

NRC COMPLIANCE BULLETIN 87-02

OCONEE TEST RESULTS

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

1

Sample ID#: ONS/QA/BOLT/1

Fastener Description: Shall Meet Requirements of Duke Power Spec.
OS-0243.00-00-0005 Rev. 3, Duke CL.A, Bolt, Machine
Hex Head ASME SA193 GR.B8, CL.2, Stainless
Steel 3/4"-10X3 1/4", QA Condition 1 (Item#7, PO# P60231)

Description of Sample Stock Location: Bin# 6-D-6-1

Material Specification as
Documented by Licensee Records:

"ASME SA193 GR.B8 CL.2" P.O. Description

"ASME SA193 GR.B8 CL.1" Receipt Paper Work

Head Marking (Specification and Manufacturer):

B8
TB

Class/Procurement Level: ASME Section III, CL.1
Duke Power QA Condition I

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

Vendor: Mackson Inc.
Rock Hill, SC

QA Requirements Imposed on Vendor: Approved Vendor, 10 CFR Part 21

Licensee Representative:

Signature: David E. Whitaker Date: February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

ONS-1

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# ONS/QA/BOLT/1

Hardness 85 HRB (Sample "B")

Ultimate Tensile Strength 84.4 Ksi (Sample "A")

0.2% Yield Strength 37.1 Ksi (Sample "A")

Charpy Impact _____

Chemical Analysis (% wt.) Sample "A" (Compared to SA193 GR.B8)

Iron _____	Titanium _____
Carbon <u>0.06</u>	Vanadium _____
Manganese <u>1.91</u>	Columbium + Tantalum _____
Phosphorus <u>0.026</u>	Copper _____
Sulfur <u><0.005</u>	Aluminum _____
Silicon <u>0.52</u>	Zinc _____
Chromium <u>18.35</u>	Tin _____
Nickel _____	Boron _____
Molybdenum _____	Others _____

*Properties found out of specification shall be noted with an Asterisk

Note: For each fastener description, two samples were obtained and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

¹
Sample ID#: ONS/QA/BOLT/2

Fastener Description: Shall Meet Requirements of Duke Power Spec.
OS-0243.00-00-0005 Rev. 3, Bolt, Machine
Hex Head ASME SA193 GR.B8 CL.2, Stainless
Steel 5/8"-11X6", QA Condition 1 (Item#12, PO#P60231)

Description of Sample Stock Location: Bin# 6-D-6-1

Material Specification as
Documented by Licensee Records:

"ASME SA193 GR.B8 CL.2" P.O. Description
"ASME SA193 GR.B8 CL.1" Receipt Paper Work
Head Marking (Specification and Manufacturer):

B8
TB

Class/Procurement Level: ASME Section III, CL.1
Duke Power QA Condition 1

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

Vendor: Mackson Inc.
Rock Hill, SC

QA Requirements Imposed on Vendor: Approved Vendor, 10 CFR Part 21

Licensee Representative:

Signature: David E. Whitaker Date: February 11, 1988

¹

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

ONS-3

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# ONS/QA/BOLT/2

Hardness 83 HRB (Sample "B")

Ultimate Tensile Strength 99.2 Ksi (Sample "A")

0.2% Yield Strength 30.8 Ksi (Sample "A")

Charpy Impact _____

Chemical Analysis (% wt.) Sample "A" (Compared to SA193 GR.B8)

Iron _____

Titanium _____

Carbon 0.05

Vanadium _____

Manganese 1.16

Columbium +
Tantalum _____

Phosphorus 0.017

Copper _____

Sulfur <0.005

Aluminum _____

Silicon 0.58

Zinc _____

Chromium 18.52

Tin _____

Nickel _____

Boron _____

Molybdenum _____

Others _____

*Properties found out of specification shall be noted with an Asterisk

Note: For each fastener description, two samples were obtained and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

1

Sample ID#: ONS/QA/BOLT/3

NOTE: Line Item 1-10 must be ASTM A-325 Material
Standard National Course Thread

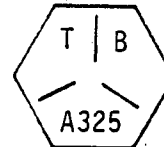
Fastener Description: Item#10. Bolt, Machine Heavy Hex HD. Medium Carbon
Steel, Quenched and Tempered ASTM A325 Type 1 UNRC-2A
Thread, Size 7/8" Dia. 9 Threads per Inch
6 1/2" Length. (Item#10, PO# N35593)

Description of Sample Stock Location: Bin# 3-A-7-1C

Material Specification as

Documented by Licensee Records: "ASTM A325 Type 1 or 2" PO# N35593
"ASTM A325 Type 1" Receipt Paper Work

Head Marking (Specification and Manufacturer):



Class/Procurement Level: Duke Power QA Condition 1,

General Plant Application

(e.g., Pressure Boundary, Structural): Structural

Vendor: Mackson Inc.
Rock Hill, SC

QA Requirements Imposed on Vendor: Approved Vendor, 10 CFR Part 21

Licensee Representative:

Signature: David E. Whitaker Date: February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

ONS-5

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# ONS/QA/BOLT/3

Hardness 30 HRC (Sample "B")

Ultimate Tensile Strength 147.2 Ksi (Sample "A")

0.2% Yield Strength 99 Ksi (Sample "A")

Charpy Impact

Chemical Analysis (% wt.) Sample "A" (Compared to A325 TP.1)

Iron

Titanium

Carbon 0.49

Vanadium

Manganese 0.75

Columbium +
Tantalum

Phosphorus 0.006

Copper

Sulfur 0.025

Aluminum

Silicon

Zinc

Chromium

Tin

Nickel

Boron

Molybdenum

Others

*Properties found out of specification shall be noted with an
Asterisk

Note: For each fastener description, two samples were obtained
and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

1

Sample ID#: ONS/QA/ROD/4

Fastener Description: Shall Meet All Requirements of Duke Power
Spec. DPS-1206.00-02-0004 Rev.1 Rod, Threaded,
3/4" Dia., -10 Threads per Inch Alloy Steel,
SA193 GR.B7, CL. 2B Fit Duke Class B
Dimensional Standard B1.1 Safety Related
(Item# 3 PO N48249)

Description of Sample Stock Location: Bin# 3K-1-8

Material Specification as
Documented by Licensee Records: ASME SA193 GR.B7

Head Marking (Specification and Manufacturer):

B7

Class/Procurement Level: ASME Section III Class 2,
Duke Power QA Condition 1

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

Vendor: Mackson Inc.
Rock Hill, SC

QA Requirements Imposed on Vendor: Approved Vendor, 10 CFR Part 21

Licensee Representative:

Signature: David E. Whitaker Date: February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

ONS-7

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# ONS/QA/ROD/4

Hardness _____

Ultimate Tensile Strength 130.6 Ksi (Sample "A")

0.2% Yield Strength 115.7 Ksi (Sample "A")

Charpy Impact _____

Chemical Analysis (% wt.) Sample "A" (Compared to SA193 GR.B7)

Iron _____

Titanium _____

Carbon 0.37

Vanadium _____

Manganese 0.84

Columbium +
Tantalum _____

Phosphorus 0.018

Copper _____

Sulfur 0.014

Aluminum _____

Silicon 0.20

Zinc _____

Chromium 1.05

Tin _____

Nickel _____

Boron _____

Molybdenum 0.19

Others _____

*Properties found out of specification shall be noted with an Asterisk

Note: For each fastener description, two samples were obtained and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

1

Sample ID#: ONS/QA/BOLT/5

Fastener Description: Hex Head Bolt/Nut-B&W PT. ORD. # 329557
Ref. PT. # 148, Dwg. 128178E.-Above Parts for
Reactor Vessel Closure Head Furnished Duke Power
on Contract # 620.0003, B&W Mark # IRC-T1
Dwg. 128702E. All Part per Original Specifications,
B&W Spec. # CS-3-22 (Item #8, PO# C8079)

Description of Sample Stock Location: Bin# 3-A-1-4

Material Specification as
Documented by Licensee Records: "SA193 GR.B7" QA Receipt Paper Work

Head Marking (Specification and Manufacturer):

B7

Class/Procurement Level: Duke Power QA Condition 1

General Plant Application
(e.g., Pressure Boundary, Structural): For Reactor Vessel Closure
Head

Vendor: Babcock & Wilcox

QA Requirements Imposed on Vendor: Approved Vendor, Certification of
Compliance to ANSI N 45.2.10
Purchase Order was Dated 6-14-74

Licensee Representative:

Signature: David E. Whitaker Date: February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

ONS-9

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# ONS/QA/BOLT/5

Hardness _____

Ultimate Tensile Strength 139.1 Ksi (Sample "A")

0.2% Yield Strength 126.4 Ksi (Sample "A")

Charpy Impact _____

Chemical Analysis (% wt.) Sample "A" (Compared to A193 GR.87)

Iron _____

Titanium _____

Carbon 0.39

Vanadium _____

Manganese 0.86

Columbium +
Tantalum _____

Phosphorus 0.007

Copper _____

Sulfur 0.019

Aluminum _____

Silicon 0.21

Zinc _____

Chromium 0.91

Tin _____

Nickel _____

Boron _____

Molybdenum 0.20

Others _____

*Properties found out of specification shall be noted with an
Asterisk

Note: For each fastener description, two samples were obtained
and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

1

Sample ID#: ONS/QA/STUD/6

Fastener Description: Stud, Carbon Steel ASME SA320 GR.L43,
1-8 UNR-2Ax7 1/4" Overall Length 6 1/2" Threaded
Marked 112T for Steam Generator Primary Inspection
Opening Furnished to Spec OSS-0018.00-00-0004
Rev. 0. (Item # 1, PO# P30662)

Description of Sample Stock Location: Bin# 3-B-2-1C

Material Specification as
Documented by Licensee Records: ASME SA320 GR.L43

Head Marking (Specification and Manufacturer):

(Sample "A")



Class/Procurement Level: ASME Section III Class 1,
Duke Power QA Condition 1



(Sample "B")

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

Vendor: Mackson Inc.
Rock Hill, SC

QA Requirements Imposed on Vendor: Approved Vendor, 10 CFR Part 21

Licensee Representative:

Signature: David E. Whitaker Date: February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

ONS-11

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# ONS/QA/STUD/6

Hardness _____

Ultimate Tensile Strength 135.7 Ksi (Sample "A")

0.2% Yield Strength 130.7 Ksi (Sample "A")

Charpy Impact _____

Chemical Analysis (% wt.) Sample "A" (Compared to SA320 GR.L43)

Iron _____

Titanium _____

Carbon 0.43

Vanadium _____

Manganese 0.86

Columbium +
Tantalum _____

Phosphorus 0.011

Copper _____

Sulfur 0.021

Aluminum _____

Silicon 0.26

Zinc _____

Chromium 0.90

Tin _____

Nickel _____

Boron _____

Molybdenum 0.21

Others _____

*Properties found out of specification shall be noted with an
Asterisk

Note: For each fastener description, two samples were obtained
and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

1

Sample ID#: ONS/QA/STUD/7

To Be Supplied In Accordance With Duke Spec.
#OSC-0244.00-00-0001, Rev. 2, Duke CL. F.
Fastener Description: Stud, Load 3/4" Dia. x10 UNCX6 1/2" Long
2 9/16" Threaded Both Ends Carbon Steel
SA193 GR.B7 Duke Class F For Use With
ITT Grinnell Clamps Fig. 200/201 1 1/2" Cylinder
Size, 3 1/2" Thru 36" Ect. (Item#2, PO# J51526)

Description of Sample Stock Location: Bin# 6-E-14-2

Material Specification as
Documented by Licensee Records: SA193 GR.B7

Head Marking (Specification and Manufacturer):

DPT
B7

Class/Procurement Level: Duke Power QA Condition 1,
ANSI B31.1

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

Vendor: ITT Grinnell

QA Requirements Imposed on Vendor: Approved Vendor, 10 CFR Part 21

Licensee Representative:

Signature: David E. Whitaker Date: February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

ONS-13

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# ONS/QA/STUD/7

Hardness _____

Ultimate Tensile Strength 146.2 Ksi (Sample "A")

0.2% Yield Strength 135.4 Ksi (Sample "A")

Charpy Impact _____

Chemical Analysis (% wt.) Sample "A" (Compared to A193 GR.B7)

Iron _____	Titanium _____
Carbon <u>0.42</u>	Vanadium _____
Manganese <u>0.95</u>	Columbium + Tantalum _____
Phosphorus <u>0.006</u>	Copper _____
Sulfur <u>0.027</u>	Aluminum _____
Silicon <u>0.23</u>	Zinc _____
Chromium <u>0.96</u>	Tin _____
Nickel _____	Boron _____
Molybdenum <u>0.19</u>	Others _____

*Properties found out of specification shall be noted with an Asterisk

Note: For each fastener description, two samples were obtained and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

1

Sample ID#: ONS/QA/STUD/8

Fastener Description: Items 1 & 2 Ref. Spec. OSS-0018.00-00-0005 Rev.0.
Item #1 Stud, Special Alloy Steel Chrome Moly
ASME SA193 GR.16 ASME Section III, CL.II
(Duke Class B). (Item #1, PO# N24188)

Description of Sample Stock Location: Bin# 3-A-1-5

Material Specification as
Documented by Licensee Records: ASME SA193 GR.16

Head Marking (Specification and Manufacturer):



Class/Procurement Level:
"ASME Section III CL.2, QA Condition I" PO# N24188
"ASME Section III CL.1, QA Condition 1"
Spec OSS-0018.00-00-0005 Rev. 0.

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

Vendor: Mackson Inc.
Rock Hill, SC

QA Requirements Imposed on Vendor: Approved Vendor, 10 CFR Part 21

Licensee Representative:

Signature: David E. Whitaker Date: February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

ONS-15

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# ONS/QA/STUD/8

Hardness -

Ultimate Tensile Strength 139.5 Ksi (Sample "A")

0.2% Yield Strength 128.8 Ksi (Sample "A")

Charpy Impact -

Chemical Analysis (% wt.) Sample "A" (Compared to SA193 GR.B16)

Iron <u>-</u>	Titanium <u>-</u>
Carbon <u>0.41</u>	Vanadium <u>-</u>
Manganese <u>0.54</u>	Columbium + Tantalum <u>-</u>
Phosphorus <u>0.008</u>	Copper <u>-</u>
Sulfur <u>0.015</u>	Aluminum <u>-</u>
Silicon <u>0.26</u>	Zinc <u>-</u>
Chromium <u>0.93</u>	Tin <u>-</u>
Nickel <u>-</u>	Boron <u>-</u>
Molybdenum <u>0.48</u>	Others <u>-</u>

*Properties found out of specification shall be noted with an Asterisk

Note: For each fastener description, two samples were obtained and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

1
Sample ID#: ONS/QA/Cap/9

Fastener Description: Must Meet Spec OS-0243-00-00-005 Rev.1
1 1/8" Hex Head Cap Screw x 8 1/4" Long N.C.
Thread CAD. Plated Carbon Steel 7 Threads per Inch
ASME SA193 GR.B7 CL.B (Item #1, PO# J19843)

Description of Sample Stock Location: Bin# 3-A-4-3

Material Specification as
Documented by Licensee Records: ASME SA193 GR.B7

Head Marking (Specification and Manufacturer):

B7S
FFL

Class/Procurement Level: ASME Section III, Class 2

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

Vendor: Power & Engineered Products

QA Requirements Imposed on Vendor: Approved Vendor, 10 CFR Part 21

Licensee Representative:

Signature: David E. Whitaker Date: February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

ONS-17

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# ONS/QA/CAP/9

Hardness 31 HRC (Sample "B")

Ultimate Tensile Strength 139.2 Ksi (Sample "A")

0.2% Yield Strength 123.7 Ksi (Sample "A")

Charpy Impact (In Progress)

Chemical Analysis (% wt.) Sample "A"

Iron

Carbon 0.36

Manganese 0.79

Phosphorus 0.009

Sulfur 0.026

Silicon 0.24

Chromium 0.85

Nickel

Molybdenum 0.19

Titanium

Vanadium

Columbium +
Tantalum

Copper

Aluminum

Zinc

Tin

Boron

Others

*Properties found out of specification shall be noted with an Asterisk

Note: For each fastener description, two samples were obtained and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

1 Sample ID#: ONS/QA/CAP/10

Fastener Description: Screw, Cap Socket Head Carbon Steel GR ASTM
A574 1 1/2"-6x4" Length.
(Item # 19, PO# N57583)

Description of Sample Stock Location: Bin# 3-A-7-6

Material Specification as
Documented by Licensee Records: ASTM A574

Head Marking (Specification and Manufacturer): None

Class/Procurement Level: Commerical Grade
Duke Power QA Condition 1

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

Vendor: Mackson, Inc. Rock Hill, SC

QA Requirements Imposed on Vendor: Approved Vendor, Commerical Grade

Licensee Representative:

Signature: David E. Whitaker Date: February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

ONS-19

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# ONS/QA/CAP/10

Hardness 41 HRC (Sample "B")

Ultimate Tensile Strength 180 Ksi (Sample "A")

0.2% Yield Strength 171.4 Ksi (Sample "A")

Charpy Impact _____

Chemical Analysis (% wt.) Sample "A" (Compared to A574)

Iron _____

Carbon 0.40

Manganese _____

Phosphorus 0.017

Sulfur 0.023

Silicon _____

Chromium _____

Nickel _____

Molybdenum _____

Titanium _____

Vanadium _____

Columbium +
Tantalum _____

Copper _____

Aluminum _____

Zinc _____

Tin _____

Boron _____

Others _____

*Properties found out of specification shall be noted with an Asterisk

Note: For each fastener description, two samples were obtained and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

1

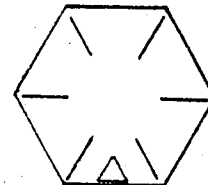
Sample ID#: ONS/NQ/BOLT/11

Fastener Description: Bolt, Machine Hex Head, Carbon Steel
SAE GR.8, 7/8"-9x4"
(MMIS ID# 02623157)

Description of Sample Stock Location: Bin# 3-DD-1-5

Material Specification as
Documented by Licensee Records: ---

Head Marking (Specification and Manufacturer):



Class/Procurement Level: Non-Safety Related

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

Vendor:

QA Requirements Imposed on Vendor: ---

Licensee Representative:

Signature: David E. Whitaker Date: February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

ONS-21

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# ONS/NQ/BOLT/11

Hardness 37 HRC (Sample "A")

Ultimate Tensile Strength _____

0.2% Yield Strength _____

Charpy Impact _____

Chemical Analysis (% wt.) Sample "A" (Compared to SAE J429 GR.8)

Iron _____

Titanium _____

Carbon 0.35

Vanadium _____

Manganese _____

Columbium +
Tantalum _____

Phosphorus 0.023

Copper _____

Sulfur 0.014

Aluminum _____

Silicon _____

Zinc _____

Chromium _____

Tin _____

Nickel _____

Boron _____

Molybdenum _____

Others _____

*Properties found out of specification shall be noted with an
Asterisk

Note: For each fastener description, two samples were obtained
and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

1

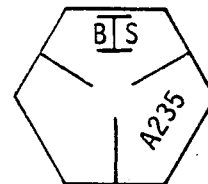
Sample ID#: ONS/NQ/BOLT/12

Fastener Description: Bolt, Machine Heavy Hex Head Medium Carbon Steel,
Quenched and Tempered ASTM A325 Type 1 UNRC-2A
Thread, Size 1/2" Dia. 13 Threads per Inch.
2" Length. Additional Specification Require per
Nuc. Station as Applicable. Item #1
Rec. #7310 835834.001

Description of Sample Stock Location: Bin# 3-CC-14-4

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

Head Marking (Specification and Manufacturer):



Class/Procurement Level: Duke Power QA Condition 1

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

Vendor: Transfer From Cherokee Nuclear Station

QA Requirements Imposed on Vendor: Procured, Received, Stored and
Controlled in Accordance With The
QA Procedures and Construction
Procedures at Cherokee Nuclear
Station

Licensee Representative:

Signature: David E. Whitaker Date: February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

ONS-23

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# ONS/NQ/BOLT/12

Hardness 31 HRC (Sample "A")

Ultimate Tensile Strength _____

0.2% Yield Strength _____

Charpy Impact _____

Chemical Analysis (% wt.) Sample "A" (Compared to A325 TP.1)

Iron _____	Titanium _____
Carbon <u>0.45</u>	Vanadium _____
Manganese <u>0.74</u>	Columbium + Tantalum _____
Phosphorus <u>0.015</u>	Copper _____
Sulfur <u>0.024</u>	Aluminum _____
Silicon _____	Zinc _____
Chromium _____	Tin _____
Nickel _____	Boron _____
Molybdenum _____	Others _____

*Properties found out of specification shall be noted with an Asterisk

Note: For each fastener description, two samples were obtained and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

1

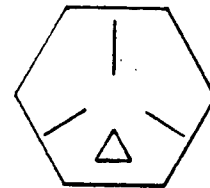
Sample ID#: ONS/NQ/BOLT/13

Fastener Description: Bolt, Bracket, P/N 8348556
(Item # 5, PO# F25920)

Description of Sample Stock Location: Bin# 6-HH-3-D

Material Specification as
Documented by Licensee Records: P/N 8348556

Head Marking (Specification and Manufacturer):



Class/Procurement Level: Duke Power QA Condition 1

General Plant Application
(e.g., Pressure Boundary, Structural): Safe Shutdown Diesel Generator

Vendor: Morrison-Knudsen Power System Div.

QA Requirements Imposed on Vendor: Approved Vendor, 10 CFR Part 21

Licensee Representative:

Signature: David E. Whitaker Date: February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

ONS-25

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# ONS/NQ/BOLT/13

Hardness 28 HRC (Sample "A")

Ultimate Tensile Strength _____

0.2% Yield Strength _____

Charpy Impact _____

Chemical Analysis (% wt.) Sample "A" (Compared to SAE J429 GR.5/A449)

Iron _____	Titanium _____
Carbon <u>0.36</u>	Vanadium _____
Manganese <u>0.70</u>	Columbium + Tantalum _____
Phosphorus <u>0.005</u>	Copper _____
Sulfur <u>0.024</u>	Aluminum _____
Silicon _____	Zinc _____
Chromium _____	Tin _____
Nickel _____	Boron _____
Molybdenum _____	Others _____

*Properties found out of specification shall be noted with an Asterisk

Note: For each fastener description, two samples were obtained and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

1 Sample ID#: ONS/NQ/STUD/14

Fastener Description: Stud, 7/8" Dia. 9 Threads per Inch x 5"
Long Alloy Steel A193 GR.B7, CL.2A, Duke CL. G
Dimensional Standard B1.1 Non-Safety
(MMIS ID# 1007B1AS1COG007050)

Description of Sample Stock Location: Bin# 2-N-4A-2

Material Specification as
Documented by Licensee Records: ---

Head Marking (Specification and Manufacturer):

SB7

Class/Procurement Level: Non-Safety Related

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

Vendor: ---

QA Requirements Imposed on Vendor: ---

Licensee Representative:

Signature: David E. Whitaker Date: February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

ONS-27

Attachment 2

Hardness - - -

0.2% Yield Strength _____

Chemical Analysis (% wt.) Sample "A" (Compared to SA193 GR.B7)

Titanium

Vanadium _____

Columbium +
Tantalum

Copper _____

Aluminum

Zinc _____

Tin _____

Boron _____

Others _____

ONS-28

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

1

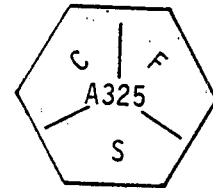
Sample ID#: ONS/NQ/Bolt/15

Fastener Description: Bolt, Hex Head Carbon Steel, Size 1 1/4"
8 Threads Per Inch Length 6" For Reactor
Coolant Motor ASTM. A325 (MMIS ID# 20110249)

Description of Sample Stock Location: Bin# 2-U-29-20

Material Specification as
Documented by Licensee Records: ASTM A325

Head Marking (Specification and Manufacturer):



Class/Procurement Level: Non-Safety Related

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

Vendor: ---

QA Requirements Imposed on Vendor: ---

Licensee Representative:

Signature: David E. Whitaker Date: February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

ONS-29

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# ONS/NQ/BOLT/15

Hardness 102 HRB (25.5 HRC) (Sample "A")

Ultimate Tensile Strength _____

0.2% Yield Strength _____

Charpy Impact _____

Chemical Analysis (% wt.) Sample "A" (Compared to A325 TP.1)

Iron _____

Titanium _____

Carbon 0.49

Vanadium _____

Manganese 1.03

Columbium +
Tantalum _____

Phosphorus 0.013

Copper _____

Sulfur 0.028

Aluminum _____

Silicon _____

Zinc _____

Chromium _____

Tin _____

Nickel _____

Boron _____

Molybdenum _____

Others _____

*Properties found out of specification shall be noted with an
Asterisk

Note: For each fastener description, two samples were obtained
and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

1

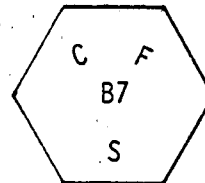
Sample ID#: ONS/NQ/BOLT/16

Fastener Description: Bolts, SA193 GR.B7. (MMIS ID# N205023453)
Bolt, Shell Side Manway Cover
1 1/4"-8x10 MSRH. (PCIE*Description)

Description of Sample Stock Location: Bin# 2-M-2-2

Material Specification as
Documented by Licensee Records: ---

Head Marking (Specification and Manufacturer):



Class/Procurement Level: Non-Safety Related

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

Vendor: ---

QA Requirements Imposed on Vendor: ---

Licensee Representative:

Signature: Daniel E. Whitaker Date: February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

ONS-31

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# ONS/NQ/BOLT/16

Hardness ---

Ultimate Tensile Strength _____

0.2% Yield Strength _____

Charpy Impact _____

Chemical Analysis (% wt.) Sample "A" (Compared to SA193 GR.B7)

Iron _____

Titanium _____

Carbon 0.38

Vanadium _____

Manganese 0.75

Columbium +
Tantalum _____

Phosphorus 0.022

Copper _____

Sulfur 0.013

Aluminum _____

Silicon 0.23

Zinc _____

Chromium 0.95

Tin _____

Nickel _____

Boron _____

Molybdenum 0.17

Others _____

*Properties found out of specification shall be noted with an
Asterisk

Note: For each fastener description, two samples were obtained
and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

1

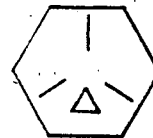
Sample ID#: ONS/NQ/BOLT/17

Fastener Description: Material to Meet Requirements of Duke Power
Specification OS-347 Rev.3 Bolt, 5/16"x4" Long
For Fuel Oil and Lube Oil Pumps
Type N3DHS-137 and N3DBS-137 Delaval Part
No. 023. (Item #18, PO# K31137)

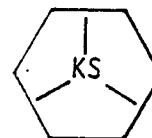
Description of Sample Stock Location: Bin# 6-EE-3-3

Material Specification as
Documented by Licensee Records: Vendor Part # 023, Head Marking
Indicates SAE J429 GR.5 or
ASTM A449

Head Marking (Specification and Manufacturer):



(Sample "A")



(Sample "B")

Class/Procurement Level: Duke Power QA Condition 1
Duke Power Specification OS-347 Rev. 3

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

Vendor: Transamerica Delaval Inc.

QA Requirements Imposed on Vendor: Approved Vendor, 10 CFR Part 21

Licensee Representative:

Signature: David E. Whitaker Date: February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

ONS-33

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# ONS/NQ/BOLT/17

Hardness 28 HRC (Sample "A")

Ultimate Tensile Strength _____

0.2% Yield Strength _____

Charpy Impact .

Chemical Analysis (% wt.) Sample "A" (Compared to SAE J429 GR.5/A449)

Iron _____

Titanium _____

Carbon 0.32

Vanadium _____

Manganese 0.83

Columbium +
Tantalum _____

Phosphorus 0.008

Copper _____

Sulfur 0.023

Aluminum _____

Silicon _____

Zinc _____

Chromium _____

Tin _____

Nickel _____

Boron _____

Molybdenum _____

Others _____

*Properties found out of specification shall be noted with an
Asterisk

Note: For each fastener description, two samples were obtained
and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

1

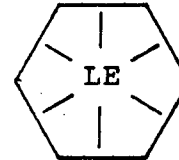
Sample ID#: ONS/NQ/SCRW/18

Fastener Description: Shall Be Furnished In Accordance With Duke
Spec. OS-0244.00-00-0001 Rev.2. Screw,
Assembly Hex Head Cap 1/2" Nominal-13 UNC X
2" Long For Use With ITT-Grinnell Figure:306/307
10KIP ANSI B31.1 QA Condition 1 (Item#10,PO#P15524)

Description of Sample Stock Location: Bin# 6-E-14-2

Material Specification as
Documented by Licensee Records: Vendor Supplied Part. Head Marking
Indicates SAE J429 GR.8 or
ASTM A354 GR.BD

Head Marking (Specification and Manufacturer):



Class/Procurement Level: ANSI B31.1,
Duke Power QA Condition 1

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

Vendor: Grinnell Corp.

QA Requirements Imposed on Vendor: Approved Vendor, 10 CFR Part 21

Licensee Representative:

Signature: David E. Whitaker Date: February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

ONS-35-

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# ONS/NQ/SCRW/18

Hardness 35 HRC (Sample "A")

Ultimate Tensile Strength _____

0.2% Yield Strength _____

Charpy Impact _____

Chemical Analysis (% wt.) Sample "A" (Compared to SAE J429 GR.8)

Iron _____

Titanium _____

Carbon 0.30

Vanadium _____

Manganese _____

Columbium +
Tantalum _____

Phosphorus 0.010

Copper _____

Sulfur 0.012

Aluminum _____

Silicon _____

Zinc _____

Chromium _____

Tin _____

Nickel _____

Boron _____

Molybdenum _____

Others _____

*Properties found out of specification shall be noted with an Asterisk

Note: For each fastener description, two samples were obtained and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

1

Sample ID#: ONS/NQ/Scrw/19

Fastener Description: Screw, Cap Hexagon Head 316 Stainless Steel
3/8"-16X1/4 ANSI B18.2.1 1985
ASTM A193 Grade B8M (Item# 2, PO# N34732)

Description of Sample Stock Location: Bin# 3-G-1-1D

Material Specification as
Documented by Licensee Records: ASTM A193 Grade B8M

Head Marking (Specification and Manufacturer):



316
B8M
TB

Class/Procurement Level: Commerical Grade,
Duke Power QA Condition 1

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

Vendor: Thread-Line Products Inc.

QA Requirements Imposed on Vendor: Commerical Grade Vendors List

Licensee Representative:

Signature: David E. Whitaker Date: February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

ONS-37

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# ONS/NQ/SCRW/19

Hardness 92 HRB (Sample "A")

Ultimate Tensile Strength _____

0.2% Yield Strength _____

Charpy Impact _____

Chemical Analysis (% wt.) Sample "A" (Compared to A193 GR.B8M)

Iron _____

Titanium _____

Carbon 0.04

Vanadium _____

Manganese 1.70

Columbium +
Tantalum _____

Phosphorus 0.025

Copper _____

Sulfur 0.005

Aluminum _____

Silicon 0.80

Zinc _____

Chromium 17.41

Tin _____

Nickel 12.00

Boron _____

Molybdenum 2.28

Others _____

*Properties found out of specification shall be noted with an
Asterisk

Note: For each fastener description, two samples were obtained
and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

1

Sample ID#: ONS/NQ/CAP/20

Fastener Description: For Bingham Williamette Reactor Coolant Pump
Shall Meet The Requirements of B&W Spec CS-3-36.
Capscrew, SH 1"x3 1/4" No. 20 (Item #1, PO# N16471)

Description of Sample Stock Location: Bin# 3-A-2-1C

Material Specification as
Documented by Licensee Records: Vendor Part No.20, Head Markings
Indicate ASME SA193 GR.B8

Head Marking (Specification and Manufacturer):



Class/Procurement Level: Duke Power QA Condition 1,
B&W Spec. CS-3-36

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

Vendor: Bingham-International

QA Requirements Imposed on Vendor: Approved Vendor, 10 CFR Part 21

Licensee Representative:

Signature: David E. Whitaker Date: February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

ONS-39

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# ONS/NQ/CAP/20

Hardness 90 HRB (Sample "A")

Ultimate Tensile Strength _____

0.2% Yield Strength _____

Charpy Impact _____

Chemical Analysis (% wt.) Sample "A" (Compared to A193 GR.B8/A320 GR.B8 CL.1)

Iron _____

Titanium _____

Carbon 0.05

Vanadium _____

Manganese 1.65

Columbium +
Tantalum _____

Phosphorus 0.021

Copper _____

Sulfur 0.014

Aluminum _____

Silicon 0.32

Zinc _____

Chromium 18.85

Tin _____

Nickel 8.18

Boron _____

Molybdenum _____

Others _____

*Properties found out of specification shall be noted with an
Asterisk

Note: For each fastener description, two samples were obtained
and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

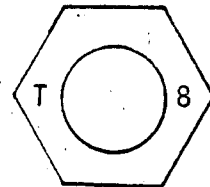
1
Sample ID#: ONS/OA/NUT/21

Fastener Description: Shall be in accordance with Duke Power
Nut, Hex 3/8" Nominal-16 UNC Class 2B Fit
Alloy Steel SA194 GR.8 Dimensional Standard
ANSI B18.2.2 Duke Class B Safety Related.
(Item #2, PO# M62911)

Description of Sample Stock Location: Bin# 3-DD-12-2

Material Specification as
Documented by Licensee Records: ASME SA194 GR.8

Head Marking (Specification and Manufacturer):



Class/Procurement Level: Duke Power QA Condition 1,
ASME Section III Class 2

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

Vendor: Mackson Inc.
Rock Hill, SC

QA Requirements Imposed on Vendor: Approved Vendor, 10 CFR Part 21

Licensee Representative:

Signature: David E. Whitaker Date: February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

ONS-41

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# ONS/QA/NUT/21

Hardness 82 HRB (Sample "A")

Ultimate Tensile Strength _____

0.2% Yield Strength _____

Charpy Impact _____

Chemical Analysis (% wt.) Sample "A"(Compared to SA194 GR.8)

Iron _____

Titanium _____

Carbon 0.05

Vanadium _____

Manganese 1.48

Columbium +
Tantalum _____

Phosphorus 0.020

Copper _____

Sulfur <0.005

Aluminum _____

Silicon 0.68

Zinc _____

Chromium 19.14

Tin _____

Nickel 9.47

Boron _____

Molybdenum _____

Others _____

*Properties found out of specification shall be noted with an
Asterisk

Note: For each fastener description, two samples were obtained
and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

1

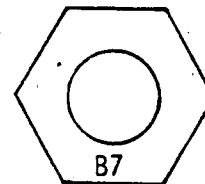
Sample ID#: ONS/QA/NUT/22

Fastener Description: Hex Head Bolt/Nut-B&W Pt. ORD. No.
329557 Ref. Pt. No. 65 Dwg. 128178E.
(Item # 8, PO# C8079 Dated 6-14-74)

Description of Sample Stock Location: Bin# 3-A-1-4

Material Specification as
Documented by Licensee Records: B&W Pt. No. 329557. Marking
Indicates ASME SA194 GR. 7

Head Marking (Specification and Manufacturer):



Class/Procurement Level: Duke Power QA Condition 1
B&W Spec. No. CS-3-22

General Plant Application
(e.g., Pressure Boundary, Structural): Nut For Reactor Vessel
Closure Head

Vendor: Babcock And Wilcox

QA Requirements Imposed on Vendor: Approved Vendor, ANSI N45.2.10

Licensee Representative:

Signature: David E. Whitaker Date: February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

ONS-43

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# ONS/QA/NUT/22

Hardness 31 HRC (Sample "A")

Ultimate Tensile Strength _____

0.2% Yield Strength _____

Charpy Impact _____

Chemical Analysis (% wt.) Sample "A" (Compared to SA194 GR.7)

Iron _____

Titanium _____

Carbon 0.39

Vanadium _____

Manganese 0.88

Columbium +
Tantalum _____

Phosphorus 0.009

Copper _____

Sulfur 0.018

Aluminum _____

Silicon 0.21

Zinc _____

Chromium 0.91

Tin _____

Nickel _____

Boron _____

Molybdenum 0.22

Others _____

*Properties found out of specification shall be noted with an
Asterisk

Note: For each fastener description, two samples were obtained
and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

1

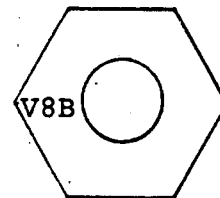
Sample ID#: ONS/QA/NUT/23

Fastener Description: Nut, Hexagon Steel, 7/16"-20,
ASME SA194 GR.8

Description of Sample Stock Location: Bin# 3-H-4-1D

Material Specification as
Documented by Licensee Records: ASME SA194 GR.8

Head Marking (Specification and Manufacturer):



Class/Procurement Level: Duke Power QA Condition 2,
ASME Section III Class 2

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

Vendor: McGuire Transfer

QA Requirements Imposed on Vendor: Received and inspected under the
Duke Power Quality Assurance Program

Licensee Representative:

Signature: C. D. Moenheimer Date: February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

ONS-45

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# ONS/QA/NUT/23

Hardness 72 HRB (Sample "A")

Ultimate Tensile Strength _____

0.2% Yield Strength _____

Charpy Impact _____

Chemical Analysis (% wt.) Sample "A"(Compared to SA194 GR.8)

Iron _____

Titanium _____

Carbon 0.08

Vanadium _____

Manganese 1.14

Columbium +
Tantalum _____

Phosphorus 0.021

Copper _____

Sulfur 0.019

Aluminum _____

Silicon 0.40

Zinc _____

Chromium 18.27

Tin _____

Nickel 8.76

Boron _____

Molybdenum _____

Others _____

*Properties found out of specification shall be noted with an
Asterisk

Note: For each fastener description, two samples were obtained
and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

1

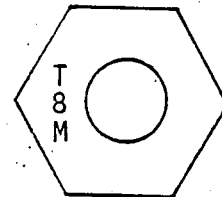
Sample ID#: ONS/QA/NUT/24

Fastener Description: Nut, Hexagon 316 Stainless Steel
ASTM A194 GR.B8M 3/8-16

Description of Sample Stock Location: Bin# 3-G-1-1D

Material Specification as
Documented by Licensee Records: ASTM A194 GR.B8M

Head Marking (Specification and Manufacturer):



Class/Procurement Level: Duke Power QA Condition 1

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

Vendor: Thread Line

QA Requirements Imposed on Vendor: None

Licensee Representative:

Signature: C. D. Misonleim Date: February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

ONS-47

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# ONS/QA/NUT/24

Hardness 71 HRB (Sample "A")

Ultimate Tensile Strength _____

0.2% Yield Strength _____

Charpy Impact _____

Chemical Analysis (% wt.) Sample "A" (Compared to SA194 GR.B8M)

Iron _____

Titanium _____

Carbon 0.02

Vanadium _____

Manganese 1.40

Columbium +
Tantalum _____

Phosphorus 0.037

Copper _____

Sulfur <0.005

Aluminum _____

Silicon 0.67

Zinc _____

Chromium 16.93

Tin _____

Nickel 12.85

Boron _____

Molybdenum 2.26

Others _____

*Properties found out of specification shall be noted with an
Asterisk

Note: For each fastener description, two samples were obtained
and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

1

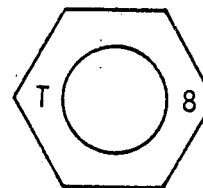
Sample ID#: ONS/NQ/NUT/25

Fastener Description: Nut, Heavy Hexagon Stainless Steel,
ASME SA SA194 GR.8.3/4"-10

Description of Sample Stock Location: Bin# 6-D-6-1

Material Specification as
Documented by Licensee Records: ASME SA 194 GR.8

Head Marking (Specification and Manufacturer):



Class/Procurement Level: Duke Power QA Condition 1,
ASME Section III, Class 1

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

Vendor: Mackson, Inc.
Rock Hill, SC

QA Requirements Imposed on Vendor: 10 CFR Part 21

Licensee Representative:

Signature: C. D. M. [Signature]

Date: February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

ONS-49

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# ONS/QA/NUT/25

Hardness 96 HRB (Sample "A")

Ultimate Tensile Strength _____

0.2% Yield Strength _____

Charpy Impact _____

Chemical Analysis (% wt.) Sample "A" (Compared to SA194 GR.8M)

Iron _____

Titanium _____

Carbon 0.05

Vanadium _____

Manganese 1.72

Columbium +
Tantalum _____

Phosphorus 0.031

Copper _____

Sulfur 0.022

Aluminum _____

Silicon 0.37

Zinc _____

Chromium 16.64

Tin _____

Nickel 10.20

Boron _____

Molybdenum 2.05

Others _____

*Properties found out of specification shall be noted with an
Asterisk

Note: For each fastener description, two samples were obtained
and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

1

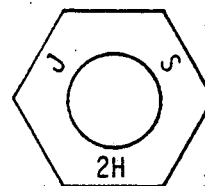
Sample ID#: ONS/QA/NUT/26

Fastener Description: Hex Nut 2H ASME SA194,1-8,
ASME Section III, Class 2

Description of Sample Stock Location: Bin# 3-K-2-13

Material Specification as
Documented by Licensee Records: ASME SA194 Grade.2H

Head Marking (Specification and Manufacturer):



Class/Procurement Level: Duke Power QA Condition 1

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

Vendor: Mackson Inc.
Rock Hill, SC

QA Requirements Imposed on Vendor: 10 CFR Part 21

Licensee Representative:

Signature: C. D. Misenheimer Date: February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

ONS-51

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# ONS/QA/NUT/26

Hardness 28 HRC (Sample "A")

Ultimate Tensile Strength _____

0.2% Yield Strength _____

Charpy Impact _____

Chemical Analysis (% wt.) Sample "A" (Compared to SA194 GR.2H)

Iron _____

Titanium _____

Carbon 0.44

Vanadium _____

Manganese _____

Columbium +
Tantalum _____

Phosphorus 0.014

Copper _____

Sulfur 0.038

Aluminum _____

Silicon _____

Zinc _____

Chromium _____

Tin _____

Nickel _____

Boron _____

Molybdenum _____

Others _____

*Properties found out of specification shall be noted with an
Asterisk

Note: For each fastener description, two samples were obtained
and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

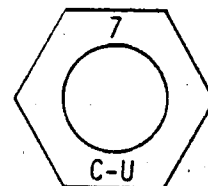
1
Sample ID#: ONS/QA/NUT/27

Fastener Description: Nut, Heavy Hexagon Carbon Steel,
SA194 GR.7, 1"-8, Duke Class B

Description of Sample Stock Location: Bin# 3-K-2-13

Material Specification as
Documented by Licensee Records: ASME SA 194 GR.7

Head Marking (Specification and Manufacturer):



Class/Procurement Level: Duke Power QA Condition 1

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

Vendor: Mackson, Inc.
Rock Hill, SC

QA Requirements Imposed on Vendor: 10 CFR Part 21

Licensee Representative:

Signature: C. D. Misenheimer Jr. Date: February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

ONS-53

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# ONS/QA/NUT/27

Hardness 28 HRC (Sample "A")

Ultimate Tensile Strength _____

0.2% Yield Strength _____

Charpy Impact _____

Chemical Analysis (% wt.) Sample "A" (Compared to SA194 GR.7)

Iron _____	Titanium _____
Carbon <u>0.38</u>	Vanadium _____
Manganese <u>0.80</u>	Columbium + Tantalum _____
Phosphorus <u>0.023</u>	Copper _____
Sulfur <u>0.019</u>	Aluminum _____
Silicon <u>0.24</u>	Zinc _____
Chromium <u>0.90</u>	Tin _____
Nickel _____	Boron _____
Molybdenum <u>0.18</u>	Others _____

*Properties found out of specification shall be noted with an Asterisk

Note: For each fastener description, two samples were obtained and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

1

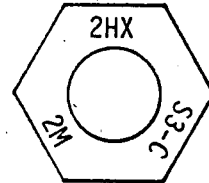
Sample ID#: ONS/QA/NUT/28

Fastener Description: Nut, Heavy Hexagon Carbon Steel,
A563 GR.A, 3/4"-10

Description of Sample Stock Location: Bin# 6-E-14-1

Material Specification as
Documented by Licensee Records: ASTM A563 GR.A

Head Marking (Specification and Manufacturer):



Class/Procurement Level: Duke Power QA Condition 1

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

Vendor: Catawba Transfer

QA Requirements Imposed on Vendor: Received, stored, and controlled in
accordance with Construction QA
Procedures at Catawba Nuclear Station

Licensee Representative:

Signature: C.D. Montemayor Date: February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

ONS-55

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# ONS/QA/NUT/28

Hardness 98 HRB (Sample "A")

Ultimate Tensile Strength _____

0.2% Yield Strength _____

Charpy Impact _____

Chemical Analysis (% wt.) Sample "A" (Compared to A563 GR.A)

Iron _____	Titanium _____
Carbon <u>0.43</u>	Vanadium _____
Manganese _____	Columbium + Tantalum _____
Phosphorus <u>0.025</u>	Copper _____
Sulfur _____	Aluminum _____
Silicon _____	Zinc _____
Chromium _____	Tin _____
Nickel _____	Boron _____
Molybdenum _____	Others _____

*Properties found out of specification shall be noted with an Asterisk

Note: For each fastener description, two samples were obtained and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

1

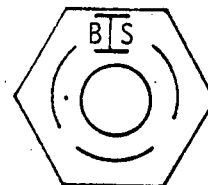
Sample ID#: ONS/QA/NUT/29

Fastener Description: Nut, Heavy Hexagon Carbon Steel,
Plain Finish, ASTM A325 GR.A, 5/8"-11

Description of Sample Stock Location: Bin# 3-A-6-2

Material Specification as
Documented by Licensee Records: ASTM A325 GR.A
(Markings Indicate A563 GR. C)

Head Marking (Specification and Manufacturer):



Class/Procurement Level: Duke Power QA Condition 1

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

Vendor: Cherokee Transfer

QA Requirements Imposed on Vendor: Procured, received, stored and controlled
in accordance with QA Procedures and
Construction Procedures at Cherokee
Nuclear Station

Licensee Representative:

Signature: C. D. McClinton Jr. Date: February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

ONS-57

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# ONS/QA/NUT/29

Hardness 95 HRB (Sample "A")

Ultimate Tensile Strength _____

0.2% Yield Strength _____

Charpy Impact _____

Chemical Analysis (% wt.) Sample "A"(Compared to A563 GR.C)

Iron _____	Titanium _____
Carbon <u>0.13</u>	Vanadium _____
Manganese _____	Columbium + Tantalum _____
Phosphorus <u>< 0.005</u>	Copper _____
Sulfur <u>0.010</u>	Aluminum _____
Silicon <u><0.010</u>	Zinc _____
Chromium _____	Tin _____
Nickel _____	Boron _____
Molybdenum _____	Others _____

*Properties found out of specification shall be noted with an Asterisk

Note: For each fastener description, two samples were obtained and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

1

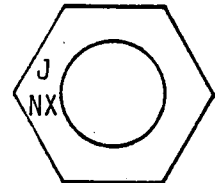
Sample ID#: ONS/QA/NUT/30

Fastener Description: Nut, Heavy Jam Carbon Steel A563 Grade A,
2 3/4 X 4, ANSI B18.2.2, ASME Section III,
Subsection NF, ASME Class 2

Description of Sample Stock Location: Bin# 3-DD-16-3

Material Specification as
Documented by Licensee Records: ASTM A563 Grade A

Head Marking (Specification and Manufacturer):



Class/Procurement Level: ASME Section III, Subsection NF,
ASME Class 2, QA Condition 1

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

Vendor: Catawba Transfer

QA Requirements Imposed on Vendor: Received, Stored, & Controlled in
Accordance With The Applicable
Quality Assurance Procedures

Licensee Representative:

Signature: C. D. Misenheimer Jr. Date: February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

ONS-59

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# ONS/OA/NUT/30

Hardness 69 HRB (Sample "A")

Ultimate Tensile Strength _____

0.2% Yield Strength _____

Charpy Impact _____

Chemical Analysis (% wt.) Sample "A" (Compared to A563 GR.A)

Iron _____

Titanium _____

Carbon 0.25

Vanadium _____

Manganese _____

Columbium +
Tantalum _____

Phosphorus 0.005

Copper _____

Sulfur 0.014

Aluminum _____

Silicon 0.19

Zinc _____

Chromium _____

Tin _____

Nickel _____

Boron _____

Molybdenum _____

Others _____

*Properties found out of specification shall be noted with an
Asterisk

Note: For each fastener description, two samples were obtained
and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

1

Sample ID#: ONS/NQ/NUT/31

Fastener Description: Nut, Heavy Hexagon Carbon Steel,
Plain Finish, GR.A ASTM A307, 1 1/8"-7

Description of Sample Stock Location: Bin# 2-0-27-5

Material Specification as
Documented by Licensee Records: ASTM A307 GR.A

Head Marking (Specification and Manufacturer): None

Class/Procurement Level: Duke Power QA Condition 1

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

Vendor: Cherokee Transfer

QA Requirements Imposed on Vendor: Procured, received, stored and controlled
in accordance with QA Procedures and
Construction Procedures at Cherokee
Nuclear Station

Licensee Representative:

Signature: C.D. Mendenhall Date: February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

ONS-61

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# ONS/NQ/NUT/31

Hardness 81 HRB (Sample "A")

Ultimate Tensile Strength _____

0.2% Yield Strength _____

Charpy Impact _____

Chemical Analysis (% wt.) Sample "A" (Compared to A307 GR.A)

Iron _____	Titanium _____
Carbon _____	Vanadium _____
Manganese _____	Columbium + Tantalum _____
Phosphorus <u>0.011</u>	Copper _____
Sulfur <u>0.008</u>	Aluminum _____
Silicon _____	Zinc _____
Chromium _____	Tin _____
Nickel _____	Boron _____
Molybdenum _____	Others _____

*Properties found out of specification shall be noted with an Asterisk

Note: For each fastener description, two samples were obtained and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

1

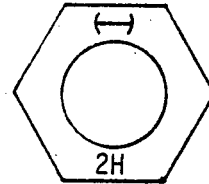
Sample ID#: ONS/NQ/NUT/32

Fastener Description: Nut, Hexagon Carbon Steel,
1 3/8"-6

Description of Sample Stock Location: Bin# 2-5-5-4

Material Specification as
Documented by Licensee Records: Carbon Steel

Head Marking (Specification and Manufacturer):



Class/Procurement Level: Non-Safety Related

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

Vendor:

QA Requirements Imposed on Vendor: None

Licensee Representative:

Signature: C. D. McQuinn Date: February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

ONS-63

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# ONS/NQ/NUT/32

Hardness 106 HRB (31 HRC) (Sample "A")

Ultimate Tensile Strength _____

0.2% Yield Strength _____

Charpy Impact _____

Chemical Analysis (% wt.) Sample "A" (Compared to A194 GR.2H)

Iron _____

Titanium _____

Carbon 0.41

Vanadium _____

Manganese _____

Columbium +
Tantalum _____

Phosphorus 0.024

Copper _____

Sulfur 0.017

Aluminum _____

Silicon _____

Zinc _____

Chromium _____

Tin _____

Nickel _____

Boron _____

Molybdenum _____

Others _____

*Properties found out of specification shall be noted with an Asterisk

Note: For each fastener description, two samples were obtained and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

1

Sample ID#: ONS/NQ/NUT/33

Fastener Description: Nut, Hexagon Carbon Steel,
2"-4 1/2"

Description of Sample Stock Location: Bin# 2-U-8-1

Material Specification as
Documented by Licensee Records: Carbon Steel

Head Marking (Specification and Manufacturer): None

Class/Procurement Level: Non-Safety Related

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

Vendor:

QA Requirements Imposed on Vendor: None

Licensee Representative:

Signature:

C. D. M... ..

Date:

February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

ONS-65

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# ONS/NQ/NUT/33

Hardness 65 HRB (Sample "A")

Ultimate Tensile Strength _____

0.2% Yield Strength _____

Charpy Impact _____

Chemical Analysis (% wt.) Sample "A" (Compared to A563 GR.A)

Iron _____

Titanium _____

Carbon 0.16

Vanadium _____

Manganese _____

Columbium +
Tantalum _____

Phosphorus 0.021

Copper _____

Sulfur _____

Aluminum _____

Silicon _____

Zinc _____

Chromium _____

Tin _____

Nickel _____

Boron _____

Molybdenum _____

Others _____

*Properties found out of specification shall be noted with an
Asterisk

Note: For each fastener description, two samples were obtained
and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

1

Sample ID#: ONS/NQ/NUT/34

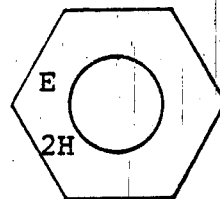
Fastener Description: Nut, Hex Carbon Steel Bolt, 7/8"-9,
SAE Grade 8

Description of Sample Stock Location: Bin# 3-DD-1-5

Material Specification as
Documented by Licensee Records: SAE Grade 8

Head Marking (Specification and Manufacturer):

Class/Procurement Level: Non-Safety Related



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

Vendor:

QA Requirements Imposed on Vendor: None

Licensee Representative:

Signature: C. D. Munn

Date: February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

ONS-67

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# ONS/NQ/NUT/34

Hardness 25 HRC Sample "A"

Ultimate Tensile Strength ---

0.2% Yield Strength ---

Charpy Impact Impact Test In Progress

Chemical Analysis (% wt.) Sample "A"

Iron

Carbon 0.37

Manganese

Phosphorus 0.015

Sulfur 0.006

Silicon

Chromium

Nickel

Molybdenum

Titanium

Vanadium

Columbium +
Tantalum

Copper

Aluminum

Zinc

Tin

Boron

Others

*Properties found out of specification shall be noted with an
Asterisk

Note: For each fastener description, two samples were obtained
and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

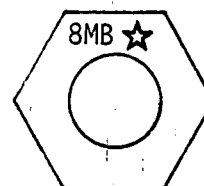
¹ Sample ID#: ONS/NQ/NUT/35

Fastener Description: Nut, Heavy Hexagon Alloy Steel,
A194 GR.8M, 3/4"-10, Duke Class E

Description of Sample Stock Location: Bin# 6-GG-6-1

Material Specification as
Documented by Licensee Records: ASTM A194 GR.8M

Head Marking (Specification and Manufacturer):



Class/Procurement Level: Duke Power QA Condition 2

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

Vendor: Mackson Inc.
Rock Hill, SC

QA Requirements Imposed on Vendor: None

Licensee Representative:

Signature: C. D. M...herman Date: February 11, 1988

¹

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

ONS-69

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# ONS/NQ/NUT/35

Hardness 74 HRB (Sample "A")

Ultimate Tensile Strength _____

0.2% Yield Strength _____

Charpy Impact _____

Chemical Analysis (% wt.) Sample "A" (Compared to SA194 GR.8)

Iron _____	Titanium _____
Carbon <u>0.02</u>	Vanadium _____
Manganese <u>0.75</u>	Columbium + Tantalum _____
Phosphorus <u>0.024</u>	Copper _____
Sulfur <u>0.008</u>	Aluminum _____
Silicon <u>0.53</u>	Zinc _____
Chromium <u>19.00</u>	Tin _____
Nickel <u>9.55</u>	Boron _____
Molybdenum _____	Others _____

*Properties found out of specification shall be noted with an Asterisk

Note: For each fastener description, two samples were obtained and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# ONS/NQ/NUT/36

Hardness 97 HRB (Sample "A")

Ultimate Tensile Strength _____

0.2% Yield Strength _____

Charpy Impact _____

Chemical Analysis (% wt.) Sample "A" (Compared to A307 GR.A)

Iron _____

Titanium _____

Carbon _____

Vanadium _____

Manganese _____

Columbium +
Tantalum _____

Phosphorus < 0.005

Copper _____

Sulfur 0.015

Aluminum _____

Silicon _____

Zinc _____

Chromium _____

Tin _____

Nickel _____

Boron _____

Molybdenum _____

Others _____

*Properties found out of specification shall be noted with an Asterisk

Note: For each fastener description, two samples were obtained and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

1

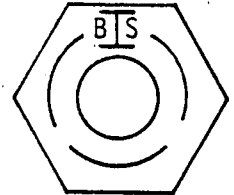
Sample ID#: ONS/NQ/NUT/37

Fastener Description: Nut, Hvy Hex Carbon Steel Plain Finish,
Grade A ASTM A325 1-8

Description of Sample Stock Location: Bin# 3-DD-10-7

Material Specification as
Documented by Licensee Records: ASTM A325 Grade A
(Markings Indicate A563 GR.C)

Head Marking (Specification and Manufacturer):



Class/Procurement Level: Duke Power QA Condition 1

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

Vendor: SSD-South

QA Requirements Imposed on Vendor: None

Licensee Representative:

Signature: C. D. M. [Signature] Date: February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

ONS-73

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# ONS/NQ/NUT/37

Hardness 97 HRB (Sample "A")

Ultimate Tensile Strength _____

0.2% Yield Strength _____

Charpy Impact _____

Chemical Analysis (% wt.) Sample "A" (Compared to A563 GR.C)

Iron _____

Titanium _____

Carbon 0.08

Vanadium _____

Manganese _____

Columbium +
Tantalum _____

Phosphorus < 0.005

Copper _____

Sulfur 0.008

Aluminum _____

Silicon _____

Zinc _____

Chromium _____

Tin _____

Nickel _____

Boron _____

Molybdenum _____

Others _____

*Properties found out of specification shall be noted with an Asterisk

Note: For each fastener description, two samples were obtained and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

1

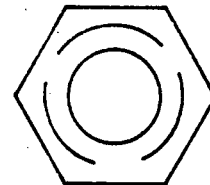
Sample ID#: ONS/NQ/NUT/38

Fastener Description: Nut, Hvy Hex Carbon Steel A563 Grade A, 1-8

Description of Sample Stock Location: Bin# 6-F-2-1

Material Specification as
Documented by Licensee Records: ASTM A563 Grade A
(Markings Indicate A563 GR.C)

Head Marking (Specification and Manufacturer):



Class/Procurement Level: Duke Power QA Condition 1

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

Vendor: Cherokee Transfer

QA Requirements Imposed on Vendor: None

Licensee Representative:

Signature: C. D. M. [Signature] Date: February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

ONS-75

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# ONS/NQ/NUT/38

Hardness 92 HRB (Sample "A")

Ultimate Tensile Strength _____

0.2% Yield Strength _____

Charpy Impact _____

Chemical Analysis (% wt.) Sample "A" (Compared to A563 GR.A)

Iron _____

Titanium _____

Carbon 0.09

Vanadium _____

Manganese _____

Columbium +
Tantalum _____

Phosphorus 0.008

Copper _____

Sulfur _____

Aluminum _____

Silicon _____

Zinc _____

Chromium _____

Tin _____

Nickel _____

Boron _____

Molybdenum _____

Others _____

*Properties found out of specification shall be noted with an
Asterisk

Note: For each fastener description, two samples were obtained
and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

1

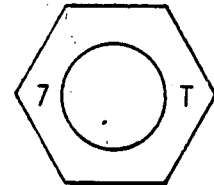
Sample ID#: ONS/NQ/NUT/39

Fastener Description: Nut, Hexagon Carbon Steel,
SA194 GR.7, 1 1/4"-8

Description of Sample Stock Location: Bin# 2-M-2-2

Material Specification as
Documented by Licensee Records: ASME SA194 GR.7

Head Marking (Specification and Manufacturer):



Class/Procurement Level: Non-Safety Related

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

Vendor:

QA Requirements Imposed on Vendor: None

Licensee Representative:

Signature: C. D. M. [Signature] Date: February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

ONS-77

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# ONS/NQ/NUT/39

Hardness (Sample "A") 105 HRB(29.5 HRC)

Ultimate Tensile Strength _____

0.2% Yield Strength _____

Charpy Impact _____

Chemical Analysis (% wt.) Sample "A" (Compared to SA194 GR.7)

Iron _____

Carbon 0.39

Manganese 0.90

Phosphorus 0.010

Sulfur 0.026

Silicon 0.27

Chromium 0.79

Nickel _____

Molybdenum 0.20

Titanium _____

Vanadium _____

Columbium +
Tantalum _____

Copper _____

Aluminum _____

Zinc _____

Tin _____

Boron _____

Others _____

*Properties found out of specification shall be noted with an
Asterisk

Note: For each fastener description, two samples were obtained
and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

1

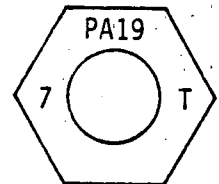
Sample ID#: ONS/NQ/NUT/40

Fastener Description: Nut, Heavy Hexagon, 1 1/4"-8

Description of Sample Stock Location: Bin# 3-A-1-1G

Material Specification as
Documented by Licensee Records: ASME SA194 GR.7

Head Marking (Specification and Manufacturer):



Class/Procurement Level: Duke Power QA Condition 1,
Duke Class A

General Plant Application
(e.g., Pressure Boundary, Structural): Pressure Boundary
(Secondary Side Steam Generator
Manway)

Vendor: Mackson Inc.
Rock Hill, SC

QA Requirements Imposed on Vendor: 10 CFR Part 21

Licensee Representative:

Signature: C. D. Meinenheimer Date: February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

ONS-79

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# ONS/NQ/NUT/40

Hardness 33 HRC (Sample "A")

Ultimate Tensile Strength _____

0.2% Yield Strength _____

Charpy Impact SPECIMEN CANNOT BE OBTAINED DUE TO NUT SIZE

Chemical Analysis (% wt.) Sample "A" (Compared to SA 194 GR.7)

Iron _____	Titanium _____
Carbon <u>0.35 (-0.03% TOLERANCE PER A29)</u>	Vanadium _____
Manganese <u>0.85</u>	Columbium + Tantalum _____
Phosphorus <u>0.013</u>	Copper _____
Sulfur <u>0.021</u>	Aluminum _____
Silicon <u>0.19</u>	Zinc _____
Chromium <u>1.02</u>	Tin _____
Nickel _____	Boron _____
Molybdenum <u>0.21</u>	Others _____

*Properties found out of specification shall be noted with an Asterisk

Note: For each fastener description, two samples were obtained and arbitrarily labeled "A" and "B".

NRC COMPLIANCE BULLETIN 87-02

McGUIRE TEST RESULTS

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

1

Sample ID#: MNS/QA/BOLT/1

Fastener Description: Bolt, Heavy Hex Head 1 1/2 - 6 X 8 UNRC 2A
Plain Finish ASTM Spec. A-325 Type 1 Without
Nut (Item 6 P.O. G58636)

Description of Sample Stock Location: Bin # 03-E0-05-3

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

Head Marking (Specification and Manufacturer):

C B
A 325

Class/Procurement Level: QA Condition 1

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

Vendor: Texas Bolt Company

QA Requirements Imposed on Vendor: Approved Vendor, 10 CFR Part 21

Licensee Representative:

Signature: David E. Whitaker Date: February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

MNS-1

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# MNS/QA/BOLT/1

Hardness 100 HRB (Sample "B")

Ultimate Tensile Strength 119.2 Ksi (Sample "A")

0.2% Yield Strength 94.1 Ksi (Sample "A")

Charpy Impact ---

Chemical Analysis (% wt.) Sample "A" (Compared To A325 Type 1)

Iron

Titanium

Carbon 0.42

Vanadium

Manganese 1.35

Columbium +
Tantalum

Phosphorus 0.018

Copper 0.12

Sulfur 0.037

Aluminum

Silicon 0.025

Zinc

Chromium 0.12

Tin

Nickel 0.08

Boron

Molybdenum 0.02

Others

*Properties found out of specification shall be noted with an Asterisk

Note: For each fastener description, two samples were obtained and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

1

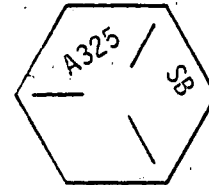
Sample ID#: MNS/QA/BOLT/2

Fastener Description: Bolt, Heavy Hex Head Carbon Steel 3/4-10 X 6
UNRC 2A Plain Finish ASTM Spec. A-325 Type 1
With Nut (Item 19,P0# G58636)

Description of Sample Stock Location: Bin # 03-E0-05-1

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

Head Marking (Specification and Manufacturer):



Class/Procurement Level: QA Condition 1

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

Vendor: Power and Engineered Products Company

QA Requirements Imposed on Vendor: Approved Vendor, 10 CFR Part 21

Licensee Representative:

Signature: David E. Whitaker Date: February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

MNS-3

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# MNS/QA/BOLT/2

Hardness 31 HRC (Sample "A")

Ultimate Tensile Strength 135.7 Ksi (Sample "A")

0.2% Yield Strength 112.2 Ksi (Sample "A")

Charpy Impact ---

Chemical Analysis (% wt.) Sample "A" (Compared To A325 Type 1)

Iron	<u> </u>	Titanium	<u> </u>
Carbon	<u>0.39</u>	Vanadium	<u> </u>
Manganese	<u>0.65</u>	Columbium + Tantalum	<u> </u>
Phosphorus	<u>0.013</u>	Copper	<u>0.01</u>
Sulfur	<u>0.011</u>	Aluminum	<u> </u>
Silicon	<u>0.19</u>	Zinc	<u> </u>
Chromium	<u>0.02</u>	Tin	<u> </u>
Nickel	<u><0.01</u>	Boron	<u> </u>
Molybdenum	<u><0.01</u>	Others	<u> </u>

*Properties found out of specification shall be noted with an Asterisk

Note: For each fastener description, two samples were obtained and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

1

Sample ID#: MNS/QA/ROD/3

Fastener Description: Rod, Threaded 3/4" Dia.-10 Threads per Inch
Alloy Steel, SA193 GR. B7 Class 2A Fit Duke
Class A Dimensional Standard B1.1 Safety Related
(Item #1 PO# N43974)

Description of Sample Stock Location: Bin# 05-K0-03-3

Material Specification as
Documented by Licensee Records: ASME SA193 GR. B7

Head Marking (Specification and Manufacturer): None

B7
H

Class/Procurement Level: Duke Power QA Condition 1
ASME Section III, Class 1

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

Vendor: Mackson Inc.
Rock Hill, SC

QA Requirements Imposed on Vendor: Approved Vendor, 10 CFR Part 21

Licensee Representative:

Signature: David E. Whitaker Date: February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

MNS-5

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# MNS/QA/ROD/3

Hardness 27 HRC (Sample B)

Ultimate Tensile Strength 132 Ksi (Sample A)

0.2% Yield Strength 117.8 Ksi (Sample A)

Charpy Impact Not Required

Chemical Analysis (% wt.) Sample (Sample A) (Compared To SA193 Gr. B7)

Iron

Titanium

Carbon 0.39

Vanadium

Manganese 0.85

Columbium +
Tantalum

Phosphorus 0.018

Copper 0.40

Sulfur 0.014

Aluminum

Silicon 0.21

Zinc

Chromium 1.03

Tin

Nickel 0.17

Boron

Molybdenum

Others

*Properties found out of specification shall be noted with an
Asterisk

Note: For each fastener description, two samples were obtained
and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

1
Sample ID#: MNS/QA/STUD/4

Fastener Description: ASME SA 193, Grade B7 and ASME Boiler and Pressure Vessel Code Section III, Class 1 Summer 1980 Addenda. Duke Spec 1206.00-2.2 Latest Revision. Stud 3/4-10 X 5. (Item 8, P.O. #J55648)

Description of Sample Stock Location: Bin # 03-E0-05-4

Material Specification as
Documented by Licensee Records: ASME SA 193 Grade 7

Head Marking (Specification and Manufacturer): B 7 R AB

Class/Procurement Level: ASME Section III Class 1,
QA Condition 1

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

Vendor: Power and Engineered Products Company

QA Requirements Imposed on Vendor: Approved Vendor, 10 CFR Part 21

Licensee Representative:

Signature: David E. Whitaker Date: February 11, 1988

1
ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

MNS-7

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# MNS/QA/STUD/4

Hardness 29 HRC (Sample "B")

Ultimate Tensile Strength 134.1 Ksi (Sample "A")

0.2% Yield Strength 116.7 Ksi (Sample "A")

Charpy Impact ---

Chemical Analysis (% wt.) Sample "A" (Compared To SA193 Grade B7)

Iron

Titanium

Carbon 0.38

Vanadium

Manganese 0.85

Columbium +
Tantalum

Phosphorus 0.008

Copper 0.18

Sulfur 0.018

Aluminum

Silicon 0.24

Zinc

Chromium 0.93

Tin

Nickel 0.16

Boron

Molybdenum 0.16

Others

*Properties found out of specification shall be noted with an Asterisk

Note: For each fastener description, two samples were obtained and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

1

Sample ID#: MNS/QA/STUD/5

Fastener Description: ASME SA 193, Grade B7 and ASME B and PV Code,
Section III, Class 1, 1980 Summer Addenda
Stud 3/4-10 X 5 1/4.
(Item 1, PO# J32490)

Description of Sample Stock Location: Bin # 03-E0-05-4

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

Head Marking (Specification and Manufacturer):

B7



Class/Procurement Level: ASME Section III Class 1,
QA Condition 1

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

Vendor: Power and Engineered Products Company

QA Requirements Imposed on Vendor: Approved Vendor, 10 CFR Part 21

Licensee Representative:

Signature: David E. Whitaker Date: February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

MNS-9

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# MNS/QA/STUD/5

Hardness 31 HRC (Sample "B")

Ultimate Tensile Strength 153.3 Ksi (Sample "A")

0.2% Yield Strength 146.7 Ksi (Sample "A")

Charpy Impact ---

Chemical Analysis (% wt.) Sample "A" (Compared To SA193 Grade B7)

Iron	<u> </u>	Titanium	<u> </u>
Carbon	<u>0.36</u>	Vanadium	<u> </u>
Manganese	<u>0.74</u>	Columbium + Tantalum	<u> </u>
Phosphorus	<u>0.012</u>	Copper	<u>0.01</u>
Sulfur	<u>0.022</u>	Aluminum	<u> </u>
Silicon	<u>0.22</u>	Zinc	<u> </u>
Chromium	<u>0.84</u>	Tin	<u> </u>
Nickel	<u>0.01</u>	Boron	<u> </u>
Molybdenum	<u>0.15</u>	Others	<u> </u>

*Properties found out of specification shall be noted with an Asterisk

Note: For each fastener description, two samples were obtained and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

1

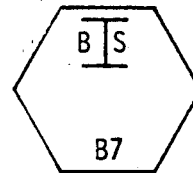
Sample ID#: MNS/QA/CAP/6

Fastener Description: To comply with Duke Spec No. 1206.00-02-0002
Latest Revision, Class B Screw, Cap Hexagon
Head Carbon Steel ASME SA193 Grade B7 7/16-
14 X 4 Inch (Item 86 P.O. #J16575)

Description of Sample Stock Location: Bin # 03-EB-03-2

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

Head Marking (Specification and Manufacturer):



Class/Procurement Level: ASME Section III Class 2,
QA Condition 1

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

Vendor: Power and Engineered Products Company

QA Requirements Imposed on Vendor: Approved Vendor, 10 CFR Part 21

Licensee Representative:

Signature: David E. Whitaker Date: February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

MNS-11

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# MNS/QA/CAP/6

Hardness 27 HRC (Sample "B")

Ultimate Tensile Strength 142.4 Ksi (Sample "A")

0.2% Yield Strength 130.6 Ksi (Sample "A")

Charpy Impact ---

Chemical Analysis (% wt.) Sample "A" (Compared To SA193 Grade B7)

Iron

Titanium

Carbon 0.44

Vanadium

Manganese 0.83

Columbium +
Tantalum

Phosphorus 0.015

Copper 0.02

Sulfur 0.019

Aluminum

Silicon 0.27

Zinc

Chromium 0.95

Tin

Nickel 0.01

Boron

Molybdenum 0.17

Others

*Properties found out of specification shall be noted with an
Asterisk

Note: For each fastener description, two samples were obtained
and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

1

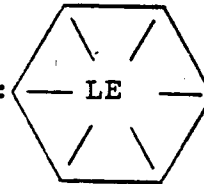
Sample ID#: MNS/QA/SCRW/7

Fastener Description: 1/2 X 3 1/2 - 13 UNC 2A SAEJ 429 Grade 8
Cap Screw (Item 2, P.O. # G10147)

Description of Sample Stock Location: Bin # 03-EC-04-2

Material Specification as
Documented by Licensee Records: SAE J429 Grade 8

Head Marking (Specification and Manufacturer):



Class/Procurement Level: QA Condition 1

General Plant Application
(e.g., Pressure Boundary, Structural): For Repair and Modification of
KC and RN Pipe Hangers
(From P.O. #G10147)

Vendor: Sure Loc Incorporated

QA Requirements Imposed on Vendor: Approved Vendor, 10 CFR Part 21

Licensee Representative:

Signature: David E. Whitaker Date: February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

MNS-13

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# MNS/QA/SCRW/7

Hardness 38 HRC (Sample "B")

Ultimate Tensile Strength 176 Ksi (Sample "A")

0.2% Yield Strength 167 Ksi (Sample "A")

Charpy Impact ---

Chemical Analysis (% wt.) Sample "B" (Compared To SAEJ429 Grade 8)

Iron	<u> </u>	Titanium	<u>0.051</u>
Carbon	<u>0.42</u>	Vanadium	<u>0.037</u>
Manganese	<u>0.55</u>	Columbium + Tantalum	<u> </u>
Phosphorus	<u>0.009</u>	Copper	<u>0.01</u>
Sulfur	<u>0.021</u>	Aluminum	<u> </u>
Silicon	<u>0.20</u>	Zinc	<u> </u>
Chromium	<u>0.35</u>	Tin	<u> </u>
Nickel	<u><0.01</u>	Boron	<u>0.0008</u>
Molybdenum	<u>0.18</u>	Others	<u> </u>

*Properties found out of specification shall be noted with an Asterisk

Note: For each fastener description, two samples were obtained and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

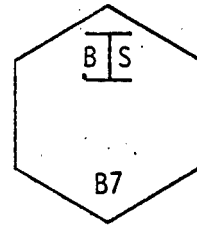
1
Sample ID#: MNS/QA/SCRW/8

Fastener Description: To Comply With Duke Spec. MCS 1206.00-02-0002
Latest Revision, Class B Screw, Cap Hexagon Head
Carbon Steel ASME SA193 GR.B7,
3/8"-16x4" (Item 61; P.O.# J16575)

Description of Sample Stock Location: Bin# 03-EA-03-6

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

Head Marking (Specification and Manufacturer):



Class/Procurement Level: ASME III CL.2,
Duke Power QA Condition 1

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

Vendor: Power & Engineered Products

QA Requirements Imposed on Vendor: Approved Vendor,
10 CFR Part 21

Licensee Representative:

Signature: David E. Whitaker Date: February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

MNS-15

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# MNS/QA/SCRW/8

Hardness 37 HRC (Sample "B")

Ultimate Tensile Strength 154.5 Ksi (Sample "A")

0.2% Yield Strength 137.3 Ksi (Sample "A")

Charpy Impact ---

Chemical Analysis (% wt.) Sample "B" (Compared To SA193 Grade B7)

Iron

Titanium

Carbon 0.43

Vanadium

Manganese 0.81

Columbium +
Tantalum

Phosphorus 0.021

Copper 0.01

Sulfur 0.024

Aluminum

Silicon 0.24

Zinc

Chromium 0.96

Tin

Nickel 0.01

Boron

Molybdenum 0.21

Others

*Properties found out of specification shall be noted with an Asterisk

Note: For each fastener description, two samples were obtained and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

1

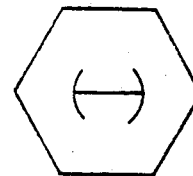
Sample ID#: MNS/QA/BOLT/9

Fastener Description: ASME Section III, 1983 Edition, Summer 1983
Addendum, Subsection NB for Class 1 Components.
Bolt, Hex Head 1/2 Inch Nominal-13 UNC X 7 3/4
Inches Long Class 2A fit Carbon Steel SA 307
Grade A Demenstional Standard ANSI B18.2.1 Duke
Class A. (Item 18, P.O. # P54197)

Description of Sample Stock Location: Bin # 03-EA-05-4

Material Specification as
Documented by Licensee Records: ASME SA 307 Grade A

Head Marking (Specification and Manufacturer):



Class/Procurement Level: ASME Section III, Class 1
QA Condition 1

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

Vendor: Mackson, Incorporated

QA Requirements Imposed on Vendor: Approved Vendor, 10 CFR Part 21

Licensee Representative:

Signature: David E. Whitaker Date: February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

MNS-17

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# MNS/QA/BOLT/9

Hardness 75 HRB (Sample "B")

Ultimate Tensile Strength 69.5 Ksi (Sample "A")

0.2% Yield Strength 40.2 Ksi (Sample "A")

Charpy Impact ---

Chemical Analysis (% wt.) Sample "A" (Compared To SA307 Grade A)

Iron	<u> </u>	Titanium	<u> </u>
Carbon	<u>0.15</u>	Vanadium	<u> </u>
Manganese	<u>0.69</u>	Columbium + Tantalum	<u> </u>
Phosphorus	<u>0.013</u>	Copper	<u>0.27</u>
Sulfur	<u>0.036</u>	Aluminum	<u> </u>
Silicon	<u>0.19</u>	Zinc	<u> </u>
Chromium	<u>0.19</u>	Tin	<u> </u>
Nickel	<u>0.10</u>	Boron	<u> </u>
Molybdenum	<u>0.03</u>	Others	<u> </u>

*Properties found out of specification shall be noted with an Asterisk

Note: For each fastener description, two samples were obtained and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

1

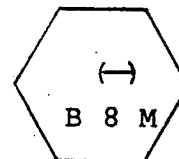
Sample ID#: MNS/QA/BOLT/10

Fastener Description: ASME Section III, 1983 Edition, Summer 1983
Addendum, Subsection NB for Class 1 Components.
Bolt, Hex Head 1/2 Inch Nominal-13 UNC X 6
Inches Long Class 2A fit Alloy Steel SA 193
Grade B8M Dimensional Standard ANSI B18.2.1 Duke
Class A Safety Related (Item 19, P.O. # P54197)

Description of Sample Stock Location: Bin # 03-EA-05-4

Material Specification as
Documented by Licensee Records: ASME SA 193 Grade B8M

Head Marking (Specification and Manufacturer):



Class/Procurement Level: ASME Section III, Class 1
QA Condition 1

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

Vendor: Mackson, Incorporated

QA Requirements Imposed on Vendor: Approved Vendor, 10 CFR Part 21

Licensee Representative:

Signature: David E. Whitaker Date: February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

MNS-19

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# MNS/QA/BOLT/10

Hardness 78 HRB (Sample "B")

Ultimate Tensile Strength 88.0 Ksi (Sample "A")

0.2% Yield Strength 36.7 Ksi (Sample "A")

Charpy Impact ---

Chemical Analysis (% wt.) Sample "A" (Compared To SA193 Grade B8M)

Iron	<u> </u>	Titanium	<u> </u>
Carbon	<u>0.03</u>	Vanadium	<u> </u>
Manganese	<u>1.54</u>	Columbium + Tantalum	<u> </u>
Phosphorus	<u>0.034</u>	Copper	<u>0.47</u>
Sulfur	<u>0.022</u>	Aluminum	<u> </u>
Silicon	<u>0.55</u>	Zinc	<u> </u>
Chromium	<u>17.40</u>	Tin	<u> </u>
Nickel	<u>10.70</u>	Boron	<u> </u>
Molybdenum	<u>2.08</u>	Others	<u> </u>

*Properties found out of specification shall be noted with an Asterisk

Note: For each fastener description, two samples were obtained and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

1

Sample ID#: MNS/NQ/BOLT/11

Fastener Description: Bolt, Carriage Carbon Steel 1/2-13 X 6
Inch Oval Head (MMIS ID # 02621512)

Description of Sample Stock Location: Bin # 05-L0-01-6

Material Specification as
Documented by Licensee Records:

Head Marking (Specification and Manufacturer): None

Class/Procurement Level: Non-Safety Related

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

Vendor:

QA Requirements Imposed on Vendor:

Licensee Representative:

Signature: David E. Whitaker Date: February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

MNS-21

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# MNS/NQ/BOLT/11

Hardness 82 HRB (Sample "A")

Ultimate Tensile Strength ---

0.2% Yield Strength ---

Charpy Impact ---

Chemical Analysis (% wt.) Sample "A" (Compared To SAEJ429 Grade 2)

Iron

Titanium

Carbon 0.10

Vanadium

Manganese 0.49

Columbium +
Tantalum

Phosphorus 0.011

Copper 0.02

Sulfur 0.027

Aluminum

Silicon <0.01

Zinc

Chromium 0.02

Tin

Nickel 0.01

Boron

Molybdenum <0.01

Others

*Properties found out of specification shall be noted with an Asterisk

Note: For each fastener description, two samples were obtained and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

1

Sample ID#: MNS/NQ/SCRW/12

Fastener Description: Screw, Hexagon Head Cap Carbon Steel
1/2-13 X 8 Inch Long (MMIS ID #02654092)

Description of Sample Stock Location: Bin # 05-L0-02-1

Material Specification as
Documented by Licensee Records:

Head Marking (Specification and Manufacturer): None

Class/Procurement Level: Non-Safety Related

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

Vendor:

QA Requirements Imposed on Vendor:

Licensee Representative:

Signature: David E. Whitaker Date: February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

MNS-23

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# MNS/NQ/SCRW/12

Hardness 85 HRB (Sample "A")

Ultimate Tensile Strength ---

0.2% Yield Strength ---

Charpy Impact ---

Chemical Analysis (% wt.) Sample "A" (Compared To SAE J429 Grade 2)

Iron

Titanium

Carbon 0.09

Vanadium

Manganese 0.45

Columbium +
Tantalum

Phosphorus 0.017

Copper 0.01

Sulfur 0.03

Aluminum

Silicon <0.01

Zinc

Chromium 0.04

Tin

Nickel 0.01

Boron

Molybdenum <0.01

Others

*Properties found out of specification shall be noted with an Asterisk

Note: For each fastener description, two samples were obtained and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

1

Sample ID#: MNS/NQ/BOLT/13

Fastener Description: Bolt, Hex Head 1-8 X 4 A 193 GR B7
for MSR (Non-Stock)

Description of Sample Stock Location: Bin # 5-L-1-1

Material Specification as
Documented by Licensee Records:

Head Marking (Specification and Manufacturer):

J B 7

Class/Procurement Level: Non-Safety Related

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

Vendor:

QA Requirements Imposed on Vendor:

Licensee Representative:

Signature:

David E. Whitaker

Date:

February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

MNS-25

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# MNS/NQ/BOLT/13

Hardness 29 HRC (Sample "A")

Ultimate Tensile Strength ---

0.2% Yield Strength ---

Charpy Impact ---

Chemical Analysis (% wt.) Sample "A" (Compared To A193 Grade B7)

Iron

Titanium

Carbon 0.39

Vanadium

Manganese 0.83

Columbium +
Tantalum

Phosphorus 0.018

Copper 0.10

Sulfur 0.023

Aluminum

Silicon 0.31

Zinc

Chromium 1.01

Tin

Nickel 0.05

Boron

Molybdenum 0.18

Others

*Properties found out of specification shall be noted with an Asterisk

Note: For each fastener description, two samples were obtained and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

1

Sample ID#: MNS/NQ/Bolt/14

Fastener Description: Bolt, Machine Hex Head Carbon Steel
ASTM A307 Grade A, UNRC-2A 13 Threads per Inch
1/2" Inch Dia. X 4" Long
(MMIS ID#02623336)

Description of Sample Stock Location: Bin# 05-L0-02-1

Material Specification as
Documented by Licensee Records:

Head Marking (Specification and Manufacturer): None

Class/Procurement Level: Non-Safety Related

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

Vendor: ---

QA Requirements Imposed on Vendor: ---

Licensee Representative:

Signature: David E. Whitaker Date: February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

MNS-27

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# MNS/NQ/BOLT/14

Hardness 84 HRB (Sample "A")

Ultimate Tensile Strength ---

0.2% Yield Strength ---

Charpy Impact ---

Chemical Analysis (% wt.) Sample (Sample "A") (Compared To A307 Gr. A)

Iron

Carbon 0.06

Manganese 0.33

Phosphorus 0.007

Sulfur 0.016

Silicon 0.03

Chromium 0.01

Nickel < 0.01

Molybdenum <0.01

Titanium

Vanadium

Columbium +
Tantalum

Copper 0.01

Aluminum

Zinc

Tin

Boron

Others

*Properties found out of specification shall be noted with an Asterisk

Note: For each fastener description, two samples were obtained and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

1

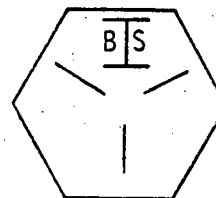
Sample ID#: MNS/NQ/SCRW/15

Fastener Description: Screw, Cap Hexagon Head Carbon Steel
3/4 Inch 16 Threads per Inch X 2 Inch Long
(MMIS ID #0253580)

Description of Sample Stock Location: Bin # 05-L0-02-2

Material Specification as
Documented by Licensee Records:

Head Marking (Specification and Manufacturer):



Class/Procurement Level: Non-Safety Related

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

Vendor:

QA Requirements Imposed on Vendor:

Licensee Representative:

Signature: David E. Whitaker Date: February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

MNS-29

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# MNS/NQ/SCRW/15

Hardness 27 HRC (Sample "A")

Ultimate Tensile Strength ---

0.2% Yield Strength ---

Charpy Impact ---

Chemical Analysis (% wt.) Sample "A" (Compared To SAE J429 Grade 5)

Iron

Titanium

Carbon 0.32

Vanadium

Manganese 0.69

Columbium +
Tantalum

Phosphorus 0.009

Copper 0.03

Sulfur 0.011

Aluminum

Silicon 0.17

Zinc

Chromium 0.06

Tin

Nickel 0.02

Boron

Molybdenum <0.01

Others

*Properties found out of specification shall be noted with an
Asterisk

Note: For each fastener description, two samples were obtained
and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

1

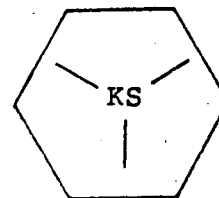
Sample ID#: MNS/NQ/SCRW/16

Fastener Description: Screw, Cap Hex Head Carbon Steel
3/4" 16 Threads per Inch X 2" Long
(MMIS ID#02653580)

Description of Sample Stock Location: Bin# 05-L0-02-2

Material Specification as
Documented by Licensee Records: ---

Head Marking (Specification and Manufacturer):



Class/Procurement Level: Non-Safety Related

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

Vendor: ---

QA Requirements Imposed on Vendor: ---

Licensee Representative:

Signature: David E. Whitaker Date: February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

MNS-31

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# MNS/NQ/SCRW/16

Hardness 97 HRB (Sample "A")

Ultimate Tensile Strength ---

0.2% Yield Strength ---

Charpy Impact ---

Chemical Analysis (% wt.) Sample (Sample "A") (Compared To SAE J429 Gr. 5)

Iron

Titanium 0.035

Carbon 0.32

Vanadium

Manganese 0.76

Columbium +
Tantalum

Phosphorus 0.013

Copper 0.14

Sulfur 0.017

Aluminum

Silicon 0.21

Zinc

Chromium 0.10

Tin

Nickel 0.04

Boron

Molybdenum 0.01

Others

*Properties found out of specification shall be noted with an
Asterisk

Note: For each fastener description, two samples were obtained
and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

1

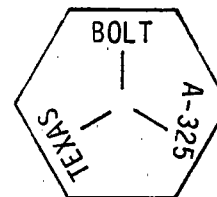
Sample ID#: MNS/NQ/BOLT/17

Fastener Description: Bolt, Machine Heavy Hexagon Head Carbon Steel
3/4 - 10 X 3 Inch UNRC 2A Plain Finish ASTM Spec.
A-325 (Item 4, P.O. # M62194)

Description of Sample Stock Location: Bin # 03-E0-05-1

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

Head Marking (Specification and Manufacturer):



Class/Procurement Level: QA Condition 1

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

Vendor: Mackson, Inc.

QA Requirements Imposed on Vendor: Approved Vendor, 10 CFR Part 21

Licensee Representative:

Signature: David E. Whitaker Date: February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

MNS-33

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# MNS/NO/BOLT/17

Hardness 26 HRC (Sample "A")

Ultimate Tensile Strength ---

0.2% Yield Strength ---

Charpy Impact ---

Chemical Analysis (% wt.) Sample "A" (Compared To A325 Type 1)

Iron

Titanium

Carbon 0.48

Vanadium

Manganese 0.69

Columbium +
Tantalum

Phosphorus 0.014

Copper 0.01

Sulfur 0.02

Aluminum

Silicon 0.23

Zinc

Chromium 0.06

Tin

Nickel <0.01

Boron

Molybdenum <0.01

Others

*Properties found out of specification shall be noted with an Asterisk

Note: For each fastener description, two samples were obtained and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

1

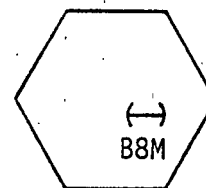
Sample ID#: MNS/NQ/BOLT/18

Fastener Description: ASME Section III, 1983 Edition, Summer 1983
Addendum, Subsection NB for Class 1 Components.
Bolt, Hex Head 5/8 Inch Nominal - II UNC X 3 1/4
Inches Long Class 2A Fit Alloy Steel SA 193 Grade
B8M Dimensional Standard ANSI B18.2.1 Duke Class A
Safety Related (Item # 21, P.O. # P54197)

Description of Sample Stock Location: Bin # 03-EA-05-4

Material Specification as
Documented by Licensee Records: ASME SA 193 Grade B8M

Head Marking (Specification and Manufacturer):



Class/Procurement Level: ASME Section III Class 1
QA Condition 1.

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

Vendor: Mackson, Inc.

QA Requirements Imposed on Vendor: Approved Vendor, 10 CFR Part 21

Licensee Representative:

Signature: David E. Whitaker Date: February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

MNS-35

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# MNS/NQ/BOLT/18

Hardness 82 HRB (Sample "A")

Ultimate Tensile Strength ---

0.2% Yield Strength ---

Charpy Impact ---

Chemical Analysis (% wt.) Sample "A" (Compared To SA193 Grade B8M)

Iron

Titanium

Carbon 0.03

Vanadium

Manganese 1.76

Columbium +
Tantalum

Phosphorus 0.027

Copper 0.27

Sulfur 0.026

Aluminum

Silicon 0.68

Zinc

Chromium 16.27

Tin

Nickel 10.95

Boron

Molybdenum 2.11

Others

*Properties found out of specification shall be noted with an
Asterisk

Note: For each fastener description, two samples were obtained
and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

1

Sample ID#: MNS/NQ/SCRW/19

Fastener Description: Screw, Cap Hex Head Medium Carbon Steel,
Quenched and Tempered GR.5, 3/4"-10X8"
Zinc Chromate (MMIS ID# 02655071)

Description of Sample Stock Location: Bin# 05-L0-02-3

Material Specification as
Documented by Licensee Records: ---

Head Marking (Specification and Manufacturer): None

Class/Procurement Level: Non-Safety Related

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

Vendor: ---

QA Requirements Imposed on Vendor: ---

Licensee Representative:

Signature: David E. Z. Butcher Date: February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

MNS-37

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# MNS/NQ/SCRW/19

*Hardness 87 HRB (Sample "A")

Ultimate Tensile Strength ---

0.2% Yield Strength ---

Charpy Impact ---

Chemical Analysis (% wt.) Sample (Sample "A") (Compared To SAE J429 Gr.5)

Iron	<u> </u>	Titanium	<u> </u>
*Carbon	<u>0.17</u>	Vanadium	<u> </u>
Manganese	<u>0.77</u>	Columbium + Tantalum	<u> </u>
Phosphorus	<u>0.017</u>	Copper	<u>0.01</u>
Sulfur	<u>0.033</u>	Aluminum	<u> </u>
Silicon	<u>0.02</u>	Zinc	<u> </u>
Chromium	<u>0.06</u>	Tin	<u> </u>
Nickel	<u><0.01</u>	Boron	<u> </u>
Molybdenum	<u><0.01</u>	Others	<u> </u>

*Properties found out of specification shall be noted with an Asterisk

Note: For each fastener description, two samples were obtained and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

1

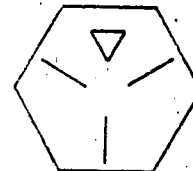
Sample ID#: MNS/NQ/SCRW/20

Fastener Description: Screw, Cap Hex Head Carbon Steel,
GR.5, 1/2"-13X1"
(MMIS ID# 02653189)

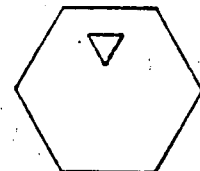
Description of Sample Stock Location: Bin# 05-LC-02-1

Material Specification as
Documented by Licensee Records: ---

Head Marking (Specification and Manufacturer):



(Sample "A")



(Sample "B")

Class/Procurement Level: Non-Safety Related

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

Vendor: ---

QA Requirements Imposed on Vendor: ---

Licensee Representative:

Signature: David E. Whitaker Date: February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

MNS-39

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# MNS/NQ/SCRW/20

*Hardness 28 HRC (Sample "A") 97 HRB (Sample "B")

Ultimate Tensile Strength ---

0.2% Yield Strength ---

Charpy Impact ---

Chemical Analysis (% wt.) Sample (Sample "A") (Compared To SAE J429 Gr. 5)

Iron

Titanium

Carbon 0.35

Vanadium

Manganese 0.84

Columbium +
Tantalum

Phosphorus 0.016

Copper 0.18

Sulfur 0.021

Aluminum

Silicon 0.30

Zinc

Chromium 0.11

Tin

Nickel 0.07

Boron

Molybdenum 0.01

Others

*Properties found out of specification shall be noted with an
Asterisk

Note: For each fastener description, two samples were obtained
and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

1

Sample ID#: MNS/NQ/SCRW/21

Fastener Description: Screw, Cap Hex Head Carbon Steel,
GR.5, 3/4"-10X4 1/2"
ASTM A325 (MMIS ID# 02653196)

Description of Sample Stock Location: Bin# 05-L0-02-3

Material Specification as
Documented by Licensee Records: ---

Head Marking (Specification and Manufacturer): None

Class/Procurement Level: Non-Safety Related

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

Vendor: ---

QA Requirements Imposed on Vendor: ---

Licensee Representative:

Signature: David E. Whitaker Date: February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

MNS-41

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# MNS/NQ/SCRW/21

* Hardness 92 HRB (Sample "A")

Ultimate Tensile Strength ---

0.2% Yield Strength ---

Charpy Impact ---

Chemical Analysis (% wt.) Sample (Sample "A") (Compared To SAE J429 Gr. 5)

Iron

Titanium

* Carbon 0.08

Vanadium

Manganese 0.30

Columbium +
Tantalum

Phosphorus 0.018

Copper 0.03

Sulfur 0.02

Aluminum

Silicon 0.08

Zinc

Chromium 0.02

Tin

Nickel 0.01

Boron

Molybdenum < 0.01

Others

*Properties found out of specification shall be noted with an
Asterisk

Note: For each fastener description, two samples were obtained
and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

1

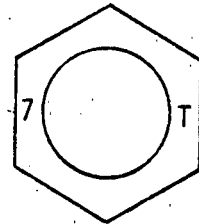
Sample ID#: MNS/QA/NUT/22

Fastener Description: Nut, Heavy Hexagon 3/4 Inch - 10 Threads per Inch
Carbon Steel SA 194 Grade 7 Class 2B Fit Duke Class
A Dimensional Standard B18.2-2 Safety Related.
(Item # 1, P. O. # N19234)

Description of Sample Stock Location: Bin # 03-E0-04-4

Material Specification as
Documented by Licensee Records: ASME SA 194 Grade 7

Head Marking (Specification and Manufacturer):



Class/Procurement Level: ASME Section III Class 1
QA Condition 1

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

Vendor: Nova Machine Products

QA Requirements Imposed on Vendor: Approved Vendor, 10 CFR Part 21

Licensee Representative:

Signature: David E. Whitaker Date: February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

MNS-43

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# MNS/QA/NUT/22

Hardness 33 HRC (Sample "A")

Ultimate Tensile Strength ---

0.2% Yield Strength ---

Charpy Impact ---

Chemical Analysis (% wt.) Sample "A" (Compared To SA194 Grade 7)

Iron	<u> </u>	Titanium	<u> </u>
Carbon	<u>0.32</u>	Vanadium	<u> </u>
Manganese	<u>0.91</u>	Columbium + Tantalum	<u> </u>
Phosphorus	<u>0.012</u>	Copper	<u>0.12</u>
Sulfur	<u>0.027</u>	Aluminum	<u> </u>
Silicon	<u>0.23</u>	Zinc	<u> </u>
Chromium	<u>1.01</u>	Tin	<u> </u>
Nickel	<u>0.17</u>	Boron	<u> </u>
Molybdenum	<u>0.21</u>	Others	<u> </u>

*Properties found out of specification shall be noted with an Asterisk

Note: For each fastener description, two samples were obtained and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

1

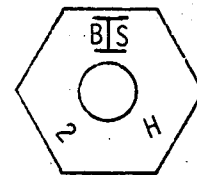
Sample ID#: MNS/QA/NUT/23

Fastener Description: Load Stud Nuts For 5 X 5 HYD Snubber
(Item #41, Rec#7320 840717). Nut, Heavy Hex Head
Carbon Steel, SA194 GR.2H, 1 3/4" X 8 UN
ANSI B18.2.2, CL.2B Fit (MMIS ID# 02641674N)
PIR O-M87-0305 Was Written 12-15-87.

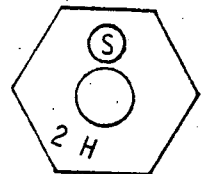
Description of Sample Stock Location: Bin# 03-EA-05-3

Material Specification as
Documented by Licensee Records: None

Head Marking (Specification and Manufacturer):



(Sample "A")



(Sample "B")

Class/Procurement Level: See Problem Investigation
Report (PIR) Serial No.
O-M87-0305

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

Vendor: ---

QA Requirements Imposed on Vendor: ---

Licensee Representative:

Signature: David E. Whitaker Date: February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

MNS-45

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# MNS/QA/NUT/23

Hardness 26 HRC (Sample "A")

Ultimate Tensile Strength ---

0.2% Yield Strength ---

Charpy Impact ---

Chemical Analysis (% wt.) Sample (Sample "A") (Compared To SA194 Gr. 2H)

Iron

Titanium

Carbon 0.49

Vanadium

Manganese 0.71

Columbium +
Tantalum

Phosphorus 0.009

Copper 0.01

Sulfur 0.014

Aluminum

Silicon 0.19

Zinc

Chromium 0.04

Tin

Nickel < 0.01

Boron

Molybdenum < 0.01

Others

*Properties found out of specification shall be noted with an
Asterisk

Note: For each fastener description, two samples were obtained
and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

1

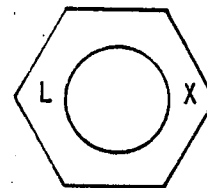
Sample ID#: MNS/QA/NUT/24

Fastener Description: "Load Stud Nuts For 1/4"X4 & 1/2"X2 1/2 Mech.
Snubbers" (Rec# 7320840717) Nut, Hex Head
Carbon Steel, ASTM A307 GR.A, 3/8"X16 UNC
ANSI B18.2.2, CL.2B Fit (MMIS ID# 02641513N),
PIR O-M87-0305 Was Written 12-15-87.

Description of Sample Stock Location: Bin# 03-EA-05-3

Material Specification as
Documented by Licensee Records: None

Head Marking (Specification and Manufacturer):



Class/Procurement Level: See Problem Investigation
Report (PIR) Serial No.
O-M87-0305

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

Vendor: ---

QA Requirements Imposed on Vendor: ---

Licensee Representative:

Signature: David E. Whitaker Date: February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

MNS-47

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# MNS/QA/NUT/24

Hardness 95 HRB (Sample "A")

Ultimate Tensile Strength ---

0.2% Yield Strength ---

Charpy Impact ---

Chemical Analysis (% wt.) Sample (Sample "A") (Compared To A 307 Gr.A)

Iron

Titanium

Carbon 0.17

Vanadium

Manganese 0.64

Columbium +
Tantalum

Phosphorus < 0.005

Copper 0.02

Sulfur 0.018

Aluminum

Silicon < 0.01

Zinc

Chromium 0.06

Tin

Nickel 0.02

Boron

Molybdenum 0.01

Others

*Properties found out of specification shall be noted with an
Asterisk

Note: For each fastener description, two samples were obtained
and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

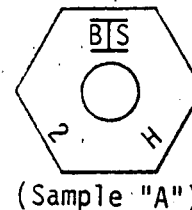
1
Sample ID#: MNS/QA/NUT/25

Fastener Description: The Below Items Shall Comply With Section III,
ASME CL.2, 1980 Edition, Summer 1982 Addenda.
Nut, Hex Head Carbon Steel 5/16"-18X9/32" Height
9/16" Width Across Flats GR. 2H, CL. 2 With
Certification That The Hex Nut Meets All
ASME SA194 Requirements. (Item #2, PO# J16581)

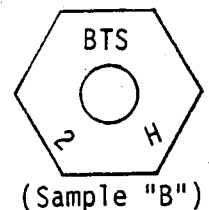
Description of Sample Stock Location: Bin# 03-EO-04-4

Material Specification as
Documented by Licensee Records: ASME SA194 Grade 2H

Head Marking (Specification and Manufacturer):



(Sample "A")



(Sample "B")

Class/Procurement Level: Duke Power QA Condition 1
ASME Section III, Class 2

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

Vendor: Smith Industries, Inc.

QA Requirements Imposed on Vendor: Approved Vendor, 10 CFR 21

Licensee Representative:

Signature: David E. Whitaker Date: February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

MNS-49

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# MNS/QA/NUT/25

Hardness 31 HRC (Sample "A")

Ultimate Tensile Strength ---

0.2% Yield Strength ---

Charpy Impact ---

Chemical Analysis (% wt.) Sample (Sample "A") (Compared To SA194 Gr. 2H)

Iron

Titanium

Carbon 0.40

Vanadium

Manganese 0.81

Columbium +
Tantalum

Phosphorus 0.031

Copper 0.04

Sulfur 0.039

Aluminum

Silicon 0.23

Zinc

Chromium 0.04

Tin

Nickel < 0.01

Boron

Molybdenum < 0.01

Others

*Properties found out of specification shall be noted with an
Asterisk

Note: For each fastener description, two samples were obtained
and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

1

Sample ID#: MNS/QA/NUT/26

Fastener Description: Nut Hexagon 7/16"-14" At A194 Grade 8M For
Gate Valve 4" Borg Warner P/N 7000011-150.
(Item #3, PO# M24974)

Description of Sample Stock Location: Bin# 03-TB-03-8

Material Specification as
Documented by Licensee Records: ASTM A194 Grade 8M

Head Marking (Specification and Manufacturer):



Class/Procurement Level: Commerical Grade,
Duke Power QA Condition 1

General Plant Application
(e.g., Pressure Boundary, Structural): Valve Part
Non-Pressure Boundary

Vendor: Borg-Warner Fluid Controls

QA Requirements Imposed on Vendor: Part Comes From OEM,
Approved Vendor

Licensee Representative:

Signature: David E. Whitaker Date: February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

MNS-51

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# MNS/QA/NUT/26

Hardness 33 HRC (Sample "A")

Ultimate Tensile Strength ---

0.2% Yield Strength ---

Charpy Impact ---

Chemical Analysis (% wt.) Sample (Sample "A") (Compared To A194 Gr. 8M)

Iron

Titanium

Carbon 0.05

Vanadium

Manganese 1.61

Columbium +
Tantalum

Phosphorus 0.031

Copper 0.31

Sulfur <0.005

Aluminum

Silicon 0.62

Zinc

Chromium 16.13

Tin

Nickel 10.85

Boron

Molybdenum 2.31

Others

*Properties found out of specification shall be noted with an
Asterisk

Note: For each fastener description, two samples were obtained
and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

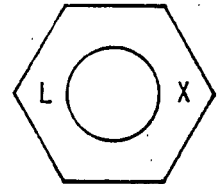
1 Sample ID#: MNS/QA/NUT/27

Fastener Description: Load Stud Nut For 1X4 Mech. Snubber.
(Rec.#7320 840717) Nut, Hex Head, Carbon Steel,
ASTM A307 GR.A 1/2" X 13 UNC, ANSI B18.2.2,
GR. 2B Fit (MMIS ID# 02641512N)
PIR O-M87-0305 Was Written 12-15-87

Description of Sample Stock Location: Bin# 03-EA-05-3

Material Specification as
Documented by Licensee Records: None

Head Marking (Specification and Manufacturer):



Class/Procurement Level: See Problem Investigation
Report (PIR) Serial No.O-M87-0305

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

Vendor: ---

QA Requirements Imposed on Vendor: ---

Licensee Representative:

Signature: David E. Whitaker Date: February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

MNS-53

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# MNS/QA/NUT/27

Hardness 85 HRB (Sample "A")

Ultimate Tensile Strength ---

0.2% Yield Strength ---

Charpy Impact ---

Chemical Analysis (% wt.) Sample (Sample "A") (Compared To A307 Gr.A)

Iron

Titanium

Carbon 0.07

Vanadium

Manganese 0.32

Columbium +
Tantalum

Phosphorus 0.007

Copper < 0.01

Sulfur 0.026

Aluminum

Silicon < 0.01

Zinc

Chromium 0.02

Tin

Nickel 0.01

Boron

Molybdenum < 0.01

Others

*Properties found out of specification shall be noted with an
Asterisk

Note: For each fastener description, two samples were obtained
and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

1

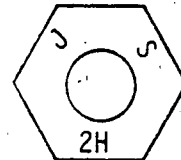
Sample ID#: MNS/QA/NUT/28

Fastener Description: Load Stud Nut For 35X6 Mech. Snubber.
(Rec.#7320 840717) Nut, Hex Head, Carbon Steel,
ASTM A307 GR., 1 1/2" X 8 UN, ANSI B18.2.2,
Class 2A Fit (MMIS ID# 02641492N)
PIR O-M87-0305 Was Written 12-15-87

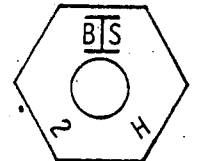
Description of Sample Stock Location: Bin# 03-EA-05-3

Material Specification as
Documented by Licensee Records: None

Head Marking (Specification and Manufacturer):



(Sample "A")



(Sample "B")

Class/Procurement Level: See Problem Investigation
Report (PIR) Serial No.O-M87-0305

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

Vendor: ---

QA Requirements Imposed on Vendor: ---

Licensee Representative:

Signature: David E. Whitaker Date: February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

MNS-55

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# MNS/QA/NUT/28

Hardness 24 HRC (Sample "A")

Ultimate Tensile Strength ---

0.2% Yield Strength ---

Charpy Impact ---

Chemical Analysis (% wt.) Sample (Sample "A") (Compared To A307 Gr. A)

Iron

Titanium

Carbon 0.43

Vanadium

Manganese 0.74

Columbium +
Tantalum

Phosphorus 0.018

Copper 0.20

Sulfur 0.034

Aluminum

Silicon 0.22

Zinc

Chromium 0.08

Tin

Nickel 0.09

Boron

Molybdenum 0.01

Others

*Properties found out of specification shall be noted with an
Asterisk

Note: For each fastener description, two samples were obtained
and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

1

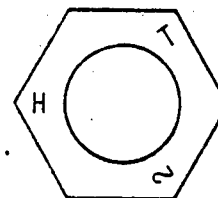
Sample ID#: MNS/QA/NUT/29

Fastener Description: Nut, Heavy Hexagon 3/4 Inch - 10 Threads per Inch
Carbon Steel SA 194 Grade 2H Class 2B Fit Duke Class
A Dimensional Standard B18.2-2 Safety Related.
Shall Comply with Duke Spec. DPS 1206.00-02-0004,
Rev. 1 (P.O. # N50064, Item No. 1)

Description of Sample Stock Location: Bin # 03-E0-04-4

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

Head Marking (Specification and Manufacturer):



Class/Procurement Level: ASME Section III Class 1
QA Condition 1

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

Vendor: Mackson, Inc.

QA Requirements Imposed on Vendor: Approved Vendor, 10 CFR Part 21

Licensee Representative:

Signature: David E. Whitaker Date: February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

MNS-57

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# MNS/QA/NUT/29

Hardness 27 HRC (Sample "A")

Ultimate Tensile Strength ---

0.2% Yield Strength ---

Charpy Impact ---

Chemical Analysis (% wt.) Sample "A" (Compared To SA194 Grade 2H)

Iron	<u> </u>	Titanium	<u> </u>
Carbon	<u>0.43</u>	Vanadium	<u> </u>
Manganese	<u>0.57</u>	Columbium + Tantalum	<u> </u>
Phosphorus	<u>0.007</u>	Copper	<u><0.01</u>
Sulfur	<u>0.026</u>	Aluminum	<u> </u>
Silicon	<u>0.14</u>	Zinc	<u> </u>
Chromium	<u>0.03</u>	Tin	<u> </u>
Nickel	<u><0.01</u>	Boron	<u> </u>
Molybdenum	<u><0.01</u>	Others	<u> </u>

*Properties found out of specification shall be noted with an Asterisk

Note: For each fastener description, two samples were obtained and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

1

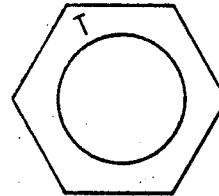
Sample ID#: MNS/QA/NUT/30

Fastener Description: ASME Section III, 1983 Edition, Summer 1983
Addendum, Subsection NB for Class 1 Components
Nut, Hex 1/2 Inch Nominal-13 UNC Class 2B Fit
Carbon Steel SA 563 Grade A Dimensional Standard
ANSI B18.2.2 Duke Class A Safety Related
(Item # 32, P.O. # P54197)

Description of Sample Stock Location: Bin # 03-EA-05-3

Material Specification as
Documented by Licensee Records: ASME SA 563 Grade A

Head Marking (Specification and Manufacturer):



Class/Procurement Level: ASME Section III Class 1
QA Condition 1

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

Vendor: Mackson, Inc.

QA Requirements Imposed on Vendor: Approved Vendor, 10 CFR Part 21

Licensee Representative:

Signature: David E. Whitaker Date: February 11, 1988

1

ONS-Oconee Nuclear Station MNS-59
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# MNS/QA/NUT/30

Hardness 90 HRB (Sample "A")

Ultimate Tensile Strength ---

0.2% Yield Strength ---

Charpy Impact ---

Chemical Analysis (% wt.) Sample "A" (Compared To SA 563 Grade A)

Iron	<u> </u>	Titanium	<u> </u>
Carbon	<u>0.01</u>	Vanadium	<u> </u>
Manganese	<u>0.36</u>	Columbium + Tantalum	<u> </u>
Phosphorus	<u>0.007</u>	Copper	<u>0.02</u>
Sulfur	<u>0.020</u>	Aluminum	<u> </u>
Silicon	<u><0.01</u>	Zinc	<u> </u>
Chromium	<u>0.04</u>	Tin	<u> </u>
Nickel	<u>0.01</u>	Boron	<u> </u>
Molybdenum	<u><0.01</u>	Others	<u> </u>

*Properties found out of specification shall be noted with an Asterisk

Note: For each fastener description, two samples were obtained and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

1

Sample ID#: MNS/QA/NUT/31

Fastener Description: ASME Section III, Class 1, 1980 Edition
S'80 Addenda or latter. Capnut, .5 Inch
Diameter 13 Threads per Inch SA-194 Grade 2H
Carbon Steel Team Inc. P/N CPN-0500-IN
(Item # 1, P. O. # P32433)

Description of Sample Stock Location: Bin # 03-E0-04-4

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

Head Marking (Specification and Manufacturer):

S 2 H B
A02135C-1
14 471

Class/Procurement Level: ASME Section III Class 1
QA Condition 1

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

Vendor: Leak Repairs, Inc.

QA Requirements Imposed on Vendor: Approved Vendor, 10 CFR Part 21

Licensee Representative:

Signature: David E. Whitaker Date: February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

MNS-61

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# MNS/QA/NUT/31

Hardness 30 HRC (Sample "A")

Ultimate Tensile Strength ---

0.2% Yield Strength ---

Charpy Impact ---

Chemical Analysis (% wt.) Sample "A" (Compared To SA194 Grade 2H)

Iron	<u> </u>	Titanium	<u> </u>
Carbon	<u>0.39</u>	(-0.03% tolerance)	Vanadium
		(per ASME SA 29)	<u> </u>
Manganese	<u>0.81</u>	Columbium +	
		Tantalum	<u> </u>
Phosphorus	<u>0.006</u>	Copper	<u>0.11</u>
Sulfur	<u>0.027</u>	Aluminum	<u> </u>
Silicon	<u>0.20</u>	Zinc	<u> </u>
Chromium	<u>0.97</u>	Tin	<u> </u>
Nickel	<u>0.18</u>	Boron	<u> </u>
Molybdenum	<u>0.20</u>	Others	<u> </u>

*Properties found out of specification shall be noted with an Asterisk

Note: For each fastener description, two samples were obtained and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

1

Sample ID#: MNS/NQ/NUT/32

Fastener Description: Nut, Hex Medium Carbon Steel 3/4" I.D. X 4 1/64"
Height X 1 1/8" Width Across Flats 10 Threads
Per Inch GR. 8 Zinc Chromate
(MMIS ID# 02641976)

Description of Sample Stock Location: Bin# 05-LO-03-2

Material Specification as
Documented by Licensee Records: ---

Head Marking (Specification and Manufacturer): None

Class/Procurement Level: Non-Safety Related

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

Vendor: ---

QA Requirements Imposed on Vendor: ---

Licensee Representative:

Signature: *David E. Whitaker* Date: February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

MNS-63

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# MNS/NQ/NUT/32

* Hardness 89 HRB (Sample "A")

Ultimate Tensile Strength ---

0.2% Yield Strength ---

Charpy Impact ---

Chemical Analysis (% wt.) Sample (Sample "A") (Compared To SAE J995 Gr.8)

Iron	<u> </u>	Titanium	<u> </u>
Carbon	<u>0.05</u>	Vanadium	<u> </u>
Manganese	<u>0.35</u>	Columbium + Tantalum	<u> </u>
Phosphorus	<u>0.012</u>	Copper	<u>0.01</u>
Sulfur	<u>0.01</u>	Aluminum	<u> </u>
Silicon	<u>0.01</u>	Zinc	<u> </u>
Chromium	<u>0.01</u>	Tin	<u> </u>
Nickel	<u>< 0.01</u>	Boron	<u> </u>
Molybdenum	<u>< 0.01</u>	Others	<u> </u>

*Properties found out of specification shall be noted with an Asterisk

Note: For each fastener description, two samples were obtained and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

1

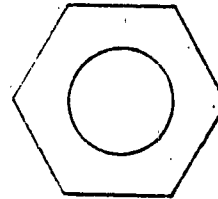
Sample ID#: MNS/NQ/NUT/33

Fastener Description: Nut, Hex 316 Stainless Steel 1/2"-13 X 7/16"
Height X 3/4" Across Flat.
(MMIS ID# 02641082)

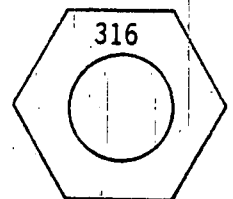
Description of Sample Stock Location: Bin# 05-LD-02-5

Material Specification as
Documented by Licensee Records: ---

Head Marking (Specification and Manufacturer):



(Sample "A")



(Sample "B")

Class/Procurement Level: Non-Safety Related

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

Vendor: ---

QA Requirements Imposed on Vendor: ---

Licensee Representative:

Signature: David E. Whitaker Date: February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

MNS-65

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# MNS/NQ/NUT/33

Hardness 27 HRC

Ultimate Tensile Strength ---

0.2% Yield Strength ---

Charpy Impact ---

Chemical Analysis (% wt.) Sample "A" (Compared To A194 Gr. 8M)

Iron

Carbon 0.03

Manganese 0.89

Phosphorus 0.039

Sulfur 0.016

Silicon 0.44

* Chromium 18.61

Nickel 10.04

* Molybdenum 0.24

Titanium

Vanadium

Columbium +
Tantalum

Copper 0.23

Aluminum

Zinc

Tin

Boron

Others

*Properties found out of specification shall be noted with an
Asterisk

Note: For each fastener description, two samples were obtained
and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

1

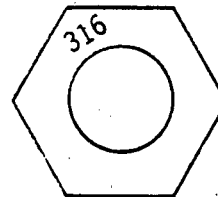
Sample ID#: MNS/NQ/NUT/34

Fastener Description: Nut, Hex 316 Stainless Steel 3/4-10 X 41/64
Inch Height X 1 1/8 Inch Across Flat
(MMIS ID # 02641085)

Description of Sample Stock Location: Bin # 05-L0-03-2

Material Specification as
Documented by Licensee Records:—

Head Marking (Specification and Manufacturer): 316



Class/Procurement Level: Non-Safety Related

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

Vendor:—

QA Requirements Imposed on Vendor: —

Licensee Representative:

Signature: David E. Whitaker Date: February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

MNS-67

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# MNS/NQ/NUT/34

Hardness 27 HRC (Sample "A")

Ultimate Tensile Strength ---

0.2% Yield Strength ---

Charpy Impact ---

Chemical Analysis (% wt.) Sample "A" (Compared To SA194 Grade 8M)

Iron

Titanium

Carbon 0.02

Vanadium

Manganese 1.01

Columbium +
Tantalum

Phosphorus 0.037

Copper 0.28

Sulfur 0.010

Aluminum

Silicon 0.51

Zinc

Chromium 16.54

Tin

Nickel 10.97

Boron

Molybdenum 2.09

Others

*Properties found out of specification shall be noted with an
Asterisk

Note: For each fastener description, two samples were obtained
and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

1

Sample ID#: MNS/NQ/NUT/35

Fastener Description: 1/2"-13 UNC 2B SAE J429 GR. 8 ,Hex Nuts
(Item # 5, PO# G10147)

Description of Sample Stock Location: Bin# 03-EO-04-4

Material Specification as
Documented by Licensee Records: SAE J429 Grade 8

Head Marking (Specification and Manufacturer): None

Class/Procurement Level: Duke Power QA Condition 1

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

Vendor: Sure-Loc, Inc.

QA Requirements Imposed on Vendor: Approved Vendor, 10 CFR Part 21

Licensee Representative:

Signature: David E. Whitaker Date: February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

MNS-69

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# MNS /NQ/NUT/35

Hardness 31 HRC (Sample "A")

Ultimate Tensile Strength ---

0.2% Yield Strength ---

Charpy Impact ---

Chemical Analysis (% wt.) Sample "A" (Compared To SAE J995 Gr. 8)

Iron	<u> </u>	Titanium	<u> </u>
Carbon	<u>0.33</u>	Vanadium	<u> </u>
Manganese	<u>0.74</u>	Columbium + Tantalum	<u> </u>
Phosphorus	<u>0.010</u>	Copper	<u>0.01</u>
Sulfur	<u>0.018</u>	Aluminum	<u> </u>
Silicon	<u>0.20</u>	Zinc	<u> </u>
Chromium	<u>0.03</u>	Tin	<u> </u>
Nickel	<u>0.01</u>	Boron	<u> </u>
Molybdenum	<u>< 0.01</u>	Others	<u> </u>

*Properties found out of specification shall be noted with an
Asterisk

Note: For each fastener description, two samples were obtained
and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

1

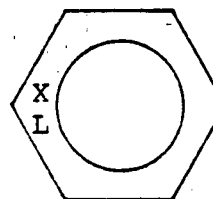
Sample ID#: MNS/NQ/NUT/36

Fastener Description: Load Stud Jam Nuts For 1/4"X4 & 1/2"x2 1/2
Mech. Snb. (Rec.# 7320 840717) Nut, Jam
Carbon Steel, ASTM A307 GR.A, 3/8"X16 UNC,
ANSI B18.2.2, CL. 2B Fit. (MMIS ID #02641587N)
PIR O-M87-0305 Was Written 12-15-87.

Description of Sample Stock Location: Bin# 03-EA-05-3

Material Specification as
Documented by Licensee Records: None

Head Marking (Specification and Manufacturer):



Class/Procurement Level: See Problem Investigation
Report (PIR)
Serial No. o-M87-0305

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

Vendor: ---

QA Requirements Imposed on Vendor: ---

Licensee Representative:

Signature: David E. Whitaker Date: February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

MNS-71

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# MNS/NQ/NUT/36

Hardness 84 HRB (Sample "A")

Ultimate Tensile Strength ---

0.2% Yield Strength ---

Charpy Impact ---

Chemical Analysis (% wt.) Sample (Sample "A") (Compared To A563 Gr. A)

Iron

Titanium

Carbon 0.05

Vanadium

Manganese 0.36

Columbium +
Tantalum

Phosphorus 0.007

Copper 0.02

Sulfur 0.018

Aluminum

Silicon 0.02

Zinc

Chromium 0.02

Tin

Nickel 0.01

Boron

Molybdenum 0.01

Others

*Properties found out of specification shall be noted with an
Asterisk

Note: For each fastener description, two samples were obtained
and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

1

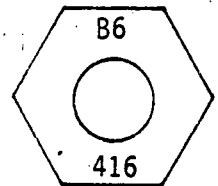
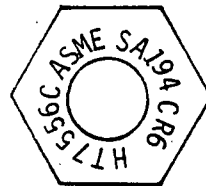
Sample ID#: MNS/NQ/NUT/37

Fastener Description: Items 178-186 Are Spare Parts For Duke Valves
On Mill Power Ord.#A25288; Duke Power Dwg.#
MCM 1205.00-207 Pacific Dwg.# 3-254-D;
Valve Class t-6; Duke Item#2D-035 Size 8".
Ea. Nut; ASTM A582 GR.416..(Item# 186, PO#C91391)
Nut, 2D035 1-8UNC A582 GR.416 (PCIE#P202635253)

Description of Sample Stock Location: Bin# 05-AB-11-7

Material Specification as
Documented by Licensee Records: ---

Head Marking (Specification and Manufacturer):



Class/Procurement Level: Non-Safety Related (Sample "A") (Sample "B")

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

Vendor: ---

QA Requirements Imposed on Vendor: ---

Licensee Representative:

Signature: David E. Whitaker Date: February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

MNS-73

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# MNS/NQ/NUT/37

Hardness 29 HRC (Sample "A")

Ultimate Tensile Strength ---

0.2% Yield Strength ---

Charpy Impact ---

Chemical Analysis (% wt.) Sample "A" (Compared To A582 Gr. 416)

Iron	<u> </u>	Titanium	<u> </u>
Carbon	<u>0.11</u>	Vanadium	<u> </u>
Manganese	<u>0.43</u>	Columbium + Tantalum	<u> </u>
Phosphorus	<u>0.009</u>	Copper	<u>0.04</u>
* Sulfur	<u>0.005</u>	Aluminum	<u> </u>
Silicon	<u>0.30</u>	Zinc	<u> </u>
Chromium	<u>12.54</u>	Tin	<u> </u>
Nickel	<u>0.32</u>	Boron	<u> </u>
Molybdenum	<u>0.07</u>	Others	<u> </u>

*Properties found out of specification shall be noted with an Asterisk

Note: For each fastener description, two samples were obtained and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

1

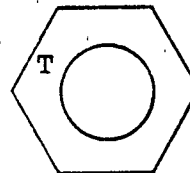
Sample ID#: MNS/NQ/NUT/38

Fastener Description: Shall Meet the Requirements of ASME Section III, 1983 Edition, Summer 1983 Addendum, Subsection NB for Class 1 Components. Nut, Hex 7/16 Nominal-14 UNC Class 2B Fit Carbon Steel SA 563 Grade A Dimensional Standard ANSI B18.2.2 Duke Class A Safety Related (Item # 29, P. O. # P54197)

Description of Sample Stock Location: Bin # 03-EA-05-3

Material Specification as Documented by Licensee Records: ASME SA 563 Grade

Head Marking (Specification and Manufacturer):



Class/Procurement Level: ASME Section III Class 1
QA Condition 1

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

Vendor: Mackson Inc.

QA Requirements Imposed on Vendor: Approved Vendor, 10 CFR Part 21

Licensee Representative:

Signature: David E. Whitaker Date: February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

MNS-75

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# MNS/NO/NUT/38

Hardness 84 HRB (Sample "A")

Ultimate Tensile Strength ----

0.2% Yield Strength ---

Charpy Impact ---

Chemical Analysis (% wt.) Sample "A" (Compared To SA563 Grade A)

Iron

Carbon 0.10

Manganese 0.45

Phosphorus 0.007

Sulfur 0.013

Silicon <0.01

Chromium 0.07

Nickel <0.01

Molybdenum <0.01

Titanium

Vanadium

Columbium +
Tantalum

Copper 0.02

Aluminum

Zinc

Tin

Boron

Others

*Properties found out of specification shall be noted with an
Asterisk

Note: For each fastener description, two samples were obtained
and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

1

Sample ID#: MNS/NQ/NUT/39

Fastener Description:

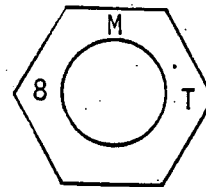
Shall Meet the Requirements of ASME Section III, 1983 Edition, Summer 1983 Addendum, Subsection NB for Class 1 Components. Nut, Hex 3/4 Inch Nominal-10 UNC Class 2B Fit Alloy Steel SA 194 Grade 8M Dimensional Standard ANSI B18.2.2 Duke Class A Safety Related (Item # 38, P. O. # P54197)

Description of Sample Stock Location: Bin # 03-EA-05-3

Material Specification as

Documented by Licensee Records: ASME SA 194 Grade 8M

Head Marking (Specification and Manufacturer):



Class/Procurement Level: ASME Section III Class 1
QA Condition 1

General Plant Application

(e.g., Pressure Boundary, Structural): Pressure Boundary

Vendor: Mackson Inc.

QA Requirements Imposed on Vendor: Approved Vendor, 10 CFR Part 21

Licensee Representative:

Signature: David E. Whitaker Date: February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

MNS-77

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# MNS/NO/NUT/39

Hardness 86 HRB (Sample "A")

Ultimate Tensile Strength ---

0.2% Yield Strength ---

Charpy Impact ---

Chemical Analysis (% wt.) Sample "A" (Compared To SA194 Grade 8M)

Iron	<u> </u>	Titanium	<u> </u>
Carbon	<u>0.07</u>	Vanadium	<u> </u>
Manganese	<u>1.78</u>	Columbium + Tantalum	<u> </u>
Phosphorus	<u>0.021</u>	Copper	<u>0.18</u>
Sulfur	<u>0.019</u>	Aluminum	<u> </u>
Silicon	<u>0.41</u>	Zinc	<u> </u>
Chromium	<u>16.78</u>	Tin	<u> </u>
Nickel	<u>12.95</u>	Boron	<u> </u>
Molybdenum	<u>2.03</u>	Others	<u> </u>

*Properties found out of specification shall be noted with an Asterisk

Note: For each fastener description, two samples were obtained and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

1

Sample ID#: MNS/NQ/NUT/40

Fastener Description: Nut, Hexagon 18-8 Stainless Steel Conforming to
ANSI Spec. B18.6.3-1975 3/8 - 16 X 1/4 Inch Height
X 5/8 width Across Flats. (Item # 48, P.O. M39720)

Description of Sample Stock Location: Bin # 03-EB-05-6

Material Specification as
Documented by Licensee Records: 18-8 Stainless Steel Conforming to
ANSI Spec B18.6.3

Head Marking (Specification and Manufacturer): None

Class/Procurement Level: QA Condition 1
Commercial Grade

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

Vendor: Mackson Inc.

QA Requirements Imposed on Vendor: Approved Vendor

Licensee Representative:

Signature: David E. Whitaker Date: _____

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

MNS-79

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# MNS/NQ/NUT/40

Hardness 29 HRC (Sample "A")

Ultimate Tensile Strength ---

0.2% Yield Strength ---

Charpy Impact ---

Chemical Analysis (% wt.) Sample "A" (Compared To A194 Grade 8)

Iron	<u> </u>	Titanium	<u> </u>
Carbon	<u>0.04</u>	Vanadium	<u> </u>
Manganese	<u>1.14</u>	Columbium + Tantalum	<u> </u>
Phosphorus	<u>0.031</u>	Copper	<u>0.13</u>
Sulfur	<u>0.013</u>	Aluminum	<u> </u>
Silicon	<u>0.30</u>	Zinc	<u> </u>
Chromium	<u>18.49</u>	Tin	<u> </u>
Nickel	<u>8.81</u>	Boron	<u> </u>
Molybdenum	<u>0.13</u>	Others	<u> </u>

*Properties found out of specification shall be noted with an Asterisk

Note: For each fastener description, two samples were obtained and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

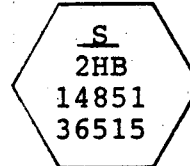
¹
Sample ID#: MNS/NQ/NUT/41

Fastener Description: Nut, Cap 9/16 Inch Nominal -12 UNC Class 2B Fit
Carbon Steel SA 194 Grade 2H ASME Section III
Subsection NB ASME Class (Item # 1, P.O. N10254)

Description of Sample Stock Location: Bin # 03-EA-05-3

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

Head Marking (Specification and Manufacturer):



Class/Procurement Level: ASME Section III
Class 1, QA Condition 1

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

Vendor: Leak Repairs Inc.

QA Requirements Imposed on Vendor: Approved Vendor, 10 CFR Part 21

Licensee Representative:

Signature: David E. Whitaker Date: February 11, 1988

¹
ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

MNS-81

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# MNS/NQ/NUT/41

Hardness 27 HRC (Sample "A")

Ultimate Tensile Strength ---

0.2% Yield Strength ---

Charpy Impact ---

Chemical Analysis (% wt.) Sample "A" (Compared To SA194 Grade 2H)

Iron	<u> </u>	Titanium	<u> </u>
Carbon	<u>0.41</u>	Vanadium	<u> </u>
Manganese	<u>0.91</u>	Columbium + Tantalum	<u> </u>
Phosphorus	<u>0.007</u>	Copper	<u>0.07</u>
Sulfur	<u>0.017</u>	Aluminum	<u> </u>
Silicon	<u>0.25</u>	Zinc	<u> </u>
Chromium	<u>0.98</u>	Tin	<u> </u>
Nickel	<u>0.14</u>	Boron	<u> </u>
Molybdenum	<u>0.22</u>	Others	<u> </u>

*Properties found out of specification shall be noted with an Asterisk

Note: For each fastener description, two samples were obtained and arbitrarily labeled "A" and "B".

NRC COMPLIANCE BULLETIN 87-02

CATAWBA TEST RESULTS

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

1
Sample ID#: CNS/QA/BOLT/1

Fastener Description: Heavy Hex Bolt, CS, 3/8"-16 X 5"

Description of Sample Stock Location: Bin# 5N-30-02-02

Material Specification as
Documented by Licensee Records: A307 GR. A

Head Marking (Specification and Manufacturer): A307 Gr. A/
Nova Machine Products

Class/Procurement Level: ASME III NF CL. 1
Duke Power QA Condition 1



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

Vendor: Nova Machine Products,
Middelburg Heights, OH

QA Requirements Imposed on Vendor: ASME III, NCA-3800
10 CFR Part 21

WJ Licensee Representative:

Signature: WJ Binkley Date: February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

CNS-1

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# CNS/QA/BOLT/1

Hardness 91 HRB (Sample "B")

Ultimate Tensile Strength 87.1 Ksi (Sample "A")

0.2% Yield Strength 76.3 Ksi (Sample "A")

Charpy Impact ---

Chemical Analysis (% wt.) Sample "A" (Compared to A307 GR.A)

Iron	Titanium
Carbon	Vanadium
Manganese	Columbium + Tantalum
Phosphorus <u><0.005</u>	Copper
Sulfur <u>0.012</u>	Aluminum
Silicon	Zinc
Chromium	Tin
Nickel	Boron
Molybdenum	Others

*Properties found out of specification shall be noted with an Asterisk

Note: For each fastener description, two samples were obtained and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

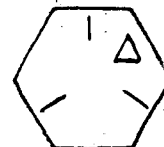
1
Sample ID#: CNS/QA/BOLT/2

Fastener Description: Hex Head Bolt, CS, 7/16"-14x5"

Description of Sample Stock Location: Bin# 5N-30-04-04

Material Specification as
Documented by Licensee Records: SAE J429 GR.5

Head Marking (Specification and Manufacturer): SAE J429 GR.5/
Infasco, Canada



Class/Procurement Level: Standard Stock
Duke Power QA Condition 1

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

Vendor: Mackson, Inc. Rock Hill, SC

QA Requirements Imposed on Vendor: None

Licensee Representative:

Signature: W. B. Bily Date: February 11, 1988

1
ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station CNS-3
CNS-Catawba Nuclear Station

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# CNS/QA/BOLT/2

Hardness 28 HRC/48.6 R30N (Sample "B")

Ultimate Tensile Strength 142 Ksi (Sample "A")

0.2% Yield Strength 128 Ksi (Sample "A")

Charpy Impact ---

Chemical Analysis (% wt.) Sample "A" (Compared to J429 GR.5)

Iron	<u> </u>	Titanium	<u> </u>
Carbon	<u>0.38</u>	Vanadium	<u> </u>
Manganese	<u> </u>	Columbium + Tantalum	<u> </u>
Phosphorus	<u>0.006</u>	Copper	<u> </u>
Sulfur	<u>0.014</u>	Aluminum	<u> </u>
Silicon	<u> </u>	Zinc	<u> </u>
Chromium	<u> </u>	Tin	<u> </u>
Nickel	<u> </u>	Boron	<u> </u>
Molybdenum	<u> </u>	Others	<u> </u>

*Properties found out of specification shall be noted with an Asterisk

Note: For each fastener description, two samples were obtained and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

1

Sample ID#: CNS/QA/BOLT/3

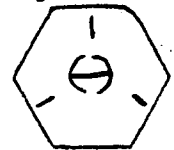
Fastener Description: Hex Head Bolt, CS, 7/16"-14x5"

Description of Sample Stock Location: Bin# 05-0B-07-1R

Material Specification as
Documented by Licensee Records: SA 449

Head Marking (Specification and Manufacturer): SA449/A&G Engineering

Class/Procurement Level: ASME III, CL.3,
Duke Power QA Condition 1



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

Vendor: Mackson, Inc. Rock Hill, SC

QA Requirements Imposed on Vendor: ASME III NCA-3800
10 CFR Part 21

Licensee Representative:

218
Signature: W. B. Bailey

Date: February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

CNS-5

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# CNS/QA/BOLT/3

Hardness 29 HRC (Sample "B")

Ultimate Tensile Strength 132.4 Ksi (Sample "A")

0.2% Yield Strength 116.4 Ksi (Sample "A")

Charpy Impact ---

Chemical Analysis (% wt.) Sample "A" (Compared to SA449)

Iron

Titanium

Carbon 0.40

Vanadium

Manganese 0.82

Columbium +
Tantalum

Phosphorus 0.023

Copper

Sulfur 0.029

Aluminum

Silicon

Zinc

Chromium

Tin

Nickel

Boron

Molybdenum

Others

*Properties found out of specification shall be noted with an
Asterisk

Note: For each fastener description, two samples were obtained
and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

1
Sample ID#: CNS/QA/BOLT/4

Fastener Description: Heavy Hex Head Bolt, Alloy Steel
3/4"-10x4"

Description of Sample Stock Location: Bin# 05-0B-07-1R

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

Head Marking (Specification and Manufacturer): SA193 GR.B7/
Texas Bolt

Class/Procurement Level: ASME III, CL.1,
Duke Power QA Condition 1
Duke Class A

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

Vendor: Mackson, Inc. Rock Hill, SC

QA Requirements Imposed on Vendor: ASME III NCA-3800
10 CFR Part 21

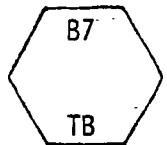
Licensee Representative:

Signature: W. Bailey Date: February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

CNS-7



DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# CNS/QA/BOLT/4

Hardness _____

Ultimate Tensile Strength 142 Ksi (Sample "A")

0.2% Yield Strength 126.7 Ksi (Sample "A")

Charpy Impact ---

Chemical Analysis (% wt.) Sample "A" (Compared to SA193 GR.B7)

Iron _____	Titanium _____
Carbon <u>0.40</u>	Vanadium _____
Manganese <u>0.78</u>	Columbium + Tantalum _____
Phosphorus <u>0.011</u>	Copper _____
Sulfur <u>0.019</u>	Aluminum _____
Silicon <u>0.25</u>	Zinc _____
Chromium <u>0.90</u>	Tin _____
Nickel _____	Boron _____
Molybdenum <u>0.21</u>	Others _____

*Properties found out of specification shall be noted with an Asterisk

Note: For each fastener description, two samples were obtained and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

1
Sample ID#: CNS/QA/BOLT/5

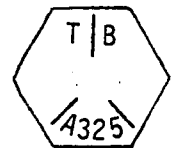
Fastener Description: Heavy Hex Head Bolt, CS, 3/4"-10 X 6"

Description of Sample Stock Location: Bin# 05-0H-01-1L

Material Specification as
Documented by Licensee Records: A325 TP.1

Head Marking (Specification and Manufacturer): A325 TP.1/
Texas Bolt

Class/Procurement Level: ASME III NF CL. 1
Duke Power QA Condition 1



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

Vendor: Nova Machine Products,
Middelburg Heights, OH

QA Requirements Imposed on Vendor: ASME III, NCA-3800
10 CFR Part 21
10 CFR Part 50 APP.B

W/B Licensee Representative:

Signature: *W/B Binkley* Date: February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

CNS-9

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# CNS/QA/BOLT/5

Hardness 23 HRC (Sample "B")

Ultimate Tensile Strength 124 Ksi (Sample "A")

0.2% Yield Strength 85.8 Ksi (Sample "A")

Charpy Impact ---

Chemical Analysis (% wt.) Sample "A" (Compared to SA325 TP.1)

Iron	<u> </u>	Titanium	<u> </u>
Carbon	<u>0.46</u>	Vanadium	<u> </u>
Manganese	<u>0.64</u>	Columbium + Tantalum	<u> </u>
Phosphorus	<u>0.019</u>	Copper	<u> </u>
Sulfur	<u>0.022</u>	Aluminum	<u> </u>
Silicon	<u> </u>	Zinc	<u> </u>
Chromium	<u> </u>	Tin	<u> </u>
Nickel	<u> </u>	Boron	<u> </u>
Molybdenum	<u> </u>	Others	<u> </u>

*Properties found out of specification shall be noted with an Asterisk

Note: For each fastener description, two samples were obtained and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

1 Sample ID#: CNS/QA/BOLT/6

Fastener Description: Hex Head Bolt, Alloy Steel, 1 1/4"-8X5"

Description of Sample Stock Location: Bin# 05-0C-02-1L

Material Specification as
Documented by Licensee Records: SA193 GR.B7

Head Marking (Specification and Manufacturer):
SA193 GR.B7/
Erie Bolt Corp.



Class/Procurement Level: ASME Section III, CL.1
Nuclear Safety Related

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

Vendor: Westinghouse Electric Corp.
Charlotte, NC.

QA Requirements Imposed on Vendor: ASME Section III, NCA-3800

Licensee Representative:

Signature: W. B. [Signature] Date: February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

CNS-11

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# CNS/QA/BOLT/6

Hardness ---

Ultimate Tensile Strength 136.3 Ksi (Sample "A")

0.2% Yield Strength 125.5 Ksi (Sample "A")

Charpy Impact Impact Test in Progress

Chemical Analysis (% wt.) Sample "A" (Compared to SA193 GR.B7)

Iron

Titanium

Carbon 0.42

Vanadium

Manganese 0.91

Columbium +
Tantalum

Phosphorus 0.012

Copper

Sulfur 0.032

Aluminum

Silicon 0.25

Zinc

Chromium 1.03

Tin

Nickel

Boron

Molybdenum 0.22

Others

*Properties found out of specification shall be noted with an
Asterisk

Note: For each fastener description, two samples were obtained
and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

1
Sample ID#: CNS/QA/STUD/7

Fastener Description: Stud, Alloy Steel, 3/4"-10x6"

Description of Sample Stock Location: Bin# 05-0G-0L-1R

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

Head Marking (Specification and Manufacturer): SA193 GR.B7/
Daniel Industries

Class/Procurement Level: ASME III, CL.2
Duke Power QA Condition 1
Duke Class B

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

Vendor: Percision Nuclear Products,
Austin, TX

QA Requirements Imposed on Vendor: ASME III NCA-3800
10 CFR Part 21

Licensee Representative:

wfb Signature: W. Bailey Date: February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

CNS-13

DB7

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# CNS/QA/STUD/7

Hardness ---

Ultimate Tensile Strength 129.3 Ksi (Sample "A")

0.2% Yield Strength 114.5 Ksi (Sample "A")

Charpy Impact ---

Chemical Analysis (% wt.) Sample "A" (Compared to SA193 GR.B7)

Iron

Titanium

Carbon 0.38

Vanadium

Manganese 0.76

Columbium +
Tantalum

Phosphorus 0.011

Copper

Sulfur 0.013

Aluminum

Silicon 0.21

Zinc

Chromium 0.88

Tin

Nickel

Boron

Molybdenum 0.16

Others

*Properties found out of specification shall be noted with an Asterisk

Note: For each fastener description, two samples were obtained and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

1

Sample ID#: CNS/QA/SCRW/8

Fastener Description: Hex Head Cap Screw, 3/4"-10x4"
Delaval P/N GB-001-150

Description of Sample Stock Location: Bin# 05-0E-11-2R

Material Specification as
Documented by Licensee Records: None

Head Marking (Specification and Manufacturer):
SAE J429 GR.5 or SA449/
Unknown

Class/Procurement Level: Duke Power QA Condition 1

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

Vendor: Transamerica Delaval,
Oakland, CA

QA Requirements Imposed on Vendor: ANSI N45.2(Minimum)



w/b Licensee Representative:

Signature: W. B. Kelly Date: February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

CNS-15

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# CNS/QA/SCRW/8

Hardness 30 HRC (Sample "B")

Ultimate Tensile Strength 141.7 Ksi (Sample "A")

0.2% Yield Strength 130.6 Ksi (Sample "A")

Charpy Impact ---

Chemical Analysis (% wt.) Sample "A" (Compared to SAEJ429 GR.5/A449)

Iron

Titanium

Carbon 0.35

Vanadium

Manganese 0.72

Columbium +
Tantalum

Phosphorus 0.018

Copper

Sulfur 0.020

Aluminum

Silicon

Zinc

Chromium

Tin

Nickel

Boron

Molybdenum

Others

*Properties found out of specification shall be noted with an
Asterisk

Note: For each fastener description, two samples were obtained
and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

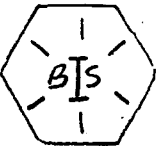
1
Sample ID#: CNS/QA/SCRW/9

Fastener Description: Hex Head Cap Screw, CS, 3/4"-10x4"

Description of Sample Stock Location: Bin# 05-0G-02-1R

Material Specification as
Documented by Licensee Records: SAE J429 GR.8

Head Marking (Specification and Manufacturer): SAE J429 GR.8/
Bethlehem Steel



Class/Procurement Level: Duke Power QA Condition 1

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

Vendor: Sure-Loc, Inc.
Charlotte, NC

QA Requirements Imposed on Vendor: QA Program Audited By DPC

Licensee Representative:

Signature: WABirley Date: February 11, 1988
1

ONS-Ocone Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

CNS-17

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# CNS/QA/SCRW/9

Hardness 36 HRC (Sample "B")

Ultimate Tensile Strength 170.6 Ksi (Sample "A")

0.2% Yield Strength 156.3 Ksi (Sample "A")

Charpy Impact ---

Chemical Analysis (% wt.) Sample "A" (Compared to SAE J429 GR.8)

Iron

Titanium

Carbon 0.38

Vanadium

Manganese

Columbium +
Tantalum

Phosphorus 0.015

Copper

Sulfur 0.015

Aluminum

Silicon

Zinc

Chromium

Tin

Nickel

Boron

Molybdenum

Others

*Properties found out of specification shall be noted with an
Asterisk

Note: For each fastener description, two samples were obtained
and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

1
Sample ID#: CNS/QA/STUD/10

Fastener Description: Stud, Stainless Steel, 3/4"-10x5"

Description of Sample Stock Location: Bin# 5N-23-05-03

Material Specification as
Documented by Licensee Records: SA564 TP630

Head Marking (Specification and Manufacturer): SA564 TP630/
A&G Engineering



Class/Procurement Level: Nuclear Safety Related
ASME III, CL.1

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

Vendor: Borg-Warner,.
Vernon, CA

QA Requirements Imposed on Vendor: ASME III, NCA-3800
10 CFR Part 21

WJB Licensee Representative:

Signature: *WJB* Date: February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

CNS-19

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# CNS/QA/STUD/10

Hardness 35 HRC (Sample "B")

Ultimate Tensile Strength 151.3 Ksi (Sample "A")

0.2% Yield Strength 145 Ksi (Sample "A")

Charpy Impact ---

Chemical Analysis (% wt.) Sample "A" (Compared to SA564 TP 630)

Iron	<u> </u>	Titanium	<u> </u>
Carbon	<u>0.05</u>	Vanadium	<u> </u>
Manganese	<u>0.81</u>	Columbium + Tantalum	<u> </u>
Phosphorus	<u>0.028</u>	Copper	<u>3.49</u>
Sulfur	<u>0.006</u>	Aluminum	<u> </u>
Silicon	<u>0.25</u>	Zinc	<u> </u>
Chromium	<u>16.15</u>	Tin	<u> </u>
Nickel	<u>4.84</u>	Boron	<u> </u>
Molybdenum	<u> </u>	Others	<u> </u>

*Properties found out of specification shall be noted with an Asterisk

Note: For each fastener description, two samples were obtained and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

1

Sample ID#: CNS/NQ/BOLT/11

Fastener Description: Bolt, Hex HD Silicon Bronze Alloy 651
3/8"-16X1", F468

Description of Sample Stock Location: Bin# 5N-30-02-03

Material Specification as
Documented by Licensee Records: ASTM F468

Head Marking (Specification and Manufacturer): None

Class/Procurement Level: Duke Power QA Condition 1
Standard Stock

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

Vendor: Mackson, Inc.
Rock Hill, SC

QA Requirements Imposed on Vendor: None

Licensee Representative:

Signature: WJ Binkley Date: February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

CNS-21

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# CNS/NQ/BOLT/11

Hardness 88 HRB (Sample "A")

Ultimate Tensile Strength _____

0.2% Yield Strength _____

Charpy Impact _____

Chemical Analysis (% wt.) Sample "A" (Compared to F468 TP 651)

Iron 0.04

Titanium _____

Carbon _____

Vanadium _____

Manganese 0.24

Columbium +
Tantalum _____

Phosphorus _____

Copper 97.80

Sulfur _____

Aluminum _____

Silicon 1.68

Zinc 0.14

Chromium _____

Tin _____

Nickel _____

Boron _____

Molybdenum _____

Others _____

*Properties found out of specification shall be noted with an
Asterisk

Note: For each fastener description, two samples were obtained
and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

1

Sample ID#: CNS/NQ/SCRW/12

Fastener Description: Hex Head Cap Screw, Bright Low Carbon Steel,
Grade 2, 7/16"-20x2"

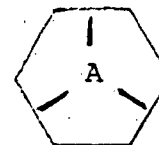
Description of Sample Stock Location: Bin# 02-0B-02-4L

Material Specification as
Documented by Licensee Records: SAE J429 GR.2

Head Marking (Specification and Manufacturer):

SAE J429 GR.2/Unknown

Class/Procurement Level: Non QA Condition



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

Vendor: Mackson, Inc.
Rock Hill, SC

QA Requirements Imposed on Vendor: None

Licensee Representative:

Signature: W. B. Almy

Date: February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

CNS-23

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# CNS/NQ/SCRW/12

Hardness 29 HRC

Ultimate Tensile Strength _____

0.2% Yield Strength _____

Charpy Impact _____

Chemical Analysis (% wt.) Sample (A) Compared to SAE J429 Gr. G/A449

Iron _____

Titanium _____

Carbon 0.33

Vanadium _____

Manganese 0.73

Columbium +
Tantalum _____

Phosphorus 0.011

Copper _____

Sulfur 0.011

Aluminum _____

Silicon _____

Zinc _____

Chromium _____

Tin _____

Nickel _____

Boron _____

Molybdenum _____

Others _____

*Properties found out of specification shall be noted with an Asterisk

Note: For each fastener description, two samples were obtained and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

1 Sample ID#: CNS/NQ/BOLT/13

Fastener Description: Bolt, Machine Hex Head, Carbon Steel,
1 1/8"-7x6", A193 Grade B7

Description of Sample Stock Location: Bin# 02-0B-03-4R

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

Head Marking (Specification and Manufacturer):

A193 GR.B7/
Bethlehem Steel

Class/Procurement Level: Non-QA Condition

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

Vendor: South Eastern Bolt & Screw

QA Requirements Imposed on Vendor: None

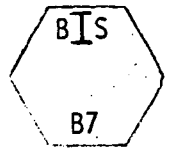
Licensee Representative:

Signature: W. B. Bailey Date: February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

CNS-25



Attachment 2

Sample ID# CNS/NQ/BOLT/13

Hardness ---

Ultimate Tensile Strength

0.2% Yield Strength

Charpy Impact _____

Chemical Analysis (% wt.) Sample "A" (Compared to SA193 GR.B7)

Iron

Titanium

Carbon 0.40

Vanadium

Manganese 0.82

Columbium +
Tantalum

Phosphorus 0.008

Copper

Sulfur 0.022

Aluminum

Silicon 0.23

Zinc _____

Chromium 0.90

Tin

Nickel

Boron _____

Molybdenum 0.19

Others _____

Note: For each fastener description, two samples were obtained and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

1

Sample ID#: CNS/NQ/BOLT/14

Fastener Description: Bolt, Machine Hex Head With Nut, Plain Steel,
5/16"-18x2", McMaster Carr P/N 91469A511

Description of Sample Stock Location: Bin# 02-04-04-08

Material Specification as
Documented by Licensee Records: Plain Steel

Head Marking (Specification and Manufacturer): SAE J429 GR.5/
A449/Unknown



Class/Procurement Level: Non QA Condition

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

Vendor: Mackson, Inc. Rock Hill, SC
Universal Fastener, Charlotte, NC
The Nut and Bolt House, Greenville, SC

QA Requirements Imposed on Vendor: None

Licensee Representative:

Signature: W. Bailey Date: February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

CNS-27

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# CNS/NQ/BOLT/14

Hardness 29 HRC (Sample "A")

Ultimate Tensile Strength _____

0.2% Yield Strength _____

Charpy Impact _____

Chemical Analysis (% wt.) Sample "A" (Compared to SAEJ429 GR.5/A449)

Iron _____

Titanium _____

Carbon 0.33

Vanadium _____

Manganese 0.74

Columbium +
Tantalum _____

Phosphorus 0.018

Copper _____

Sulfur 0.011

Aluminum _____

Silicon _____

Zinc _____

Chromium _____

Tin _____

Nickel _____

Boron _____

Molybdenum _____

Others _____

*Properties found out of specification shall be noted with an
Asterisk

Note: For each fastener description, two samples were obtained
and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

1 Sample ID#: CNS/NQ/BOLT/15

Fastener Description: Hex Head Bolt, Plain Steel,
3/8"-16x4"

Description of Sample Stock Location: Bin# 02-0B-03-4R

Material Specification as
Documented by Licensee Records: None

Head Marking (Specification and Manufacturer): None

Class/Procurement Level: Non QA Condition

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

Vendor: Sure-Loc, Inc.
Charlotte, NC

QA Requirements Imposed on Vendor: None

WJB Licensee Representative:

Signature: *WJB* Date: February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

CNS-29

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# CNS/NQ/BOLT/15

Hardness 93 HRB (Sample "A")

Ultimate Tensile Strength _____

0.2% Yield Strength _____

Charpy Impact _____

Chemical Analysis (% wt.) Sample "A" (Compared to SAEJ429 GR.1,2/A307GR.A,B)

Iron _____

Carbon 0.07

Manganese 0.39

Phosphorus 0.027

Sulfur 0.022

Silicon _____

Chromium _____

Nickel _____

Molybdenum _____

Titanium _____

Vanadium _____

Columbium +
Tantalum _____

Copper _____

Aluminum _____

Zinc _____

Tin _____

Boron _____

Others _____

*Properties found out of specification shall be noted with an Asterisk

Note: For each fastener description, two samples were obtained and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

1

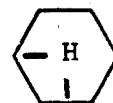
Sample ID#: CNS/NQ/SCRW/16

Fastener Description: Hex Head Cap Screw, Stainless Steel,
1/2"-20 X 1"

Description of Sample Stock Location: Bin# 02-04-04-05

Material Specification as
Documented by Licensee Records: TP 18-8 SS

Head Marking (Specification and Manufacturer): TP18-8 SS/
W.H.Haskell Mfg.



Class/Procurement Level: Non-QA Condition

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

Vendor: Unknown

QA Requirements Imposed on Vendor: None

Licensee Representative:

Signature: WJ B. [Signature] Date: February 11, 1988

1

OCS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

CNS-31

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# CNS/NQ/SCRW/16

Hardness 89 HRB

Ultimate Tensile Strength _____

0.2% Yield Strength _____

Charpy Impact _____

Chemical Analysis (% wt.) Sample "A" (Compared to A193 GR. B8)

Iron _____	Titanium _____
Carbon <u>0.01</u>	Vanadium _____
Manganese <u>1.43</u>	Columbium + Tantalum _____
Phosphorus <u>0.029</u>	Copper _____
Sulfur <u>0.012</u>	Aluminum _____
Silicon <u>0.51</u>	Zinc _____
*Chromium <u>17.64 (17.80% Allowed Per A29)</u>	Tin _____
Nickel <u>9.22</u>	Boron _____
Molybdenum _____	Others _____

*Properties found out of specification shall be noted with an Asterisk

Note: For each fastener description, two samples were obtained and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

1

Sample ID#: CNS/NQ/SCRW/17

Fastener Description: Hex Head Cap Screw, Bright Low Carbon
Steel, 7/16"-20 X 4"

Description of Sample Stock Location: Bin# 02-0B-02-4L

Material Specification as
Documented by Licensee Records: SAE J429 GR.2•

Head Marking (Specification and Manufacturer): SAE J429 GR.5 or A449/
No Mfg. Mark



Class/Procurement Level: Non-QA Condition

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

Vendor: Sure-Loc, Inc.
Charlotte, NC

QA Requirements Imposed on Vendor: None

Licensee Representative:

Signature: W. B. Bily Date: February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

CNS-33

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# CNS/NQ/SCRW/17

Hardness 30 HRC

Ultimate Tensile Strength _____

0.2% Yield Strength _____

Charpy Impact _____

Chemical Analysis (% wt.) Sample (A) Compared to SAE J429 Gr. 5/A449

Iron _____

Titanium _____

Carbon 0.36

Vanadium _____

Manganese 0.65

Columbium +
Tantalum _____

Phosphorus 0.012

Copper _____

Sulfur 0.023

Aluminum _____

Silicon _____

Zinc _____

Chromium _____

Tin _____

Nickel _____

Boron _____

Molybdenum _____

Others _____

*Properties found out of specification shall be noted with an
Asterisk

Note: For each fastener description, two samples were obtained
and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

1

Sample ID#: CNS/NQ/SCRW/18

Fastener Description: Hex Head Bolt, CS, 1 1/2"-6x14"

Description of Sample Stock Location: Bin# 02-0B-04-5R

Material Specification as
Documented by Licensee Records: A325

Head Marking (Specification and Manufacturer): A325 TP.1/Unknown



Class/Procurement Level: Non QA Condition

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

Vendor: Universal Fasteners,
Charlotte, NC

QA Requirements Imposed on Vendor: None

WJB Licensee Representative:

Signature: *WJB* Date: February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

CNS-35

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# CNS/NQ/BOLT/18

Hardness 23 HRC (Sample "A")

Ultimate Tensile Strength _____

0.2% Yield Strength _____

Charpy Impact _____

Chemical Analysis (% wt.) Sample "A" (Compared to A325 TP.1)

Iron _____	Titanium _____
Carbon <u>0.40</u>	Vanadium _____
Manganese <u>0.74</u>	Columbium + Tantalum _____
Phosphorus <u>0.007</u>	Copper _____
Sulfur <u>0.024</u>	Aluminum _____
Silicon _____	Zinc _____
Chromium _____	Tin _____
Nickel _____	Boron _____
Molybdenum _____	Others _____

*Properties found out of specification shall be noted with an Asterisk

Note: For each fastener description, two samples were obtained and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

¹
Sample ID#: CNS/NQ/SCRW/19

Fastener Description: Hex Socket Head Cap Screw, Steel,
1/2"-13x2" McMaster Carr P/N 91251A720

Description of Sample Stock Location: Bin# 02-05-01-04

Material Specification as
Documented by Licensee Records: A574

Head Marking (Specification and Manufacturer): None

Class/Procurement Level: Non QA Condition

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

Vendor: Sure-Loc, Inc.
Charlotte, NC

QA Requirements Imposed on Vendor: None

WAB
Licensee Representative:

Signature: *W. J. Butler* Date: February 11, 1988

¹

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

CNS-37

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# CNS/NQ/SCRW/19

Hardness 41 HRC (Sample "A")

Ultimate Tensile Strength

0.2% Yield Strength

Charpy Impact

Chemical Analysis (% wt.) Sample "A" (Compared to A574)

Iron

Titanium

Carbon 0.36

Vanadium

Manganese

Columbium +
Tantalum

Phosphorus 0.010

Copper

Sulfur 0.017

Aluminum

Silicon

Zinc

Chromium

Tin

Nickel

Boron

Molybdenum

Others

*Properties found out of specification shall be noted with an
Asterisk

Note: For each fastener description, two samples were obtained
and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

¹ Sample ID#: CNS/NQ/SCRW/20

Fastener Description: Square Head Set Screw, Alloy Steel,
1/2"-13 X 3" McMaster Carr
P/N 91418A724

Description of Sample Stock Location: Bin# 02-04-04-04

Material Specification as
Documented by Licensee Records: SAE J429 GR.8

Head Marking (Specification and Manufacturer): None

Class/Procurement Level: Non-QA Condition

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

Vendor: Sure-Loc, Inc.
Charlotte, NC

QA Requirements Imposed on Vendor: None

Licensee Representative:

Signature: W. B. [Signature] Date: February 11, 1988

¹

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

CNS-39

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# CNS/NQ/SCRW/20

* Hardness 98 HRB (A)

Ultimate Tensile Strength

0.2% Yield Strength

Charpy Impact

Chemical Analysis (% wt.) Sample (A) Compared to SAE J429 Gr. 8

Iron <u></u>	Titanium <u></u>
* Carbon <u>0.14</u>	Vanadium <u></u>
Manganese <u></u>	Columbium + Tantalum <u></u>
Phosphorus <u>0.009</u>	Copper <u></u>
Sulfur <u>0.017</u>	Aluminum <u></u>
Silicon <u></u>	Zinc <u></u>
Chromium <u></u>	Tin <u></u>
Nickel <u></u>	Boron <u></u>
Molybdenum <u></u>	Others <u></u>

*Properties found out of specification shall be noted with an Asterisk

Note: For each fastener description, two samples were obtained and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

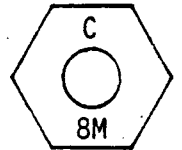
1

Sample ID#: CNS/QA/NUT/21

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

Description of Sample Stock Location: Bin# 5N-23-02-01

Material Specification as
Documented by Licensee Records: SA194 GR.8M



Head Marking (Specification and Manufacturer): SA194 GR.8M/
Coast Industrial Supply

Class/Procurement Level: ASME III, CL.1
Duke Power QA Condition 1

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

Vendor: Borg Warner,
Van Nuys, CA

QA Requirements Imposed on Vendor: ASME III, NCA-3800

WJB Licensee Representative:

Signature: WJB Date: February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

CNS-41

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# CNS/QA/NUT/21

Hardness 101 HRB (Sample "A")

Ultimate Tensile Strength _____

0.2% Yield Strength _____

Charpy Impact _____

Chemical Analysis (% wt.) Sample "A" (Compared to SA194 GR.8M)

Iron _____

Titanium _____

Carbon 0.07

Vanadium _____

Manganese 1.35

Columbium +
Tantalum _____

Phosphorus 0.026

Copper _____

Sulfur 0.024

Aluminum _____

Silicon 0.41

Zinc _____

Chromium 17.12

Tin _____

Nickel 12.71

Boron _____

Molybdenum 2.08

Others _____

*Properties found out of specification shall be noted with an
Asterisk

Note: For each fastener description, two samples were obtained
and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

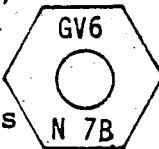
1
Sample ID#: CNS/QA/NUT/22

Fastener Description: Heavy Hex Nut, Carbon Steel,
1 1/4"-12

Description of Sample Stock Location: Bin# 05-0B-07-1R

Material Specification as
Documented by Licensee Records: SA194 GR.2H,
(PO Allowed SA194 GR.7 Substitution)

Head Marking (Specification and Manufacturer): SA194 GR.7/
Nova Machine Products



Class/Procurement Level: ASME III, NF CL.1
Duke Power QA Condition 1

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

Vendor: Nova Machine Products,
Middelburg Heights, OH

QA Requirements Imposed on Vendor: ASME III, NCA-3800
10 CFR Part 21

WJB Licensee Representative:

Signature: WJB Date: February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

CNS-43

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# CNS/QA/NUT/22

Hardness 32 HRC (Sample "A")

Ultimate Tensile Strength _____

0.2% Yield Strength _____

Charpy Impact _____

Chemical Analysis (% wt.) Sample "A" (Compared to SA194 GR.2H)

Iron _____

Titanium _____

Carbon 0.39 (-0.03% tolerance per A 29) Vanadium _____

Manganese _____

Columbium +
Tantalum _____

Phosphorus 0.013

Copper _____

Sulfur 0.022

Aluminum _____

Silicon _____

Zinc _____

Chromium _____

Tin _____

Nickel _____

Boron _____

Molybdenum _____

Others _____

*Properties found out of specification shall be noted with an Asterisk

Note: For each fastener description, two samples were obtained and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

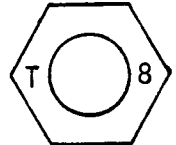
1 Sample ID#: CNS/QA/NUT/23

Fastener Description: Hex Nut, Stainless Steel,
5/16"-18"

Description of Sample Stock Location: Bin# 5N-32-04-04

Material Specification as
Documented by Licensee Records: SA194 GR.8

Head Marking (Specification and Manufacturer): SA194 GR.8/
Texas Bolt



Class/Procurement Level: ASME III, CL.1
Duke Power QA Condition 1
Duke Class A

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

Vendor: Mackson, Inc.
Rock Hill, SC

QA Requirements Imposed on Vendor: ASME III, NCA-3800
10 CFR Part 21

W/B Licensee Representative:

Signature: W/B Bailey Date: February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

CNS-45

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# CNS/QA/NUT/23

Hardness 81 HRB (Sample "A")

Ultimate Tensile Strength _____

0.2% Yield Strength _____

Charpy Impact _____

Chemical Analysis (% wt.) Sample "A" (Compared to SA194 GR.8)

Iron _____

Titanium _____

Carbon 0.07

Vanadium _____

Manganese 0.88

Columbium +
Tantalum _____

Phosphorus 0.025

Copper _____

Sulfur <0.005

Aluminum _____

Silicon 0.73

Zinc _____

Chromium 19.46

Tin _____

Nickel 8.42

Boron _____

Molybdenum _____

Others _____

*Properties found out of specification shall be noted with an
Asterisk

Note: For each fastener description, two samples were obtained
and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

¹
Sample ID#: CNS/QA/NUT/24

Fastener Description: Hex Nut, Brass,
5/16"-18"

Description of Sample Stock Location: Bin# 5N-30-03-04

Material Specification as
Documented by Licensee Records: Brass

Head Marking (Specification and Manufacturer): None/Unknown

Class/Procurement Level: Duke Power QA Condition 1
Standard Stock

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

Vendor: Sure-Loc, Inc.
Charlotte, NC

QA Requirements Imposed on Vendor: None

WJB Licensee Representative:

Signature: *WJB* Date: February 11, 1988

¹

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

CNS-47

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# CNS/QA/NUT/24

Hardness 92 HRB (Sample "A")

Ultimate Tensile Strength _____

0.2% Yield Strength _____

Charpy Impact _____

Chemical Analysis (% wt.) Sample "A" (Compared to F467 GR.C270)

Iron <u>0.060</u>	Titanium _____
Carbon _____	Vanadium _____
Manganese _____	Columbium + Tantalum _____
Phosphorus _____	Copper <u>63.14</u>
Sulfur _____	Aluminum _____
Silicon _____	Zinc <u>Balance</u>
Chromium _____	Tin _____
Nickel _____	Boron _____
Molybdenum _____	Others (Lead) <u><0.010</u>

*Properties found out of specification shall be noted with an Asterisk

Note: For each fastener description, two samples were obtained and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

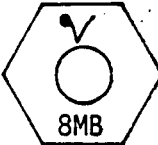
1
Sample ID#: CNS/QA/NUT/25

Fastener Description: Hex Nut, Stainless Steel,
5/8"-11

Description of Sample Stock Location: Bin# 5N-25-08-02

Material Specification as
Documented by Licensee Records: SA194 GR.8M

Head Marking (Specification and Manufacturer): SA194GR.8MB/Unknown



Class/Procurement Level: ASME III CL.3
Duke Power QA Condition 1
Duke Class C

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

Vendor: Borg Warner
Van Nuys, CA

QA Requirements Imposed on Vendor: ASME III NA-3700
10 CFR Part 21

WAB Licensee Representative:

Signature: *WAB* Date: February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

CNS-49

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# CNS/QA/NUT/25

Hardness 85 HRB (Sample "A")

Ultimate Tensile Strength _____

0.2% Yield Strength _____

Charpy Impact _____

Chemical Analysis (% wt.) Sample "A" (Compared to SA194 GR.8M)

Iron _____

Titanium _____

Carbon 0.06

Vanadium _____

Manganese 1.64

Columbium +
Tantalum _____

Phosphorus 0.023

Copper _____

Sulfur <0.005

Aluminum _____

Silicon 0.75

Zinc _____

Chromium 17.61

Tin _____

Nickel 12.16

Boron _____

Molybdenum 2.28

Others _____

*Properties found out of specification shall be noted with an Asterisk

Note: For each fastener description, two samples were obtained and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

1

Sample ID#: CNS/QA/NUT/26

Fastener Description: Nut, Hex Carbon Steel, SAE J995, GR.8.,
5/8"-11

Description of Sample Stock Location: Bin# 05-0G-01-1L

Material Specification as
Documented by Licensee Records: SAE J995, GR.8

Head Marking (Specification and Manufacturer):

Unknown/Unknown



Class/Procurement Level: Duke Power QA Condition 1
Standard Stock

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

Vendor: Sure-Loc, Inc.
Charlotte, NC

QA Requirements Imposed on Vendor: None

Licensee Representative:

Signature: W. B. H. J. Date: February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

CNS-51

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# CNS/QA/NUT/26

Hardness 28 HRC (Sample "A")

Ultimate Tensile Strength _____

0.2% Yield Strength _____

Charpy Impact _____

Chemical Analysis (% wt.) Sample "A" (Compared to SAEJ995 GR.8)

Iron _____

Titanium _____

Carbon 0.40

Vanadium _____

Manganese 0.67

Columbium +
Tantalum _____

Phosphorus 0.013

Copper _____

Sulfur 0.019

Aluminum _____

Silicon _____

Zinc _____

Chromium _____

Tin _____

Nickel _____

Boron _____

Molybdenum _____

Others _____

*Properties found out of specification shall be noted with an
Asterisk

Note: For each fastener description, two samples were obtained
and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

1

Sample ID#: CNS/QA/NUT/27

Fastener Description: Hex Nut, Special Standard Finish, Carbon Steel,
ASTM A563 Grade B, 1 1/2"x6

Description of Sample Stock Location: Bin# 05-0E-11-1L

Material Specification as
Documented by Licensee Records: ASTM A563 Grade B

Head Marking (Specification and Manufacturer): None/Acimet Mfg.

Class/Procurement Level: Duke Power QA Condition 1

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

Vendor: Patterson Industries
E. Liverpool, OH

QA Requirements Imposed on Vendor: ANSI N45.2(Minimum)

WJB Licensee Representative:

Signature: WJB Date: February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

CNS-53

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# CNS/QA/NUT/27

Hardness 84 HRB (Sample "A")

Ultimate Tensile Strength _____

0.2% Yield Strength _____

Charpy Impact _____

Chemical Analysis (% wt.) Sample "A" (Compared to A563 GR.B)

Iron _____

Carbon 0.45

Manganese _____

Phosphorus 0.011

Sulfur _____

Silicon _____

Chromium _____

Nickel _____

Molybdenum _____

Titanium _____

Vanadium _____

Columbium +
Tantalum _____

Copper _____

Aluminum _____

Zinc _____

Tin _____

Boron _____

Others _____

*Properties found out of specification shall be noted with an Asterisk

Note: For each fastener description, two samples were obtained and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

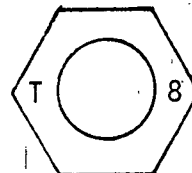
1
Sample ID#: CNS/QA/NUT/28

Fastener Description: Hex Nut, Stainless Steel, A194 Grade 8, 3/8"x16

Description of Sample Stock Location: Bin# 5N-30-05-01

Material Specification as
Documented by Licensee Records: ASTM A194 Grade 8

Head Marking (Specification and Manufacturer):
A194 GR.8/Texas Bolt



Class/Procurement Level: Duke Power QA Condition 4

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

Vendor: Mackson Inc.,
Rock Hill, SC

QA Requirements Imposed on Vendor: ANSI N45.2 (Minimum)

Licensee Representative:

Signature: W. B. B. B. Date: February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

CNS-55

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# CNS/QA/NUT/28

Hardness 82 HRB (Sample "A")

Ultimate Tensile Strength _____

0.2% Yield Strength _____

Charpy Impact _____

Chemical Analysis (% wt.) Sample "A" (Compared to A194 GR.8)

Iron _____

Titanium _____

Carbon 0.07

Vanadium _____

Manganese 0.97

Columbium +
Tantalum _____

Phosphorus 0.012

Copper _____

Sulfur <0.005

Aluminum _____

Silicon 0.74

Zinc _____

Chromium 18.95

Tin _____

Nickel 8.67

Boron _____

Molybdenum _____

Others _____

*Properties found out of specification shall be noted with an Asterisk

Note: For each fastener description, two samples were obtained and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

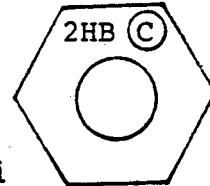
1 Sample ID#: CNS/QA/NUT/29

Fastener Description: Nut, Hexagon Jam, ASTM A194 Grade 2H
1 1/4-20

Description of Sample Stock Location: Bin# 5N-2A-10-01

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

Head Marking (Specification and Manufacturer):
A194 GR.2H/Unknown



Class/Procurement Level: Duke Power QA Condition 1
ASME Section III (CL.1,2 or 3)

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

Vendor: Borg Warner

QA Requirements Imposed on Vendor: ASME Section III, NA-3700

Licensee Representative:

Signature: W. Briley Date: February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

CNS-57

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# CNS/QA/NUT/29

Hardness 30 HRC (Sample "A")

Ultimate Tensile Strength _____

0.2% Yield Strength _____

Charpy Impact _____

Chemical Analysis (% wt.) Sample "A" (Compared to A194 GR.2H)

Iron _____

Titanium _____

Carbon 0.40

Vanadium _____

Manganese _____

Columbium +
Tantalum _____

Phosphorus 0.025

Copper _____

Sulfur 0.031

Aluminum _____

Silicon _____

Zinc _____

Chromium _____

Tin _____

Nickel _____

Boron _____

Molybdenum _____

Others _____

*Properties found out of specification shall be noted with an
Asterisk

Note: For each fastener description, two samples were obtained
and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

¹
Sample ID#: CNS/QA/NUT/30

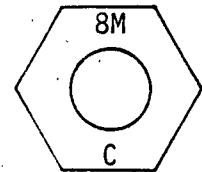
Fastener Description: Hex Jam Nut, Stainless Steel, 3/4"-10
Borg Warner P/N 7000111-350

Description of Sample Stock Location: Bin# 5N-20-02-02

Material Specification as
Documented by Licensee Records: A194 GR. 8M

Head Marking (Specification and Manufacturer): A194 Gr. 8M/Unknown

Class/Procurement Level: Duke QA Condition 1
ASME III (CL. 1, 2 or 3)



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

Vendor: Borg Warner
Van Nuys, CA

QA Requirements Imposed on Vendor: ASME III NA-3700
10 CFR Part 21

Licensee Representative:

¹ w/B Signature: W. B. Binkley

Date: February 11, 1988

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

CNS-59

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# CNS/QA/NUT/30

Hardness 102 HRB (Sample "A")

Ultimate Tensile Strength _____

0.2% Yield Strength _____

Charpy Impact _____

Chemical Analysis (% wt.) Sample "A" (Compared to A194 GR.8M)

Iron _____

Titanium _____

Carbon 0.03

Vanadium _____

Manganese 1.82

Columbium +
Tantalum _____

Phosphorus 0.037

Copper _____

Sulfur 0.030

Aluminum _____

Silicon 0.25

Zinc _____

Chromium 16.46

Tin _____

Nickel 10.63

Boron _____

Molybdenum 2.08

Others _____

*Properties found out of specification shall be noted with an Asterisk

Note: For each fastener description, two samples were obtained and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

1

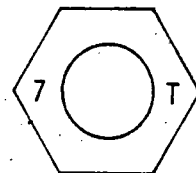
Sample ID#: CNS/NQ/NUT/31

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

Description of Sample Stock Location: Bin# 05-0G-02-1R

Material Specification as
Documented by Licensee Records: SA194 Grade 7

Head Marking (Specification and Manufacturer): SA194 Gr. 7/
Texas Bolt



Class/Procurement Level: Duke Class B, QA Condition 1
ASME III CL. 2

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

Vendor: Mackson Inc.,
Rock Hill, SC

QA Requirements Imposed on Vendor: ASME III NCA-3800
10 CFR Part 21

Licensee Representative:

Signature: W. B. [Signature] Date: February 11, 1988

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

CNS-61

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# CNS/NQ/NUT/31

Hardness 31 HRC (Sample "A")

Ultimate Tensile Strength _____

0.2% Yield Strength _____

Charpy Impact _____

Chemical Analysis (% wt.) Sample "A" (Compared to SA194 GR.7)

Iron _____

Titanium _____

Carbon 0.37

Vanadium _____

Manganese 0.92

Columbium +
Tantalum _____

Phosphorus 0.013

Copper _____

Sulfur 0.026

Aluminum _____

Silicon 0.24

Zinc _____

Chromium 1.01

Tin _____

Nickel _____

Boron _____

Molybdenum 0.21

Others _____

*Properties found out of specification shall be noted with an
Asterisk

Note: For each fastener description, two samples were obtained
and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

¹
Sample ID#: CNS/NQ/NUT/32

Fastener Description: Heavy Hex Nut, Steel, 3/4"-10
McMaster Carr P/N 90498A036

Description of Sample Stock Location: Bin# 02-0B-02-4L

Material Specification as
Documented by Licensee Records: None

Head Marking (Specification and Manufacturer): None/Unknown

Class/Procurement Level: Non-QA Condition

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

Vendor: Interlock, Inc., Charlotte, NC
Sure-Loc, Inc., Charlotte, NC

QA Requirements Imposed on Vendor: None

Licensee Representative:

¹ Signature: W. B. [Signature] Date: February 11, 1988

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

CNS-63

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# CNS/NQ/NUT/32

Hardness 71 HRB (Sample "A")

Ultimate Tensile Strength _____

0.2% Yield Strength _____

Charpy Impact _____

Chemical Analysis (% wt.) Sample "A" (Compared to A563 GR.A)

Iron _____

Titanium _____

Carbon 0.21

Vanadium _____

Manganese 0.61

Columbium +
Tantalum _____

Phosphorus 0.008

Copper _____

Sulfur 0.013

Aluminum _____

Silicon _____

Zinc _____

Chromium _____

Tin _____

Nickel _____

Boron _____

Molybdenum _____

Others _____

*Properties found out of specification shall be noted with an
Asterisk

Note: For each fastener description, two samples were obtained
and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

¹
Sample ID#: CNS/NQ/NUT/33

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

Description of Sample Stock Location: Bin# 02-05-01-03

Material Specification as
Documented by Licensee Records: None

Head Marking (Specification and Manufacturer): None/Unknown

Class/Procurement Level: Non-QA Condition

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

Vendor: Mackson, Inc. Charlotte, NC
Stewart Fastener Corp., Charlotte, NC

QA Requirements Imposed on Vendor: None

Licensee Representative:

¹ Signature: WJ Bailey Date: February 11, 1988

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

CNS-65

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# CNS/NQ/NUT/33

Hardness 87 HRB (Sample "A")

Ultimate Tensile Strength _____

0.2% Yield Strength _____

Charpy Impact _____

Chemical Analysis (% wt.) Sample "A" (Compared to F467 GR.651) _____

Iron 0.02

Titanium _____

Carbon _____

Vanadium _____

Manganese 0.33

Columbium +
Tantalum _____

Phosphorus _____

Copper 98.0

Sulfur _____

Aluminum _____

Silicon 1.42

Zinc 0.14

Chromium _____

Tin _____

Nickel _____

Boron _____

Molybdenum _____

Others (Lead) 0.03

*Properties found out of specification shall be noted with an
Asterisk

Note: For each fastener description, two samples were obtained
and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

1

Sample ID#: CNS/NQ/NUT/34

Fastener Description: Hex Nut, Steel, Zinc Chromate Plating,
7/8"-14 McMaster Carr, P/N 9004 2A037

Description of Sample Stock Location: Bin# 02-0B-02-1L

Material Specification as
Documented by Licensee Records: None

Head Marking (Specification and Manufacturer): None/Unknown

Class/Procurement Level: Non-QA Condition

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

Vendor: Mackson, Inc. Charlotte, NC

QA Requirements Imposed on Vendor: None

Licensee Representative:

Signature: W. J. B. [Signature] Date: February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

CNS-67

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# CNS/NQ/NUT/34

Hardness 72 HRB (Sample "A")

Ultimate Tensile Strength _____

0.2% Yield Strength _____

Charpy Impact _____

Chemical Analysis (% wt.) Sample "A" (Compared to A563 GR.A)

Iron _____	Titanium _____
Carbon <u>0.15</u>	Vanadium _____
Manganese <u>0.46</u>	Columbium + Tantalum _____
Phosphorus <u>0.025</u>	Copper _____
Sulfur <u>0.011</u>	Aluminum _____
Silicon _____	Zinc _____
Chromium _____	Tin _____
Nickel _____	Boron _____
Molybdenum _____	Others _____

*Properties found out of specification shall be noted with an Asterisk

Note: For each fastener description, two samples were obtained and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

¹
Sample ID#: CNS/NQ/NUT/35

Fastener Description: Heavy Hex Nut, Stainless Steel,
1 3/8"-8

Description of Sample Stock Location: Bin# 5N-29-04-02

Material Specification as
Documented by Licensee Records: SA453 Gr. 660 CL. A

Head Marking (Specification and Manufacturer): HT. Code 4BLC1 Traceable to
SA453 Fr. 660 CL. 1/Precision
Nuclear Products

Class/Procurement Level: Duke Class A, QA Condition 1
ASME III CL. 1



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

Vendor: Precision Nuclear Products,
Austin, TX

QA Requirements Imposed on Vendor: ASME III, NCA-3800

Licensee Representative:

¹ W/B Signature: W. B. [Signature] Date: February 11, 1988

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station CNS-69
CNS-Catawba Nuclear Station

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# CNS/NQ/NUT/35

Hardness 35 HRC (Sample "A")

Ultimate Tensile Strength _____

0.2% Yield Strength _____

Charpy Impact _____

Chemical Analysis (% wt.) Sample "A" (Compared to SA453 GR.660)

Iron _____

Titanium 2.06

Carbon 0.04

Vanadium 0.22

Manganese 0.35

Columbium +
Tantalum _____

Phosphorus 0.015

Copper _____

Sulfur <0.005

Aluminum 0.33

Silicon 0.25

Zinc _____

Chromium 14.61

Tin _____

Nickel 23.95

Boron 0.004

Molybdenum 1.12

Others _____

*Properties found out of specification shall be noted with an Asterisk

Note: For each fastener description, two samples were obtained and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

1

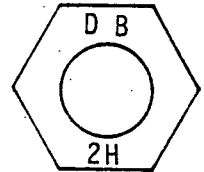
Sample ID#: CNS/NQ/NUT/36

Fastener Description: Heavy Hex Nut, Carbon Steel,
1 1/4"-8

Description of Sample Stock Location: Bin# 05-0B-07-1R

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

Head Marking (Specification and Manufacturer): SA194 GR.2H/
Daniel Bolt



Class/Procurement Level: Duke Class B
Duke Power QA Condition 1
ASME Section III, CL.2

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

Vendor: Nova Machine Products,
Middelburg Heights, OH.

QA Requirements Imposed on Vendor: ASME Section III, NCA-3800
10 CFR Part 21

Licensee Representative:

Signature: W. B. Bily Date: February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

CNS-71

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# CNS/NQ/NUT/36

Hardness 26 HRC

Ultimate Tensile Strength _____

0.2% Yield Strength _____

Charpy Impact _____

Chemical Analysis (% wt.) Sample _____

Iron _____

Titanium _____

Carbon 0.47

Vanadium _____

Manganese _____

Columbium +
Tantalum _____

Phosphorus 0.008

Copper _____

Sulfur 0.009

Aluminum _____

Silicon _____

Zinc _____

Chromium _____

Tin _____

Nickel _____

Boron _____

Molybdenum _____

Others _____

*Properties found out of specification shall be noted with an
Asterisk

Note: For each fastener description, two samples were obtained
and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

¹ Sample ID#: CNS/NQ/NUT/37

Fastener Description: Heavy Hex Nut, CS, 1"-8

Description of Sample Stock Location: Bin# 5N-30-05-01

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

Head Marking (Specification and Manufacturer): None/Unknown

Class/Procurement Level: Duke QA Condition 1

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

Vendor: Mackson, Inc.
Rock Hill, SC

QA Requirements Imposed on Vendor: ANSI N45.2(Minimum)

Licensee Representative:

Signature: W. B. Bailey Date: February 11, 1988

¹

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

CNS-73

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# CNS/NQ/NUT/37

Hardness 96 HRB (Sample "A")

Ultimate Tensile Strength _____

0.2% Yield Strength _____

Charpy Impact _____

Chemical Analysis (% wt.) Sample "A" (Compared to A563 GR.A)

Iron _____

Titanium _____

Carbon 0.12

Vanadium _____

Manganese _____

Columbium +
Tantalum _____

Phosphorus <0.005

Copper _____

Sulfur _____

Aluminum _____

Silicon _____

Zinc _____

Chromium _____

Tin _____

Nickel _____

Boron _____

Molybdenum _____

Others _____

*Properties found out of specification shall be noted with an Asterisk

Note: For each fastener description, two samples were obtained and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

1

Sample ID#: CNS/NQ/NUT/38

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

Description of Sample Stock Location: Bin# 5N-30-04-01

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

Head Marking (Specification and Manufacturer): SA194 Gr. 2H/Unknown



Class/Procurement Level: Duke Class B, QA Condition 1
ASME III, CL. 2

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

Vendor: Power and Engineered Products
S. Plainfield, NJ

QA Requirements Imposed on Vendor: ASME III, NCA-3800
10 CFR Part 21

Licensee Representative:

Signature: W. J. B. B. B.

Date: February 11, 1988

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

CNS-75

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# CNS/NQ/NUT/38

Hardness 27 HRC (Sample "A")

Ultimate Tensile Strength _____

0.2% Yield Strength _____

Charpy Impact _____

Chemical Analysis (% wt.) Sample "A" (Compared to SA194 GR.2H)

Iron _____

Titanium _____

Carbon 0.47

Vanadium _____

Manganese _____

Columbium +
Tantalum _____

Phosphorus 0.023

Copper _____

Sulfur 0.030

Aluminum _____

Silicon _____

Zinc _____

Chromium _____

Tin _____

Nickel _____

Boron _____

Molybdenum _____

Others _____

*Properties found out of specification shall be noted with an
Asterisk

Note: For each fastener description, two samples were obtained
and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

1 Sample ID#: CNS/NQ/NUT/39

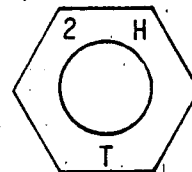
Fastener Description: Hex Nut, CS, 5/8"-18

Description of Sample Stock Location: Bin# 05-0B-07-1R

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

Head Marking (Specification and Manufacturer): SA194 Gr. 2H/Unknown

Class/Procurement Level: ASME III, NF CL. 1
Duke QA Condition 1



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

Vendor: Nova Machine Products
Middelburg, OH

QA Requirements Imposed on Vendor: ASME III, NA-3700
10 CFR Part 21

Licensee Representative:

Signature: W. Bailey Date: February 11, 1988

1
ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

CNS-77

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# CNS/NQ/NUT/39

Hardness 29 HRC (Sample "A")

Ultimate Tensile Strength _____

0.2% Yield Strength _____

Charpy Impact _____

Chemical Analysis (% wt.) Sample "A" (Compared to SA194 GR.2H)

Iron _____

Carbon 0.41

Manganese _____

Phosphorus 0.020

Sulfur 0.012

Silicon _____

Chromium _____

Nickel _____

Molybdenum _____

Titanium _____

Vanadium _____

Columbium +
Tantalum _____

Copper _____

Aluminum _____

Zinc _____

Tin _____

Boron _____

Others _____

*Properties found out of specification shall be noted with an Asterisk

Note: For each fastener description, two samples were obtained and arbitrarily labeled "A" and "B".

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 1

Fastener Testing Data Sheet

1 Sample ID#: CNS/NQ/NUT/40

Fastener Description: Hex Nut, 5/8"-11 Delaval
P/N ZG-001-002

Description of Sample Stock Location: Bin# 5N-07-05-02

Material Specification as
Documented by Licensee Records: None

Head Marking (Specification and Manufacturer): SA194 Gr. 2H/Unknown

Class/Procurement Level: Duke QA Condition 1



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

Vendor: Delaval
Oakland, CA

QA Requirements Imposed on Vendor: ANSI N45.2, 1971

Licensee Representative:

Signature: W. B. Bily Date: February 11, 1988

1

ONS-Oconee Nuclear Station
MNS-McGuire Nuclear Station
CNS-Catawba Nuclear Station

CNS-79

DUKE POWER COMPANY RESPONSE TO
NRC COMPLIANCE BULLETIN 87-02

Attachment 2

Test Data Summary

Sample ID# CNS/NQ/NUT/40

Hardness 27 HRC (Sample "A")

Ultimate Tensile Strength _____

0.2% Yield Strength _____

Charpy Impact _____

Chemical Analysis (% wt.) Sample "A" (Compared to A194 GR.2H)

Iron _____

Titanium _____

Carbon 0.46

Vanadium _____

Manganese _____

Columbium +
Tantalum _____

Phosphorus 0.017

Copper _____

Sulfur 0.015

Aluminum _____

Silicon _____

Zinc _____

Chromium _____

Tin _____

Nickel _____

Boron _____

Molybdenum _____

Others _____

*Properties found out of specification shall be noted with an
Asterisk

Note: For each fastener description, two samples were obtained
and arbitrarily labeled "A" and "B".