as a function of hardness for 4340 and 41XX Steels.

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: BVPS-1-1

Fastener Description: 1/2 x 1 1/4 bolt

Description of Sample Stock Location: DLC Construction Warehouse #1

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

Head Marking (Specification and Manufacturer): J B7

**Class/Procurement Level: Cat. 1

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

Pressure Boundary or Structural

Vendor:

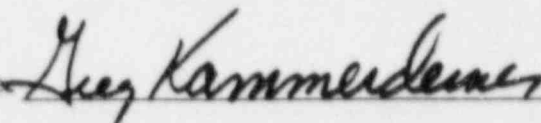
Dell Fastener
91 South Point Drive
Bridgeville, PA 15017

P.O.#: FM 2015

QA Requirements Imposed on Vendor: Certificate of Conformance

Licensee Representative: G. A. Kammerdeiner

Signature



Date

2-9-88

* BVPS-1: Beaver Valley Power Station Unit 1
BVPS-2: Beaver Valley Power Station Unit 2

** CAT. 1: Safety-Related
CAT. 2, 3, NS: Non-safety Related

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: BVPS-1-2

Fastener Description: 1/2" Hex Nut

Description of Sample Stock Location: DLC Construction Warehouse #1

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

Head Marking (Specification and Manufacturer): U 2H

**Class/Procurement Level: Category I

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

Pressure Boundary or Structural

Vendor:

Service Supply
11-13 Shingiss Street
McKees Rocks, PA 15136

P.O.#: FM 2603

QA Requirements Imposed on Vendor: Certificate of Compliance

Licensee Representative: G. A. Kammerdeiner

Signature

G. A. Kammerdeiner

Date

2-9-88

* BVPS-1: Beaver Valley Power Station Unit 1
BVPS-2: Beaver Valley Power Station Unit 2

** CAT. 1: Safety-Related
CAT. 2, 3, NS: Non-safety Related

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: BVPS-1-3

Fastener Description: 3/4" x 4" Hex Head Bolt

Description of Sample Stock Location: DLC Construction Warehouse #1

Material Specification as Documented by Licensee Records: ASTM A-325 - Type 1

Head Marking (Specification and Manufacturer): A325 NKYM \ /

**Class/Procurement Level: Category I

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

Vendor:

Service Supply
11-13 Shingiss Street
McKees Rocks, PA 15136

P.O.#: FC 941

QA Requirements Imposed on Vendor: Certificate of Compliance: 10CFR21

Licensee Representative: G. A. Kammerdeiner

Signature

G. A. Kammerdeiner

Date

2-9-88

* BVPS-1: Beaver Valley Power Station Unit 1
BVPS-2: Beaver Valley Power Station Unit 2

** CAT. 1: Safety-Related
CAT. 2, 3, NS: Non-safety Related

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: BVPS-1-4

Fastener Description: 3/4" Hex Nut

Description of Sample Stock Location: DLC Construction Warehouse #1

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

Head Marking (Specification and Manufacturer): I 2H

**Class/Procurement Level: Cat. 1

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

Pressure Boundary of Structural

Vendor:

Service Supply
11-13 Shingiss Street
McKees Rocks, PA 15136

P.O.#: FC 941

QA Requirements Imposed on Vendor: Certificate of Compliance (10CFR21)

Licensee Representative: G. A. Kammerdeiner

Signature

G. A. Kammerdeiner

Date

2-9-88

* BVPS-1: Beaver Valley Power Station Unit 1
BVPS-2: Beaver Valley Power Station Unit 2

** CAT. 1: Safety-Related
CAT. 2, 3, NS: Non-safety Related

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: BVPS-1-5

Fastener Description: 5/8" x 1" Bolt

Description of Sample Stock Location: DLC Construction Warehouse #1

Material Specification as Documented by Licensee Records: ASTM A325 Type 1

Head Marking (Specification and Manufacturer): A325 \ / A

**Class/Procurement Level: Cat. 1

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

Vendor:

Service Supply
11-13 Shinghiss Street
McKees Rocks, PA 15136

P.O.#: FC 941

QA Requirements Imposed on Vendor: Certificate of Conformance (10CFR21)

Licensee Representative: G. A. Kammerdeiner

Signature *G. A. Kammerdeiner* Date 2-4-88

* BVPS-1: Beaver Valley Power Station Unit 1
BVPS-2: Beaver Valley Power Station Unit 2

** CAT. 1: Safety-Related
CAT. 2, 3, NS: Non-safety Related

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: BVPS-1-6

Fastener Description: 5/8" Hex Nut

Description of Sample Stock Location: DLC Construction Warehouse #1

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

Head Marking (Specification and Manufacturer): E 2H

**Class/Procurement Level: Category I

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

Pressure Boundary or Structural

Vendor:

Service Supply
11-13 Shingiss Street
McKees Rocks, PA 15136

P.O.#: FC 941

QA Requirements Imposed on Vendor: Certificate of Conformance (10CFR21)

Licensee Representative: G. A. Kammerdeiner

Signature

G. A. Kammerdeiner

Date

2-9-88

* BVPS-1: Beaver Valley Power Station Unit 1
BVPS-2: Beaver Valley Power Station Unit 2

** CAT. 1: Safety-Related
CAT. 2, 3, NS: Non-safety Related

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: BVPS-1-7

Fastener Description: 1/2" x 1" Hex Head Bolt

Description of Sample Stock Location: DLC Construction Warehouse #1

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

Head Marking (Specification and Manufacturer): J B7

**Class/Procurement Level: Category I

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

Pressure Boundary or Structural

Vendor:

Fastener House
4-405 Parkway View Drive
Pittsburgh, PA 15205

P.O.#: FM-1610

QA Requirements Imposed on Vendor: Certificate of Compliance

Licensee Representative: G. A. Kammerdeiner

Signature Guy Kammerdeiner Date 2-9-88

* BVPS-1: Beaver Valley Power Station Unit 1
BVPS-2: Beaver Valley Power Station Unit 2

** CAT. 1: Safety-Related
CAT. 2, 3, NS: Non-safety Related

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: BVPS-1-8

Fastener Description: 1/2" Hex Nut

Description of Sample Stock Location: DLC Construction Warehouse #1

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

Head Marking (Specification and Manufacturer): 2H T

**Class/Procurement Level: Cat. 1

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

Pressure Boundary or Structural

Vendor:

Dell Fasteners
91 South Pointe Drive
Bridgeville, PA 15017

P.O.#: FM 1826

QA Requirements Imposed on Vendor: Certificate of Conformance

Licensee Representative: G. A. Kammerdeiner

Signature

G. A. Kammerdeiner

Date

2-9-88

* BVPS-1: Beaver Valley Power Station Unit 1
BVPS-2: Beaver Valley Power Station Unit 2

** CAT. 1: Safety-Related
CAT. 2, 3, NS: Non-safety Related

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: BVPS-1-9

Fastener Description: 1/2" x 1" Hex Head Bolt

Description of Sample Stock Location: DLC Construction Warehouse #1

Material Specification as Documented by Licensee Records: ASTM A193-B7

Head Marking (Specification and Manufacturer): J B7

**Class/Procurement Level: Category 1

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

Pressure Boundary or Structural

Vendor:

Fastener House
4-405 Parkway View Drive
Pittsburgh, PA 15205

P.O.#: FM-2361

QA Requirements Imposed on Vendor: Certificate of Conformance

Licensee Representative: G. A. Kammerdeiner

Signature

G. A. Kammerdeiner

Date

2-9-88

* BVPS-1: Beaver Valley Power Station Unit 1
BVPS-2: Beaver Valley Power Station Unit 2

** CAT. 1: Safety-Related
CAT. 2, 3, NS: Non-safety Related

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: BVPS-1-10

Fastener Description: 1/2" Hex Nut

Description of Sample Stock Location: DLC Construction Warehouse #1

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

Head Marking (Specification and Manufacturer): 2H T

**Class/Procurement Level: Cat. 1

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

Pressure Boundary or Structure

Vendor:

Dell Fasteners
91 South Pointe Drive
Bridgeville, PA 15017

P.O.#: FM 1826

QA Requirements Imposed on Vendor: Certificate of Conformance

Licensee Representative: G. A. Kammerdeiner

Signature

G. A. Kammerdeiner

Date

2-9-88

* BVPS-1: Beaver Valley Power Station Unit 1
BVPS-2: Beaver Valley Power Station Unit 2

** CAT. 1: Safety-Related
CAT. 2, 3, NS: Non-safety Related

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: BVPS-1-11A

Fastener Description: 5/8" x 1" Hex Head Bolt

Description of Sample Stock Location: DLC Construction Warehouse #1

Material Specification as Documented by Licensee Records: ASTM A325, Type 1

Head Marking (Specification and Manufacturer): A325 B1S

**Class/Procurement Level: Category 1

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

Vendor:

Service Supply
11-13 Shingiss Street
McKees Rocks, PA 15136

P.O.#: FC 748

QA Requirements Imposed on Vendor: Certificate of Compliance (10CFR21)

Licensee Representative: G. A. Kammerdeiner

Signature

G. A. Kammerdeiner

Date

2-9-88

* BVPS-1: Beaver Valley Power Station Unit 1
BVPS-2: Beaver Valley Power Station Unit 2

** CAT. 1: Safety-Related
CAT. 2, 3, NS: Non-safety Related

Attachment 1



Fastener Testing Data Sheet

*Sample ID#: BVPS-1-11B

Fastener Description: 5/8" x 1" Hex Head Bolt

Description of Sample Stock Location: DLC Construction Warehouse #1

Material Specification as Documented by Licensee Records: ASTM A325 Type 1

Head Marking (Specification and Manufacturer): 325  

**Class/Procurement Level: Cat. 1

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

Vendor:

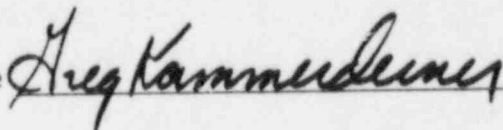
Service Supply
11-13 Shingiss Street
McKees Rocks, PA 15136

P.O.#: FC 748

QA Requirements Imposed on Vendor: Certificate of Conformance (10CFR21)

Licensee Representative: G. A. Kammerdeiner

Signature



Date

2-9-88

* BVPS-1: Beaver Valley Power Station Unit 1
BVPS-2: Beaver Valley Power Station Unit 2

** CAT. 1: Safety-Related
CAT. 2, 3, NS: Non-safety Related

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: BVPS-1-12

Fastener Description: 5/8" Hex Nut

Description of Sample Stock Location: DLC Construction Warehouse #1

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

Head Marking (Specification and Manufacturer): E 2H

**Class/Procurement Level: Cat. 1

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

Pressure Boundary or Structural

Vendor:

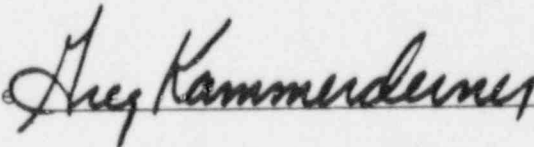
Service Supply
11-13 Shingiss Street
McKees Rocks, PA 15136

P.O.#: FC 748

QA Requirements Imposed on Vendor: Certificate of Compliance (10CFR21)

Licensee Representative: G. A. Kammerdeiner

Signature



Date

2-9-88

* BVPS-1: Beaver Valley Power Station Unit 1
BVPS-2: Beaver Valley Power Station Unit 2

** CAT. 1: Safety-Related
CAT. 2, 3, NS: Non-safety Related

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: BVPS-1-13

Fastener Description: 5/8" x 2" Hex Head Bolt

Description of Sample Stock Location: DLC Construction Warehouse #1

Material Specification as Documented by Licensee Records: ASTM A325 - Type 1

Head Marking (Specification and Manufacturer): A325 T/B

**Class/Procurement Level: Category 1

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

Vendor:

Southern Bolt & Fastener
P.O. Box 7196
Shreveport, LA 71107

P.O.#: FC 645 (2BV-53581-6)

QA Requirements Imposed on Vendor:

ASME III Certificate of Compliance; 10CFR21

Licensee Representative: G. A. Kammerdeiner

Signature

G. A. Kammerdeiner

Date

2-9-88

* BVPS-1: Beaver Valley Power Station Unit 1
BVPS-2: Beaver Valley Power Station Unit 2

** CAT. 1: Safety-Related
CAT. 2, 3, NS: Non-safety Related

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: BVPS-1-14

Fastener Description: 5/8" Hex Nut

Description of Sample Stock Location: DLC Construction Warehouse #1

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

Head Marking (Specification and Manufacturer): U 2H

**Class/Procurement Level: Category 1

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

Pressure Boundary or Structural

Vendor:

Fastener House
4-405 Parkway View Drive
Pittsburgh, PA 15205

P.O.#: FX 0124

QA Requirements Imposed on Vendor: Certificate of Conformance

Licensee Representative: G. A. Kammerdeiner

Signature

Greg Kammerdeiner

Date

2-9-88

* BVPS-1: Beaver Valley Power Station Unit 1
BVPS-2: Beaver Valley Power Station Unit 2

** CAT. 1: Safety-Related
CAT. 2, 3, NS: Non-safety Related

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: BVPS-1-15

Fastener Description: 3/4" x 4 1/4" Bolt

Description of Sample Stock Location: DLC Construction Warehouse #1

Material Specification as Documented by Licensee Records: ASTM A325, Type 1

Head Marking (Specification and Manufacturer): A325 / \ Texas Bolt

**Class/Procurement Level: Category 1

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

Vendor:

Southern Bolt and Fasteners
P.O. Box 7196
Shreveport, LA 71107

P.O.#: FM365 (2BV-53581-3)

QA Requirements Imposed on Vendor:

ASME III Certificate of Conformance; 10CFR21

Licensee Representative: G. A. Kammerdeiner

Signature G. A. Kammerdeiner Date 2-9-88

* BVPS-1: Beaver Valley Power Station Unit 1
BVPS-2: Beaver Valley Power Station Unit 2

** CAT. 1: Safety-Related
CAT. 2, 3, NS: Non-safety Related

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: BVPS-1-16

Fastener Description: 3/4" Nut

Description of Sample Stock Location: DLC Construction Warehouse #1

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

Head Marking (Specification and Manufacturer): 2H I

**Class/Procurement Level: Category 1

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

Pressure Boundary or Structural

Vendor:

Service Supply
11-13 Shingiss Street
McKees Rocks, PA 15136

P.O.#: FC 941

QA Requirements Imposed on Vendor: Certificate of Compliance; 10CFR21

Licensee Representative: G. A. Kammerdeiner

Signature

Greg Kammerdeiner

Date

2-9-88

* BVPS-1: Beaver Valley Power Station Unit 1
BVPS-2: Beaver Valley Power Station Unit 2

** CAT. 1: Safety-Related
CAT. 2, 3, NS: Non-safety Related

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: BVPS-1-17

Fastener Description: Bonnet Stud 5/8-11 x 4 3/4"

Description of Sample Stock Location: Stock #854298; 07-02-05-23-007

Material Specification as Documented by Licensee Records: ASTM A193 B7

Head Marking (Specification and Manufacturer): C B7

**Class/Procurement Level: 1A

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

Bonnet Stud for Gate Valve

Vendor:

Pacific Valve Co.
3201 Walnut Street
Long Beach, CA 90807

P.O.#: 1BV91620

QA Requirements Imposed on Vendor: Certificate of Conformance

Licensee Representative: G. A. Kammerdeiner

Signature

G. A. Kammerdeiner

Date

2-9-88

* BVPS-1: Beaver Valley Power Station Unit 1
BVPS-2: Beaver Valley Power Station Unit 2

** CAT. 1: Safety-Related
CAT. 2, 3, NS: Non-safety Related

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: BVPS-1-18

Fastener Description: 5/8" Hex Nut

Description of Sample Stock Location: Stock #871390: 07-02-03-02-001

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

Head Marking (Specification and Manufacturer): JS 2H

**Class/Procurement Level: Category 1

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

Pressure Boundary or Structural

Vendor:

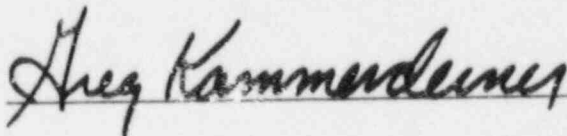
American Fastener Technologies Corp.
2012 Babcock Boulevard
Pittsburgh, PA 15209

P.O.#: D046263

QA Requirements Imposed on Vendor: Certificate of Compliance

Licensee Representative: G. A. Kammerdeiner

Signature



Date

2-9-88

* BVPS-1: Beaver Valley Power Station Unit 1
BVPS-2: Beaver Valley Power Station Unit 2

** CAT. 1: Safety-Related
CAT. 2, 3, NS: Non-safety Related

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: BVPS-1-19

Fastener Description: Stud 5/8" - 11 x 2 3/4"

Description of Sample Stock Location: Stock #854416: 07-02-05-23-006

Material Specification as Documented by Licensee Records: ASTM A193 B7

Head Marking (Specification and Manufacturer): C B7

**Class/Procurement Level: Category 1

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

Bonnet Stud for MOV

Vendor:

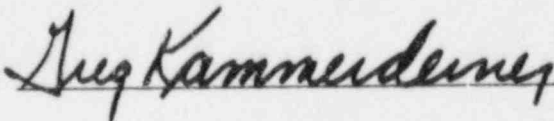
Pacific Valve Co.
3201 Walnut Street
Long Beach, CA 90807

P.O.#: 1BV90971

QA Requirements Imposed on Vendor: Certificate of Compliance

Licensee Representative: G. A. Kammerdeiner

Signature



Date

2-9-88

* BVPS-1: Beaver Valley Power Station Unit 1
BVPS-2: Beaver Valley Power Station Unit 2

** CAT. 1: Safety-Related
CAT. 2, 3, NS: Non-safety Related

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: BVPS-1-20

Fastener Description: 5/8" Nut

Description of Sample Stock Location: Stock #871390: 07-02-03-02-001

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

Head Marking (Specification and Manufacturer): JS 2H

**Class/Procurement Level: Category 1

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

Pressure Boundary or Structural

Vendor:

American Fastener Technologies Corp.
2012 Babcock Boulevard
Pittsburgh, PA 15209

P.O.#: D046263

QA Requirements Imposed on Vendor: Certificate of Conformance

Licensee Representative: G. A. Kammerdeiner

Signature

G. A. Kammerdeiner

Date

2-9-88

* BVPS-1: Beaver Valley Power Station Unit 1
BVPS-2: Beaver Valley Power Station Unit 2

** CAT. 1: Safety-Related
CAT. 2, 3, NS: Non-safety Related

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: BVPS-1-21

Fastener Description: Stud 3/4" - 10 x 6"

Description of Sample Stock Location: Stock #852858: 07-02-06-06-005

Material Specification as Documented by Licensee Records: ASTM A193 B7

Head Marking (Specification and Manufacturer): C B7

**Class/Procurement Level: Category 1

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

Bonnet Stud for Gear Operated Globe Valve

Vendor:

Pacific Valve, Inc.
3201 Walnut Street
Long Beach, CA 90807

P.O.#: 1BV91620

QA Requirements Imposed on Vendor: Certificate of Conformance

Licensee Representative: G. A. Kammerdeiner

Signature Alex Kammerdeiner Date 2-9-88

* BVPS-1: Beaver Valley Power Station Unit 1
BVPS-2: Beaver Valley Power Station Unit 2

** CAT. 1: Safety-Related
CAT. 2, 3, NS: Non-safety Related

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: BVPS-1-22

Fastener Description: Hex Nut 3/4"

Description of Sample Stock Location: DLC Construction Warehouse #1

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

Head Marking (Specification and Manufacturer): JS 2H

**Class/Procurement Level: Category 1

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

Pressure Boundary or Structural

Vendor:

Service Supply
11-13 Shingiss Street
McKees Rocks, PA 15136

P.O.#: FC 748

QA Requirements Imposed on Vendor: Certificate of Compliance; 10CFR21

Licensee Representative: G. A. Kammerdeiner

Signature

G. A. Kammerdeiner

Date

2-9-88

* BVPS-1: Beaver Valley Power Station Unit 1
BVPS-2: Beaver Valley Power Station Unit 2

** CAT. 1: Safety-Related
CAT. 2, 3, NS: Non-safety Related

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: BVPS-1-23

Fastener Description: Stud 1 1/4" x 9"

Description of Sample Stock Location:

Operations Stores; Stock #857493: 07-02-07-09-005

Material Specification as Documented by Licensee Records: ASTM A193-52T B7

Head Marking (Specification and Manufacturer): CB 16

**Class/Procurement Level: 3 C

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

Maintenance Material

Vendor:

D-Bolt Co. of Pennsylvania
999 Eighth Street
Glenshaw, PA 15116

P.O.#: D021598

QA Requirements Imposed on Vendor: None listed

Licensee Representative: G. A. Kammerdeiner

Signature *Gug Kammerdeiner* Date 2-9-88

* BVPS-1: Beaver Valley Power Station Unit 1
BVPS-2: Beaver Valley Power Station Unit 2

** CAT. 1: Safety-Related
CAT. 2, 3, NS: Non-safety Related

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: BVPS-1-24

Fastener Description: Nut 1 1/4"

Description of Sample Stock Location: Stock #857493: 07-02-07-09-005

Material Specification as Documented by Licensee Records: ASTM A194-54-2H

Head Marking (Specification and Manufacturer): E 2H

**Class/Procurement Level: 3C

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

Maintenance Material

Vendor:

D-Bolt Co. of Pennsylvania
999 Eighth Street
Glenshaw, PA 15116

P.O.#: D021598

QA Requirements Imposed on Vendor: None listed

Licensee Representative: G. A. Kammerdeiner

Signature G. A. Kammerdeiner Date 2-9-88

* BVPS-1: Beaver Valley Power Station Unit 1
BVPS-2: Beaver Valley Power Station Unit 2

** CAT. 1: Safety-Related
CAT. 2, 3, NS: Non-safety Related

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: BVPS-1-25

Fastener Description: Stud 1" x 7"

Description of Sample Stock Location: Stock #425331: 07-02-07-09-010

Material Specification as Documented by Licensee Records: ASTM A193-52T-B7

Head Marking (Specification and Manufacturer): B7 C

**Class/Procurement Level: Non-safety

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

Non-safety related

Vendor:

D-Bolt Co. of Pennsylvania
999 Eighth Street
Glenshaw, PA 15116

P.O.#: D040459

QA Requirements Imposed on Vendor: None

Licensee Representative: G. A. Kammerdeiner

Signature

Aug Kammerdeiner

Date

2-9-88

* BVPS-1: Beaver Valley Power Station Unit 1
BVPS-2: Beaver Valley Power Station Unit 2

** CAT. 1: Safety-Related
CAT. 2, 3, NS: Non-safety Related

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: BVPS-1-26A

Fastener Description: Nut 1"

Description of Sample Stock Location: Stock #425331: 07-02-07-09-010

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

Head Marking (Specification and Manufacturer): S 2H

**Class/Procurement Level: Non-safety

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

Non-safety related

Vendor:

D-Bolt Co. of Pennsylvania
999 Eighth Street
Glenshaw, PA 1511

P.O.#: D040459

QA Requirements Imposed on Vendor: None

Licensee Representative: G. A. Kammerdeiner

Signature

G. A. Kammerdeiner

Date

2-9-88

* BVPS-1: Beaver Valley Power Station Unit 1
BVPS-2: Beaver Valley Power Station Unit 2

** CAT. 1: Safety-Related
CAT. 2, 3, NS: Non-safety Related

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: BVPS-1-26B

Fastener Description: Nut 1"

Description of Sample Stock Location: Stock #425331: 07-02-07-09-010

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

Head Marking (Specification and Manufacturer): None

**Class/Procurement Level: Non-safety

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

Non-safety related

Vendor:

D-Bolt Co. of Pennsylvania
999 Eighth Street
Glenshaw, PA 15116

P.O.#: D040459

QA Requirements Imposed on Vendor: None

Licensee Representative: G. A. Kammerdeiner

Signature

Gug Kammerdeiner

Date

2-9-88

* BVPS-1: Beaver Valley Power Station Unit 1
BVPS-2: Beaver Valley Power Station Unit 2

** CAT. 1: Safety-Related
CAT. 2, 3, NS: Non-safety Related

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: BVPS-2-1

Fastener Description: 1/8" x 6" stud

Description of Sample Stock Location: Unit 2 Construction Warehouse D

Material Specification as Documented by Licensee Records: SA 193-B6

Head Marking (Specification and Manufacturer): SAM (→) B6

**Class/Procurement Level: Cat. 1

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

Pressure Boundary

Vendor:

A&G Engineering
4640 E. LaPalma Ave.
Anaheim, CA 92806

P.O.#: 2BV-61379

QA Requirements Imposed on Vendor:

ASME Sect. III Certificate of Conformance; Heat Code

Licensee Representative: G. A. Kammerdeiner

Signature

G. A. Kammerdeiner

Date

2-9-88

* BVPS-1: Beaver Valley Power Station Unit 1
BVPS-2: Beaver Valley Power Station Unit 2

** CAT. 1: Safety-Related
CAT. 2, 3, NS: Non-safety Related

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: BVPS-2-2

Fastener Description: 7/8" nut

Description of Sample Stock Location: Unit 2 Construction Warehouse D

Material Specification as Documented by Licensee Records: SA 194-6 (Type 410)

Head Marking (Specification and Manufacturer): F ZG G6

**Class/Procurement Level: Cat. 1

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

Pressure Boundary

Vendor:

A&G Engineering
4640 E. LaPalma Ave.
Anaheim, CA 92806

P.O.#: 2BV-61379

QA Requirements Imposed on Vendor:

ASME III Certificate of Conformance; Heat Code

Licensee Representative: G. A. Kammerdeiner

Signature

G. A. Kammerdeiner

Date

2-9-88

* BVPS-1: Beaver Valley Power Station Unit 1
BVPS-2: Beaver Valley Power Station Unit 2

** CAT. 1: Safety-Related
CAT. 2, 3, NS: Non-safety Related

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: BVPS-2-3

Fastener Description: 1/2" x 1 3/4" Bolt

Description of Sample Stock Location: Unit 2 Construction Warehouse D

Material Specification as Documented by Licensee Records: SA 325 - Type 1

Head Marking (Specification and Manufacturer): BIS LI A 92 A325

**Class/Procurement Level: Cat. 1

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

Vendor:

Southern Bolt & Fasteners
P.O. Box 7196
Shreveport, LA 71107

P.O.#: 2BV-54115

QA Requirements Imposed on Vendor:

ASME III Certificate of Compliance and Certified Mill Test Report

Licensee Representative: G. A. Kammerdeiner

Signature

Gug Kammerdeiner

Date

2-9-88

* BVPS-1: Beaver Valley Power Station Unit 1
BVPS-2: Beaver Valley Power Station Unit 2

** CAT. 1: Safety-Related
CAT. 2, 3, NS: Non-safety Related

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: BVPS-2-4

Fastener Description: 1/2" nut

Description of Sample Stock Location: Unit 2 Construction Warehouse D

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

Head Marking (Specification and Manufacturer): 2H T

**Class/Procurement Level: Cat. 1

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

Pressure Boundary or Structural

Vendor:

Southern Bolt & Fastener
P.O. Box 7196
Shreveport, LA 71107

P.O.#: 2BV-53581

QA Requirements Imposed on Vendor: ASME III Certificate of Compliance

Licensee Representative: G. A. Kammerdeiner

Signature

G. A. Kammerdeiner

Date

2-9-88

* BVPS-1: Beaver Valley Power Station Unit 1
BVPS-2: Beaver Valley Power Station Unit 2

** CAT. 1: Safety-Related
CAT. 2, 3, NS: Non-safety Related

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: BVPS-2-5

Fastener Description: 1" x 5 1/2" Stud

Description of Sample Stock Location: Unit 2 Construction Warehouse D

Material Specification as Documented by Licensee Records: SA 193 B6 (Class 2)

Head Marking (Specification and Manufacturer): B6 CY3

**Class/Procurement Level: Cat. 1

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

Pressure Boundary

Vendor:

Cardinal Industries
3873 West Oquendo
Las Vegas, NV 89118

P.O.#: 2BV-59636

QA Requirements Imposed on Vendor:

ASME III Certificate of Compliance; Heat Code

Licensee Representative: G. A. Kammerdeiner

Signature

G. A. Kammerdeiner

Date

2-9-88

* BVPS-1: Beaver Valley Power Station Unit 1
BVPS-2: Beaver Valley Power Station Unit 2

** CAT. 1: Safety-Related
CAT. 2, 3, NS: Non-safety Related

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: BVPS-2-6

Fastener Description: 1" nut

Description of Sample Stock Location: Unit 2 Construction Warehouse D

Material Specification as Documented by Licensee Records: SA 194-6 (Type 410)

Head Marking (Specification and Manufacturer): (↔) K5 6

**Class/Procurement Level: Cat. 1

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

Pressure Boundary

Vendor:

Cardinal Industries
3873 West Oquendo
Las Vegas, NV 89118

P.O.#: 2BV 59636

QA Requirements Imposed on Vendor: ASME III Certificate of Conformance

Licensee Representative: G. A. Kammerdeiner

Signature

G. A. Kammerdeiner

Date

2-9-88

* BVPS-1: Beaver Valley Power Station Unit 1
BVPS-2: Beaver Valley Power Station Unit 2

** CAT. 1: Safety-Related
CAT. 2, 3, NS: Non-safety Related

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: BVPS-2-7

Fastener Description: 7/8" x 7" bolt

Description of Sample Stock Location: Unit 2 Construction Warehouse D

Material Specification as Documented by Licensee Records: SA 193B6 (Class 2)

Head Marking (Specification and Manufacturer): (↔) B6

**Class/Procurement Level: Cat. 1

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

Pressure Boundary

Vendor:

A&G Engineering
4640 E. LaPalma Ave.
Anaheim, CA 92806

P.O.#: 2BV-62452

QA Requirements Imposed on Vendor: ASME III Certificate of Conformance

Licensee Representative: G. A. Kammerdeiner

Signature

G. A. Kammerdeiner

Date

2-9-88

* BVPS-1: Beaver Valley Power Station Unit 1
BVPS-2: Beaver Valley Power Station Unit 2

** CAT. 1: Safety-Related
CAT. 2, 3, NS: Non-safety Related

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: BVPS-2-8

Fastener Description: 7/8" hex nut

Description of Sample Stock Location:

Unit 2 Construction Warehouse D

Material Specification as Documented by Licensee Records: SA194-6 (Type 410)

Head Marking (Specification and Manufacturer): G6 ZG F

**Class/Procurement Level: Cat. 1

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

Pressure Boundary

Vendor:

A&G Engineering
4640 E. LaPalma Ave.
Anaheim, CA 92806

P.O.#: 2BV-61379

QA Requirements Imposed on Vendor: ASME III Certificate of Conformance

Licensee Representative: G. A. Kammerdeiner

Signature

Gug Kammerdeiner

Date

2-9-88

* BVPS-1: Beaver Valley Power Station Unit 1
BVPS-2: Beaver Valley Power Station Unit 2

** CAT. 1: Safety-Related
CAT. 2, 3, NS: Non-safety Related

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: BVPS-2-9

Fastener Description: 1/2 - 13 x 4" Stud (all thread) C.S. (unc)

Description of Sample Stock Location: Unit 2 Construction Warehouse D

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

Head Marking (Specification and Manufacturer): B7 R

**Class/Procurement Level: Cat. 1

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

Pressure Boundary or Structural

Vendor:

R.E.C. Corporation
2 Sheraton Plaza
New Rochelle, NY 10801

P.O.#: 2BV-54119

QA Requirements Imposed on Vendor:

ASME III Certificate of Conformance; Certified Mill Test Report

Licensee Representative: G. A. Kammerdeiner

Signature

Greg Kammerdeiner

Date

2-9-88

* BVPS-1: Beaver Valley Power Station Unit 1
BVPS-2: Beaver Valley Power Station Unit 2

** CAT. 1: Safety-Related
CAT. 2, 3, NS: Non-safety Related

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: BVPS-2-10

Fastener Description: 1/2"-13 hex nut

Description of Sample Stock Location:

Unit 2 Construction Warehouse D

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

Head Marking (Specification and Manufacturer): 2H BIS

**Class/Procurement Level: Cat. 1

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

Pressure Boundary or Structural

Vendor:

Pepco, Inc.
P.O. Box 382
South Plainfield, NJ 07081

P.O.#: 2BV-57847

QA Requirement? Imposed on Vendor: ASME III Certificate of Conformance

Licensee Representative: G. A. Kammerdeiner

Signature

G. A. Kammerdeiner

Date

2-9-88

* BVPS-1: Beaver Valley Power Station Unit 1
BVPS-2: Beaver Valley Power Station Unit 2

** CAT. 1: Safety-Related
CAT. 2, 3, NS: Non-safety Related

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: BVPS-2-11

Fastener Description: 1 1/4" x 4" C.S. Stud (all thread)

Description of Sample Stock Location: Unit 2 Construction Warehouse D

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

Head Marking (Specification and Manufacturer): B7 R AJ

**Class/Procurement Level: Cat. 1

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

Pressure Boundary

Vendor:

R.E.C. Corporation
2 Sheraton Plaza
New Rochelle, NY 10801

P.O.#: 2BV-55227

QA Requirements Imposed on Vendor:

ASME III Certified Material Test Reports; Heat Coded; Certificate of Conformance

Licensee Representative: G. A. Kammerdeiner

Signature *G. A. Kammerdeiner* Date 2-9-88

* BVPS-1: Beaver Valley Power Station Unit 1
BVPS-2: Beaver Valley Power Station Unit 2

** CAT. 1: Safety-Related
CAT. 2, 3, NS: Non-safety Related

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: BVPS-2-12

Fastener Description: 1 1/4" C.S. Hvy. Hex Nut

Description of Sample Stock Location: Unit 2 Construction Warehouse D

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

Head Marking (Specification and Manufacturer): OY 88 T 2H

**Class/Procurement Level: Cat. 1

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

Pressure Boundary or Structural

Vendor:

A&G Engineering
4640 E. LaPalma Ave.
Anaheim, CA 92806

P.O.#: 2BV-62525

QA Requirements Imposed on Vendor:

ASME III Certified Material Test Report; Certificate of Compliance

Licensee Representative: G. A. Kammerdeiner

Signature

Gug Kammerdeiner

Date

2-9-88

* BVPS-1: Beaver Valley Power Station Unit 1
BVPS-2: Beaver Valley Power Station Unit 2

** CAT. 1: Safety-Related
CAT. 2, 3, NS: Non-safety Related

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: BVPS-2-13

Fastener Description: 1/2 - 13 x 3 1/8 stud

Description of Sample Stock Location: Unit 2 Construction Warehouse D

Material Specification as Documented by Licensee Records: SA 193-B8

Head Marking (Specification and Manufacturer): B8/C

**Class/Procurement Level: Cat. 1

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

Pressure Boundary

Vendor:

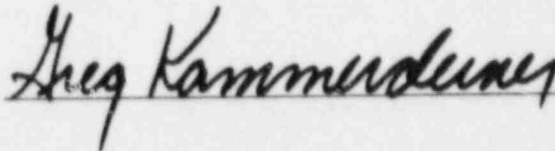
Cardinal Industries
3873 West Oquendo
Las Vegas, NV 89118

P.O.#: 2BV-62516

QA Requirements Imposed on Vendor: ASME III Certificate of Compliance

Licensee Representative: G. A. Kammerdeiner

Signature



Date

2-9-88

* BVPS-1: Beaver Valley Power Station Unit 1
BVPS-2: Beaver Valley Power Station Unit 2

** CAT. 1: Safety-Related
CAT. 2, 3, NS: Non-safety Related

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: BVPS-2-14

Fastener Description: 1/2" Nut

Description of Sample Stock Location: Unit 2 Construction Warehouse D

Material Specification as Documented by Licensee Records: SA 194-8

Head Marking (Specification and Manufacturer): \leftrightarrow 8

**Class/Procurement Level: Cat. 1

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

Pressure Boundary

Vendor:

Cardinal Industries
3873 West Oquendo
Las Vegas, NV 89118

P.O.#: 2BV-62516

QA Requirements Imposed on Vendor: ASME III Certificate of Conformance

Licensee Representative: G. A. Kammerdeiner

Signature

G. A. Kammerdeiner

Date

2-9-88

* BVPS-1: Beaver Valley Power Station Unit 1
BVPS-2: Beaver Valley Power Station Unit 2

** CAT. 1: Safety-Related
CAT. 2, 3, NS: Non-safety Related

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: BVPS-2-15

Fastener Description: 5/8" x 5 1/2" Hex Head SS Bolt

Description of Sample Stock Location: Unit 2 Construction Warehouse D

Material Specification as Documented by Licensee Records: SA 193-B8

Head Marking (Specification and Manufacturer): (↔) B8 ACT

**Class/Procurement Level: Cat. 1

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

Pressure Boundary

Vendor:

A&G Engineering
4640 E. LaPalma Ave.
Anaheim, CA 92806

P.O.#: 2BV-58259

QA Requirements Imposed on Vendor: ASME III Certificate of Conformance

Licensee Representative: G. A. Kammerdeiner

Signature

Greg Kammerdeiner

Date

2-9-88

* BVPS-1: Beaver Valley Power Station Unit 1
BVPS-2: Beaver Valley Power Station Unit 2

** CAT. 1: Safety-Related
CAT. 2, 3, NS: Non-safety Related

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: BVPS-2-16

Fastener Description: 5/8" SS Hex Nut

Description of Sample Stock Location: Unit 2 Construction Warehouse D

Material Specification as Documented by Licensee Records: SA 194-8

Head Marking (Specification and Manufacturer): 8B (N)

**Class/Procurement Level: Cat. 1

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

Pressure Boundary

Vendor:

Lone Star Screw
P.O. Box 15211-T
Houston, TX 77020

P.O.#: 2BV-58496

QA Requirements Imposed on Vendor: ASME III Certificate of Conformance

Licensee Representative: G. A. Kammerdeiner

Signature

G. A. Kammerdeiner

Date

2-9-88

* BVPS-1: Beaver Valley Power Station Unit 1
BVPS-2: Beaver Valley Power Station Unit 2

** CAT. 1: Safety-Related
CAT. 2, 3, NS: Non-safety Related

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: BVPS-2-17

Fastener Description: 1" x 3 1/2" Bolt

Description of Sample Stock Location: Unit 2 Construction Warehouse D

Material Specification as Documented by Licensee Records: SA 325 Type 1

Head Marking (Specification and Manufacturer): T B A325 \ /
|

**Class/Procurement Level: Cat. 1

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

Vendor:

A&G Engineering
4640 E. LaPalma Ave.
Anaheim, CA 92806

P.O.#: 2BV-59447

QA Requirements Imposed on Vendor: ASME III Certificate of Conformance

Licensee Representative: G. A. Kammerdeiner

Signature

Greg Kammerdeiner

Date

2-9-88

* BVPS-1: Beaver Valley Power Station Unit 1

BVPS-2: Beaver Valley Power Station Unit 2

** CAT. 1: Safety-Related

CAT. 2, 3, NS: Non-safety Related

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: BVPS-2-18

Fastener Description. 1" nut

Description of Sample Stock Location: Unit 2 Construction Warehouse D

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

Head Marking (Specification and Manufacturer): B1S 2H

**Class/Procurement Level: Cat. 1

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

Pressure Boundary or Structural

Vendor:

Pepco Inc.
P.O. Box 382
South Plainfield, NJ 07080

P.O.#: 2BV-57847

QA Requirements Imposed on Vendor: ASME III Certificate of Conformance

Licensee Representative: G. A. Kammerdeiner

Signature

Gug Kammerdeiner

Date

2-9-88

* BVPS-1: Beaver Valley Power Station Unit 1
BVPS-2: Beaver Valley Power Station Unit 2

** CAT. 1: Safety-Related
CAT. 2, 3, NS: Non-safety Related

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: BVPS-2-19

Fastener Description: 1/2" x 1 1/2" bolt

Description of Sample Stock Location: Unit 2 Construction Warehouse D

Material Specification as Documented by Licensee Records: SA 325 Type 1

Head Marking (Specification and Manufacturer): BIS A325

**Class/Procurement Level: Cat. 1

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

Vendor:

Pepco Inc.
P.O. Box 382
South Plainfield, NJ 07080

P.O.#: 2BV-57847

QA Requirements Imposed on Vendor: ASME III Certificate of Conformance

Licensee Representative: G. A. Kammerdeiner

Signature

Guy Kammerdeiner

Date

2-9-88

* BVPS-1: Beaver Valley Power Station Unit 1
BVPS-2: Beaver Valley Power Station Unit 2

** CAT. 1: Safety-Related
CAT. 2, 3, NS: Non-safety Related

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: BVPS-2-20

Fastener Description: 1/2" Hex Nut

Description of Sample Stock Location: Unit 2 Construction Warehouse D

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

Head Marking (Specification and Manufacturer): BIS 2H

**Class/Procurement Level: Cat. 1

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

Pressure Boundary or Structural

Vendor:

Pepco Inc.
P.O. Box 382
South Plainfield, NJ 07080

P.O.#: 2BV-57847

QA Requirements Imposed on Vendor: ASME III Certificate of Conformance

Licensee Representative: G. A. Kammerdeiner

Signature G. A. Kammerdeiner Date 2-9-88

* BVPS-1: Beaver Valley Power Station Unit 1
BVPS-2: Beaver Valley Power Station Unit 2

** CAT. 1: Safety-Related
CAT. 2, 3, NS: Non-safety Related

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: BVPS-2-21

Fastener Description: 5/8" x 2 1/4" Hex Hd. Bolt (C.S.)

Description of Sample Stock Location: Unit 2 Construction Warehouse D

Material Specification as Documented by Licensee Records: SA 325 - Type 1

Head Marking (Specification and Manufacturer): B1S A325

**Class/Procurement Level: Cat. 1

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

Vendor:

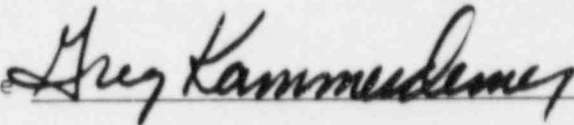
Pepco Inc.
P.O. Box 382
South Plainfield, NJ 07080

P.O.#: 2BV-57847

QA Requirements Imposed on Vendor: ASME III Certificate of Conformance

Licensee Representative: G. A. Kammerdeiner

Signature



Date

2-9-88

* BVPS-1: Beaver Valley Power Station Unit 1
BVPS-2: Beaver Valley Power Station Unit 2

** CAT. 1: Safety-Related
CAT. 2, 3, NS: Non-safety Related

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: BVPS-2-22

Fastener Description: 5/8" CS Hex Nut (CAD Plate)

Description of Sample Stock Location: Unit 2 Construction Warehouse D

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

Head Marking (Specification and Manufacturer): MF 2H

**Class/Procurement Level: Cat. 1

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

Pressure Boundary or Structural

Vendor:

R.E.C. Corporation
2 Sheraton Plaza
New Rochelle, NY 10801

P.O.#: 2BV-54119

QA Requirements Imposed on Vendor:

ASME III Certificate of Conformance; Certified Mill Test Report

Licensee Representative: G. A. Kammerdeiner

Signature

Greg Kammerdeiner

Date

2-9-88

* BVPS-1: Beaver Valley Power Station Unit 1

BVPS-2: Beaver Valley Power Station Unit 2

** CAT. 1: Safety-Related

CAT. 2, 3, NS: Non-safety Related

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: BVPS-2-23

Fastener Description: 3/4" x 4" Hex Head CS Bolt

Description of Sample Stock Location: Unit 2 Construction Warehouse D

Material Specification as Documented by Licensee Records: SA 325 - Type 1

Head Marking (Specification and Manufacturer): BIS A325

**Class/Procurement Level: Cat. 1

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

Vendor:

Pepco Inc.
P.O. Box 382
South Plainfield, NJ 07080

P.O.#: 2BV-57847

QA Requirements Imposed on Vendor: ASME III Certificate of Conformance

Licensee Representative: G. A. Kammerdeiner

Signature

Greg Kammerdeiner

Date

2-9-88

* BVPS-1: Beaver Valley Power Station Unit 1
BVPS-2: Beaver Valley Power Station Unit 2

** CAT. 1: Safety-Related
CAT. 2, 3, NS: Non-safety Related

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: BVPS-2-24

Fastener Description: 3/4" CS Hx Hvy Nut

Description of Sample Stock Location: Unit 2 Construction Warehouse D

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

Head Marking (Specification and Manufacturer): 2H GU

**Class/Procurement Level: Cat. 1

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

Vendor:

Pepco, Inc.
P.O. Box 382
South Plainfield, NJ 07080

P.O.#: 2BV-57847

QA Requirements Imposed on Vendor: ASME III Certificate of Conformance

Licensee Representative: G. A. Kammerdeiner

Signature Aug Kammerdeiner Date 2-9-88

* BVPS-1: Beaver Valley Power Station Unit 1
BVPS-2: Beaver Valley Power Station Unit 2

** CAT. 1: Safety-Related
CAT. 2, 3, NS: Non-safety Related

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: BVPS-2-25

Fastener Description: 7/8" x 1 1/2" Hex Hd. C.S. Bolt

Description of Sample Stock Location: Unit 2 Construction Warehouse D

Material Specification as Documented by Licensee Records: SA 325 Type 1

Head Marking (Specification and Manufacturer): BIS A325

**Class/Procurement Level: Cat. 1

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

Structural

Vendor:

Pepco Inc.
P.O. Box 382
South Plainfield, NJ 07080

P.O.#: 2BV-56649

QA Requirements Imposed on Vendor:

ASME III Certificate of Conformance; Certified Mill Test Report

Licensee Representative: G. A. Kammerdeiner

Signature G. A. Kammerdeiner Date 2-9-88

* BVPS-1: Beaver Valley Power Station Unit 1
BVPS-2: Beaver Valley Power Station Unit 2

** CAT. 1: Safety-Related
CAT. 2, 3, NS: Non-safety Related

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: BVPS-2-26

Fastener Description: 7/8" CS Hx Hvy Nut

Description of Sample Stock Location: Unit 2 Construction Warehouse D

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

Head Marking (Specification and Manufacturer): 2H C UA

**Class/Procurement Level: Cat. 1

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

Pressure Boundary or Structural

Vendor:

Pepco Inc.
P.O. Box 382
South Plainfield, NJ 07080

P.O.#: 2BV-57847

QA Requirements Imposed on Vendor: ASME III Certificate of Conformance

Licensee Representative: G. A. Kammerdeiner

Signature

Gug Kammerdeiner

Date

2-9-88

* BVPS-1: Beaver Valley Power Station Unit 1
BVPS-2: Beaver Valley Power Station Unit 2

** CAT. 1: Safety-Related
CAT. 2, 3, NS: Non-safety Related

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: BVPS-2-27

Fastener Description: 7/8" x 3 1/2" bolt

Description of Sample Stock Location: Unit 2 Construction Warehouse D

Material Specification as Documented by Licensee Records: ASTM A490

Head Marking (Specification and Manufacturer): A490 C LE

**Class/Procurement Level: Cat. 1

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

Vendor:

Cardinal Industries
3873 West Oquendo
Las Vegas, NV 89118

P.O.#: 2BV-61790

QA Requirements Imposed on Vendor: ASTM Certificate of Conformance

Licensee Representative: G. A. Kammerdeiner

Signature *Gug Kammerdeiner* Date *2-9-88*

* BVPS-1: Beaver Valley Power Station Unit 1
BVPS-2: Beaver Valley Power Station Unit 2

** CAT. 1: Safety-Related
CAT. 2, 3, NS: Non-safety Related

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: BVPS-2-28

Fastener Description: 7/8" Nut

Description of Sample Stock Location: Unit 2 Construction Warehouse D

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

Head Marking (Specification and Manufacturer): 2H C UH

**Class/Procurement Level: Cat. 1

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

Structural or Pressure Boundary

Vendor:

Pepco Inc.
P.O. Box 382
South Plainfield, NJ 07080

P.O.#: 2BV-57847

QA Requirements Imposed on Vendor: ASME III Certificate of Conformance

Licensee Representative: G. A. Kammerdeiner

Signature

G. A. Kammerdeiner

Date

2-9-88

* BVPS-1: Beaver Valley Power Station Unit 1
BVPS-2: Beaver Valley Power Station Unit 2

** CAT. 1: Safety-Related
CAT. 2, 3, NS: Non-safety Related

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: BVPS-2-29

Fastener Description: 1 1/4" x 5" bolt

Description of Sample Stock Location: Unit 2 Construction Warehouse D

Material Specification as Documented by Licensee Records: ASTM A490

Head Marking (Specification and Manufacturer): A490 S W-2

**Class/Procurement Level: Cat. 1

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

Vendor:

Pepco Inc.
P.O. Box 382
South Plainfield, NJ 07080

P.O.#: 2BV-56148

QA Requirements Imposed on Vendor:

ASME III Certified Material Test Report; Certificate of Conformance;
Heat Coded

Licensee Representative: G. A. Kammerdeiner

Signature

G. A. Kammerdeiner

Date

2-9-88

* BVPS-1: Beaver Valley Power Station Unit 1
BVPS-2: Beaver Valley Power Station Unit 2

** CAT. 1: Safety-Related
CAT. 2, 3, NS: Non-safety Related

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: BVPS-2-30

Fastener Description: 1 1/4" nut

Description of Sample Stock Location: Unit 2 Construction Warehouse D

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

Head Marking (Specification and Manufacturer): 2H MF JB

**Class/Procurement Level: Cat. 1

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

Pressure Boundary or Structural

Vendor:

R.E.C. Corporation
2 Sheraton Plaza
New Rochelle, NY 10801

P.O.#: 2BV-54119

QA Requirements Imposed on Vendor:

ASME III Certificate of Compliance; Certified Mill Test Report

Licensee Representative: G. A. Kammerdeiner

Signature

Gug Kammerdeiner

Date

2-9-88

* RVPS-1: Beaver Valley Power Station Unit 1
BVPS-2: Beaver Valley Power Station Unit 2

** CAT. 1: Safety-Related
CAT. 2, 3, NS: Non-safety Related

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: BVPS-2-31

Fastener Description: 1" x 4 1/4" Hex Head Bolt

Description of Sample Stock Location: Unit 2 Construction Warehouse D

Material Specification as Documented by Licensee Records: ASTM A-490

Head Marking (Specification and Manufacturer): BIS A490

**Class/Procurement Level: Cat. 1

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

Vendor:

Hardware Specialties
48-75 36th St.
Long Island City, NY 11101

P.O.#: 2BV-58142

QA Requirements Imposed on Vendor: ASTM Certificate of Conformance

Licensee Representative: G. A. Kammerdeiner

Signature

Gug Kammerdeiner

Date

29-88

* BVPS-1: Beaver Valley Power Station Unit 1

BVPS-2: Beaver Valley Power Station Unit 2

** CAT. 1: Safety-Related

CAT. 2, 3, NS: Non-safety Related

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: BVPS-2-32

Fastener Description: 1" C.S. Hex Hvy Nut

Description of Sample Stock Location: Unit 2 Construction Warehouse D

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

Head Marking (Specification and Manufacturer): 2H B1S

**Class/Procurement Level: Cat. 1

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

Structural or Pressure Boundary

Vendor:

Pepco Inc.
P.O. Box 382
South Plainfield, NJ 07080

P.O.#: 2BV-57847

QA Requirements Imposed on Vendor: ASME III Certificate of Conformance

Licensee Representative: G. A. Kammerdeiner

Signature

G. A. Kammerdeiner

Date

2-9-88

* BVPS-1: Beaver Valley Power Station Unit 1
BVPS-2: Beaver Valley Power Station Unit 2

** CAT. 1: Safety-Related
CAT. 2, 3, NS: Non-safety Related

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: BVPS-2-33

Fastener Description: 1 1/4" x 5" Hex Hd. Bolt

Description of Sample Stock Location: Unit 2 Construction Warehouse D

Material Specification as Documented by Licensee Records: ASTM A-490

Head Marking (Specification and Manufacturer): A490 S W-2

**Class/Procurement Level: Cat. 1

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

Vendor:

Pepco Inc.
P.O. Box 382
South Plainfield, NJ 07080

P.O.#: 2BV-56148

QA Requirements Imposed on Vendor:

ASME III Certified Material Test Report; Certificate of Conformance;
Heat Coded

Licensee Representative: G. A. Kammerdeiner

Signature

Gug Kammerdeiner

Date

2-9-88

* BVPS-1: Beaver Valley Power Station Unit 1
BVPS-2: Beaver Valley Power Station Unit 2

** CAT. 1: Safety-Related
CAT. 2, 3, NS: Non-safety Related

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: BVPS-2-34

Fastener Description: 1 1/4" CS Hex Hvy Nut

Description of Sample Stock Location: Unit 2 Construction Warehouse D

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

Head Marking (Specification and Manufacturer): 2H OY 88

**Class/Procurement Level: Cat. 1

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

Pressure Boundary or Structural

Vendor:

A&G Engineering
4640 E. LaPalma Ave.
Anaheim, CA 92806

P.O.#: 2BV-62525

QA Requirements Imposed on Vendor:

ASME III Certificate of Conformance; Certified Material Test Report

Licensee Representative: G. A. Kammerdeiner

Signature *Guy Kammerdeiner* Date 2-9-88

* BVPS-1: Beaver Valley Power Station Unit 1
BVPS-2: Beaver Valley Power Station Unit 2

** CAT. 1: Safety-Related
CAT. 2, 3, NS: Non-safety Related

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: BVPS-2-35

Fastener Description: Bolt 3/4 x 6 3/4

Description of Sample Stock Location: Stock #960011: 02-01-78-11-002

Material Specification as Documented by Licensee Records: SA 193 B7

Head Marking (Specification and Manufacturer): Ⓢ b7 (7 is partial)

**Class/Procurement Level: Cat. 1

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

Recirc. Spray Cooler

Vendor:

Joseph Oat Corp.
2500 Broadway
Camden, NJ 01804

P.O.#: D008445

QA Requirements Imposed on Vendor: ASME III Certified Material Test Report

Licensee Representative: G. A. Kammerdeiner

Signature

Gug Kammerdeiner

Date

2-9-88

* BVPS-1: Beaver Valley Power Station Unit 1
BVPS-2: Beaver Valley Power Station Unit 2

** CAT. 1: Safety-Related
CAT. 2, 3, NS: Non-safety Related

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: BVPS-2-36

Fastener Description: Hex Nut 3/4"

Description of Sample Stock Location: Stock #960010: 02-01-78-11-002

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

Head Marking (Specification and Manufacturer): J 2H

**Class/Procurement Level: Cat. 1

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

Pressure Boundary

Vendor:

Joseph Oat Corp.
2500 Broadway
Camden, NJ 01804

P.O.#: D008445

QA Requirements Imposed on Vendor: ASME III Certified Material Test Report

Licensee Representative: G. A. Kammerdeiner

Signature

G. A. Kammerdeiner

Date

2-9-88

* BVPS-1: Beaver Valley Power Station Unit 1
BVPS-2: Beaver Valley Power Station Unit 2

** CAT. 1: Safety-Related
CAT. 2, 3, NS: Non-safety Related

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: BVPS-2-37

Fastener Description: Stud 5/8 - 11 x 2 3/8"

Description of Sample Stock Location: Stock #960067: 02-01-78-13-002

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

Head Marking (Specification and Manufacturer): B7 C H16

**Class/Procurement Level: Cat. 1

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

Vendor:

Cardinal Industrial Prod.
3873 West Oquendo
Las Vegas, NV 89118

P.O.#: D019782

QA Requirements Imposed on Vendor: ASME III Certificate of Conformance

Licensee Representative: G. A. Kammerdeiner

Signature

G. A. Kammerdeiner

Date

2-9-88

* BVPS-1: Beaver Valley Power Station Unit 1
BVPS-2: Beaver Valley Power Station Unit 2

** CAT. 1: Safety-Related
CAT. 2, 3, NS: Non-safety Related

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: BVPS-2-38

Fastener Description: 5/8" Hex Nut

Description of Sample Stock Location: Stock #960072: 02-01-78-13-002

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

Head Marking (Specification and Manufacturer): 2H JC

**Class/Procurement Level: Cat. 1

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

Structure for Leslie 3" 150# Y Strainer

Vendor:

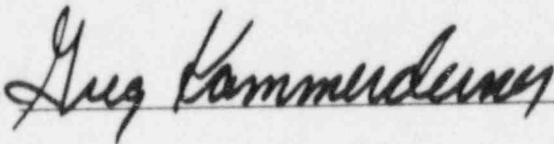
Cardinal Industries
3873 West Oquendo
Las Vegas, NV 89118

P.O.#: D019782

QA Requirements Imposed on Vendor: ASME III Certificate of Conformance

Licensee Representative: G. A. Kammerdeiner

Signature



Date

2-9-88

* BVPS-1: Beaver Valley Power Station Unit 1
BVPS-2: Beaver Valley Power Station Unit 2

** CAT. 1: Safety-Related
CAT. 2, 3, NS: Non-safety Related

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: BVPS-2-39

Fastener Description: Stud 5/8" x 4"

Description of Sample Stock Location: Stock #960414: 07-02-04-09-002

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

Head Marking (Specification and Manufacturer): B7 ☆

**Class/Procurement Level: Cat. 2

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

Structural: Heat Exchanger

Vendor:

Atlas Industrial Mfg. Co.
80 Somerset Street
Clifton, NJ 07012

P.O.#: C500387

QA Requirements Imposed on Vendor: None

Licensee Representative: G. A. Kammerdeiner

Signature

Gug Kammerdeiner

Date

2-9-88

* BVPS-1: Beaver Valley Power Station Unit 1
BVPS-2: Beaver Valley Power Station Unit 2

** CAT. 1: Safety-Related
CAT. 2, 3, NS: Non-safety Related

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: BVPS-2-40

Fastener Description: Nut 5/8"

Description of Sample Stock Location: Stock #960414: 07-02-04-09-002

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

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

**Class/Procurement Level: Cat. 2

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

Heat Exchanger

Vendor:

Atlas Industrial Mfg. Co.
80 Somerset Street
Clifton, NJ 07012

P.O.#: C500387

QA Requirements Imposed on Vendor: None

Licensee Representative: G. A. Kammerdeiner

Signature

G. A. Kammerdeiner

Date

2-9-88

* BVPS-1: Beaver Valley Power Station Unit 1
BVPS-2: Beaver Valley Power Station Unit 2

** CAT. 1: Safety-Related
CAT. 2, 3, NS: Non-safety Related

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: BVPS-2-41

Fastener Description: Stud 3/4-10 x 5 1/4

Description of Sample Stock Location: Stock #960364: 07-02-02-19-006

Material Specification as Documented by Licensee Records: SA 193 B7

Head Marking (Specification and Manufacturer): D E B7

**Class/Procurement Level: Cat. 2

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

Vendor:

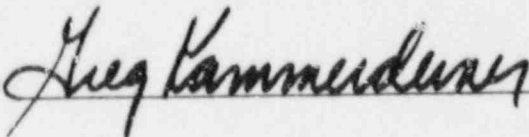
Atlas Industrial Mfg. Co.
80 Somerset Street
Clifton, NJ 07012

F.O.#: C500340

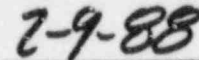
QA Requirements Imposed on Vendor: None (COC & MTR supplied)

Licensee Representative: G. A. Kammerdeiner

Signature



Date



* BVPS-1: Beaver Valley Power Station Unit 1
BVPS-2: Beaver Valley Power Station Unit 2

** CAT. 1: Safety-Related
CAT. 2, 3, NS: Non-safety Related

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: BVPS-2-42

Fastener Description: Nut 3/4-10

Description of Sample Stock Location: Stock #960364: 07-02-02-19-006

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

Head Marking (Specification and Manufacturer): J 2H

**Class/Procurement Level: Cat. 2

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

Vendor:

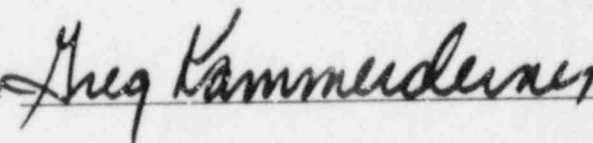
Atlas Industrial Mfg. Co.
80 Somerset Street
Clifton, NJ 07012

P.O.#: C500340

QA Requirements Imposed on Vendor: None (COC & MTR furnished)

Licensee Representative: G. A. Kammerdeiner

Signature



Date

2-9-88

* BVPS-1: Beaver Valley Power Station Unit 1
BVPS-2: Beaver Valley Power Station Unit 2

** CAT. 1: Safety-Related
CAT. 2, 3, NS: Non-safety Related

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: BVPS-2-43

Fastener Description: Stud 3/4"-10 x 4 3/4"

Description of Sample Stock Location: Stock #960098: 07-02-08-07-005

Material Specification as Documented by Licensee Records: SA 193 B7

Head Marking (Specification and Manufacturer): B7 C

**Class/Procurement Level: Cat. 2

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

Heat Exchanger

Vendor:

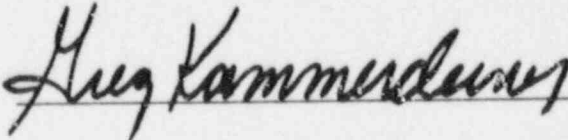
Atlas Industrial Mfg. Co.
80 Somerset Street
Clifton, NJ 07012

P.O.#: D005673

QA Requirements Imposed on Vendor: None

Licensee Representative: G. A. Kammerdeiner

Signature



Date

2-9-88

* BVPS-1: Beaver Valley Power Station Unit 1
BVPS-2: Beaver Valley Power Station Unit 2

** CAT. 1: Safety-Related
CAT. 2, 3, NS: Non-safety Related

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: BVPS-2-44

Fastener Description: Hex Nut 3/4"

Description of Sample Stock Location: Unit 2 Construction Warehouse D

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

Head Marking (Specification and Manufacturer): MF 2H

**Class/Procurement Level: Cat. 1

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

Pressure Boundary or Structural

Vendor:

R.E.C. Corporation
2 Sheraton Plaza
New Rochelle, NY 10801

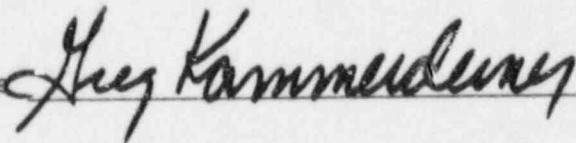
P.O.#: 2BV-54119

QA Requirements Imposed on Vendor:

ASME III Certificate of Conformance; Certified Mill Test Report

Licensee Representative: G. A. Kammerdeiner

Signature



Date

2-9-88

* BVPS-1: Beaver Valley Power Station Unit 1
BVPS-2: Beaver Valley Power Station Unit 2

** CAT. 1: Safety-Related
CAT. 2, 3, NS: Non-safety Related

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: BVPS-2-45

Fastener Description: Stud 3/4 x 6 3/4

Description of Sample Stock Location: Stock #964050: 07-02-12-04-003

Material Specification as Documented by Licensee Records: SA 193 B7

Head Marking (Specification and Manufacturer): B7 ☆

**Class/Procurement Level: Cat. 3

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

Aux Boiler Blowdown Vent Condenser

Vendor:

Atlas Industrial Mfg. Co.
80 Somerset Street
Clifton, NJ 07012

P.O.#: D005536

QA Requirements Imposed on Vendor: None

Licensee Representative: G. A. Kammerdeiner

Signature

G. A. Kammerdeiner

Date

2-9-88

* BVPS-1: Beaver Valley Power Station Unit 1
BVPS-2: Beaver Valley Power Station Unit 2

** CAT. 1: Safety-Related
CAT. 2, 3, NS: Non-safety Related

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: BVPS-2-46

Fastener Description: Nut 3/4

Description of Sample Stock Location: Stock #964050: 07-02-12-04-003

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

Head Marking (Specification and Manufacturer): J 2H

**Class/Procurement Level: Cat. 3

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

Aux Boiler Blowdown Vent Condenser

Vendor:

Atlas Industrial Mfg. Co.
80 Somerset Street
Clifton, NJ 07012

P.O.#: D005536

QA Requirements Imposed on Vendor: None

Licensee Representative: G. A. Kammerdeiner

Signature

G. A. Kammerdeiner

Date

2-9-88

* BVPS-1: Beaver Valley Power Station Unit 1
BVPS-2: Beaver Valley Power Station Unit 2

** CAT. 1: Safety-Related
CAT. 2, 3, NS: Non-safety Related

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: BVPS-2-47

Fastener Description: Stud All Thd 5/8" x 3"

Description of Sample Stock Location: Unit 2 Construction Warehouse D

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

Head Marking (Specification and Manufacturer): D B7

**Class/Procurement Level: Cat. 1

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

Structural or Pressure Boundary

Vendor:

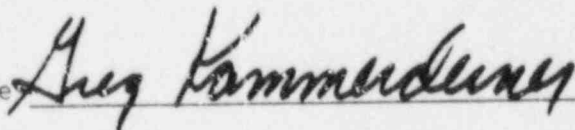
Southern Bolt & Fasteners
P.O. Box 7196
Shreveport, LA 71107

P.O.#: 2BV-53581

QA Requirements Imposed on Vendor: ASME III Certificate of Conformance

Licensee Representative: G. A. Kammerdeiner

Signature



Date

2-9-88

* BVPS-1: Beaver Valley Power Station Unit 1
BVPS-2: Beaver Valley Power Station Unit 2

** CAT. 1: Safety-Related
CAT. 2, 3, NS: Non-safety Related

Attachment 1
Fastener Testing Data Sheet

*Sample ID#: BVPS-2-48

Fastener Description: 5/8" Hex Nut

Description of Sample Stock Location: Unit 2 Construction Warehouse D

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

Head Marking (Specification and Manufacturer): 2H B1S

**Class/Procurement Level: Cat. 1

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

Structural or Pressure Boundary

Vendor:

Pepco Inc.
P.O. Box 382
South Plainfield, NJ 07080

P.O.#: 2BV-57847

QA Requirements Imposed on Vendor: ASME III Certificate of Conformance

Licensee Representative: G. A. Kammerdeiner

Signature

G. A. Kammerdeiner

Date

2-9-88

* BVPS-1: Beaver Valley Power Station Unit 1
BVPS-2: Beaver Valley Power Station Unit 2

** CAT. 1: Safety-Related
CAT. 2, 3, NS: Non-safety Related

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: BVPS-2-49

Fastener Description: 3/4" x 3 1/2" Stud - All Thd

Description of Sample Stock Location: Unit 2 Construction Warehouse D

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

Head Marking (Specification and Manufacturer): D B7

**Class/Procurement Level: Cat. 1

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

Pressure Boundary or Structural

Vendor:

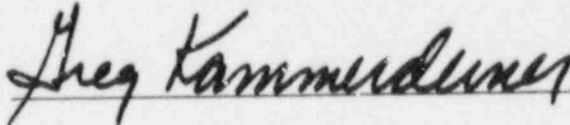
Southern Bolt & Fastener
P.O. Box 7196
Shreveport, LA 71107

P.O.#: 2BV-53581

QA Requirements Imposed on Vendor: ASME III Certificate of Conformance

Licensee Representative: G. A. Kammerdeiner

Signature



Date

2-9-88

* BVPS-1: Beaver Valley Power Station Unit 1
BVPS-2: Beaver Valley Power Station Unit 2

** CAT. 1: Safety-Related
CAT. 2, 3, NS: Non-safety Related

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: BVPS-2-50

Fastener Description: 3/4" Hex Nut

Description of Sample Stock Location: Unit 2 Construction Warehouse D

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

Head Marking (Specification and Manufacturer): 2H C-U

**Class/Procurement Level: Cat. 1

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

Structural or Pressure Boundary

Vendor:

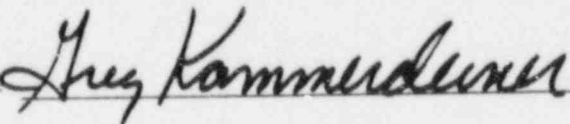
Pepco Inc.
P.O. Box 382
South Plainfield, NJ 07080

P.O.#: 2BV-57847

QA Requirements Imposed on Vendor: ASME III Certificate of Conformance

Licensee Representative: G. A. Kammerdeiner

Signature



Date

2-9-88

* BVPS-1: Beaver Valley Power Station Unit 1
BVPS-2: Beaver Valley Power Station Unit 2

** CAT. 1: Safety-Related
CAT. 2, 3, NS: Non-safety Related

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: BVPS-2-51

Fastener Description: 7/8" x 5" Hex Hd Bolt

Description of Sample Stock Location: Unit 2 Construction Warehouse D

Material Specification as Documented by Licensee Records: SA 193 B7

Head Marking (Specification and Manufacturer): N B7 CFS

**Class/Procurement Level: Cat. 1

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

Pressure Boundary or Structural

Vendor:

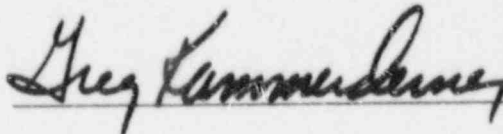
Hub Inc.
2146 Flintstone Dr.
Tucker, GA 30084

P.O.#: 2BV-64391

QA Requirements Imposed on Vendor: ASME III Certificate of Conformance

Licensee Representative: G. A. Kammerdeiner

Signature



Date

2-9-88

* BVPS-1: Beaver Valley Power Station Unit 1
BVPS-2: Beaver Valley Power Station Unit 2

** CAT. 1: Safety-Related
CAT. 2, 3, NS: Non-safety Related

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: BVPS-2-52

Fastener Description: 7/8" Hex Nut

Description of Sample Stock Location: Unit 2 Construction Warehouse

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

Head Marking (Specification and Manufacturer): C UA 2H

**Class/Procurement Level: Cat. 1

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

Structural or Pressure Boundary

Vendor:

Pepco Inc.
P.O. Box 382
South Plainfield, NJ 07080

P.O.#: 2BV-57847

QA Requirements Imposed on Vendor: ASME III Certificate of Conformance

Licensee Representative: G. A. Kammerdeiner

Signature

Gug Kammerdeiner

Date

2-9-88

* BVPS-1: Beaver Valley Power Station Unit 1
BVPS-2: Beaver Valley Power Station Unit 2

** CAT. 1: Safety-Related
CAT. 2, 3, NS: Non-safety Related

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: BVPS-2-53

Fastener Description: 1" x 4" Hex Hd Bolt

Description of Sample Stock Location: Unit 2 Construction Warehouse D

Material Specification as Documented by Licensee Records: SA 193 B7

Head Marking (Specification and Manufacturer): B7 ~~P~~ B

**Class/Procurement Level: Cat. 1

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

Pressure Boundary or Structural

Vendor:

Southern Bolt & Fastener
P.O. Box 7196
Shreveport, LA 71107

P.O.#: 2BV-53653

QA Requirements Imposed on Vendor:

ASME III Certificate of Conformance; Certified Mill Test Report

Licensee Representative: G. A. Kammerdeiner

Signature *G. A. Kammerdeiner* Date 2-9-88

* BVPS-1: Beaver Valley Power Station Unit 1
BVPS-2: Beaver Valley Power Station Unit 2

** CAT. 1: Safety-Related
CAT. 2, 3, NS: Non-safety Related

Attachment 1

Fastener Testing Data Sheet

*Sample ID#: BVPS-2-54

Fastener Description: 1" Hex Nut

Description of Sample Stock Location: Unit 2 Construction Warehouse D

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

Head Marking (Specification and Manufacturer): BIS 2H

**Class/Procurement Level: Cat. 1

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

Structural or Pressure Boundary

Vendor:

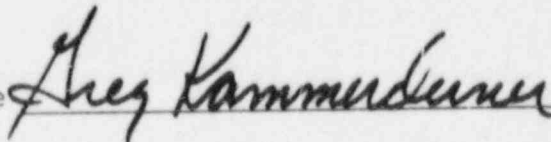
Pepco Inc.
P.O. Box 382
South Plainfield, NJ 07080

P.O.#: 2BV-57847

QA Requirements Imposed on Vendor: ASME III Certificate of Conformance

Licensee Representative: G. A. Kammerdeiner

Signature



Date

2-9-08

* BVPS-1: Beaver Valley Power Station Unit 1
BVPS-2: Beaver Valley Power Station Unit 2

** CAT. 1: Safety-Related
CAT. 2, 3, NS: Non-safety Related

ATTACHMENT 2

ID No.	Hardness	UTS	Y.S.	C	Mn	P	S	Si	Ni	Cr	Mo
<u>A-194 Grade 2H</u>											
BVPS-1-2	29.3 Rc			.47		.016	.020				
BVPS-1-4	31.2 Rc			.43		.015	.015				
BVPS-1-6	29.0 Rc			.44		.017	.028				
BVPS-1-8	34.3 Rc			.44		.007	.027				
BVPS-1-10	33.4 Rc			.44		.005	.027				
BVPS-1-12	26.0 Rc			*.346		.020	.026				
BVPS-1-14	30.5 Rc			.41		.023	.024				
BVPS-1-16	30.9 Rc			.42		.011	.018				
BVPS-1-18	28.7 Rc			.46		.018	.025				
BVPS-1-20	27.5 Rc			.47		.018	.026				
BVPS-1-22	26.8 Rc			.47		.025	.040				
BVPS-1-24	27.3 Rc			.45		.009	.043				
BVPS-1-26A	*21.8 Rc			.48		.009	.024				
BVPS-1-26B	*55.1 Rb			*.12		.007	.025				
BVPS-2-4	31.1 Rc			*.36		.017	.020				
BVPS-2-10	33.1 Rc			.43		.009	.023				
BVPS-2-12	33.2 Rc			.42		.017	.015				
BVPS-2-18	34.0 Rc			.54		.018	.011				
BVPS-2-20	32.2 Rc			.42		.015	.024				
BVPS-2-22	33.8 Rc			.46		.017	.040				
BVPS-2-24	29.2 Rc			.43		.021	.016				
BVPS-2-26	29.4 Rc			.44		.019	.017				
BVPS-2-28	28.9 Rc			.45		.020	.015				
BVPS-2-30	32.0 Rc			.43		.016	.024				

ATTACHMENT 2

ID No.	Hardness	UTS	Y.S.	C	Mn	P	S	Si	Ni	Cr	Mo
<u>A-194 Grade 2H</u>											
BVPS-2-32	30.9 Rc			.52		.010	.018				
BVPS-2-34	32.9 Rc			.43		.021	.013				
BVPS-2-36	29.7 Rc			.42		.012	.008				
BVPS-2-38	29.7 Rc			.44		.015	.021				
BVPS-2-40	28.4 Rc			.49		.013	.009				
BVPS-2-42	29.1 Rc			.42		.016	.012				
BVPS-2-44	33.7 Rc			.46		.012	.026				
BVPS-2-46	27.6 Rc			.48		.014	.015				
BVPS-2-48	33.1 Rc			.44		.012	.022				
BVPS-2-50	29.8 Rc			.43		.020	.016				
BVPS-2-52	30.4 Rc			.45		.020	.014				
BVPS-2-54	33.1 Rc			.52		.013	.017				

ATTACHMENT 2

ID No.	Hardness	UTS	Y.S.	C	Mn	P	S	Si	Ni	Cr	Mo
	<u>A-325</u>	Type 1 (Break Load)	(Minimum Break Load)								
BVPS-1-3	24.1 Rc	49,500	40,100	.26	.97	.010	.009				
BVPS-1-5	30.7 Rc	33,000	27,100	.40	.72	.014	.019				
BVPS-1-11A	25.0 Rc	32,700	27,100	.40	.84	.007	.023				
BVPS-1-11B	33.3 Rc	37,000	27,100	.33	.73	.014	.032				
BVPS-1-13	33.9 Rc	36,500	27,100	.47	.94	.017	.013				
BVPS-1-15	29.4 Rc	49,400	40,100	.40	.94	.017	.022				
BVPS-2-3	30.9 Rc	22,700	17,050	.44	.79	.013	.019				
BVPS-2-17	24.2 Rc	81,000	72,700	.47	.75	.006	.014				
BVPS-2-19	32.4 Rc	22,700	17,050	.45	.90	.010	.019				
BVPS-2-21	34.9 Rc	35,600	27,100	.41	.68	.013	.023				
BVPS-2-23	32.5 Rc	50,500	40,100	.46	.74	.008	.022				
BVPS-2-25	23.6 Rc	63,800	55,450	.40	.80	.010	.012				
<u>SA-193 Grade B6</u>											
BVPS-2-1	24.0 Rc	119,820	101,847	.12	.75	.013	.013	.41		11.8	
BVPS-2-5	31.0 Rc	144,284	128,557	.14	.38	.017	.019	.35		12.3	
BVPS-2-7	28.1 Rc	131,802	114,329	.13	.48	.011	.014	.27		12.5	
<u>SA-193 Grade B8</u>											
BVPS-2-13	39.0 Rc	159,118	121,242	.05	.66	.023	.029	.51	8.59	18.2	
BVPS-2-15	75.0 Rb	81,319	30,969	.04	1.46	.029	.030	.23	9.74	18.8	

ATTACHMENT 2

ID No.	Hardness	UTS	Y.S.	C	Mn	P	S	Si	Ni	Cr	Mo	CU	B
	<u>A490</u>	(Break Load)											
BVPS-2-27	34.3 Rc	71,400		.40	.89	.008	.017		.01	.29	.21	<.01	.005
BVPS-2-29	34.0 Rc	149,900		.34	1.00	.010	.012		.17	1.03	.21	.19	.003
BVPS-2-31	33.1 Rc	95,600		.35	.88	.009	.019		.02	.58	.01	.02	<.001
BVPS-2-33	33.0 Rc	146,200		.33	.98	.010	.011		.18	1.03	.21	.20	.002
	<u>A194 Grade 6</u>												
BVPS-2-2	27.2 Rc			.14	.40	.013	.026	.37		13.0			
BVPS-2-6	25.8 Rc			.14	.72	.018	.017	.30		12.8			
BVPS-2-8	23.7 Rc			.14	.41	.017	.026	.39		12.8			
	<u>A194 Grade 8</u>												
BVPS-2-14	98.7 Rb			.07	1.69	.029	.019	.39	8.2	19.7			
BVPS-2-16	98.9 Rb			.06	1.93	.032	.026	.90	8.68	19.5			

ATTACHMENT 2

ID No.	Hardness	UTS	Y.S.	C	Mn	P	S	Si	Ni	Cr	Mo
<u>A-193 Grade B7</u>											
BVPS-1-1	28.5 Rc	132,130	123,405	.42	.99	.021	.014	.26		1.0	.15
BVPS-1-7	31.2 Rc	140,086	123,236	.42	.96	.018	.034	.32		1.03	.15
BVPS-1-9	29.3 Rc	132,051	116,559	.43	1.05	.020	.029	.26		1.08	.15
BVPS-1-17	21.1 Rc	136,970	108,485	.41	.82	.017	.016	.30		1.02	.18
BVPS-1-19	31.3 Rc	143,086	115,832	.40	.85	.015	.019	.28		1.11	.20
BVPS-1-21	30.7 Rc	138,293	122,317	.41	.85	.009	.018	.28		1.01	.19
BVPS-1-23	29.5 Rc	135,796	119,321	.42	.69	.008	.020	.33		1.04	.18
BVPS-1-25	31.3 Rc	141,787	125,312	.40	.93	.014	.032	.24		1.07	.16
BVPS-2-9	31.3 Rc	142,222	129,999	.42	.96	.010	.021	.30		.92	.21
BVPS-2-11	31.7 Rc	142,857	132,867	.44	1.01	.015	.028	.34		1.10	.017
BVPS-2-35	31.5 Rc	143,710	131,278	.38	.81	.025	.021	.23		1.01	.18
BVPS-2-37	28.7 Rc	131,919	127,071	.41	.98	.025	.028	.25		1.02	.18
BVPS-2-39	29.5 Rc	137,778	119,798	.45	.98	.021	.027	.35		.88	.18
BVPS-2-41	29.3 Rc	132,801	124,314	.40	.87	.041	.019	.31		.99	.18
BVPS-2-43	31.4 Rc	140,789	124,314	.41	1.05	.028	.020	.29		1.03	.20
BVPS-2-45	31.3 Rc	139,790	124,314	.43	1.02	.025	.017	.39		1.08	.20
BVPS-2-47	31.3 Rc	141,082	125,050	.40	.89	.007	.017	.24		.87	.19
BVPS-2-49	32.0 Rc	142,084	126,253	.41	.91	.017	.019	.26		.93	.18
BVPS-2-51	34.7 Rc	153,270	140,789	.43	.90	.014	.017	.23		.94	.16
BVPS-2-53	31.4 Rc	142,287	125,811	.38	.83	.009	.019	.23		.91	.17