ATTACHMENT 1

MATERIAL RECEIPT INSPECTION AND CONTROL SUMMARY

Receipt Inspection

PQC-09 Section	Receiving Inspection Responsibility
3.1	Quality Control Supervisor assigns qualified personnel to perform receiving inspections.
3.1.3	For Quality Class I and ASME procurements, the Receiving QC Inspector verifies the vendor is listed in the Supply System Evaluated Suppliers List (ESL).
3.1.7; Attachments 5.3 and 5.4	QC Inspector performs receiving inspection. Inspector verifies that identification and marking are in accordance with codes, specifications, drawings as indicated in the Purchase Order (including head markings for Grade and Manufacturer symbols).
3.1.8	For items which have dimensions or other quantitative attributes (i.e., hardness, thread size etc.) specified in the P.O./Specification, documents the results of test/inspection reports submitted with the material that confirm these attributes.
3.1.11; Attachment 5.5	QC Inspector reviews Certified Material Test Reports (CMTRs), Certificates of Conformance and other test reports for chemical and physical properties; accepted to the specification required by the Purchase Order.
3.1.15	QC Inspector indicates acceptance of documentation by stamp, signature, and date.
3.1.17 through 3.1.21	When item and documentation is determined to be satisfactory, the QC Inspector completes a green QC accept tag documenting all pertinent data. For ASME procurements, the inspector notifies the ANI that material and documentation are available for his review (the ANI may indicate concurrence by signature on the tag). QC Inspector attaches accept tag and notifies Warehouse personnel that item is ready for storage or release.
3.2	If discrepancy is identified, attaches a "hold tag" and segregates item(s) if practical. The QC Inspector initiates a Plant Deficiency report.

NOTE

WNP-2 Procurement Specification 10434 for procurement of Commercial Grade "Structural Nuts and Bolts, ASTM A307/A325/A490/A563" requries on site hardness testing of three samples of each lot of bolts or nuts in accordance with ASTM F606. This is in addition to other receiving inspection requirements as specified in the procedure PQC-09.

Control of Material

The following procedures specify internal controls utilized during storage and issuance from stock:

PPM 1.15.2 - "Material, Equipment, Parts and Supplies Procurement", Rev. 0
PPM 1.15.8 - "Warehousing", Rev. 1
CPP 8.4.31 - "Materials and Equipment Identification and Coding", Rev. 1
CPP 8.4.51 - "Warehouse Withdrawals and Returns", Rev. 1
NOS-27 - "Procurement and Storage Control", Rev. 3

Warehousing Activity

a. Acceptance of Shipment

PPM 1.15.8

1. Inspects for damage
2. Placement in receiving hold area

b. Commercial Receiving Process

1. Match with procurement documentation and determine Quality Class.
2. Initiate a material receiving report, noting any changes from the procurement requirements.
3. Tag or mark items or containers to identify to Purchase Order.
4. Notify Quality Control on all Quality Class I and CG items received in order to perform a receipt inspection per PQC-09.

c. Material Identification, Coding and Storage Control

PPM 1.15.8

1. All inventory items are identified with tags.
2. Storage locations are entered in the Materials Management System.

CPP 8.4.31

3. Inventory items are entered into the Materials Management System for material planning, inventory and management control.

PPM 1.15.8

4. Material is stored so as to meet or exceed the storage level requirements.

PPM 1.15.8, NOS-27

5. General housekeeping is checked periodically to assure that item identity is being maintained and specific storage requirements are met.

d. Material Withdrawal

PPM 1.15.8
CCP 8.4.51

1. Material issues from inventory are controlled through the use of authorized store orders.

PPM 1.15.8
CPP 8.4.51

Store orders specify quantity request, part number, description, matcode number or other information as required.

PPM 1.15.8

2. Delivery Manifests document deliveries made by the Warehouse for direct purchase items (other than inventory).

ATTACHMENT 2

A325 bolts and nuts are available in three types (i.e. Type 1, 2 or 3). When the bolt type is not specified, either Type 1 or Type 2 may be supplied at the option of the manufacturer. Type 3 bolts are used when atmospheric corrosion resistance is required. Review of the test results indicates that the Type A325 bolts and nuts have not been properly designated by specific type or grade into the matcode system. This discrepancy has no safety significance due to identical material strength requirements for all three types of bolts and nuts. Additionally design specifications do not require use of A325 Type 3 bolts and nuts. Thus substitution of Type 3 bolts and nuts for Type 1 or 2 application has no impact on plant safety.

Sample N1C was reanalyzed due to one chemical element being out of specification. The test results indicate the nut to be A563 Grade C3 which coincides with the required markings on the nut. The Purchase Order specified the nut to be A325 Type C3 which was subsequently revised to specify A563 Grade C3. Certificate of Compliance from the vendor certifies the nut to be either A325 Type 3 or A563 Grade C3, since both these types of nuts are interchangeable. The matcode is being changed to specify these nuts as A563 Grade C3 instead of A325 Grade B. This discrepancy has no safety significance as different types of A325 nuts and A563 Grade C3 nuts have the same mechanical strength.

Samples N1B and N1D ($\frac{1}{2}$"-13 nuts) were procured and certified as A325 Type 3/A563 Gr. C3 heavy hex nuts and were matcoded as A325 Gr. B heavy hex nuts. Markings on these nuts do not meet the ASTM marking requirements for A325 Type 3/A563 Gr. C3 heavy hex nuts. Recheck confirmed that the nuts are hex series and not heavy hex as certified. The regular hex series would help explain the lack of required marking. The chemical analysis shows conformance to A325 Type 1,2 and 3 nuts.

Initial chemical analysis results on some samples came in with one chemical element out of specification (B1K, B2C and B2E). Chemical reanalysis of these samples confirmed compliance with their required material specifications.

Initial test results and reanalysis of sample N2A confirmed the nut to be A194 Grade 4 which agrees with the Purchase Order and ASTM marking requirements. The matcode is being changed to classify these nuts as A194 Grade 4 instead of A194 Grade 7. Substitution of a Grade 4 nut for a Grade 7 nut will not affect the design considerations as A194 Grades 2H, 3, 4 and 7 all have to meet the same proof loads. Moreover this is a Quality Class 2 nut and could not be used for safety related applications.

Sample B2F was identified in the matcode as A354 Grade BC while the test results indicate it to be a carbon steel type A307 or ANSI 18.6.3. The Purchase Order did not specify any ASTM Specification other than screws to be zinc chromate carbon steel. These machine screws are not safety related and are not used in any pressure boundary. These screws are being excessed.

Non-safety related sample B2D is an A193 Grade B8 stud, 7/8" - 11 X 6", for which initial measured hardness test of R_C 27.5 (average) exceeded the maximum hardness for a B8 Class 1 material. Due to the high hardness a tensile test was performed to check if the material had been strain hardened. The tensile strength was 120,000 psi, the yield strength was 68,400 psi and 1/4t hardness was R_C 30.5. This yield strength falls below the yield for a Class 2 strain hardened material. An additional stud from the same lot was tested and produced a tensile strength of 121,800 psi, yield strength of 80,800 psi and R_C 31.0 average hardness. Although the stud was not marked as a Class 2 strain hardened material, the physical properties show that it possibly is. Furthermore, the ASTM Specification states that A193 Austenitic Stainless Steel grades in the strain hardened condition may not show uniform properties throughout the section in sizes over 3/4". This may explain the lower yield strength (68,400 psi) exhibited in the tensile test of the first sample. The yield strength of these studs is below the 90,000 psi threshold for stress corrosion cracking concerns, therefore the use of these studs will not present a problem in the plant. Additionally, the stud is non-safety related so it would not be used for ASME or safety related applications.

ATTACHMENT 3

SAFETY RELATED

BOLTS, STUDS, CAP SCREWS

No.	Sample I.D.#	Lab I.D.#	Grade (per matcode)	Size (per matcode)
1	WNP-2-25116392	B1C	A325 Gr. B	3/4"x5"-10
2	WNP-2-25120956	B1D	SA193 Gr. B7	1¼"x11"-8
3	WNP-2-25120956	B1E	SA193 Gr. B7	1¼"x11"-8
4	WNP-2-25114943	B1A	A193 Gr. B7	3/4"x10"-10
5	WNP-2-25112920	B1K	SA193 Gr. B8	7/8"x4-3/4"-9
6	WNP-2-25127823	B1H	A490 Tp. 1	1¼"x4"-7
7	WNP-2-25131925	B1F	A320 Gr. L7	1-3/4"x13½"-8
8	WNP-2-25114593	B1I	A307 Gr. B	1¼"x6¼"-7
9	WNP-2-25114593	B1J	A307 Gr. B	1¼"x6¼"-7
10	WNP-2-25114593	B1L	A307 Gr. B	1¼"x6¼"-7

NUTS

No.	Sample I.D.#	Lab I.D.#	Grade (per matcode)	Size (per matcode)
1	WNP-2-25207154	N1B	A325 Gr. B	½"-13
2	WNP-2-25206370	N1A	A194 Gr. 4	1¼"-8
3	WNP-2-25206370	N1G	A194 Gr. 4	1¼"-8
4	WNP-2-25210423	N1S	A194 Gr. 2H	3/4"-10
5	WNP-2-25213370	N1O	SA194 Gr. 2H	7/8"-9
6	WNP-2-25206405	N1E	A194 Gr. 2H	1¼"-7
7	WNP-2-25210192	N1T	A194 Gr. 2H	1¼"-8
8	WNP-2-25206321	N1F	A194 Gr. 2H	1½"-6
9	WNP-2-25208673	N1H	SA563 Gr. A	3/8"-16
10	WNP-2-25208673	N1I	SA563 Gr. A	3/8"-16
11	WNP-2-25206615	N1U	A194 Gr. 2H	1¼"-8

FASTENER TESTING DATA SHEET

Sample ID#: WNP-2-25116392

Lab ID#: B1C

Fastener Description: Bolt 3/4" x 5"

Description of Sample Stock Location: 0207533A0

Material Specification as Documented by Licensee Records: A325 Gr. B

Note: Action taken to change description to Type 1

Head Marking (Specification and Manufacturer): A325 LE

Class/Procurement Level: QC1

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

Structural

Vendor: Cardinal Industrial Products, 38731 W. Oquendo, Las Vegas, NV 98118

QA Requirements Imposed on Vendor: C of C

Comments: Safety related - meets specifications of A325 Type 1.

Licensee Representative:

Signature RRane Date 1-8-88

NRC Representative:

Signature [signature] Date 1/8/88

DATA SUMMARY

Mechanical Analysis

Chemical Analysis

ID#	Hardness	UTS	0.2% YS*	C	Mn	Si	P	S	Cr	Ni	Mo	Cu	Ti	V
B1C	N/A	N/A	28,400 lb*	0.44	0.93	0.19	0.010	0.015	0.18	0.01	0.06	0.01	0.10	<0.01

Note: UTS - Ultimate Heat Strength; YS - Yield Strength; C - Carbon; Mn - Manganese; Si - Silicon; P - Phosphorus; S - Sulfur; Cr - Chromium; Ni - Nickel; Mo - Molybdenum; Cu - Copper; Ti - Titanium; V - Vanadium

*Proof Load

FASTENER TESTING DATA SHEET

Sample ID#: WNP-2-25120956

Lab ID#: B1D, B1E

Fastener Description: Stud, 1¾" x 11"

Description of Sample Stock Location: 0209E54

Material Specification as Documented by Licensee Records:

SA193 Gr. B7 ASME III/3

Head Marking (Specification and Manufacturer): CB7 S12

Class/Procurement Level: QC1

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

Pressure Boundary

Vendor: Coast Industrial Supply Co., 2612 2nd Avenue, Seattle, WA 98121

QA Requirements Imposed on Vendor: C of C and CMTR

Comments: Safety related - meets specifications of SA193 Gr. B7.

Licensee Representative:

Signature R Rowe Date 1-8-88

NRC Representative:

Signature [signature] Date 1/8/88

DATA SUMMARY

	Mechanical Analysis			Chemical Analysis										
ID#	Hardness	UTS	0.2% YS*	C	Mn	Si	P	S	Cr	Ni	Mo	Cu	Ti	V
BID	N/A	139,200	126,800	0.43	0.86	0.29	0.024	0.012	1.05	0.03	0.16	0.01	<0.01	<0.01

Note: UTS - Ultimate Heat Strength; YS - Yield Strength; C - Carbon; Mn - Manganese; Si - Silicon; P - Phosphorus; S - Sulfur; Cr - Chromium; Ni - Nickel; Mo - Molybdenum; Cu - Copper; Ti - Titanium; V - Vanadium

*Proof Load

FASTENER TESTING DATA SHEET

Sample ID#: WNP-2-25120956

Lab ID#: B1D, B1E

Fastener Description: Stud, 1¼" x 11"

Description of Sample Stock Location: 0209E54

Material Specification as Documented by Licensee Records:

SA193 Gr. B7 ASME III/3

Head Marking (Specification and Manufacturer): CB7 S12

Class/Procurement Level: QC1

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

Pressure Boundary

Vendor: Coast Industrial Supply Co., 2612 2nd Avenue, Seattle, WA 98121

QA Requirements Imposed on Vendor: C of C and CMTR

Comments: Safety related - meets specification of SA193 Gr. B7.

Licensee Representative:

Signature RRaua Date 1-8-88

NRC Representative:

Signature [signature] Date 1/8/88

DATA SUMMARY

Mechanical Analysis | Chemical Analysis

ID#	Hardness	UTS	0.2% YS*	C	Mn	Si	P	S	Cr	Ni	Mo	Cu	Ti	V
B1E	N/A	140,500	127,000	0.42	0.86	0.29	0.023	0.011	1.03	0.03	0.16	0.01	<0.01	0.01

Note: UTS - Ultimate Heat Strength; YS - Yield Strength; C - Carbon; Mn - Manganese; Si - Silicon; P - Phosphorus; S - Sulfur; Cr - Chromium; Ni - Nickel; Mo - Molybdenum; Cu - Copper; Ti - Titanium; V - Vanadium

*Proof Load

FASTENER TESTING DATA SHEET

Sample ID#: WNP-2-25114943

Lab ID#: B1A

Fastener Description: Stud 3/4" x 10"

Description of Sample Stock Location: 02074A46A

Material Specification as Documented by Licensee Records: A193 Gr. B7

Head Marking (Specification and Manufacturer): B7 WR5

Class/Procurement Level: QC1

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

Pressure Boundary

Vendor: Coast Industrial Supply Co., 2612 Second Avenue, Seattle, WA 98121

QA Requirements Imposed on Vendor: Certificate of Conformance and CMTR

Comments: Safety related - meets specification of A193 Gr. B7.

Licensee Representative:

Signature RRans Date 1-8-88

NRC Representative:

Signature [signature] Date 1/8/88

DATA SUMMARY

Mechanical Analysis | Chemical Analysis

ID#	Hardness	UTS	0.2% YS*	C	Mn	Si	P	S	Cr	Ni	Mo	Cu	Ti	V
B1A	N/A	142,400	129,600	0.42	0.90	0.26	0.027	0.012	1.03	0.03	0.18	0.01	<0.01	<0.01

Note: UTS - Ultimate Heat Strength; YS - Yield Strength; C - Carbon; Mn - Manganese; Si - Silicon; P - Phosphorus; S - Sulfur; Cr - Chromium; Ni - Nickel; Mo - Molybdenum; Cu - Copper; Ti - Titanium; V - Vanadium

*Proof Load

FASTENER TESTING DATA SHEET

Sample ID#: WNP-2-25112920

Lab ID#: B1K

Fastener Description: Stud 7/8" x 4-3/4"

Description of Sample Stock Location: 3A1B05D03

Material Specification as Documented by Licensee Records: SA193 Gr. B8

ASME III/2

Head Marking (Specification and Manufacturer): B83

Class/Procurement Level: QC1

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

Pressure Boundary

Vendor: Ray Bristow Co., Inc. 19400 SW Teton Avenue, Tualatin, OR 97062

QA Requirements Imposed on Vendor: C of C CMTR

Comments: Safety related - chemistry analysis redone due to carbon being slightly out of specifications - results okay per SA193 Gr. B8.

Licensee Representative:

Signature R Rans Date 1-8-88

NRC Representative:

Signature [signature] Date 1/8/88

DATA SUMMARY

Mechanical Analysis

Chemical Analysis

ID#	Hardness	UTS	0.2% YS*	C	Mn	Si	P	S	Cr	Ni	Mo	Cu	Ti	V
B1K	N/A	97,700	55,400	0.09	1.86	0.36	0.035	0.014	18.09	8.94	0.34	0.29	0.03	0.04

Note: UTS - Ultimate Heat Strength; YS - Yield Strength; C - Carbon; Mn - Manganese; Si - Silicon; P - Phosphorus; S - Sulfur; Cr - Chromium; Ni - Nickel; Mo - Molybdenum; Cu - Copper; Ti - Titanium; V - Vanadium

*Proof Load

FASTENER TESTING DATA SHEET

Sample ID#: WNP-2-25127823

Lab ID#: B1H

Fastener Description: Bolt 1¼" x 4"

Description of Sample Stock Location: 3G1G07C02

Material Specification as Documented by Licensee Records: A490 Type 1

Head Marking (Specification and Manufacturer): A490 PB

Class/Procurement Level: QC1

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

Structural

Vendor: Coast Industrial Co., 2612 Second Avenue, Seattle, WA 98121

QA Requirements Imposed on Vendor: C of C and CMTR

Comments: Safety related - meets specification of A490 Type 1.

Licensee Representative:

Signature RRane Date 1-6-88

NRC Representative:

Signature [signature] Date 1/8/88

DATA SUMMARY

Mechanical Analysis | Chemical Analysis

ID#	Hardness	UTS	0.2% YS*	C	Mn	Si	P	S	Cr	Ni	Mo	Cu	Ti	V
B1H	N/A	163,200	152,300	0.45	0.85	0.18	0.017	0.025	0.91	0.07	0.17	0.10	<0.01	<0.01

Note: UTS - Ultimate Heat Strength; YS - Yield Strength; C - Carbon; Mn - Manganese; Si - Silicon; P - Phosphorus; S - Sulfur; Cr - Chromium; Ni - Nickel; Mo - Molybdenum; Cu - Copper; Ti - Titanium; V - Vanadium

*Proof Load

FASTENER TESTING DATA SHEET

Sample ID#: WNP-2-25131925

Lab ID#: B1F

Fastener Description: Bolt 1-3/4" x 13½"

Description of Sample Stock Location: 0209PR1E2

Material Specification as Documented by Licensee Records:

A320 Gr. L7

Head Marking (Specification and Manufacturer): L7 C P6 J

Class/Procurement Level: QC1

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

Structural

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

QA Requirements Imposed on Vendor: C of C

Comments: Safety related - meets specification of A320 Gr. L7.

Licensee Representative:

Signature RRaus Date 1-8-88

NRC Representative:

Signature [illegible] Date 1/8/88

DATA SUMMARY

	Mechanical Analysis			Chemical Analysis										
ID#	Hardness	UTS	0.2% YS*	C	Mn	Si	P	S	Cr	Ni	Mo	Cu	Ti	V
B1F	N/A	149,100	131,500	0.42	0.86	0.19	0.025	0.020	0.92	0.08	0.15	0.19	<0.01	<0.01

Note: UTS - Ultimate Heat Strength; YS - Yield Strength; C - Carbon; Mn - Manganese; Si - Silicon; P - Phosphorus; S - Sulfur; Cr - Chromium; Ni - Nickel; Mo - Molybdenum; Cu - Copper; Ti - Titanium; V - Vanadium

*Proof Load

FASTENER TESTING DATA SHEET

Sample ID#: WNP-2-25114593

Lab ID#: B1I, B1J, B1L

Fastener Description: Bolts 1¼ x 6¼"

Description of Sample Stock Location: 3G1G05D01

Material Specification as Documented by Licensee Records: A307 Gr. B

Head Marking (Specification and Manufacturer): Y

Class/Procurement Level: QCI

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

Structural

Vendor: Ray Bristow Co., 1640 NW 14th Avenue, Portland, OR 97209

QA Requirements Imposed on Vendor: C of C and CMTR

Comments: Safety related - meets specification of A307 Gr. B.

Licensee Representative:

Signature RRans Date 1-8-88

NRC Representative:

Signature [signature] Date 1/8/88

DATA SUMMARY

Mechanical Analysis | Chemical Analysis

ID#	Hardness	UTS	0.2% YS*	C	Mn	Si	P	S	Cr	Ni	Mo	Cu	Ti	V
B1I	N/A	68,500	38,900	0.21	0.68	0.05	0.005	0.019	0.13	0.19	0.02	0.17	<0.01	<0.01

Note: UTS - Ultimate Heat Strength; YS - Yield Strength; C - Carbon; Mn - Manganese; Si - Silicon; P - Phosphorus; S - Sulfur; Cr - Chromium; Ni - Nickel; Mo - Molybdenum; Cu - Copper; Ti - Titanium; V - Vanadium

*Proof Load

FASTENER TESTING DATA SHEET

Sample ID#: WNP-2-25114593

Lab ID#: B1I, B1J, B1L

Fastener Description: Bolts 1¼ x 6¼"

Description of Sample Stock Location: 3G1G05D01

Material Specification as Documented by Licensee Records: A307 Gr. B

Head Marking (Specification and Manufacturer): Y

Class/Procurement Level: QCI

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

Structural

Vendor: Ray Bristow Co., 1640 NW 14th Avenue, Portland, OR 97209

QA Requirements Imposed on Vendor: C of C and CMTR

Comments: Safety related - meets specification of A307 Gr. B.

Licensee Representative:

Signature RRane Date 1-8-88

NRC Representative:

Signature [signature] Date 1/8/88

Mechanical Analysis | Chemical Analysis

ID#	Hardness	UTS	0.2% YS*	C	Mn	Si	P	S	Cr	Ni	Mo	Cu	Ti	V
B1J	N/A	67,500	37,600	0.22	0.63	0.05	0.005	0.019	0.13	0.20	0.02	0.17	<0.01	<0.01

Note: UTS - Ultimate Heat Strength; YS - Yield Strength; C - Carbon; Mn - Manganese; Si - Silicon; P - Phosphorus; S - Sulfur; Cr - Chromium; Ni - Nickel; Mo - Molybdenum; Cu - Copper; Ti - Titanium; V - Vanadium

*Proof Load

FASTENER TESTING DATA SHEET

Sample ID#: WNP-2-25114593

Lab ID#: B1I, B1J, B1L

Fastener Description: Bolts 1¾ x 6¾"

Description of Sample Stock Location: 3G1G05D01

Material Specification as Documented by Licensee Records: A307 Gr. B

Head Marking (Specification and Manufacturer): Y

Class/Procurement Level: QCI

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

Structural

Vendor: Ray Bristow Co., 1640 NW 14th Avenue, Portland, OR 97209

QA Requirements Imposed on Vendor: C of C and CMTR

Comments: Safety related - meets specification of A307 Gr. B.

Licensee Representative:

Signature RRang Date 1-8-88

NRC Representative:

Signature [signature] Date 1/8/88

DATA SUMMARY

Mechanical Analysis | Chemical Analysis

ID#	Hardness	UTS	0.2% YS*	C	Mn	Si	P	S	Cr	Ni	Mo	Cu	Ti	V
B1L		68,600	39,000	0.22	0.68	0.05	0.004	0.019	0.12	1.98	0.02	0.17	<0.01	<0.01

Note: UTS - Ultimate Heat Strength; YS - Yield Strength; C - Carbon; Mn - Manganese; Si - Silicon; P - Phosphorus; S - Sulfur; Cr - Chromium; Ni - Nickel; Mo - Molybdenum; Cu - Copper; Ti - Titanium; V - Vanadium

*Proof Load

FASTENER TESTING DATA SHEET

Sample ID#: WNP-2-25207154

Lab ID#: N1B, N1D

Fastener Description: Nut ½"

Description of Sample Stock Location: 0207542

Material Specification as Documented by Licensee Records: A325 Gr. B

Head Marking (Specification and Manufacturer): B | S R (*see comments)

Class/Procurement Level: QC1

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

Vendor: Guyon Alloys, 3400 Rogerdale Road, Houston, TX 77042

QA Requirements Imposed on Vendor: C of C

Comments: *Markings do not meet the requirements of ASTM A325 Type 1, 2, 3 nuts. Review indicates that these nuts are hex nuts rather then heavy hex as specified in the procurement documents. Chemical analysis satisfies the requirements of A325 Type 1, 2, 3 nuts. Further evaluation is underway to determine safety significance and its impact.

Licensee Representative:

Signature RRaus Date 1-6-88

NRC Representative:

Signature [signature] Date 1/8/88

DATA SUMMARY

Mechanical Analysis | Chemical Analysis

ID#	Hardness	UTS	0.2% YS*	C	Mn	Si	P	S	Cr	Ni	Mo	Cu	Ti	V
N1B	HRB 95.0	N/A	N/A	0.10	0.66	0.32	0.099	0.026	0.57	0.63	0.09	0.28	<0.01	<0.01

Note: UTS - Ultimate Heat Strength; YS - Yield Strength; C - Carbon; Mn - Manganese; Si - Silicon; P - Phosphorus; S - Sulfur; Cr - Chromium; Ni - Nickel; Mo - Molybdenum; Cu - Copper; Ti - Titanium; V - Vanadium

*Proof Load

FASTENER TESTING DATA SHEET

Sample ID#: WNP-2-25206370

Lab ID#: N1A, N1G

Fastener Description: Nut 1¼"

Description of Sample Stock Location: 02073A53B

Material Specification as Documented by Licensee Records:

A194 Gr. 4 ASME III/2

Head Marking (Specification and Manufacturer): S7J 4

Class/Procurement Level: QC1

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

Structural

Vendor: Coast Industrial Supply Co., 2612 2nd Avenue, Seattle, WA 90058

QA Requirements Imposed on Vendor: C of C and CMTR

Comments: Safety related - meets specifications of A194 Gr. 4.
Could not perform impact test due to material size.

Licensee Representative:

Signature RRaua Date 1-8-88

NRC Representative:

Signature [signature] Date 1/8/88

DATA SUMMARY

	Mechanical Analysis			Chemical Analysis										
ID#	Hardness	UTS	0.2% YS*	C	Mn	Si	P	S	Cr	Ni	Mo	Cu	Ti	V
N1A	HRC 25.5	N/A	N/A	0.44	0.76	0.20	0.015	0.033	0.07	0.07	0.25	0.05	<0.01	<0.01

Note: UTS - Ultimate Heat Strength; YS - Yield Strength; C - Carbon; Mn - Manganese; Si - Silicon; P - Phosphorus; S - Sulfur; Cr - Chromium; Ni - Nickel; Mo - Molybdenum; Cu - Copper; Ti - Titanium; V - Vanadium

*Proof Load

FASTENER TESTING DATA SHEET

Sample ID#: WNP-2-25206370

Lab ID#: N1A, N1G

Fastener Description: Nut 1¼"

Description of Sample Stock Location: 02073A53B

Material Specification as Documented by Licensee Records:

A194 Gr. 4 ASME III/2

Head Marking (Specification and Manufacturer): S7J 4

Class/Procurement Level: QC1

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

Structural

Vendor: Coast Industrial Supply Co., 2612 2nd Avenue, Seattle, WA 90058

QA Requirements Imposed on Vendor: C of C and CMTR

Comments: Safety related - meets specifications of A194 Gr. 4.

Could not perform impact test due to material size.

Licensee Representative:

Signature RRaws Date 1-8-88

NRC Representative:

Signature [signature] Date 1/8/88

DATA SUMMARY

Mechanical Analysis

Chemical Analysis

ID#	Hardness	UTS	0.2% YS*	C	Mn	Si	P	S	Cr	Ni	Mo	Cu	Ti	V
N1G	HRC 26.0	N/A	N/A	0.43	0.76	0.20	0.017	0.028	0.07	0.07	0.26	0.04	<0.01	<0.01

Note: UTS - Ultimate Heat Strength; YS - Yield Strength; C - Carbon; Mn - Manganese; Si - Silicon; P - Phosphorus; S - Sulfur; Cr - Chromium; Ni - Nickel; Mo - Molybdenum; Cu - Copper; Ti - Titanium; V - Vanadium

*Proof Load

FASTENER TESTING DATA SHEET

Sample ID#: WNP-2-25210423

Lab ID#: N1S

Fastener Description: Nut 3/4"

Description of Sample Stock Location: 3F1F07D01

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

ASME III/2

Head Marking (Specification and Manufacturer): J S 2H

Class/Procurement Level: QC1

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

Pressure Boundary

Vendor: Coast Industrial, 2612 2nd Avenue, Seattle, WA 98134

QA Requirements Imposed on Vendor: C of C

Comments: Safety related - meets specification of A194 Gr. 2H.

Licensee Representative:

Signature RRang Date 1-8-88

NRC Representative:

Signature [signature] Date 1/8/88

DATA SUMMARY

Mechanical Analysis | Chemical Analysis

ID#	Hardness	UTS	0.2% YS*	C	Mn	Si	P	S	Cr	Ni	Mo	Cu	Ti	V
N1S	HRC 26.0	N/A	N/A	0.49	0.77	0.22	0.028	0.040	0.08	0.11	0.02	0.22	<0.01	<0.01

Note: UTS - Ultimate Heat Strength; YS - Yield Strength; C - Carbon; Mn - Manganese; Si - Silicon; P - Phosphorus; S - Sulfur; Cr - Chromium; Ni - Nickel; Mo - Molybdenum; Cu - Copper; Ti - Titanium; V - Vanadium

*Proof Load

FASTENER TESTING DATA SHEET

Sample ID#: WNP-2-25213370

Lab ID#: N10

Fastener Description: Nut 7/8"

Description of Sample Stock Location: 3H1H03D02

Material Specification as Documented by Licensee Records: SA194 Gr. 2H ASME III/2

Head Marking (Specification and Manufacturer): 1E74 2H T

Class/Procurement Level: QCI

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

Vendor: Ray Bristow Co., 1640 NW 14th, Portland, OR 97209

QA Requirements Imposed on Vendor: C of C and CMTR

Comments: Safety related - meets specification of SA194 Gr. 2H ASME III/2.

Licensee Representative:

Signature RRang Date 1-6-88

NRC Representative:

Signature [signature] Date 1/8/88

DATA SUMMARY

	Mechanical Analysis			Chemical Analysis										
ID#	Hardness	UTS	0.2% YS*	C	Mn	Si	P	S	Cr	Ni	Mo	Cu	Ti	V
N10	HRC 30.0	N/A	N/A	0.50	0.91	0.20	0.012	0.024	0.05	0.03	0.03	0.01	<0.01	<0.01

Note: UTS - Ultimate Heat Strength; YS - Yield Strength; C - Carbon; Mn - Manganese; Si - Silicon; P - Phosphorus; S - Sulfur; Cr - Chromium; Ni - Nickel; Mo - Molybdenum; Cu - Copper; Ti - Titanium; V - Vanadium

*Proof Load

FASTENER TESTING DATA SHEET

Sample ID#: WNP-2-25206405

Lab ID#: N1E

Fastener Description: Nut 1¼"

Description of Sample Stock Location: 02073A70B

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

Head Marking (Specification and Manufacturer): 2H K

Class/Procurement Level: QC1

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

Pressure Boundary

Vendor: Ray Bristow Co., 1640 NW 14th Avenue, Portland, OR 97209

QA Requirements Imposed on Vendor: C of C and CMTR

Comments: Safety related - meets specifications of A194 Gr. 2H.

Licensee Representative:

Signature RRowe Date 1-8-88

NRC Representative:

Signature [signature] Date 1/8/88

DATA SUMMARY

	Mechanical Analysis			Chemical Analysis										
ID#	Hardness	UTS	0.2% YS*	C	Mn	Si	P	S	Cr	Ni	Mo	Cu	Ti	V
N1E	HRC 29.5	N/A	N/A	0.48	0.75	0.23	0.014	0.015	0.11	0.02	0.01	0.01	<0.01	<0.01

Note: UTS - Ultimate Heat Strength; YS - Yield Strength; C - Carbon; Mn - Manganese; Si - Silicon; P - Phosphorus; S - Sulfur; Cr - Chromium; Ni - Nickel; Mo - Molybdenum; Cu - Copper; Ti - Titanium; V - Vanadium

*Proof Load

FASTENER TESTING DATA SHEET

Sample ID#: WNP-2-25210192

Lab ID#: N1T

Fastener Description: Nut 1¼"

Description of Sample Stock Location: 3G1G02C01

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

ASME III/2

Head Marking (Specification and Manufacturer): RM GS 2H

Class/Procurement Level: QC1

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

Pressure Boundary

Vendor: Rocky Mountain Nuclear, P.O. Box 15045, Salt Lake City, UT

QA Requirements Imposed on Vendor: CMTR

Comments: Safety related - meets specification of A194 Gr. 2H.

Impact test not performed due to material size.

Licensee Representative:

Signature RRaus Date 1-8-88

NRC Representative:

Signature [signature] Date 1/9/88

DATA SUMMARY

	Mechanical Analysis			Chemical Analysis										
ID#	Hardness	UTS	0.2% YS*	C	Mn	Si	P	S	Cr	Ni	Mo	Cu	Ti	V
N1T	HRC 27.5	N/A	N/A	0.42	0.79	0.25	0.015	0.015	0.03	0.02	0.01	0.01	<0.01	<0.01

Note: UTS - Ultimate Heat Strength; YS - Yield Strength; C - Carbon; Mn - Manganese; Si - Silicon; P - Phosphorus; S - Sulfur; Cr - Chromium; Ni - Nickel; Mo - Molybdenum; Cu - Copper; Ti - Titanium; V - Vanadium

*Proof Load

FASTENER TESTING DATA SHEET

Sample ID#: WNP-2-25206321

Lab ID#: N1F

Fastener Description: Nut 1½"

Description of Sample Stock Location: 02072A24

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

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

Class/Procurement Level: QC1

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

Pressure Boundary

Vendor: Ray Bristow Co., 1640 NW 14th, Portland, OR 97209

QA Requirements Imposed on Vendor: C of C and CMTR

Comments: Safety related - meets specification of A194 Gr. 2H.

Licensee Representative:

Signature RRaws Date 1-8-88

NRC Representative:

Signature [signature] Date 1/8/88

DATA SUMMARY

	Mechanical Analysis			Chemical Analysis										
ID#	Hardness	UTS	0.2% YS*	C	Mn	Si	P	S	Cr	Ni	Mo	Cu	Ti	V
N1F	HRC 30.5	N/A	N/A	0.46	0.88	0.20	0.015	0.046	0.12	0.02	0.01	0.01	<0.01	<0.01

Note: UTS - Ultimate Heat Strength; YS - Yield Strength; C - Carbon; Mn - Manganese; Si - Silicon; P - Phosphorus; S - Sulfur; Cr - Chromium; Ni - Nickel; Mo - Molybdenum; Cu - Copper; Ti - Titanium; V - Vanadium

*Proof Load

FASTENER TESTING DATA SHEET

Sample ID#: WNP-2-25208673

Lab ID#: N1H, N1I

Fastener Description: Nut 3/8"

Description of Sample Stock Location: 0209G43

Material Specification as Documented by Licensee Records: SA563 Gr. A
ASME III/1

Head Marking (Specification and Manufacturer): B I S

Class/Procurement Level: QC1

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

Vendor: NPS Industries, 150 Meadowlands Parkway, Secaucus, NJ 07094

QA Requirements Imposed on Vendor: C of C and CMTR

Comments: Safety related - meets specification of SA563 Gr. A.

Licensee Representative:

Signature R Rane Date 1-8-88

NRC Representative:

Signature [signature] Date 1/8/88

DATA SUMMARY

Mechanical Analysis | Chemical Analysis

ID#	Hardness	UTS	0.2% YS*	C	Mn	Si	P	S	Cr	Ni	Mo	Cu	Ti	V
N1H	HRB 86.5	N/A	N/A	0.15	0.50	<0.01	0.004	0.020	0.01	0.01	0.01	0.01	<0.01	<0.01

Note: UTS - Ultimate Heat Strength; YS - Yield Strength; C - Carbon; Mn - Manganese; Si - Silicon; P - Phosphorus; S - Sulfur; Cr - Chromium; Ni - Nickel; Mo - Molybdenum; Cu - Copper; Ti - Titanium; V - Vanadium

*Proof Load

DATA SUMMARY

Mechanical Analysis | Chemical Analysis

ID#	Hardness	UTS	0.2% YS*	C	Mn	Si	P	S	Cr	Ni	Mo	Cu	Ti	V
N1I	HRB 89.0	N/A	N/A	0.19	0.48	<0.01	0.005	0.022	0.05	0.05	0.1	0.10	<0.01	<0.01

Note: UTS - Ultimate Heat Strength; YS - Yield Strength; C - Carbon; Mn - Manganese; Si - Silicon; P - Phosphorus; S - Sulfur; Cr - Chromium; Ni - Nickel; Mo - Molybdenum; Cu - Copper; Ti - Titanium; V - Vanadium

*Proof Load

FASTENER TESTING DATA SHEET

Sample ID#: WNP-2-25208673

Lab ID#: N1H, N1I

Fastener Description: Nut 3/8"

Description of Sample Stock Location: 0209G43

Material Specification as Documented by Licensee Records: SA563 Gr. A
ASME III/1

Head Marking (Specification and Manufacturer): B I S

Class/Procurement Level: QC1

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

Vendor: NPS Industries, 150 Meadowlands Parkway, Secaucus, NJ 07094

QA Requirements Imposed on Vendor: C of C and CMTR

Comments: Safety related - meets specifications of SA563 Gr. A.

Licensee Representative:

Signature RRans Date 1-8-88

NRC Representative:

Signature [signature] Date 1/8/88

FASTENER TESTING DATA SHEET

Sample ID#: WNP-2-25206615

Lab ID#: N1P, N1Q, N1R, N1U

Fastener Description: Nuts 1¼"

Description of Sample Stock Location: 3G1G06E01

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

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

Class/Procurement Level: QC1

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

Pressure Boundary

Vendor: Coast Industrial Co., 2612 2nd Avenue, Seattle, WA 98134

QA Requirements Imposed on Vendor: C of C and CMTR

Comments: Safety related - meets specification of A194 Gr. 2H.

Licensee Representative:

Signature RRans Date 1-8-88

NRC Representative:

Signature [signature] Date 1/8/88

DATA SUMMARY

Mechanical Analysis | Chemical Analysis

ID#	Hardness	UTS	0.2% YS*	C	Mn	Si	P	S	Cr	Ni	Mo	Cu	Ti	V
N1U	HRC 28.0	N/A	N/A	0.50	0.76	0.22	0.011	0.027	0.10	0.13	0.02	0.16	<0.01	<0.01

Note: UTS - Ultimate Heat Strength; YS - Yield Strength; C - Carbon; Mn - Manganese; Si - Silicon; P - Phosphorus; S - Sulfur; Cr - Chromium; Ni - Nickel; Mo - Molybdenum; Cu - Copper; Ti - Titanium; V - Vanadium

*Proof Load

ATTACHMENT 4

NON-SAFETY RELATED

BOLTS, STUDS, CAP SCREWS

No.	Sample I.D.#	Lab I.D.#	Grade (per matcode)	Size (per matcode)
1	WNP-2-25131211	B1G	A325 Tp. 2	½"x1"
2	WNP-2-25100376	B2A	A193 Gr. B7	1¼"x9"-8
3	WNP-2-25100376	B2B	A193 Gr. B7	1¼"x9"-8
4	WNP-2-25100376	B2C	A193 Gr. B7	1¼"x9"-8
5	WNP-2-25116343	B1B	A325 Gr. B	1"x3"-8
6	WNP-2-25103995	B2E	A449	5/8"x6"-11
7	WNP-2-25100565	B2D	A193 Gr. B8	7/8"x6"-11
8	WNP-2-25127690	B2G	A307 Gr. B	1-1/8"x5½"-7
9	WNP-2-25127690	B2H	A307 Gr. B	1-1/8"x5½"-7
10	WNP-2-25100236	B2F	A354 Gr. BC	¼"x6"-20

NUTS

No.	Sample I.D.#	Lab I.D.#	Grade (per matcode)	Size (per matcode)
1	WNP-2-25207154	N1D	A325 Gr. B	½"-13
2	WNP-2-25206615	N1P	A194 Gr. 2H	1¼"-8
3	WNP-2-25206615	N1Q	A194 Gr. 2H	1¼"-8
4	WNP-2-25206615	N1R	A194 Gr. 2H	1¼"-8
5	WNP-2-25207133	N1C	A325 Gr. B	1"-8
6	WNP-2-25207770	N1N	SA194 Gr. 2H	5/8"-11
7	WNP-2-25200231	N2A	A194 Gr. 7	7/8"-9
8	WNP-2-25208743	N1J	A194 Gr. 2H	1-1/8"-8
9	WNP-2-25208743	N1K	A194 Gr. 2H	1-1/8"-8
10	WNP-2-25212964	N1M	A194 Gr. B8	¼"-20
11	WNP-2-25209331	N1L	A540Gr. B23	1-3/4"
12	WNP-2-25200392	N2B	A563 Gr. A	1¼"-7"

FASTENER TESTING DATA SHEET

Sample ID#: WNP-2-25131211

Lab ID#: B1G

Fastener Description: Bolt 1/2" x 1"

Description of Sample Stock Location: G02L02I01

Material Specification as Documented by Licensee Records: A325 Type 2

Note: Action taken to change description to Type 1

Head Marking (Specification and Manufacturer): A325 BJP

Class/Procurement Level: QC1 Commercial

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

Vendor: John Perine Co., Inc., 820 S. Adams, Seattle, WA 98108

QA Requirements Imposed on Vendor: C of C

Comments: Non-safety related - meets specification of A325 Type 1.

Licensee Representative:

Signature R Rane Date 1-8-88

NRC Representative:

Signature [signature] Date 1/8/88

Mechanical Analysis

Chemical Analysis

ID#	Hardness	UTS	0.2% YS*	C	Mn	Si	P	S	Cr	Ni	Mo	Cu	Ti	V
B1G	HRC 26.0	N/A	N/A	0.35	1.11	0.20	0.016	0.028	0.10	0.12	0.02	0.24	N/A	N/A

Note: UTS - Ultimate Heat Strength; YS - Yield Strength; C - Carbon; Mn - Manganese; Si - Silicon; P - Phosphorus; S - Sulfur; Cr - Chromium; Ni - Nickel; Mo - Molybdenum; Cu - Copper; Ti - Titanium; V - Vanadium

*Proof Load

FASTENER TESTING DATA SHEET

Sample ID#: WNP-2-25100376

Lab ID#: B2A, B2B, B2C

Fastener Description: Stud 1¼" x 9"

Description of Sample Stock Location: A01F04I01 #17

Material Specification as Documented by Licensee Records: A193 Gr. B7

Head Marking (Specification and Manufacturer): B7 CIP

Class/Procurement Level: QC2

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

Structural

Vendor: Unknown

QA Requirements Imposed on Vendor: Unknown

Comments: Non-safety related - meets specification of A193 Gr. B7.

Licensee Representative:

Signature RRaus Date 1-8-88

NRC Representative:

Signature [signature] Date 1/8/88

DATA SUMMARY

Mechanical Analysis

Chemical Analysis

ID#	Hardness	UTS	0.2% YS*	C	Mn	Si	P	S	Cr	Ni	Mo	Cu	Ti	V
B2A	HRC 33.5	N/A	N/A	0.40	0.93	0.26	0.024	0.021	1.02	0.08	0.16	0.09	<0.01	<0.01

Note: UTS - Ultimate Heat Strength; YS - Yield Strength; C - Carbon; Mn - Manganese; Si - Silicon; P - Phosphorus; S - Sulfur; Cr - Chromium; Ni - Nickel; Mo - Molybdenum; Cu - Copper; Ti - Titanium; V - Vanadium

*Proof Load

FASTENER TESTING DATA SHEET

Sample ID#: WNP-2-25100376

Lab ID#: B2A, B2B, B2C

Fastener Description: Stud 1¼" x 9"

Description of Sample Stock Location: A01F04I01 #17

Material Specification as Documented by Licensee Records: A193 Gr. B7

Head Marking (Specification and Manufacturer): B7 CIP

Class/Procurement Level: QC2

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

Vendor: Unknown

QA Requirements Imposed on Vendor: Unknown

Comments: Non-safety related - meets specification of A193 Gr. B7.

Licensee Representative:

Signature RRane Date 1-8-88

NRC Representative:

Signature [signature] Date 1/8/88

DATA SUMMARY

Mechanical Analysis

Chemical Analysis

ID#	Hardness	UTS	0.2% YS*	C	Mn	Si	P	S	Cr	Ni	Mo	Cu	Ti	V
B2B	HRC 30.5	N/A	N/A	0.40	0.92	0.26	0.020	0.017	1.03	0.14	0.15	0.08	<0.01	<0.01

Note: UTS - Ultimate Heat Strength; YS - Yield Strength; C - Carbon; Mn - Manganese; Si - Silicon; P - Phosphorus; S - Sulfur; Cr - Chromium; Ni - Nickel; Mo - Molybdenum; Cu - Copper; Ti - Titanium; V - Vanadium

*Proof Load

FASTENER TESTING DATA SHEET

Sample ID#: WNP-2-25100376

Lab ID#: B2A, B2B, B2C

Fastener Description: Stud 1¼" x 9"

Description of Sample Stock Location: A01F04I01 #17

Material Specification as Documented by Licensee Records: A193 Gr. B7

Head Marking (Specification and Manufacturer): B7 CIP

Class/Procurement Level: QC2

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

Vendor: Unknown

QA Requirements Imposed on Vendor: Unknown

Comments: Non-safety related - chemical analysis redone due to high silicon content - probably typing mistake, reanalysis confirms acceptability to A193 Gr. B7 specifications.

Licensee Representative:

Signature RRaus Date 1-8-88

NRC Representative:

Signature [signature] Date 1/8/88

DATA SUMMARY

Mechanical Analysis | Chemical Analysis

ID#	Hardness	UTS	0.2% YS*	C	Mn	Si	P	S	Cr	Ni	Mo	Cu	Ti	V
B2C	HRC 23.5	N/A	N/A	0.37	0.91	0.27	0.018	0.021	1.02	0.08	0.15	0.12	N/A	N/A

Note: UTS - Ultimate Heat Strength; YS - Yield Strength; C - Carbon; Mn - Manganese; Si - Silicon; P - Phosphorus; S - Sulfur; Cr - Chromium; Ni - Nickel; Mo - Molybdenum; Cu - Copper; Ti - Titanium; V - Vanadium

*Proof Load

FASTENER TESTING DATA SHEET

Sample ID#: WNP-2-25116343

Lab ID#: B1B

Fastener Description: Bolt 1" x 3"

Description of Sample Stock Location: 0207524A0

Material Specification as Documented by Licensee Records: A325 Gr. B

Note: Action taken to change description to Type 1

Head Marking (Specification and Manufacturer): A325 R I B (W)

Class/Procurement Level: QC1

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

Structural

Vendor: Ray Bristow Co., 1640 NW 14th Avenue, Portland, OR 97209

QA Requirements Imposed on Vendor: C of C and CMTR

Comments: Non-safety related - meets specifications of A325 Type 1.

Licensee Representative:

Signature RRaw Date 1-8-88

NRC Representative:

Signature [signature] Date 1/8/88

DATA SUMMARY

	Mechanical Analysis			Chemical Analysis										
ID#	Hardness	UTS	0.2% YS*	C	Mn	Si	P	S	Cr	Ni	Mo	Cu	Ti	V
B1B	HRC 32.0	N/A	N/A	0.42	0.94	0.25	0.005	0.021	0.03	0.06	0.01	0.08	<0.01	<0.01

Note: UTS - Ultimate Heat Strength; YS - Yield Strength; C - Carbon; Mn - Manganese; Si - Silicon; P - Phosphorus; S - Sulfur; Cr - Chromium; Ni - Nickel; Mo - Molybdenum; Cu - Copper; Ti - Titanium; V - Vanadium

*Proof Load

FASTENER TESTING DATA SHEET

Sample ID#: WNP-2-25103995

Lab ID#: B2E, NRC2

Fastener Description: Bolt 5/8" x 6"

Description of Sample Stock Location: G02K13I01

Material Specification as Documented by Licensee Records: A449

Galvanized Cadmium

Head Marking (Specification and Manufacturer): KS

Class/Procurement Level: G

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

Structural

Vendor: John Perrine Co., 820 South Adams, Seattle, WA 98108

QA Requirements Imposed on Vendor: N/A

Comments: Non-safety related - chemical analysis redone due to high manganese content - probably typing mistake, reanalysis confirms acceptability to A449 specification:

Licensee Representative:

Signature RRane Date 1-8-88

NRC Representative:

Signature [signature] Date 1/8/88

DATA SUMMARY

Mechanical Analysis

Chemical Analysis

ID#	Hardness	UTS	0.2% YS*	C	Mn	Si	P	S	Cr	Ni	Mo	Cu	Ti	V
B2E	HRC 32.5	N/A	N/A	0.36	0.73	0.23	0.023	0.012	0.10	0.07	0.01	0.16	N/A	N/A

Note: UTS - Ultimate Heat Strength; YS - Yield Strength; C - Carbon; Mn - Manganese; Si - Silicon; P - Phosphorus; S - Sulfur; Cr - Chromium; Ni - Nickel; Mo - Molybdenum; Cu - Copper; Ti - Titanium; V - Vanadium

*Proof Load

FASTENER TESTING DATA SHEET

Sample ID#: WNP-2-25100565

Lab ID#: B2D

Fastener Description: Stud 7/8" x 6"

Description of Sample Stock Location: A01F04I01

Material Specification as Documented by Licensee Records: A193 Gr. B8

Head Marking (Specification and Manufacturer): B8 *

Class/Procurement Level: QC2

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

Structural

Vendor: John Perine Co., 820 South Adams, Seattle, WA 98108

QA Requirements Imposed on Vendor: C of C and CMTR

Comments: Non-safety related, results indicate higher value of hardness, possibly bolt is A193 Gr. B8 Class 2. Another bolt from same lot was sent for testing. Results confirm high hardness. Since yield strength is less than 90,000 psi, use on non-safety related applications does not pose any problem.

Licensee Representative:

Signature R Rang Date 1-8-88

NRC Representative:

Signature [signature] Date 1/8/88

Mechanical Analysis

Chemical Analysis

	ID#	Hardness	UTS	0.2% YS*	C	Mn	Si	P	S	Cr	Ni	Mo	Cu	Ti	V
Initial Test	B2D	HRC 27.5*	N/A	N/A	0.07	0.68	0.35	0.027	0.015	18.62	8.24	0.30	0.27	0.04	0.07
Retest	B2D	HRC 30.5*	120,000	68,400											
Second Sample	B2D	HRC 31.0*	121,800	80,800	0.06	0.66	0.33	0.026	0.013	18.59	8.25	0.30	0.24	0.03	0.05

*Out of specified range

Note: UTS - Ultimate Heat Strength; YS - Yield Strength; C - Carbon; Mn - Manganese; Si - Silicon; P - Phosphorus; S - Sulfur; Cr - Chromium; Ni - Nickel; Mo - Molybdenum; Cu - Copper; Ti - Titanium; V - Vanadium

*Proof Load

FASTENER TESTING DATA SHEET

Sample ID#: WNP-2-25127690

Lab ID#: B2G, B2H

Fastener Description: Bolts 1-1/8" x 5½"

Description of Sample Stock Location: 3I1I06E02

Material Specification as Documented by Licensee Records: A307 Gr. B

Head Marking (Specification and Manufacturer): Y

Class/Procurement Level: QC2

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

Structural

Vendor: Ray Bristow Co., 1640 NW 14th, Portland, OR 97209

QA Requirements Imposed on Vendor: C of C and CMTR

Comments: Non-safety related - meets specification of A307 Gr. B.

Licensee Representative:

Signature RRaus Date 1-8-88

NRC Representative:

Signature [signature] Date 1/8/88

DATA SUMMARY

Mechanical Analysis

Chemical Analysis

ID#	Hardness	UTS	0.2% YS*	C	Mn	Si	P	S	Cr	Ni	Mo	Cu	Ti	V
B2G	HRB 71.0	N/A	N/A	0.17	0.64	0.06	0.006	0.018	0.10	0.09	0.01	0.17	<0.01	<0.01

Note: UTS - Ultimate Heat Strength; YS - Yield Strength; C - Carbon; Mn - Manganese; Si - Silicon; P - Phosphorus; S - Sulfur; Cr - Chromium; Ni - Nickel; Mo - Molybdenum; Cu - Copper; Ti - Titanium; V - Vanadium

*Proof Load

FASTENER TESTING DATA SHEET

Sample ID#: WNP-2-25127690

Lab ID#: B2G, B2H

Fastener Description: Bolts 1-1/8" x 5½"

Description of Sample Stock Location: 3I1I06E02

Material Specification as Documented by Licensee Records: A307 Gr. B

Head Marking (Specification and Manufacturer): Y

Class/Procurement Level: QC2

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

Structural

Vendor: Ray Bristow Co., 1640 NW 14th, Portland, OR 97209

QA Requirements Imposed on Vendor: C of C and CMTR

Comments: Non-safety related - meets specification of A307 Gr. B.

Licensee Representative:

Signature RRans Date 1-8-88

NRC Representative:

Signature [signature] Date 1/8/88

DATA SUMMARY

Mechanical Analysis

Chemical Analysis

ID#	Hardness	UTS	0.2% YS*	C	Mn	Si	P	S	Cr	Ni	Mo	Cu	Ti	V
B2H	HRB 71.5	N/A	N/A	0.16	0.66	0.07	0.004	0.015	0.09	0.10	0.01	0.17	<0.01	<0.01

Note: UTS - Ultimate Heat Strength; YS - Yield Strength; C - Carbon; Mn - Manganese; Si - Silicon; P - Phosphorus; S - Sulfur; Cr - Chromium; Ni - Nickel; Mo - Molybdenum; Cu - Copper; Ti - Titanium; V - Vanadium

*Proof Load

FASTENER TESTING DATA SHEET

Sample ID#: WNP-2-25100236

Lab ID#: B2F

Fastener Description: Machine Screw 1/4" x 6"-20

Description of Sample Stock Location: G02K01C02

Material Specification as Documented by Licensee Records: A354 Gr. BC

Action has been taken to excess these machine screws.

Head Marking (Specification and Manufacturer): N/A

Class/Procurement Level: G

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

Structural

Vendor: Ray Bristow Co., 1819 SW Court Avenue, Pendleton, OR 97801

QA Requirements Imposed on Vendor: N/A

Comments: Non-safety related, test results indicate cap screw to be A307 Gr. B or ANSI B18,6.3. Purchase order did not specify any ASTM grade, only requirement what was P.O. specified "stove bolt zinc chromate". No impact on plant safety.

Licensee Representative:

Signature RRans Date 1-8-88

NRC Representative:

Signature [signature] Date 1/8/88

DATA SUMMARY

Mechanical Analysis | Chemical Analysis

ID#	Hardness	UTS	0.2% YS*	C	Mn	Si	P	S	Cr	Ni	Mo	Cu	Ti	V
B2F	HRB 75.0	N/A	N/A	0.08	0.40	<0.01	0.014	0.024	0.02	0.01	0.01	0.01	<0.01	<0.01

Note: UTS - Ultimate Heat Strength; YS - Yield Strength; C - Carbon; Mn - Manganese; Si - Silicon; P - Phosphorus; S - Sulfur; Cr - Chromium; Ni - Nickel; Mo - Molybdenum; Cu - Copper; Ti - Titanium; V - Vanadium

*Proof Load

FASTENER TESTING DATA SHEET

Sample ID#: WNP-2-25207154

Lab ID#: N1B, N1D

Fastener Description: Nut ½"

Description of Sample Stock Location: 0207542

Material Specification as Documented by Licensee Records: A325 Gr. B

Head Marking (Specification and Manufacturer): B I S R (*see comments)

Class/Procurement Level: QC1

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

Vendor: Guyon Alloys, 3400 Rogerdale Road, Houston, TX 77042

QA Requirements Imposed on Vendor: C of C

Comments: *Markings do not meet the requirements of ASTM A325 Type 1, 2, 3 nuts. Review indicates that these nuts are hex nuts rather then heavy hex as specified in the procurement documents. Chemical analysis satisfies the requirements of A325 Type 1, 2, 3 nuts. Further evaluation is underway to determine safety significance and its impact.

Licensee Representative:

Signature RRans Date 1-8-88

NRC Representative:

Signature [signature] Date 1/8/88

DATA SUMMARY

Mechanical Analysis

Chemical Analysis

ID#	Hardness	UTS	0.2% YS*	C	Mn	Si	P	S	Cr	Ni	Mo	Cu	Ti	V
N1D	NRB 96.0	N/A	N/A	0.11	0.67	0.32	0.103	0.031	0.58	0.62	0.10	0.28	<0.01	<0.01

Note: UTS - Ultimate Heat Strength; YS - Yield Strength; C - Carbon; Mn - Manganese; Si - Silicon; P - Phosphorus; S - Sulfur; Cr - Chromium; Ni - Nickel; Mo - Molybdenum; Cu - Copper; Ti - Titanium; V - Vanadium

*Proof Load

FASTENER TESTING DATA SHEET

Sample ID#: WNP-2-25206615

Lab ID#: N1P, N1Q, N1R, N1U

Fastener Description: Nuts 1¼"

Description of Sample Stock Location: 3G1G06E01

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

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

Class/Procurement Level: QC1

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

Pressure Boundary

Vendor: Coast Industrial Co., 2612 2nd Avenue, Seattle, WA 98134

QA Requirements Imposed on Vendor: C of C and CMTR

Comments: Non-safety related - meets specification of A194 Gr. 2H.

Licensee Representative:

Signature RRans Date 1-8-88

NRC Representative:

Signature [signature] Date 1/8/88

Mechanical Analysis | Chemical Analysis

ID#	Hardness	UTS	0.2% YS*	C	Mn	Si	P	S	Cr	Ni	Mo	Cu	Ti	V
N1P	HRC 26.0	N/A	N/A	0.49	0.77	0.21	0.011	0.032	0.10	0.13	0.02	0.17	<0.01	<0.01

Note: UTS - Ultimate Heat Strength; YS - Yield Strength; C - Carbon; Mn - Manganese; Si - Silicon; P - Phosphorus; S - Sulfur; Cr - Chromium; Ni - Nickel; Mo - Molybdenum; Cu - Copper; Ti - Titanium; V - Vanadium

*Proof Load

FASTENER TESTING DATA SHEET

Sample ID#: WNP-2-25206615

Lab ID#: N1P, N1Q, N1R, N1U

Fastener Description: Nuts 1¼"

Description of Sample Stock Location: 3G1G06E01

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

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

Class/Procurement Level: QC1

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

Pressure Boundary

Vendor: Coast Industrial Co., 2612 2nd Avenue, Seattle, WA 98134

QA Requirements Imposed on Vendor: C of C and CMTR

Comments: Non-safety related - meets specification of A194 Gr. 2H.

Licensee Representative:

Signature RRans Date 1-8-88

NRC Representative:

Signature [signature] Date 1/8/88

Mechanical Analysis | Chemical Analysis

ID#	Hardness	UTS	0.2% YS*	C	Mn	Si	P	S	Cr	Ni	Mo	Cu	Ti	V
N1Q	HRC 27.5	N/A	N/A	0.50	0.78	0.22	0.010	0.029	0.10	0.13	0.02	0.17	<0.01	<0.01

Note: UTS - Ultimate Heat Strength; YS - Yield Strength; C - Carbon; Mn - Manganese; Si - Silicon; P - Phosphorus; S - Sulfur; Cr - Chromium; Ni - Nickel; Mo - Molybdenum; Cu - Copper; Ti - Titanium; V - Vanadium

*Proof Load

FASTENER TESTING DATA SHEET

Sample ID#: WNP-2-25206615

Lab ID#: N1P, N1Q, N1R, N1U

Fastener Description: Nuts 1¼"

Description of Sample Stock Location: 3G1G06E01

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

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

Class/Procurement Level: QC1

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

Vendor: Coast Industrial Co., 2612 2nd Avenue, Seattle, WA 98134

QA Requirements Imposed on Vendor: C of C and CMTR

Comments: Non-safety related - meets specification of A194 Gr. 2H.

Licensee Representative:

Signature RRans Date 1-8-88

NRC Representative:

Signature [signature] Date 1/8/88

DATA SUMMARY

Mechanical Analysis | Chemical Analysis

ID#	Hardness	UTS	0.2% YS*	C	Mn	Si	P	S	Cr	Ni	Mo	Cu	Ti	V
N1R	HRC 26.5	N/A	N/A	0.50	0.77	0.22	0.010	0.029	0.01	0.14	0.02	0.17	<0.01	<0.01

Note: UTS - Ultimate Heat Strength; YS - Yield Strength; C - Carbon; Mn - Manganese; Si - Silicon; P - Phosphorus; S - Sulfur; Cr - Chromium; Ni - Nickel; Mo - Molybdenum; Cu - Copper; Ti - Titanium; V - Vanadium

*Proof Load

FASTENER TESTING DATA SHEET

Sample ID#: WNP-2-25207133

Lab ID#: N1C

Fastener Description: Nut 1"

Description of Sample Stock Location: 0207544

Material Specification as Documented by Licensee Records: A325 Gr. B

Change matcode to A563 Gr. C3

Head Marking (Specification and Manufacturer): B I S C 3 WR

Class/Procurement Level: QC1

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

Structural

Vendor: Guyon Alloys, 3400 Rogerdale Road, Houston, TX 77042

QA Requirements Imposed on Vendor: C of C

Comments: Non-safety related - meets specification of A563 Gr. C3

Licensee Representative:

Signature RRawl Date 1-8-88

NRC Representative:

Signature [signature] Date 1/8/88

DATA SUMMARY

Mechanical Analysis

Chemical Analysis

ID#	Hardness	UTS	0.2% YS*	C	Mn	Si	P	S	Cr	Ni	Mo	Cu	Ti	V
N1C	HRC 25.5	N/A	N/A	0.22	1.02	0.21	0.017	0.014	0.53	0.28	0.01	0.23	<0.01	<0.01

Note: UTS - Ultimate Heat Strength; YS - Yield Strength; C - Carbon; Mn - Manganese; Si - Silicon; P - Phosphorus; S - Sulfur; Cr - Chromium; Ni - Nickel; Mo - Molybdenum; Cu - Copper; Ti - Titanium; V - Vanadium

*Proof Load

FASTENER TESTING DATA SHEET

Sample ID#: WNP-2-25207770

Lab ID#: N1N

Fastener Description: Nut 5/8"

Description of Sample Stock Location: 3I1I04C01

Material Specification as Documented by Licensee Records: SA194 Gr. 2H ASME III/1

Head Marking (Specification and Manufacturer): J 82S 2H

Class/Procurement Level: QC1

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

Vendor: Coast Industrial Supply Co., 2512 2nd Avenue, Seattle, WA 98121

QA Requirements Imposed on Vendor: C of C and CMTR

Comments: Non-safety related - meets specification of SA194 Gr. 2H ASME III/1.

Licensee Representative:

Signature RRang Date 1-8-88

NRC Representative:

Signature [signature] Date 1/8/88

DATA SUMMARY

Mechanical Analysis

Chemical Analysis

ID#	Hardness	UTS	0.2% YS*	C	Mn	Si	P	S	Cr	Ni	Mo	Cu	Ti	V
N1N	HRC 27.0	N/A	N/A	0.48	0.68	0.20	0.010	0.022	0.02	0.02	0.01	0.03	<0.01	<0.01

Note: UTS - Ultimate Heat Strength; YS - Yield Strength; C - Carbon; Mn - Manganese; Si - Silicon; P - Phosphorus; S - Sulfur; Cr - Chromium; Ni - Nickel; Mo - Molybdenum; Cu - Copper; Ti - Titanium; V - Vanadium

*Proof Load

FASTENER TESTING DATA SHEET

Sample ID#: WNP-2-25200231

Lab ID#: N2A

Fastener Description: Nut 7/8"

Description of Sample Stock Location: G02K15G02

Material Specification as Documented by Licensee Records: A194 Gr. 7

Action taken to change matcode to A194 Gr. 4.

Head Marking (Specification and Manufacturer): U 4

Class/Procurement Level: QC2

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

Structural

Vendor: Unknown

QA Requirements Imposed on Vendor: Unknown

Comments: Non-safety related - chemical analysis redone to verify marking to A194 Gr. 4.

Licensee Representative:

Signature RRans Date 1-8-88

NRC Representative:

Signature [signature] Date 1/8/88

DATA SUMMARY

Mechanical Analysis | Chemical Analysis

ID#	Hardness	UTS	0.2% YS*	C	Mn	Si	P	S	Cr	Ni	Mo	Cu	Ti	V
N2A	HRC 29.5	N/A	N/A	0.41	0.79	0.34	0.021	0.016	0.15	0.021	0.22	0.02	<0.01	<0.01

Note: UTS - Ultimate Heat Strength; YS - Yield Strength; C - Carbon; Mn - Manganese; Si - Silicon; P - Phosphorus; S - Sulfur; Cr - Chromium; Ni - Nickel; Mo - Molybdenum; Cu - Copper; Ti - Titanium; V - Vanadium

*Proof Load

FASTENER TESTING DATA SHEET

Sample ID#: WNP-2-25208743

Lab ID#: N1J, N1K

Fastener Description: Nut 1-1/8"

Description of Sample Stock Location: 0209G84

Material Specification as Documented by Licensee Records: A194 Gr. 2H ASME III/1

Head Marking (Specification and Manufacturer): 2H JS 7AF

Class/Procurement Level: QC1

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

Vendor: Power and Engineered Products, 157 Helen Street, South Plainfield, NJ 07080

QA Requirements Imposed on Vendor: C of C and CMTR

Comments: Non-safety related - meets specification of A194 Gr. 2H. No impact test performed due to material size.

Licensee Representative:

Signature RRane Date 1-8-88

NRC Representative:

Signature BJ Holt Date 1/8/88

DATA SUMMARY

Mechanical Analysis

Chemical Analysis

ID#	Hardness	UTS	0.2% YS*	C	Mn	Si	P	S	Cr	Ni	Mo	Cu	Ti	V
N1J	HRC 24.5	N/A	N/A	0.47	0.80	0.18	0.023	0.032	0.39	0.05	0.01	0.01	<0.01	<0.01

Note: UTS - Ultimate Heat Strength; YS - Yield Strength; C - Carbon; Mn - Manganese; Si - Silicon; P - Phosphorus; S - Sulfur; Cr - Chromium; Ni - Nickel; Mo - Molybdenum; Cu - Copper; Ti - Titanium; V - Vanadium

*Proof Load

FASTENER TESTING DATA SHEET

Sample ID#: WNP-2-25208743

Lab ID#: N1J, N1K

Fastener Description: Nut 1-1/8".

Description of Sample Stock Location: 0209G84

Material Specification as Documented by Licensee Records: A194 Gr. 2H
ASME III/1

Head Marking (Specification and Manufacturer): 2H JS 7AF

Class/Procurement Level: QC1

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

Vendor: Power and Engineered Products, 157 Helen Street, South Plainfield, NJ 07080

QA Requirements Imposed on Vendor: C of C and CMTR

Comments: Non-safety related - meets specification of A194 Gr. 2H. No impact test performed due to material size.

Licensee Representative:

Signature RRone Date 1-6-88

NRC Representative:

Signature [signature] Date 1/8/88

DATA SUMMARY

Mechanical Analysis | Chemical Analysis

ID#	Hardness	UTS	0.2% YS*	C	Mn	Si	P	S	Cr	Ni	Mo	Cu	Ti	V
N1K	HRC 24.5	N/A	N/A	0.48	0.80	0.16	0.028	0.034	0.38	0.04	0.01	0.01	<0.01	<0.01

Note: UTS - Ultimate Heat Strength; YS - Yield Strength; C - Carbon; Mn - Manganese; Si - Silicon; P - Phosphorus; S - Sulfur; Cr - Chromium; Ni - Nickel; Mo - Molybdenum; Cu - Copper; Ti - Titanium; V - Vanadium

*Proof Load

FASTENER TESTING DATA SHEET

Sample ID#: WNP-2-25212964

Lab ID#: N1M

Fastener Description: Nut 1/4"

Description of Sample Stock Location: G02K02D01

Material Specification as Documented by Licensee Records: A194 Gr. B8

Head Marking (Specification and Manufacturer): B8

Class/Procurement Level: QC1 Commercial

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

Structural

Vendor: John Perine Co., Inc., 820 South Adams, Seattle, WA 98108

QA Requirements Imposed on Vendor: C of C

Comments: Non-safety related - meets specification of A194 Gr. B8.

Licensee Representative:

Signature RRans Date 1-8-88

NRC Representative:

Signature [signature] Date 1/8/88

DATA SUMMARY

	Mechanical Analysis			Chemical Analysis										
ID#	Hardness	UTS	0.2% YS*	C	Mn	Si	P	S	Cr	Ni	Mo	Cu	Ti	V
N1M	HRC 23.5	N/A	N/A	0.04	1.02	0.56	0.017	0.005	17.63	8.18	0.11	0.16	0.05	0.07

Note: UTS - Ultimate Heat Strength; YS - Yield Strength; C - Carbon; Mn - Manganese; Si - Silicon; P - Phosphorus; S - Sulfur; Cr - Chromium; Ni - Nickel; Mo - Molybdenum; Cu - Copper; Ti - Titanium; V - Vanadium

*Proof Load

FASTENER TESTING DATA SHEET

Sample ID#: WNP-2-25209331

Lab ID#: N1L

Fastener Description: Nut 1-3/4"

Description of Sample Stock Location: 0209WB80

Material Specification as Documented by Licensee Records: A540 Gr. B23

Action taken to add Class 1 to matcode description.

Head Marking (Specification and Manufacturer): A540C

Class/Procurement Level: QC1

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

Structural

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

QA Requirements Imposed on Vendor: C of C and CMTR

Comments: Non-safety related - meets specification requirements of A540 Gr. B23 Class 1.

Licensee Representative:

Signature R Rains Date 1-8-88

NRC Representative:

Signature EJ Date 1/8/88

DATA SUMMARY

Mechanical Analysis | Chemical Analysis

ID#	Hardness	UTS	0.2% YS*	C	Mn	Si	P	S	Cr	Ni	Mo	Cu	Ti	V
N1L	HRC 34.5	N/A	N/A	0.39	0.70	0.26	0.015	0.016	0.83	1.72	0.20	0.02	<0.01	<0.01

Note: UTS - Ultimate Heat Strength; YS - Yield Strength; C - Carbon; Mn - Manganese; Si - Silicon; P - Phosphorus; S - Sulfur; Cr - Chromium; Ni - Nickel; Mo - Molybdenum; Cu - Copper; Ti - Titanium; V - Vanadium

*Proof Load

FASTENER TESTING DATA SHEET

Sample ID#: WNP-2-25200392

Lab ID#: N2B

Fastener Description: Nut 1¼"

Description of Sample Stock Location: G02J12C01

Material Specification as Documented by Licensee Records: A563 Gr. A

Head Marking (Specification and Manufacturer): N/A

Class/Procurement Level: QC2

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

Vendor: Unknown

QA Requirements Imposed on Vendor: Unknown

Comments: Non-safety related - meets specification of A563 Gr. A.

Licensee Representative:

Signature R Rang Date 1-8-88

NRC Representative:

Signature [signature] Date 1/8/88

DATA SUMMARY

Mechanical Analysis | Chemical Analysis

ID#	Hardness	UTS	0.2% YS*	C	Mn	Si	P	S	Cr	Ni	Mo	Cu	Ti	V
N2B	HRB 72.0	N/A	N/A	0.18	0.51	0.21	0.028	0.018	0.03	0.02	0.01	0.01	<0.01	<0.01

Note: UTS - Ultimate Heat Strength; YS - Yield Strength; C - Carbon; Mn - Manganese; Si - Silicon; P - Phosphorus; S - Sulfur; Cr - Chromium; Ni - Nickel; Mo - Molybdenum; Cu - Copper; Ti - Titanium; V - Vanadium

*Proof Load

ATTACHMENT 5

NON-SAFETY RELATED

NRC SAMPLES

No.	Sample I.D.#	Lab I.D.#	Grade (per matcode)	Size (per matcode)
1	NRC Sample 1	NRC1	A307 Gr. B	3/4"x4"
2	WNP-2-25103995	NRC2	A449	5/8"x6"-11

FASTENER TESTING DATA SHEET

Sample ID#: NRC Sample 1

Lab ID#: NRC1

Fastener Description: Bolt 3/4" x 4"

Description of Sample Stock Location: 0209E47

Material Specification as Documented by Licensee Records: A307 Gr. B on Bin

Head Marking (Specification and Manufacturer): M

Class/Procurement Level: N/A

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

Excessed

Vendor: Unknown

QA Requirements Imposed on Vendor: Unknown

Comments: Additional NRC samples - meets specification of A307 Gr. B.

Licensee Representative:

Signature R Rana Date 1-8-88

NRC Representative:

Signature [signature] Date 1/8/88

DATA SUMMARY

Mechanical Analysis

Chemical Analysis

ID#	Hardness	UTS	0.2% YS*	C	Mn	Si	P	S	Cr	Ni	Mo	Cu	Ti	V
NRC1	HRB 96.5	67,000	60,100	0.09	0.50	<0.01	0.021	0.015	0.04	0.02	0.01	0.01	<0.01	<0.01

Note: UTS - Ultimate Heat Strength; YS - Yield Strength; C - Carbon; Mn - Manganese; Si - Silicon; P - Phosphorus; S - Sulfur; Cr - Chromium; Ni - Nickel; Mo - Molybdenum; Cu - Copper; Ti - Titanium; V - Vanadium

*Proof Load

FASTENER TESTING DATA SHEET

Sample ID#: WNP-2-25103995

Lab ID#: B2E, NRC2

Fastener Description: Bolt 5/8" x 6"

Description of Sample Stock Location: G02K13I01

Material Specification as Documented by Licensee Records: A449

Galvanized Cadmium

Head Marking (Specification and Manufacturer): KS

Class/Procurement Level: G

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

Structural

Vendor: John Perrine Co., 820 South Adams, Seattle, WA 98108

QA Requirements Imposed on Vendor: N/A

Comments: Additional NRC samples - meets specification of A449.

Licensee Representative:

Signature R Rane Date 1-6-88

NRC Representative:

Signature [signature] Date 1/8/88

DATA SUMMARY

Mechanical Analysis | Chemical Analysis

ID#	Hardness	UTS	0.2% YS*	C	Mn	Si	P	S	Cr	Ni	Mo	Cu	Ti	V
NRC2	HRC 30.0	N/A	N/A	0.38	0.71	0.22	0.017	0.014	0.10	0.07	0.01	0.11	0.03	0.01

Note: UTS - Ultimate Heat Strength; YS - Yield Strength; C - Carbon; Mn - Manganese; Si - Silicon; P - Phosphorus; S - Sulfur; Cr - Chromium; Ni - Nickel; Mo - Molybdenum; Cu - Copper; Ti - Titanium; V - Vanadium

*Proof Load