RECORD COPY

NONCONFORMING ITEM REPORT

USE BLACK BALL POINT PEN ONLY

Requisition No.: N/A | Vendor: WESTINGHOUSE | Items violated: A-5-2 11/17/83

MPS PO No.: N/A | Mech/Elec System: RN

Yes / No | Identification method: Tag No. 1; Other; Not applicable

Duke Construction Project: SBA

Serial No.: 3866

Location of item: VHSE. #1

Description of item and statement of problem:

Re: RN PUMP MOTOR: NUCLEAR SER. WATER PUMP MOTOR.

1. SPACE HEATER NAMEPLATE MOUNTED AT T/C CONNECTION BOX ON OPPISITE SIDE OF MOTOR FROM SPACE HGATER CONNECTION BOX.
2. LOWER BEARING T/C IS BROKEN.
3. COOLING WATER FLANGE OPENINGS (4) NOT COVERED.

MTR. SER # 15-78-74F18634

Evaluation/Disposition responsibility: X Const. X Design — MECH | (40)

Originated: C. A. Cole 9-8-78 | Section/Group review: [signature] 9-13-78 | QA: [signature] 9-13-78

Report to mgmt: Yes / No

Disposition: See Below

Evaluation/Justification:

1. Remove space heater nameplate from T/C connection box and attach to space heater connection box.
2. Cover cooling water flange openings.
3. Lower Bearing T/C will be replaced by Westinghouse serviceman. Westinghouse is advised of the problem in the attached letter of September 12, 1978.

By: [signature] 10/27/78 | Technical approval: [signature] 11/6/78 | QA approval: T C Roberts 11-6-78

Action/Inspection required:

Action	Assigned to	Performed by	Date
Relocate space heater nameplate to space heater connection Box	Elect Craft (29)	[signature]	12-12-78
Cover cooling Water flange Openings	Elect Craft (29)	[signature]	12-13-78
Coordinate the replacement of Lower Bearing T/C with Westinghouse Serviceman.	Tech Support (03)	SEE BELOW	

B405240516 631117
PDR ADOCK 05000413
G PDR

By: [signature] Date: 11/22/78 | QA approval: [signature] Date: 11/28/78

SEE NCI 5767 WHICH CLEARS THIS NCI [signature] 11/13/79

Distribution: Elect Mech Elect

Number of copies: 2 1 1 1 1 1

[signature] Date 11-14-79

DUKE POWER COMPANY
GENERAL OFFICES
422 SOUTH CHURCH STREET
CHARLOTTE, N. C. 28242

P. O. BOX 33189

TELEPHONE AREA 704
373-4011

September 12, 1978

Q-1A
3865

Mr. C. K. Moore
Westinghouse Electric
P. O. Box 32817
Charlotte, N. C. 28232

SUBJECT: Catawba Nuclear Station
Nuclear Service Water Pump Motor
FILE: CN-1318.20
H.P.S. Co. Order No. A-71135
Westinghouse CH-18020-L7

Dear Chester:

During Alex Ehrenburg's visit to Catawba Nuclear Station for NSW pump motor inspection we found lower bearing thermocouple leads broken near the place the T.C. is attached to the bearing. Please advise when Westinghouse will make the necessary repairs.

Sincerely yours,

C. J. Wylie, Chief Engineer
Electrical Division

BY: Alex Ehrenburg

APPROVED: J. P. Vogleyede

CJW/AIE/JPV/kkm

NO ATTACH

DUKE POWER COMPANY
CONSTRUCTION DEPARTMENT
CATAWBA NUCLEAR 1 & 2
CLOVER, S. C. 29710

P. O. BOX 223

TELEPHONE: AREA 803
831-1812

March 29, 1979

MEMO TO FILE

Catawba 1-2
Nuclear Service Water Pump Motor

One of the nuclear service water pump motors presently located in the No. 1 Warehouse is nonconformed and is covered by NCI #3865. The nature of the NCI will not affect the moving of the motor so it can be installed on the pump. Action is currently being done in accordance with the NCI, but minor problems are holding up its immediate completion.

J W Beam
W Beam
Technical Support-Electrical

JWB/lwl

R S Morgan
QA Approval

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DUKE POWER COMPANY
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PROJECT CATAWBA

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NONCONFORMING ITEM REPORT

USE BLACK BALL POINT PEN ONLY

1. REQUISITION NO.	N/A
3. VENDOR/LOCATION	N/A
REQUIREMENTS VIOLATED	H-5, CP-23, CP-23B
MPS PO NO	N/A
MECH/ELEC SYSTEM	EOA
YES / NO	
IDENTIFICATION METHOD	TAG / ONLY TAPE / OTHER / NOT PROTECTED
9. LOCATION OF ITEM	CONTROL ROOM 594' EL.
SERIAL NO	4386

10. DESCRIPTION OF ITEM AND STATEMENT OF PROBLEM: BOLTS (1/2") SUPPLIED BY VENDER FOR MOUNTING MAIN CONTROL BOARDS TO BASE CHANNEL WERE TOO SHORT. BOLTS (1/2 X 1 1/4) ISSUED BY WAREHOUSE AND INSTALLED IN CONTROL BOARD BASES ARE NOT IDENTIFIED AS SAFETY RELATED BOLTING MATERIAL.

REASON FOR NOT IDENTIFYING WHAT NCI NO.: THERE ARE APPROX. 150 BOLTS THROUGHOUT CONTROL ROOM.

14. EVALUATION/DISPOSITION RESPONSIBILITY: CONST / X DESIGN / QA / NSSS — BY [illegible] Q.C.

15. ORIGINATOR	DATE	15. SENIOR QC REVIEW	DATE	16. Q.A. REVIEW	DATE
R. Harvey	11/30/78	[signature]	11-30-78	[signature]	12-1-78

17. DISPOSITION: Acceptable - pending approval of test results. [initials] 4/25/79

18. REPORT TO MGMT: YES / X NO

EVALUATION/JUSTIFICATION

~~ALL 1/2" DESIGN ORDERED BOLTS (ATTACHED) ARE OR ARE EQUAL TO ASTM A307 AND ARE SUITABLE FOR USE ON SAFETY SYSTEMS.~~

~~ALL REQUISITIONS FOR 1/2" BOLTS THAT COULD BE FOUND WERE RESEARCHED AND FOUND TO BE AS ABOVE.~~

(SEE ATTACHED SHEET)

19. BY	DATE	20. TECHNICAL APPROVAL	DATE	21. Q.A. APPROVAL	DATE
R.J. Mullaney	2/1/79	[signature]	4/3/79	T.C. Roberts	2-12-79

22. ACTION/INSPECTION REQUIRED	23. ASSIGNED TO	24. PERFORMED BY	DATE
	CECV / ~~QCME~~		
1) Perform test in accordance with Attachment.	~~SRS~~	T.H. Robertson	2/17/81
2) Test results of NCIs 4495 and 4496 have been accepted by Design Elect. [initials] 4/25/79 for all bolt received of the types tested [initials] 11-18-79	CEEL	[signature]	8/24/81
3) Test results were found to be unacceptable. See NCI No. ______ . [initials] 4/25/79	CEEL	NA.	

25. BY	DATE	26. Q.A. APPROVAL	DATE
[illegible] Newell	4-25-79	[signature]	4-25-79

27. ACTION/INSPECTION EXCEPTIONS OR REMARKS

DISTRIBUTION	PROJECT CONST SUPT	CONST SUPT	SR QC	QA	DESIGN	NSSS	PLANT
			Bal	Bal	Bal		Eng
NUMBER ORIGINAL	2	1	1	1	1		
OF COPIES COPY	2	1	1	1	1	1	

[signature] 8/27/81

NCI 4386

17. The 1/2 X 1 1/4" bolts used by Construction for mounting the Main Control Boards are to be equivalent in strength to ASTM A-307 bolts.

    These bolts should be included in the sample program of 1/2" bolts being tested under the resolutions of NCI 4495 and NCI 4496 to verify their acceptability for this safety-related application.

19. By: _____ Date: 4/18/79

20. Technical Approval: D G Allen Date: 4/18/79

21. QA Approval: T C Roberts Date: 4-19-79

FORM Q-1A REVISION 9

DUKE POWER COMPANY
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PROJECT Catawba

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NONCONFORMING ITEM REPORT

USE BLACK BALL POINT PEN ONLY

2 REQUISITION NO.	3 VENDOR/LOCATION	4 DOCUMENTS VIOLATED
N/A	N/A	CN 1214-3 Rev. 5
5 MPS PO NO: N/A	6 MECH/ELEC SYSTEM: N/A	
7 YES X NO (1/10/79)	8 IDENTIFICATION METHOD: ☒ Q-1B'S 1 ☒ NCI TAPE ☐ OTHER ☐ NOT PRACTICAL	

9 LOCATION OF ITEM: Auxiliary Building EL 560' Col. '53-54' 'MM'

16 SERIAL NO: 4314

10 DESCRIPTION OF ITEM AND STATEMENT OF PROBLEM

45KVA Lighting Transformer 1LA9
Not Seismic mounted by detail on CN1214-3 Rev. 5
Mounted with "4" 3/4 Anchors, Print Calls for
Six 1/2 Anchors

14 EVALUATION/DISPOSITION RESPONSIBILITY ☐ CONST ☒ DESIGN ☐ QA ☐ NSSS DUE 1-1-79

11 ORIGINATED	DATE	12 SENIOR/SUP REVIEW	DATE	15 QA REVIEW	DATE
Roy Humbree	11-20-78	[signature]	11-20-78	[signature]	11-21-78

17 DISPOSITION CN 1214-3 OK as is

18 REPORT TO MGMT ☐ YES ☒ NO

EVALUATION/JUSTIFICATION

Lighting transformer 1LA9 mounted using 4-3/4 ϕ sleeve anchors for wide flange action is acceptable. Drawing CN1214-3 Rev. 8 will detail required changes.

19 BY	DATE	20 TECHNICAL APPROVAL	DATE	21 QA APPROVAL	DATE
Michael Robinson	1-3-79	MC Green	1-3-79	TC Roberts	1-12-79

22 ACTION/INSPECTION REQUIRED	23 ASSIGNED TO	24 PERFORMED BY	DATE
Remove NCI tape & Q-1B tag when Drawing CN-1214-3 is revised to show the transformer mounting detail	QC (15)	R Humbree	1-23-79

25	DATE	26 QA APPROVAL	DATE
[signature]	1/8/79	[signature]	1-19-79

28 ACTION/INSPECTION EXCEPTIONS OR REMARKS

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NONCONFORMING ITEM REPORT

USE BLACK BALL POINT PEN ONLY

1. [ ]ION NO. N/A	3. VENDOR [ ]CATION N/A	4. DOCUMENTS VIOLATED CNS-1390 01-00-0017 PART-4 (STORAGE)	
5. MPS PO NO N/A	6. MECH/ELEC SYSTEM EOA		
2. [ ] YES ☐ NO	8. IDENTIFICATION METHOD ☒ Q-1BS 3 ☐ ONLY TAPE ☐ OTHER ☐ NOT PRACTICAL		

7. LOCATION OF ITEM: Control Room - Elev. 594 Unit I and II

16. SERIAL NO. 4432

10. DESCRIPTION OF ITEM AND STATEMENT OF PROBLEM: During routine inspection, it has been noted that all wiring and components installed in Main Control Board Panels have been subjected to severe moisture conditions (apparently condensation).

14. EVALUATION/DISPOSITION RESPONSIBILITY ☒ CONST ☐ DESIGN ☐ QA ☐ NSSS DIV Elect. (08)

11. ORIGINATED	DATE	13. SENIOR [ ] REVIEW	DATE	15. Q A REVIEW	DATE
R. Hamm[ ]	12/4/78	[signature]	12-4-78	R.A. Morgan	12-4-78

17. DISPOSITION: Check circuits, dry component

18. REPORT TO MGMT ☐ YES ☒ NO

EVALUATION/JUSTIFICATION

Randomly check the operation of a sufficient number of circuits to assure proper component operation. Replace any components that are found to ~~be damage~~ be inoperable. All components will be check for operation prior to transfer to steam Production. Aussure that wiring and components have been dried. Remove tags.

19. BY	DATE	20. TECHNICAL APPROVAL	DATE	21. Q A APPROVAL	DATE
J.W. Rowell	12-12-78	[signature]	12-12-78	R.A. Morgan	12-13-78

22. ACTION/INSPECTION REQUIRED	23. ASSIGNED TO	27. PERFORMED BY	DATE
① Randomly check circuits	Croft (29)	[signature]	12-19-78
② Assure dryness - Remove tags	C.C. (14)	B. Hamb[ ]	12-19-78

	DATE	26. Q A APPROVAL	DATE
J.W. Rowell	12-12-78	R.A. Morgan	12-13-78

28. ACTION/INSPECTION EXCEPTIONS OR REMARKS

DISTRIBUTION	PROJECT ENGR	GEN SUPT	Sr. Const. Engr	Sr. QC Engr	Sr. [ ] Engr	Sr. QA Engr	QA [ ] Supv	Area Supt.		ANI		
			Elect		Elect		Elect		Elec			
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29. [signature] DATE 12-21-78

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PROJECT Catawba

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JPB

1. REQUISITION NO. N/A	3. VENDOR/LOCATION N/A	4. DOCUMENTS VIOLATED M52 Rev. 1; CP115 Rev. 4
5. MPS. PO NO. N/A	6. MECH/ELEC SYSTEM N/A	
7. YES ~~NO~~ MAG 1/11/79	8. IDENTIFICATION METHOD ☒ Q-18 ☒ NCI TAPE ☐ OTHER ☐ NOT PRACTICAL	

9. LOCATION OF ITEM Auxiliary Building EL 522' Col. '55' 'FF'

10. SERIAL NO. 4311

10. DESCRIPTION OF ITEM AND STATEMENT OF PROBLEM

30 KVA Lighting Transformer is required to be seismically mounted by CN 1214-3 Rev. 5 but Anchors cannot be identified as required by M-52 and CP 115

14. EVALUATION/DISPOSITION RESPONSIBILITY ☐ CONST ☒ DESIGN ☐ QA ☐ NSSS BY Civil 39

11. ORIGINATED	DATE	13. SECTION REVIEW	DATE	15. Q.A. REVIEW	DATE
Roy Hembree	11-20-78	[signature]	11-20-78	[signature]	11-21-78

17. DISPOSITION ~~OK as~~ is RELOCATE ~~con~~

18. REPORT TO MGMT ☐ YES ☒ NO

EVALUATION/JUSTIFICATION The transformer was installed prior to the release of a drawing detailing the mounting technique to be used. The transformer is to be relocated as near as possible to the original location and mounted using the details of drawing CN1214-3 and Construction Procedure CP-115. No drawing revisions are required.

19. BY	DATE	20. TECHNICAL APPROVAL	DATE	21. Q.A. APPROVAL	DATE
Michael Robinson	1-3-79	M.C. Green	1/3/79	T C Roberts	1-12-79

22. ACTION/INSPECTION REQUIRED	23. ASSIGNED TO	27. PERFORMED BY	DATE
Relocate transformer and re-install it per drawing CN 1214-3 & CP-115. This operation can be performed ~~without~~ without removing the NCI tape & tag.	Elect (29)	J.C. Potts	1-22-79
Inspect transformer after it is relocated in accordance with CNS 1214-3 & CP-115. Remove NCI tape & Q-18 tag if satisfactory	QC (15)	R Hembree	1-23-79

BY	DATE	24. Q.A. APPROVAL	DATE
Carl R Bore	1/18/79	[signature]	1-19-79

26. ACTION/INSPECTION EXCEPTIONS OR REMARKS

DISTRIBUTION	PROJECT FILE	GEN SUPT	...	Elect	...	Elect	...	Elect
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29. [signature] DATE 1-24-79

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2. REQUISITION NO: N/A

3. VENDOR LOCATION: N/A

DOCUMENTS VIOLATED: M52 Rev. 1; CP115 Rev. 1

5. MPS PO NO: N/A

6. MECH/ELEC SYSTEM: N/A

7. NSSS: YES ☒ NO

8. IDENTIFICATION METHOD: ☒ Q-1B5 1 ... TAPE ☐ OTHER ☐ NOT PRACTICAL

9. LOCATION OF ITEM: Auxiliary Building El. 522' Col. '59' 'FF'

16. SERIAL NO: 4312

10. DESCRIPTION OF ITEM AND STATEMENT OF PROBLEM

30 KVA Lighting Transformer is required to be seismically mounted by CN 1214-3 Rev. 5 but Anchors cannot be identified as required by M-52 and CP115

14. EVALUATION/DISPOSITION RESPONSIBILITY ☒ CONST ☐ DESIGN ☐ QA ☐ NSSS BY Elect. QE

15. ORIGINATED: Roy Hembree DATE 11-20-78

13. SUPERVISOR REVIEW: [signature] DATE 11-20-78

Q.A. REVIEW: RAMorgan DATE 11-21-78

17. DISPOSITION: See below

18. REPORT TO MGMT ☐ YES ☒ NO

EVALUATION/JUSTIFICATION

Transformer was installed before seismic mounting details were issued and prior to receiving vendor's location recommendations.

Relocate transformer as near present location as possible and mount per CN 1214-3, CP-115, and vendors recommendations.

19. BY: WBMcrsek DATE 3 Jan 79

20. TECHNICAL APPROVAL: DL Freeze DATE 1-3-79

21. Q.A. APPROVAL: RAMorgan DATE 1-3-79

22. ACTION/INSPECTION REQUIRED

ACTION/INSPECTION REQUIRED	23 ASSIGNED TO	27 PERFORMED BY	DATE
① Relocate transformer	Craft (29)	J.E. Potts	1-22-79
② Inspect per CN 1214-3 and CP-115	QC (15)	R. Hembree	1-23-79

BY: WBMcrsek DATE 3 Jan 79

26. QA APPROVAL: RAMorgan DATE 1-3-79

28. ACTION/INSPECTION EXCEPTIONS OR REMARKS

DISTRIBUTION	PROJECT ORIG.	CEN. SUPT.	CONST. ENGR.	QC	...	...	ANI
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USE BLACK BALL POINT PEN ONLY

2. REQUISITION NO. N/A	3. VENDOR/LOCATION N/A
4. DOCUMENTS VIOLATED CN1214-3 Rev. 5	
5. MPS PO NO. N/A	6. MECH/ELEC SYSTEM N/A
7. YES ☒ NO MRB 1/1/79	8. IDENTIFICATION METHOD ☒ ID'S 1 NCI TAPE ☐ OTHER ☐ NOT PRACTICAL

9. LOCATION OF ITEM Auxiliary Building EL. 543 Cols. '52' 'CC'

10. SERIAL NO. 4313

10. DESCRIPTION OF ITEM AND STATEMENT OF PROBLEM

30 KVA Lighting Transformer 1LA6
Not seismic mounted by detail on CN1214-3 Rev. 5
Mounted with four 3/4 Anchors, Print calls for
Six 1/2 Anchors

14. EVALUATION/DISPOSITION RESPONSIBILITY ☐ CONST ☒ DESIGN ☐ QA ☐ NSSS DIV Civil 3.9

11. ORIGINATED	DATE	13. SECTION/ENGR REVIEW	DATE	15. Q A REVIEW	DATE
Roy Henline	11-20-78	[signature]	11-20-78	RAMorgan	11-21-78

17. DISPOSITION CN 1214-3 OK as is

18. REPORT TO MGMT ☐ YES ☒ NO

EVALUATION/JUSTIFICATION

Lighting transformer 1LA6 mounted using 4-3/4"φ sleeve anchors per wide flange is acceptable. Revision 8 to drawing CN1214-3 will show the required changes.

19. BY	DATE	20. TECHNICAL APPROVAL	DATE	21. Q A APPROVAL	DATE
Michael Erlunson	1-3-79	M.C. Green	1-3-79	T C Roberts	1-12-79

22. ACTION/INSPECTION REQUIRED	23. ASSIGNED TO	27. PERFORMED BY	DATE
Remove NCI tape & tag when drawing CN-1214-3 is revised to show the transformer mounting detail	QC (15)	R. [signature]	1-27-79

	DATE	26. Q A APPROVAL	DATE
Michael R. Bost	1/18/79	RAMorgan	1-19-79

[illegible] INSPECTION [illegible]

DISTRIBUTION								
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[illegible] 1-29-79

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USE BLACK BALL POINT PEN ONLY

2 REQUISITION NO: N/A
3 VENDOR/LOCATION: N/A
4 DOCUMENTS VIOLATED: CN 1214-3 Rev 5
5 MPS PO NO: N/A
6 MECH/ELEC SYSTEM: N/A
7 YES X NO — PRR 1/11/79
8 IDENTIFICATION METHOD: ☒ QIB 3 ☒ NCI TAPE ☐ OTHER ☐ NOT PRACTICAL

9 LOCATION OF ITEM: Auxiliary Building El. 560' Cds 55' "HH"
10 NCR NO: 435

10 DESCRIPTION OF ITEM AND STATEMENT OF PROBLEM

45 KVA Lighting Transformer 1LA7
Not seismic mounted by detail on CN 1214-3 Rev. 5
Mounted with four 3/4 Anchors, Print Calls for
Six 1/2 Anchors

14 EVALUATION/DISPOSITION RESPONSIBILITY: ☐ CONST ☒ DESIGN ☐ QA ☐ NSSS QA Cat I 3.7

11 ORIGINATED: Roy Hembree DATE 11-20-78
13 SENIOR ENGR REVIEW: [signature] DATE 11-20-78
15 QA REVIEW: [signature] DATE 11-21-78

17 DISPOSITION: CN 1214-3 OK as is
18 REPORT TO NRC: ☐ YES ☒ NO

EVALUATION/JUSTIFICATION

Lighting transformer 1LA7 mounted using 4-3/4"ϕ shear anchors per subject sketch is acceptable. Drawing CN 1214-3 Rev 8 will show required changes.

19 BY: Michael Cheever DATE 1-3-79
20 TECHNICAL APPROVAL: M Calhoun DATE 1-3-79
21 Q A APPROVAL: TC Roberts DATE 1-12-79

22 ACTION/INSPECTION REQUIRED	23 ASSIGNED TO	27 PERFORMED BY	DATE
Remove NCI tape & QIB tag when drawing CN-1214-3 is revised to show the transformer mounting detail.	QC (15)	R Hembree	1-23-79

Michael P Barr DATE 1/18/79
28 QA APPROVAL: [signature] DATE 1-19-79

ORIGINATOR EXEMPTIONS OR REMARKS

DISTRIBUTION								
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1. REQUISITION NO.	3. VENDOR/LOCATION	4. DOCUMENTS VIOLATED
N/A	N/A	CN 1214-3 Rev 5
5. MPS PO NO	6. MECH/ELEC SYSTEM	
N/A	N/A	
7. NSM YES ☒ NO PRC 1/1/79	8. IDENTIFICATION METHOD ☒ TAG 1 ☒ NCI TAPE ☐ OTHER ☐ NOT PRACTICAL	

9. LOCATION OF ITEM: Auxiliary Building EL 560' Cols '57' 'MM'

SERIAL NO. 4316

10. DESCRIPTION OF ITEM AND STATEMENT OF PROBLEM

45 KVA Lighting Transformer 1LAB
Not seismic mounted by detail on CN 1214-3 Rev 5
Mounted with four 3/4 Anchors. Print calls for
six 1/2 Anchors

14. EVALUATION/DISPOSITION RESPONSIBILITY ☐ CONST ☒ DESIGN ☐ QA ☐ NSSS DIV Civil 32

11. ORIGINATED	DATE	12. SENIOR REVIEW	DATE	13. QA REVIEW	DATE
Roy Humbree	11-20-78	[signature]	11-20-78	[signature]	11-21-78

17. DISPOSITION CN 1214-3 OK as is

18. REPORT TO MGMT ☐ YES ☒ NO

EVALUATION/JUSTIFICATION

Lighting transformer 1LAB mounted using 4-3/4 ø
Hilti anchors is acceptable. Drawing CN 1214-3
will detail the required change.

19. BY	DATE	20. TECHNICAL APPROVAL	DATE	21. QA APPROVAL	DATE
Michael [illegible]	1-3-79	MC Green	1-3-79	T C Roberts	1-12-79

22. ACTION/INSPECTION REQUIRED	23. ASSIGNED TO	24. PERFORMED BY	DATE
Remove NCI tape & tag when Drawing CN 1214-3 is revised to show the transformer mounting detail	QC (15)	R. Humbree	1-23-79

25. BY	DATE	26. QA APPROVAL	DATE
Michael R. Bose	1/18/79	RA Morgan	1-19-79

28. ACTION/INSPECTION EXCEPTIONS OR REMARKS

DISTRIBUTION	PROJECT ENGR	...	...	...	...	...	...
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2. REQUISITION NO. N/A

3. VENDOR ... ATION: Hoffman

4. DOCUMENTS VIOLATED: M-41 B Serial no. 1

5. MPS PO NO: N/A

6. MECH./ELEC. SYSTEM: N/A

7. ... ☐ YES ☐ NO

8. IDENTIFICATION METHOD: ☒ Q-1B's ... ☐ ONLY TAPE ☐ OTHER ☐ NOT PRACTICAL

9. LOCATION OF ITEM: Warehouse # 1. Electrical Fab Shop

10. SERIAL NO. 4357

10. DESCRIPTION OF ITEM AND STATEMENT OF PROBLEM

IEATC 10 - Left Front and Right Front Door Damage. Cabinet was droped during routine handling.

14. EVALUATION/DISPOSITION RESPONSIBILITY ☒ CONST ☐ DESIGN ☐ QA ☐ NSSS QV Elect. 08

11. ORIGINATED: Jerry Coleman DATE 11-28-78

13. SENIOR ... REVIEW: L. R. Powers DATE 11-28-78

15. Q.A. REVIEW: R.A. Morgan DATE 11-29-78

17. DISPOSITION: Repair Cabinet

18. REPORT TO MGMT ☐ YES ☒ NO

EVALUATION/JUSTIFICATION

Repair cabinet ~~and install~~ per by straigting doors
Inspect cabinet after repair remove tape & tag.

19. BY: G.W. Powell DATE 12-12-78

20. TECHNICAL APPROVAL: D. L. Beam DATE 12-12-78

21. Q.A. APPROVAL: R.A. Morgan DATE 12-12-78

22. ACTION/INSPECTION REQUIRED	23. ASSIGNED TO	24. PERFORMED BY	DATE
① Repair Cabinet	Craft 69	R.T. ...	12-28-78
② Inspect Cabinet remove tape & Tag	Q.C. 14	T. Coleman	12-28-78

25. G.W. Powell DATE 12-12-78

26. QA APPROVAL: R.A. Morgan DATE 12-12-78

28. ACTION/INSPECTION EXCEPTIONS OR REMARKS

DISTRIBUTION	PROJECT ENGR	CON SUPT	...	... Elect.	QC	... Elect.	QA	... Elect.	...	ANI
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27. ... M.D. Johnson DATE 12-28-78

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USE BLACK BALL POINT PEN ONLY

2 REQUISITION NO. N/A
3 VENDOR/FABRICATION Hoffman
4 DOCUMENTS VIOLATED M-41 B Serial no. 1
5 MPS PO NO
6 MECH/ELEC SYSTEM N/A
8 IDENTIFICATION METHOD Q-18 5 1 ONLY TAPE; OTHER; NOT PRACTICAL
YES ☐ NO

7 LOCATION OF ITEM Warehouse # 1 Electrical Fab Shop
16 SERIAL NO 4372

10 DESCRIPTION OF ITEM AND STATEMENT OF PROBLEM

1EATC-11 Center of C Channel bowed out 3/8 of an inch Right Door bowed out 2½". Panel Damaged During Routine Handling.

14 EVALUATION/DISPOSITION RESPONSIBILITY ☒ CONST ☐ DESIGN ☐ QA ☐ NSSS DIV Elect Q.S.

11 ORIGINATED Terry Coleman DATE 11-29-78
13 SENIOR ENGR REVIEW S.K. Cameron DATE 11-29-78
15 Q A REVIEW R.A. Morgan DATE 11-29-78

17 DISPOSITION Repair Cabinet
18 REPORT TO MGMT ☐ YES ☒ NO

EVALUATION/JUSTIFICATION

Repair cabinet ~~and install~~ Jack by straighting Bow in door and panel. Reinspect cabinet after repair remove tape and tag

19 BY J. W. Powell DATE 12-12-78
20 TECHNICAL APPROVAL S.G. Beam DATE 12-12-78
21 Q A APPROVAL R.A. Morgan DATE 12-12-78

22 ACTION/INSPECTION REQUIRED

Action	23 Assigned to	Performed by	Date
1. Repair cabinet	Craft (29)	[illegible]	12-25-78
2. Inspect cabinet remove tape & tag	QC (16)	T. Coleman	12-29-78

J. W. Powell DATE 12-12-78
26 Q A APPROVAL R.A. Morgan DATE 12-12-78

28 ACTION/INSPECTION EXCEPTIONS OR REMARKS

DISTRIBUTION	PROJECT ENGR	GEN SUPT	[illegible] Engr	[illegible] QC Elect	QC Engr	[illegible] Elect	QA Engr	QA [illegible] Bat	QA Engr	[illegible]	ANI
NUMBER OF COPIES		2		1	1	1		1			
		2		1	1	1		1			

FORM Q-1A REVISION 9

DUKE POWER COMPANY
CONSTRUCTION DEPARTMENT
PROJECT CATAWBA

NONCONFORMING ITEM REPORT

USE BLACK BALL POINT PEN ONLY

1. NCI NO.: N/A
2. VENDOR/LOCATION: N/A
3. DOCUMENTS VIOLATED: H-5, CP-23, (CP-27B), CN-1903-01
4. NSSS/ELEC SYSTEM: ENC
NSR: YES ☒ NO ☐
8. IDENTIFICATION METHOD: ☐ Q-1B-5 ☐ ONLY TAPE ☐ OTHER ☒ NOT PRACTICAL
16. SERIAL NO.: 4495

LOCATION OF ITEM: AUXILIARY BLDG. UNIT I & II ALL ELEV.'S

10. DESCRIPTION OF ITEM AND STATEMENT OF PROBLEM: 1/2" BOLTS USED THROUGHOUT AUX. BLDG. CABLE TRAY SUPPORT SYSTEM ARE NOT IDENTIFIED AS "UNISTRUT" (DESIGNATED AS SUCH ON DESIGN DRAWINGS IE. CN-1903-01) NEITHER ARE THEY IDENTIFIED AS SAFETY RELATED STOCK BOLTING MATERIAL PER CP-23 (CP-27B) The use of these bolts may continue until This problem is resolved.
NOT IDENTIFIED WITH QIB TAG - AREA TOO EXTENSIVE

14. EVALUATION/DISPOSITION RESPONSIBILITY: ☐ CONST ☒ DESIGN ☐ QA ☐ NSSS ☐ Elect 4.0

11. ORIGINATOR: T. Hamm DATE 12/13/78
13. SENIOR VENDOR REVIEW: [signature] DATE 12-13-78
15. Q.A. REVIEW: [signature] DATE 12-19-78
18. REPORT TO MGMT: YES ☒ NO ☒ 4/1/79

17. DISPOSITION (HCM 4/25/79): Acceptable - pending approval of test results

EVALUATION/JUSTIFICATION

~~Based on the attached letter by RG Mahaney dated Feb 2, 1979 and the attached certifications from Sure-loc and Southeastern Bolt and Screw, it has been established that all bolting material (1/2"Φ) was either ASTM A307 or SAE J429 Grade 2 which is equivalent to A307. Design drawings designating bolting material have been revised to indicate that all bolts used on cable tray hanger connections shall be ASTM A307 or equivalent.~~

(SEE ATTACHED SHEET)

[signature] 2/26/79
[signature] 2/26/79

19. BY: W E Thomas DATE 2-26-79
20. [signature] E L Kay Jr. DATE 2/26/79
21. Q.A. APPROVAL: T C Roberts DATE 2-28-79

22 ACTION/INSPECTION REQUIRED	23 ASSIGNED TO	24 PERFORMED BY	DATE
	~~QCME~~ THR		
	~~SRGC~~		
1) Perform test in accordance w/ Attachment	CECV.	T.H. Robertson	2/1/81
2) When results of testing program have been ~~accepted~~ evaluated by Design Elect., attach to this NCI. HCM 4/25/79	CEEL	J. W Rowell	3-25-81
3) Test results found acceptable by Design Elect. 4/25/79 for all bolts received of the types tested. 10-15-79	CEEL	J. W Rowell	3-25-81
4) Test results found to be unacceptable by Design Elect. See NCI No. ——. HCM 4/25/79	CEEL	N/A	

② T.H. Robertson 12/10/80 [signature] 12-10-80

① J.W. Rowell DATE 4-25-79
26 Q.A. APPROVAL ① [signature] DATE 4-25-79

ACTION/INSPECTION EXCEPTIONS OR REMARKS * IF BOLTS PROVE UNSAT THEY SHALL BE REMOVED.

DISTRIBUTION	PROJECT FILE	CEN SUPT					ANI	
		Bat	Bat	Elect	Bat			
NUMBER OF COPIES	2	1	1	1	1	1	1	
	2							

[signature] 3-27-81

NCI 4495 – Rev. 1

~~17. The 1/2" diameter bolts used in the nuclear safety related cable tray~~ support systems are to be equivalent in strength to ASTM A-307 bolts. All appropriate design drawings have been revised to indicate this.

To verify that all 1/2" diameter bolts used meet this strength requirement, a random sample of each bolt size shall be secured by Construction from those bolts which are not indentified by appropriate markings. The sample sizes shall be in accordance with B W Logan's attached letter of 3/29/79. These samples shall then be tested in accordance with C L Ray's attached test procedure of 3/20/79.

The results of this testing program shall be sent to Design Engineering/ Electrical Division for determination of acceptability.

19. By: _____ Date: 4/18/79

20. Technical Approval: D J Olsen Date: 4/18/79

~~21. QA Approval:~~ T C Potts Date: 4-19-79

(See Revision 2 - Attached)

NCI 4495 - Revision 2

17. The ½" diameter bolts used in the nuclear safety related cable tray support systems are to be equivalent in strength to ASTM A-307 bolts. All appropriate design drawings have been revised to indicate this.

To verify that all ½" diameter bolts used meet this strength requirement, a random sample of each bolt size shall be secured by Construction from those bolts which are not identified by appropriate markings. The sample sizes shall be in accordance with B W Logan's attached letter of 3/29/79. These samples shall then be sent to a qualified outside testing laboratory by the Construction Department, to be tested in accordance with ASTM A-307 requirements. The results of this testing program shall be sent to the Design Engineering Electrical Division for determination of acceptability.

In order to prevent reoccurance of this problem, several changes have been implemented. First, all appropriate design documents have been revised to specifically state the material/grade requirements for bolting materials. Second, the Purchase Requisitions for all bolting materials are checked for the inclusion of applicable material/grade requirements. Third, Mill Power Supply has committed that no vendor or material substitutions will be made without the prior approval of responsible Design Engineering personnel.

19. By: _____ Date: 4/24/80

20. Technical Approval: _____ Date: 4/26/80

21. QA Approval: T C Roberts Date: 12-3-80

See attached addendum, dated 3.16.81

March 29, 1979

D G Owen

Subject: Determination of Sample Size for Catawba
Electrical Bolting Material Problem
File: CN-1388.00

The testing of sample bolts to make an inference about the ability of an entire lot to meet tensile strength criteria is a two part statistical problem. The first part involves the determination of an appropriate sample size, and the second part is concerned with the acceptance or rejection of the lot based upon the results of the tests.

The following procedure is proposed to 1) determine an appropriate sample size for each of the bolt lots in question, and 2) establish a criteria for accepting or rejecting the lot based upon the test results. In order to establish the procedure, the following assumptions must be made:

1) Since the number of bolt manufacturers represented in the questioned lots cannot be determined, each lot shall be approached as an unknown quantity.

2) The bolts used at Catawba Nuclear Station are not significantly different from those used at McGuire Nuclear Station. This allows the use of McGuire test results to estimate physical parameters which are needed to determine sample sizes. The Catawba test results will indicate the validity of this assumption.

3) The accuracy of torque wrenches used to tighten bolts is $\pm$ 5% of the set value. This is used to determine the allowable error in measuring tensile strength. The test should not expect accuracy better than that of the wrenches used to tighten the bolts.

4) An acceptable confidence factor is 99% or roughly three standard deviations (3σ) from the mean value.

Based upon these assumptions the following expression* should be used to determine sample sizes

$$n = \left[\frac{3\sigma}{E}\right]^2$$

where n is the number of samples, σ is one standard deviation from the mean tensile strength calculated from McGuire test results, and E is the allowable error in the tensile strength measurement and is based on McGuire data. This expression means that if n samples are tested, there is better than a 99% chance the estimated tensile strength for the lot will lie within the allowable error limit.

*From Introduction to Probability and Statistics, pp. 182, 197

When a tested bolt size from McGuire closely corresponds to a questioned bolt size from Catawba, the McGuire test data* for that bolt size shall be used in calculating the Catawba sample size. When a Catawba bolt size does not correspond to a tested McGuire bolt size, the McGuire values which give the most conservative estimate of sample size, i.e., the largest observed standard deviation and the smallest allowable error bound, shall be used in the sample size determination.

The following table will summarize the suggested sample sizes** for each of the questioned bolt sizes:

Bolt Size	Quantity Issued	Suggested Sample Size Confidence 95%	99%
1/2" X 15/16"	107,500	-	58
1/2" X 1 3/16"	15,000	-	8
1/2" X 1 1/2"	51,000	-	45
1/2" X 1 3/4"	1,600	26	(56)
1/2" X 2"	1,000	25	(55)
1/2" X 2 1/4"	500	25	(52)
1/2" X 2 1/2"	10 000	-	58

For the 1 3/4, 2 and 2 1/4 inch bolts, a 95% confidence level is suggested to reduce the number of samples to a more realistic value. Also, the reason only eight samples were required of the 1 3/16 inch bolts is that the McGuire data for the 1 1/4 inch bolts displayed a fairly small standard deviation.

After testing the bolts from Catawba, a mean value for tensile strength and a standard deviation about the mean should be calculated for each bolt size. ASTM Standard A 307-76b sets the minimum acceptable tensile strength for Class A bolts at 8500 lbf. Acceptance or rejection of a bolt size lot should be determined by the following procedure:

1) Calculate a mean and a standard deviation from test data
2) Subtract 8500 from the mean value
3) Divide the result (from 2) by the calculated standard deviation
4) If this quotient is greater than 2, accept the lot. This gives 95% confidence that the bolts in the lot have tensile strengths greater than the mean less 2σ.
5) If the quotient is less than 2
   a) reject the lot or,
   b) repeat the test using the same sample size or,
   c) find the true percentage from a standard normal distribution table and determine if it is acceptable. For instance, 1.645σ give 90% confidence.

* McGuire NCI Report No. 4444
** Calculations are attached.

If you have questions or comments on the above procedures, please notify me.

Bruce W. Logan

B W Logan
Assistant Design Engineer

BWL/lge

attachments

cc: L E Suther
S B Garman
C J Hager

CALCULATIONS

For 99% confidence

Bolt size	σ	E	$n=\left[\frac{3\sigma}{E}\right]^2$	N	$n_L=n\left[\frac{N}{N+n}\right]^*$
1/2 X 15/16	1214	480	58	107,500	-
1/2 X 1 3/16	455	480	8	15,000	-
1/2 X 1 1/2	1214	545	45	51,000	-
1/2 X 1 3/4	1214	480	58	1,600	56
1/2 X 2	1214	480	58	1,000	55
1/2 X 2 1/4	1214	480	58	500	52
1/2 X 2 1/2	1214	480	58	10,000	-

For 95% confidence

Bolt Size	σ	E	$n=\left[\frac{2\sigma}{E}\right]^2$	N	$n_L=n\left[\frac{N}{N+n}\right]^*$
1/2 X 1 3/4	1214	480	26	1,600	-
1/2 X 2	1214	480	26	1,000	25
1/2 X 2 1/4	1214	480	26	500	25

*ASTM Standard E 122-72, Section 5, p 1045

REFERENCES

1. ASTM Standard A 307-76b, "Standard Specification for Carbon Steel Externally and Internally Threaded Standard Fasteners."

2. ASTM Standard E 122-72, "Standard Recommended Practice for Choice of Sample Size to Estimate the Average Quality of a Lot or Process."

3. William Mendenhall, Introduction to Probability and Statistics, Duxbury Press, 1971.

4. McGuire NCI Report No. 4444.

17. EVALUATION OF TEST RESULTS

In order to complete the statistical process of determining whether or not the sample bolts meet the mechanical strength criteria of ASTM A-307 bolts, the attached test results for each of the samples must be evaluated according to the established acceptance procedure (See B W Logan's attached letter dated 3/29/79).

The evaluation of the test results for the 1/2" bolts is summarized in Tables I and II. For the lot of 1/2" x 15/16" bolts, a Rockwell "B" hardness test determines whether the bolts conform to the mechanical requirements. As shown in Table I, the results indicate that the mean value is greater than two standard deviations from both the upper and lower limits of the hardness requirements. Therefore the respective sample of 1/2" x 15/16" bolts is acceptable to the standards of ASTM A-307 bolts. The remaining samples were tested in regards to their conformance to the mechanical tensile strength requirements. The evaluation of their test results is summarized in Table II and indicates that the respective samples are also acceptable. In conclusion, the test results have determined that the subject bolts meet the mechanical requirements for ASTM A-307 bolts with a 95% confidence level.

19. By: Douglas W Vaas / [signature] Date: 3/16/81

20. Technical Approval [signature] Date: 3/17/81

21. QA Approval T C Roberts Date: 3-23-81

BOLT SIZE	SAMPLE SIZE	MEAN (1)	STANDARD DEVIATION (2)	REQUIRED RANGE MIN (3)	REQUIRED RANGE MAX (4)	$\frac{(1)-(3)}{(2)}$	$\frac{(4)-(1)}{(2)}$	ACCEPTABLE LOT?
1/2" x 15/16"	58	92.95	2.62	69	100	9.14	2.69	YES

TABLE I

EVALUATION OF HARDNESS TEST RESULTS

FOR 1/2" BOLTS

BOLT SIZE	SAMPLE SIZE	MEAN (1)	STANDARD DEVIATION (2)	MIN TENSILE STRENGTH (LBS) (3)	$\frac{(1)-(3)}{(2)}$	ACCEPTABLE LOT ?
1/2" x 1-3/16"	8	10825.00	738.24	8500.	3.15	YES
1/2" x 1-1/2"	45	12415.55	232.04	8500.	16.87	YES
1/2" x 1-3/4"	26	11723.07	505.61	8500.	6.37	YES
1/2" x 2"	25	11612.00	172.17	8500.	18.08	YES
1/2" x 2-1/4"	25	13436.00	392.51	8500.	12.58	YES
1/2" x 2-1/2"	58	12484.48	111.29	8500.	35.80	YES

TABLE II

EVALUATION OF TENSILE STRENGTH TEST RESULTS

FOR 1/2" BOLTS

LAW ENGINEERING TESTING COMPANY

geotechnical environmental & construction materials consultants
501 MINUET LANE
P.O. BOX 11297 • CHARLOTTE NORTH CAROLINA 28220
(704) 523-2022

REPORT OF ROCKWELL "B" HARDNESS INSPECTION

Client:	Duke Power Company	Office:	Charlotte Metals
Project:	Catawba Nuclear Station Newport, South Carolina	Date:	February 4, 1981
		Lab. No.	CHS 81-016

Client's P. O. No.: G 2494-41

Material: Reported as Carbon Steel Externally Threaded Standard Fastner ASTM A307 (See Below) Grade A

Heat No.: Unknown

Date Tested: 2/2/81

Procedure: In accordancd with ASTM A307-78 and ASTM E18-79

EQUIPMENT CALIBRATION

Readings	Average Reading	Calibration Standard	Reading Correction, %
--	84.1	81.6	97.0
--	87.3	81.6	93.5

ROCKWELL "B" HARDNESS RESULTS

LETCo. Piece No.	Bolt Size (In)	Average Reading	Corrected Reading	Comments
1-23-81-1	1/2" x 15/16"	92.0	89	--
1-23-81-2	1/2" x 15/16"	97.1	94	--
1-23-81-3	1/2" x 15/16"	92.2	89	--
1-23-81-4	1/2" x 15/16"	95.6	93	--
1-23-81-5	1/2" x 15/16"	98.3	95	--
1-23-81-6	1/2" x 15/16"	98.0	95	--
1-23-81-7	1/2" x 15/16"	97.3	94	--
1-23-81-8	1/2" x 15/16"	97.5	95	--
1-23-81-9	1/2" x 15/16"	99.2	96	--
1-23-81-10	1/2" x 15/16"	98.0	95	--
1-23-81-11	1/2" x 15/16"	99.0	95	--
1-23-81-12	1/2" x 15/16"	98.3	94	--
1-23-81-13	1/2" x 15/16"	99.3	95	--
1-23-81-14	1/2" x 15/16"	96.5	92	--

Duke Power Company
Catawba Nuclear Station
LETCo. Job No. CHS 81-016
February 4, 1981

ROCKWELL "B" HARDNESS RESULTS
Continued

LETCo. Piece No.	Bolt Size (In)	Average Reading	Corrected Reading	Comments
1-23-81-15	1/2" x 15/16"	97.8	93	--
1-23-81-16	1/2" x 15/16"	96.6	92	--
1-23-81-17	1/2" x 15/16"	95.6	91	--
1-23-81-18	1/2" x 15/16"	100.0	96	--
1-23-81-19	1/2" x 15/16"	99.8	95	--
1-23-81-20	1/2" x 15/16"	98.7	94	--
1-23-81-21	1/2" x 15/16"	100.6	95	--
1-23-81-22	1/2" x 15/16"	95.7	90	--
1-23-81-23	1/2" x 15/16"	99.3	94	--
1-23-81-24	1/2" x 15/16"	97.5	92	--
1-23-81-25	1/2" x 15/16"	100.7	95	--
1-23-81-26	1/2" x 15/16"	99.0	94	--
1-23-81-27	1/2" x 15/16"	98.8	93	--
1-23-81-28	1/2" x 15/16"	100.2	95	--
1-23-81-29	1/2" x 15/16"	99.7	94	--
1-23-81-30	1/2" x 15/16"	100.0	95	--
1-23-81-31	1/2" x 15/16"	98.2	93	--
1-23-81-32	1/2" x 15/16"	102.8	97	--
1-23-81-33	1/2" x 15/16"	99.7	94	--
1-23-81-34	1/2" x 15/16"	96.3	91	--
1-23-81-35	1/2" x 15/16"	100.3	95	--
1-23-81-36	1/2" x 15/16"	97.2	92	--
1-23-81-37	1/2" x 15/16"	98.5	93	--
1-23-81-38	1/2" x 15/16"	95.3	90	--
1-23-81-39	1/2" x 15/16"	99.3	94	--
1-23-81-40	1/2" x 15/16"	99.8	94	--
1-23-81-41	1/2" x 15/16"	98.2	91	--
1-23-81-42	1/2" x 15/16"	99.2	92	--
1-23-81-43	1/2" x 15/16"	99.2	92	--
1-23-81-44	1/2" x 15/16"	101.2	94	--
1-23-81-45	1/2" x 15/16"	96.8	90	--
1-23-81-46	1/2" x 15/16"	98.0	91	--
1-23-81-47	1/2" x 15/16"	98.0	91	--
1-23-81-48	1/2" x 15/16"	97.0	90	--
1-23-81-49	1/2" x 15/16"	100.2	93	--

ROCKWELL "B" HARDNESS RESULTS
Continued

LETCo. Piece No.	Bolt Size (In)	Average Reading	Corrected Reading	Comments
1-23-81-50	1/2" x 15/16"	100.0	93	--
1-23-81-51	1/2" x 15/16"	89.7	83	--
1-23-81-52	1/2" x 15/16"	98.3	91	--
1-23-81-53	1/2" x 15/16"	100.8	94	--
1-23-81-54	1/2" x 15/16"	102.2	95	--
1-23-81-55	1/2" x 15/16"	90.8	84	--
1-23-81-56	1/2" x 15/16"	102.7	96	--
1-23-81-57	1/2" x 15/16"	101.0	94	--
1-23-81-58	1/2" x 15/16"	102.5	95	--
Required Range			69 thru 100	

Inspector: Richard B. Morris

Reviewed by:

Edward M. Beck, P. E.
Metals Department Manager

Respectfully submitted,
LAW ENGINEERING TESTING COMPANY

Larry B. Coble, Metals Laboratory Supervisor

LAW ENGINEERING TESTING COMPANY

geotechnical environmental & construction materials consultants

501 MINUET LANE
P.O. BOX 11297 • CHARLOTTE, NORTH CAROLINA 28220
(704) 523-2022

REPORT OF MECHANICAL TENSION TEST

Client: Duke Power Company
Project: Catawba Nuclear Station
Newport, South Carolina

Office: Charlotte Metals
Date: February 4, 1981
Lab. No. CHS 81-016

Client P. O. No.: G 2494-41

Material: Reported as Carbon Steel Externally Threaded Standard Fastener ASTM A307 (See Below) Grade A

Heat No.: Unknown

Date Tested: 2/3/81

Procedure: In accordance with ASTM A307-78 and ASTM A370-77

TEST RESULTS

LETCo. Piece No.	Bolt Size (In)	Threads Per Inch	Area (In^2)	Ultimate Load (Lbs)
1-23-81-1	1/2" x 1-3/16"	13	0.1419	10,[illegible]0
1-23-81-2	1/2" x 1-3/16"	13	0.1419	10,550
1-23-81-3	1/2" x 1-3/16"	13	0.1419	10,400
1-23-81-4	1/2" x 1-3/16"	13	0.1419	12,400
1-23-81-5	1/2" x 1-3/16"	13	0.1419	10,050
1-23-81-6	1/2" x 1-3/16"	13	0.1419	10,250
1-23-81-7	1/2" x 1-3/16"	13	0.1419	10,850
1-23-81-8	1/2" x 1-3/16"	13	0.1419	11,200
Minimum				8,500
1-23-81-1	1/2" x 1-1/2"	13	0.1419	12,500
1-23-81-2	1/2" x 1-1/2"	13	0.1419	12,250
1-23-81-3	1/2" x 1-1/2"	13	0.1419	12,300
1-23-81-4	1/2" x 1-1/2"	13	0.1419	12,150
1-23-81-5	1/2" x 1-1/2"	13	0.1419	12,500
1-23-81-6	1/2" x 1-1/2"	13	0.1419	12,250
1-23-81-7	1/2" x 1-1/2"	13	0.1419	12,100
1-23-81-8	1/2" x 1-1/2"	13	0.1419	12,000
1-23-81-9	1/2" x 1-1/2"	13	0.1419	12,500
1-23-81-10	1/2" x 1-1/2"	13	0.1419	12,650
1-23-81-11	1/2" x 1-1/2"	13	0.1419	12,150
1-23-81-12	1/2" x 1-1/2"	13	0.1419	12,300

MECHANICAL TENSION TEST
Continued

LETCo. Piece No.	Bolt Size (In)	Threads Per Inch	Area (In^2)	Ultimate Load (Lbs)
1-23-81-13	1/2" x 1-1/2"	13	0.1419	12,700
1-23-81-14	1/2" x 1-1/2"	13	0.1419	12,400
1-23-81-15	1/2" x 1-1/2"	13	0.1419	12,650
1-23-81-16	1/2" x 1-1/2"	13	0.1419	12,450
1-23-81-17	1/2" x 1-1/2"	13	0.1419	12,400
1-23-81-18	1/2" x 1-1/2"	13	0.1419	12,500
1-23-81-19	1/2" x 1-1/2"	13	0.1419	12,750
1-23-81-20	1/2" x 1-1/2"	13	0.1419	12,600
1-23-81-21	1/2" x 1-1/2"	13	0.1419	12,200
1-23-81-22	1/2" x 1-1/2"	13	0.1419	12,200
1-23-81-23	1/2" x 1-1/2"	13	0.1419	12,350
1-23-81-24	1/2" x 1-1/2"	13	0.1419	12,800
1-23-81-25	1/2" x 1-1/2"	13	0.1419	12,350
1-23-81-26	1/2" x 1-1/2"	13	0.1419	12,300
1-23-81-27	1/2" x 1-1/2"	13	0.1419	12,450
1-23-81-28	1/2" x 1-1/2"	13	0.1419	12,650
1-23-81-29	1/2" x 1-1/2"	13	0.1419	12,800
1-23-81-30	1/2" x 1-1/2"	13	0.1419	12,150
1-23-81-31	1/2" x 1-1/2"	13	0.1419	12,850
1-23-81-32	1/2" x 1-1/2"	13	0.1419	12,550
1-23-81-33	1/2" x 1-1/2"	13	0.1419	12,600
1-23-81-34	1/2" x 1-1/2"	13	0.1419	12,100
1-23-81-35	1/2" x 1-1/2"	13	0.1419	12,550
1-23-81-36	1/2" x 1-1/2"	13	0.1419	12,450
1-23-81-37	1/2" x 1-1/2"	13	0.1419	12,200
1-23-81-38	1/2" x 1-1/2"	13	0.1419	12,150
1-23-81-39	1/2" x 1-1/2"	13	0.1419	12,750
1-23-81-40	1/2" x 1-1/2"	13	0.1419	12,100
1-23-81-41	1/2" x 1-1/2"	13	0.1419	12,650
1-23-81-42	1/2" x 1-1/2"	13	0.1419	12,400
1-23-81-43	1/2" x 1-1/2"	13	0.1419	12,700
1-23-81-44	1/2" x 1-1/2"	13	0.1419	12,100
1-23-81-45	1/2" x 1-1/2"	13	0.1419	12,200
Minimum				8,500

Duke Power Company
Catawba Nuclear Station
LETCo. Job No. CHS 81-016
February 4, 1981
Page 3 of 11

MECHANICAL TENSION TEST
Continued

LETCo. Piece No.	Bolt Size (In)	Threads Per Inch	Area (In^2)	Ultimate Load (Lbs)
1-23-81-1	1/2" x 1-3/4"	13	0.1419	11,700
1-23-81-2	1/2" x 1-3/4"	13	0.1419	12,050
1-23-81-3	1/2" x 1-3/4"	13	0.1419	12,300
1-23-81-4	1/2" x 1-3/4"	13	0.1419	12,100
1-23-81-5	1/2" x 1-3/4"	13	0.1419	11,750
1-23-81-6	1/2" x 1-3/4"	13	0.1419	11,650
1-23-81-7	1/2" x 1-3/4"	13	0.1419	11,700
1-23-81-8	1/2" x 1-3/4"	13	0.1419	12,300
1-23-81-9	1/2" x 1-3/4"	13	0.1419	11,700
1-23-81-10	1/2" x 1-3/4"	13	0.1419	12,250
1-23-81-11	1/2" x 1-3/4"	13	0.1419	12,200
1-23-81-12	1/2" x 1-3/4"	13	0.1419	11,550
1-23-81-13	1/2" x 1-3/4"	13	0.1419	12,300
1-23-81-14	1/2" x 1-3/4"	13	0.1419	12,100
1-23-81-15	1/2" x 1-3/4"	13	0.1419	10,400
1-23-81-16	1/2" x 1-3/4"	13	0.1419	11,650
1-23-81-17	1/2" x 1-3/4"	13	0.1419	11,550
1-23-81-18	1/2" x 1-3/4"	13	0.1419	10,550
1-23-81-19	1/2" x 1-3/4"	13	0.1419	11,700
1-23-81-20	1/2" x 1-3/4"	13	0.1419	11,700
1-23-81-21	1/2" x 1-3/4"	13	0.1419	12,200
1-23-81-22	1/2" x 1-3/4"	13	0.1419	11,750
1-23-81-23	1/2" x 1-3/4"	13	0.1419	11,700
1-23-81-24	1/2" x 1-3/4"	13	0.1419	11,650
1-23-81-25	1/2" x 1-3/4"	13	0.1419	11,600
1-23-81-26	1/2" x 1-3/4"	13	0.1419	10,700
Minimum				8,500

MECHANICAL TENSION TEST
Continued

LETCo. Piece No.	Bolt Size (In)	Threads Per Inch	Area (In^2)	Ultimate Load (Lbs)
1-23-81-1	1/2" x 2"	13	0.1419	11,950
1-23-81-2	1/2" x 2"	13	0.1419	11,200
1-23-81-3	1/2" x 2"	13	0.1419	11,650
1-23-81-4	1/2" x 2"	13	0.1419	11,600
1-23-81-5	1/2" x 2"	13	0.1419	11,800
1-23-81-6	1/2" x 2"	13	0.1419	11,450
1-23-81-7	1/2" x 2"	13	0.1419	11,600
1-23-81-8	1/2" x 2"	13	0.1419	11,600
1-23-81-9	1/2" x 2"	13	0.1419	11,700
1-23-81-10	1/2" x 2"	13	0.1419	11,650
1-23-81-11	1/2" x 2"	13	0.1419	11,550
1-23-81-12	1/2" x 2"	13	0.1419	11,750
1-23-81-13	1/2" x 2"	13	0.1419	11,750
1-23-81-14	1/2" x 2"	13	0.1419	11,550
1-23-81-15	1/2" x 2"	13	0.1419	11,700
1-23-81-16	1/2" x 2"	13	0.1419	11,650
1-23-81-17	1/2" x 2"	13	0.1419	11,750
1-23-81-18	1/2" x 2"	13	0.1419	11,600
1-23-81-19	1/2" x 2"	13	0.1419	11,450
1-23-81-20	1/2" x 2"	13	0.1419	11,150
1-23-81-21	1/2" x 2"	13	0.1419	11,650
1-23-81-22	1/2" x 2"	13	0.1419	11,750
1-23-81-23	1/2" x 2"	13	0.1419	11,600
1-23-81-24	1/2" x 2"	13	0.1419	11,500
1-23-81-25	1/2" x 2"	13	0.1419	11,700
Minumum				8,500

MECHANICAL TENSION TEST
Continued

LETCo. Piece No.	Bolt Size (In)	Threads Per Inch	Area (In^2)	Ultimate Load (Lbs)
1-23-81-1	1/2" x 2-1/4"	13	0.1419	13,600
1-23-81-2	1/2" x 2-1/4"	13	0.1419	12,000
1-23-81-3	1/2" x 2-1/4"	13	0.1419	13,500
1-23-81-4	1/2" x 2-1/4"	13	0.1419	13,400
1-23-81-5	1/2" x 2-1/4"	13	0.1419	13,650
1-23-81-6	1/2" x 2-1/4"	13	0.1419	12,850
1-23-81-7	1/2" x 2-1/4"	13	0.1419	13,650
1-23-81-8	1/2" x 2-1/4"	13	0.1419	13,450
1-23-81-9	1/2" x 2-1/4"	13	0.1419	13,450
1-23-81-10	1/2" x 2-1/4"	13	0.1419	12,950
1-23-81-11	1/2" x 2-1/4"	13	0.1419	13,700
1-23-81-12	1/2" x 2-1/4"	13	0.1419	14,000
1-23-81-13	1/2" x 2-1/4"	13	0.1419	13,750
1-23-81-14	1/2" x 2-1/4"	13	0.1419	13,400
1-23-81-15	1/2" x 2-1/4"	13	0.1419	13,600
1-23-81-16	1/2" x 2-1/4"	13	0.1419	13,450
1-23-81-17	1/2" x 2-1/4"	13	0.1419	13,500
1-23-81-18	1/2" x 2-1/4"	13	0.1419	13,450
1-23-81-19	1/2" x 2-1/4"	13	0.1419	13,200
1-23-81-20	1/2" x 2-1/4"	13	0.1419	13,950
1-23-81-21	1/2" x 2-1/4"	13	0.1419	13,250
1-23-81-22	1/2" x 2-1/4"	13	0.1419	13,600
1-23-81-23	1/2" x 2-1/4"	13	0.1419	13,600
1-23-81-24	1/2" x 2-1/4"	13	0.1419	13,500
1-23-81-25	1/2" x 2-1/4"	13	0.1419	13,450
Minimum				8,500

Duke Power Company
Catawba Nuclear Station
LETCo. Job No. CHS 81-016
February 4, 1981

MECHANICAL TENSION TEST
Continued

LETCo. Piece No.	Bolt Size (In)	Threads Per Inch	Area (In^2)	Ultimate Load (Lbs)
1-23-81-1	1/2" x 2-1/2"	13	0.1419	12,450
1-23-81-2	1/2" x 2-1/2"	13	0.1419	12,550
1-23-81-3	1/2" x 2-1/2"	13	0.1419	12,450
1-23-81-4	1/2" x 2-1/2"	13	0.1419	12,600
1-23-81-5	1/2" x 2-1/2"	13	0.1419	12,400
1-23-81-6	1/2" x 2-1/2"	13	0.1419	12,550
1-23-81-7	1/2" x 2-1/2"	13	0.1419	12,600
1-23-81-8	1/2" x 2-1/2"	13	0.1419	12,550
1-23-81-9	1/2" x 2-1/2"	13	0.1419	12,600
1-23-81-10	1/2" x 2-1/2"	13	0.1419	12,700
1-23-81-11	1/2" x 2-1/2"	13	0.1419	12,600
1-23-81-12	1/2" x 2-1/2"	13	0.1419	12,550
1-23-81-13	1/2" x 2-1/2"	13	0.1419	12,500
1-23-81-14	1/2" x 2-1/2"	13	0.1419	12,450
1-23-81-15	1/2" x 2-1/2"	13	0.1419	12,550
1-23-81-16	1/2" x 2-1/2"	13	0.1419	12,600
1-23-81-17	1/2" x 2-1/2"	13	0.1419	12,600
1-23-81-18	1/2" x 2-1/2"	13	0.1419	12,350
1-23-81-19	1/2" x 2-1/2"	13	0.1419	12,350
1-23-81-20	1/2" x 2-1/2"	13	0.1419	12,650
1-23-81-21	1/2" x 2-1/2"	13	0.1419	12,450
1-23-81-22	1/2" x 2-1/2"	13	0.1419	12,550
1-23-81-23	1/2" x 2-1/2"	13	0.1419	12,450
1-23-81-24	1/2" x 2-1/2"	13	0.1419	12,700
1-23-81-25	1/2" x 2-1/2"	13	0.1419	12,650
1-23-81-26	1/2" x 2-1/2"	13	0.1419	12.550
1-23-81-27	1/2" x 2-1/2"	13	0.1419	12,300
1-23-81-28	1/2" x 2-1/2"	13	0.1419	12,550
1-23-81-29	1/2" x 2-1/2"	13	0.1419	12,350
1-23-81-30	1/2" x 2-1/2"	13	0.1419	12,450
1-23-81-31	1/2" x 2-1/2"	13	0.1419	12,500
1-23-81-32	1/2" x 2-1/2"	13	0.1419	12,400
1-23-81-33	1/2" x 2-1/2"	13	0.1419	12,350
1-23-81-34	1/2" x 2-1/2"	13	0.1419	12,450
1-23-81-35	1/2" x 2-1/2"	13	0.1419	12,500
1-23-81-36	1/2" x 2-1/2"	13	0.1419	12,350
1-23-81-37	1/2" x 2-1/2"	13	0.1419	12,450
1-23-81-38	1/2" x 2-1/2"	13	0.1419	12,350

MECHANICAL TENSION TEST
Continued

LETCo. Piece No.	Bolt Size (In)	Threads Per Inch	Area (In^2)	Ultimate Load (Lbs)
1-23-81-39	1/2" x 2-1/2"	13	0.1419	12,300
1-23-81-40	1/2" x 2-1/2"	13	0.1419	12,250
1-23-81-41	1/2" x 2-1/2"	13	0.1419	12,500
1-23-81-42	1/2" x 2-1/2"	13	0.1419	12,450
1-23-81-43	1/2" x 2-1/2"	13	0.1419	12,450
1-23-81-44	1/2" x 2-1/2"	13	0.1419	12,500
1-23-81-45	1/2" x 2-1/2"	13	0.1419	12,300
1-23-81-46	1/2" x 2-1/2"	13	0.1419	12,500
1-23-81-47	1/2" x 2-1/2"	13	0.1419	12,600
1-23-81-48	1/2" x 2-1/2"	13	0.1419	12,400
1-23-81-49	1/2" x 2-1/2"	13	0.1419	12,450
1-23-81-50	1/2" x 2-1/2"	13	0.1419	12,450
1-23-81-51	1/2" x 2-1/2"	13	0.1419	12,200
1-23-81-52	1/2" x 2-1/2"	13	0.1419	12,500
1-23-81-53	1/2" x 2-1/2"	13	0.1419	12,500
1-23-81-54	1/2" x 2-1/2"	13	0.1419	12,450
1-23-81-55	1/2" x 2-1/2"	13	0.1419	12,550
1-23-81-56	1/2" x 2-1/2"	13	0.1419	12,650
1-23-81-57	1/2" x 2-1/2"	13	0.1419	12,600
1-23-81-58	1/2" x 2-1/2"	13	0.1419	12,500
Minimum				8,500

Duke Power Company
Catawba Nuclear Station
LETCo. Job No. CHS 81-016
February 4, 1981

MECHANICAL TENSION TEST
Continued

LETCo. Piece No.	Bolt Size (In)	Threads Per Inch	Area (In^2)	Ultimate Load (Lbs)
1-23-81-1	3/8" x 1"	16	0.0775	5,650
1-23-81-2	3/8" x 1"	16	0.0775	5,700
1-23-81-3	3/8" x 1"	16	0.0775	5,500
1-23-81-4	3/8" x 1"	16	0.0775	5,500
1-23-81-5	3/8" x 1"	16	0.0775	5,550
1-23-81-6	3/8" x 1"	16	0.0775	5,600
1-23-81-7	3/8" x 1"	16	0.0775	5,400
1-23-81-8	3/8" x 1"	16	0.0775	5,500
1-23-81-9	3/8" x 1"	16	0.0775	5,650
1-23-81-10	3/8" x 1"	16	0.0775	5,250
1-23-81-11	3/8" x 1"	16	0.0775	5,700
1-23-81-12	3/8" x 1"	16	0.0775	5,700
1-23-81-13	3/8" x 1"	16	0.0775	5,500
1-23-81-14	3/8" x 1"	16	0.0775	5,650
1-23-81-15	3/8" x 1"	16	0.0775	5,600
1-23-81-16	3/8" x 1"	16	0.0775	5,750
1-23-81-17	3/8" x 1"	16	0.0775	5,600
1-23-81-18	3/8" x 1"	16	0.0775	5,550
1-23-81-19	3/8" x 1"	16	0.0775	5,700
1-23-81-20	3/8" x 1"	16	0.0775	5,450
1-23-81-21	3/8" x 1"	16	0.0775	5,650
1-23-81-22	3/8" x 1"	16	0.0775	5,750
1-23-81-23	3/8" x 1"	16	0.0775	5,600
1-23-81-24	3/8" x 1"	16	0.0775	5,650
1-23-81-25	3/8" x 1"	16	0.0775	5.550
1-23-81-26	3/8" x 1"	16	0.0775	5,550
1-23-81-27	3/8" x 1"	16	0.0775	5,650
1-23-81-28	3/8" x 1"	16	0.0775	5,650
1-23-81-29	3/8" x 1"	16	0.0775	5,550
1-23-81-30	3/8" x 1"	16	0.0775	5,750
1-23-81-31	3/8" x 1"	16	0.0775	5,400
1-23-81-32	3/8" x 1"	16	0.0775	5,600
Minimum				4,650

MECHANICAL TENSION TEST
Continued

LETCo. Piece No.	Bolt Size (In)	Threads Per Inch	Area (In^2)	Ultimate Load (Lbs)
1-23-81-1	3/8" x 1-1/4"	16	0.0775	7,600
1-23-81-2	3/8" x 1-1/4"	16	0.0775	7,400
1-23-81-3	3/8" x 1-1/4"	16	0.0775	7,350
1-23-81-4	3/8" x 1-1/4"	16	0.0775	7,600
1-23-81-5	3/8" x 1-1/4"	16	0.0775	7,300
1-23-81-6	3/8" x 1-1/4"	16	0.0775	7,350
1-23-81-7	3/8" x 1-1/4"	16	0.0775	7,750
1-23-81-8	3/8" x 1-1/4"	16	0.0775	7,650
1-23-81-9	3/8" x 1-1/4"	16	0.0775	7,250
1-23-81-10	3/8" x 1-1/4"	16	0.0775	7,350
1-23-81-11	3/8" x 1-1/4"	16	0.0775	7,650
1-23-81-12	3/8" x 1-1/4"	16	0.0775	7,650
1-23-81-13	3/8" x 1-1/4"	16	0.0775	7,750
1-23-81-14	3/8" x 1-1/4"	16	0.0775	7,750
1-23-81-15	3/8" x 1-1/4"	16	0.0775	7,300
1-23-81-16	3/8" x 1-1/4"	16	0.0775	7,650
1-23-81-17	3/8" x 1-1/4"	16	0.0775	7,550
1-23-81-18	3/8" x 1-1/4"	16	0.0775	7,650
1-23-81-19	3/8" x 1-1/4"	16	0.0775	7,250
1-23-81-20	3/8" x 1-1/4"	16	0.0775	7,200
1-23-81-21	3/8" x 1-1/4"	16	0.0775	7,100
1-23-81-22	3/8" x 1-1/4"	16	0.0775	7,750
1-23-81-23	3/8" x 1-1/4"	16	0.0775	7,350
1-23-81-24	3/8" x 1-1/4"	16	0.0775	7,400
1-23-81-25	3/8" x 1-1/4"	16	0.0775	7,750
1-23-81-26	3/8" x 1-1/4"	16	0.0775	7,700
1-23-81-27	3/8" x 1-1/4"	16	0.0775	7,300
1-23-81-28	3/8" x 1-1/4"	16	0.0775	7,250
1-23-81-29	3/8" x 1-1/4"	16	0.0775	7,250
1-23-81-30	3/8" x 1-1/4"	16	0.0775	7,300
1-23-81-31	3/8" x 1-1/4"	16	0.0775	7,500
1-23-81-32	3/8" x 1-1/4"	16	0.0775	7,600
Minimum				4,650

MECHANICAL TENSION TEST
Continued

LETCo. Piece No.	Bolt Size (In)	Threads Per Inch	Area (In^2)	Ultimate Load (Lbs)
1-23-81-1	3/8" x 1-1/2"	16	0.0775	5,750
1-23-81-2	3/8" x 1-1/2"	16	0.0775	6,100
1-23-81-3	3/8" x 1-1/2"	16	0.0775	5,900
1-23-81-4	3/8" x 1-1/2"	16	0.0775	5,700
1-23-81-5	3/8" x 1-1/2"	16	0.0775	6,300
1-23-81-6	3/8" x 1-1/2"	16	0.0775	6,350
1-23-81-7	3/8" x 1-1/2"	16	0.0775	6,450
1-23-81-8	3/8" x 1-1/2"	16	0.0775	6,050
1-23-81-9	3/8" x 1-1/2"	16	0.0775	6,100
1-23-81-10	3/8" x 1-1/2"	16	0.0775	5,850
1-23-81-11	3/8" x 1-1/2"	16	0.0775	5,800
1-23-81-12	3/8" x 1-1/2"	16	0.0775	6,300
1-23-81-13	3/8" x 1-1/2"	16	0.0775	5,800
1-23-81-14	3/8" x 1-1/2"	16	0.0775	5,900
1-23-81-15	3/8" x 1-1/2"	16	0.0775	6,000
1-23-81-16	3/8" x 1-1/2"	16	0.0775	6,300
1-23-81-17	3/8" x 1-1/2"	16	0.0775	6,300
1-23-81-18	3/8" x 1-1/2"	16	0.0775	5,850
1-23-81-19	3/8" x 1-1/2"	16	0.0775	5,800
1-23-81-20	3/8" x 1-1/2"	16	0.0775	6,000
1-23-81-21	3/8" x 1-1/2"	16	0.0775	5,900
1-23-81-22	3/8" x 1-1/2"	16	0.0775	6,250
1-23-81-23	3/8" x 1-1/2"	16	0.0775	5,950
1-23-81-24	3/8" x 1-1/2"	16	0.0775	6,350
1-23-81-25	3/8" x 1-1/2"	16	0.0775	6,000
1-23-81-26	3/8" x 1-1/2"	16	0.0775	6,100
1-23-81-27	3/8" x 1-1/2"	16	0.0775	5,900
1-23-81-28	3/8" x 1-1/2"	16	0.0775	5,800
1-23-81-29	3/8" x 1-1/2"	16	0.0775	6,650
1-23-81-30	3/8" x 1-1/2"	16	0.0775	5,950
1-23-81-31	3/8" x 1-1/2"	16	0.0775	6,300
1-23-81-32	3/8" x 1-1/2"	16	0.0775	6,000
Minimum				4,650

Duke Power Company
Catawba Nuclear Station
LETCo. Job No. CHS 81-016
February 4, 1981

MECHANICAL TENSION TEST
Continued

LETCo. Piece No.	Bolt Size (In)	Threads Per Inch	Area (In^2)	Ultimate Load (Lbs)
1-23-81-1	3/8" x 2-1/2"	16	0.0775	7,100
1-23-81-2	3/8" x 2-1/2"	16	0.0775	6,900
1-23-81-3	3/8" x 2-1/2"	16	0.0775	7,100
1-23-81-4	3/8" x 2-1/2"	16	0.0775	7,750
1-23-81-5	3/8" x 2-1/2"	16	0.0775	7,600
1-23-81-6	3/8" x 2-1/2"	16	0.0775	7,500
1-23-81-7	3/8" x 2-1/2"	16	0.0775	7,500
1-23-81-8	3/8" x 2-1/2"	16	0.0775	7,500
1-23-81-9	3/8" x 2-1/2"	16	0.0775	7,100
1-23-81-10	3/8" x 2-1/2"	16	0.0775	7,600
1-23-81-11	3/8" x 2-1/2"	16	0.0775	7,050
1-23-81-12	3/8" x 2-1/2"	16	0.0775	7,500
1-23-81-13	3/8" x 2-1/2"	16	0.0775	7,100
1-23-81-14	3/8" x 2-1/2"	16	0.0775	6,900
1-23-81-15	3/8" x 2-1/2"	16	0.0775	7,600
1-23-81-16	3/8" x 2-1/2"	16	0.0775	7,250
1-23-81-17	3/8" x 2-1/2"	16	0.0775	6,800
1-23-81-18	3/8" x 2-1/2"	16	0.0775	7,100
1-23-81-19	3/8" x 2-1/2"	16	0.0775	7,500
1-23-81-20	3/8" x 2-1/2"	16	0.0775	7,490
1-23-81-21	3/8" x 2-1/2"	16	0.0775	7,350
1-23-81-22	3/8" x 2-1/2"	16	0.0775	7,000
1-23-81-23	3/8" x 2-1/2"	16	0.0775	6,800
1-23-81-24	3/8" x 2-1/2"	16	0.0775	7,550
1-23-81-25	3/8" x 2-1/2"	16	0.0775	7,450
1-23-81-26	3/8" x 2-1/2"	16	0.0775	7,450
1-23-81-27	3/8" x 2-1/2"	16	0.0775	6,850
1-23-81-28	3/8" x 2-1/2"	16	0.0775	7,250
1-23-81-29	3/8" x 2-1/2"	16	0.0775	7,600
1-23-81-30	3/8" x 2-1/2"	16	0.0775	7,450
1-23-81-31	3/8" x 2-1/2"	16	0.0775	7,450
1-23-81-32	3/8" x 2-1/2"	16	0.0775	7,350
Minimum				4,650

Inspector(s): Larry E. Coble
Mark S. Westall

Reviewed by:

Edward M. Beck, P.E.
Metals Department Manager

Respectfully submitted,
LAW ENGINEERING TESTING COMPANY

Larry E. Coble, Metals Laboratory Supervisor

LAW ENGINEERING TESTING COMPANY

geotechnical environmental & construction materials consultants

501 MINUET LANE
P.O. BOX 11297 • CHARLOTTE, NORTH CAROLINA 28220
(704) 523-2022

REPORT OF CHEMICAL ANALYSIS

Client: DUKE POWER COMPANY
Project: CATAWBA NUCLEAR STATION
Newport, South Carolina

Office: Charlotte Metals
Date: February 9, 1981
Lab. No. CHS 81-016

Client P. O. No.: G2494-41
Material: Reported as Carbon Steel Externally Threaded Standard Fastener ASTM A-307 (See Below) Grade A
Heat No.: Unknown
Date Tested: 2/9/81
Procedure: In accordance with ASTM A-307-78, ASTM A-36-77, and ASTM E-30-77

TEST RESULTS

LET Co. Piece No.	Elements					Size		
	Carbon	Manganese	Phosphorus	Sulfur	Silicon			
[redacted]-81-59	0.13	0.40	0.02	0.02	0.18	1/2"	x	15/16"
[redacted]-81-9	0.15	0.51	0.01	0.01	0.16	1/2"	x	1-3/16"
1-23-81-46	0.15	0.49	0.02	0.02	0.24	1/2"	x	1-1/2"
1-23-81-27	0.16	0.50	0.02	0.02	0.15	1/2"	x	1-3/4"
1-23-81-28	0.19	0.33	0.02	0.02	0.15	1/2"	x	2"
1-23-81-26	0.15	0.48	0.01	0.02	0.15	1/2"	x	2-1/4"
1-23-81-58	0.16	0.37	0.01	0.01	0.15	1/2"	x	2-1/2"
1-23-81-32	0.12	0.29	0.01	0.01	0.13	3/8"	x	3/4"
1-23-81-33	0.18	0.38	0.02	0.02	0.22	3/8"	x	1"
1-23-81-33	0.21	0.84	0.02	0.02	0.44	3/8"	x	1-1/4"
1-23-81-33	0.18	0.36	0.02	0.02	0.12	3/8"	x	1-1/2"
1-23-81-33	0.16	0.36	0.02	0.01	0.14	3/8"	x	2-1/2"
Required A-307	----	----	0.06	0.15	----			
Required A-36	0.26	----	0.04	0.05	0.15 to 0.30			

Note: The single values are the maximum allowed in the required section.
Item 1-23-81-33, 3/8" x 1-1/4" exceeds the maximum of silicon per basic material specification.

Inspector(s): Larry E. Coble
J. Sidney Rice, Jr.

Reviewed by: _____
Edward M. Beck, P. E.
Corporate Consultant/Metals

Respectfully submitted,
LAW ENGINEERING TESTING COMPANY

_____
Larry E. Coble, Metals Laboratory Supervisor

RECORD COPY

NONCONFORMING ITEM REPORT

USE BLACK BALL POINT PEN ONLY

System No.	1312.06-00-0001 / 1312.06-00-0002
Documents Violated	P3A E-154 / P3A E-155
MPS PC No.	N/A
Mech./Elec. Sys.	EPE
Identification Method	Tags, Tape
9. Location of Item	Auxiliary Building Unit 1 Elevation 577'0" Column Lines AA & BB 45 & 46 - 46 & 47
10. Serial No.	3893

10. Description of Item and Statement of Problem

TRANSFORMER 1ETXC HAS LOW GAS PRESSURE IN VIOLATION TO P3A E-15[4] REQUIREMENTS PRESSURE IS 1.70 LBS LOW. P3A STATES PLUS OR MINUS 1 AT 19.02 READING CALCULATED AT 17.32

TRANSFORMER 1ETXE ALSO HAS LOW GAS PRESSURE IN VIOLATION TO P3A E-155. READING CALCULATED AT 17.04 P3A STATES PLUS OR MINUS 1 @ 19.35 PRESSURE IS 2.31 LBS LOW.

14. Evaluation/Disposition Responsibility: [X] Const [ ] Design [ ] QA [ ] NSSS Div. ELEC

11. Originated	Date	13. Sen. Engr. Review	Date	15. QA Review	Date
Lewis L Rudisill	9-18-78	[signature]	9-18-78	[signature]	9-18-78

17. Disposition: ACCEPTABLE - SEE BELOW EVALUATION

18. Report to Mgmt: [ ] Yes [X] No

Evaluation/Justification

THE TRANSFORMERS SHALL BE REFILLED WITH GAS AND CHECKED FOR LEAKS IN ACCORDANCE WITH CNM-1312.06-40. SUBSTITUTIONS IN THE PROCEDURE FOR REFILLING AND CHECKING OF LEAKS SHALL BE MADE AT THE DISCRETION OF THE RESPONSIBLE FIELD ENGINEER. CONSTRUCTION ENGINEER - ELECT. SHALL BE RESPONSIBLE FOR COORDINATING REPAIR WITH TRANSMISSION DEPT. AND FOR ASSURING THAT CONST. DEPT. QA PROCEDURES ARE FOLLOWED.

QC TO REINSPECT AND ~~REMOVE~~ AND REMOVE TAPE & TAGS.

19. By	Date	20. Technical Approval	Date	21. QA Approval	Date
J. W. Beam	10-16-78	[signature]	10-16-78	[signature]	10/16/78

22. Action/Inspection Required	23. Assigned To	24. Performed By	Date
1) FILLING WITH GAS, LEAK TESTING	TRANS. DEPT. 08	JWB	5-9-79
2) COORDINATING REPAIR AND ASSURING THAT CONST. DEPT. QA PROCEDURES ARE FOLLOWED.	T.S. ELECT. 08	JWB	5-9-79
3) FINAL INSPECTION AND REMOVAL OF TAPE & TAGS	QC ELECT. 15	LER	5-9-79
1ETXE TRANSFORMER HAS DEVELOPED ANOTHER LEAK - SEE NCI 5587 J.W. Beam 5-9-79			

25. By	Date	26. QA Approval	Date
J. W. Beam	10-16-78	[signature]	10-16-78

27. Action/Inspection Exceptions or Remarks: TRANSFORMER HAS A WELD LEAK AND HAS BEEN DOCUMENTED ON NCI 5587 L.E. RUDISILL 5-9-79

Distribution	Project Engr.	Con. Supt.	Const. Engr. Elect.	QC Manager	QA Engr. Elect.	Trans. Dept.
Number of Copies Initial	2	1	1	1	1	
Of Copies Final	2	1	1	1	1	1

29. Final QA Review: [signature] Date 5-16-79

FORM Q-1A REVISION 9

DUKE POWER COMPANY
CONSTRUCTION DEPARTMENT
PROJECT CATAWBA

RECORD COPY

NONCONFORMING ITEM REPORT

USE BLACK BALL POINT PEN ONLY

2 REQUISITION NO. N/A

3 VENDOR/LOCATION WESTINGHOUSE

DOCUMENTS VIOLATED P-3

5 MPS PO NO N/A

6 MECH/ELEC SYSTEM NV

YES ☐ NO

IDENTIFICATION METHOD ☒ OTHER 2 ☐ NCI TAPE ☐ OTHER ☐ NOT PRACTICAL

9 LOCATION OF ITEM A.B.-1 EL. 543 FT. INSTALLED LOCATION

12 SERIAL NO 3864

10 DESCRIPTION OF ITEM AND STATEMENT OF PROBLEM

CHARGING PUMP MOTOR THERMOCOUPLES ARE DAMAGED. Ie. OPEN ELEMENT WIRES AND BROKEN PROTECTING TUBES. BROKEN ELEMENT WIRE IS A CONTINUING PROBLEM APPARENTLY DUE TO SMALL WIRE SIZE. (#44, .020 IN.)

EAC 3-29-79 ~~1. MOTOR S/N 15-76 - INBOARD BEARING EAC 3-28-79~~
EAC 3-29-79 ~~2. MOTOR S/N 35-76 - INBOARD BEARING EAC 3-28-79~~

14 EVALUATION/DISPOSITION RESPONSIBILITY ☒ CONST ☐ DESIGN ☐ QA ☐ NSSS DIV ELEC

11 ORIGINATED	DATE	13 SENIOR ENGR REVIEW	DATE	15 Q.A. REVIEW	DATE
E. A. Cole	9-12-78	[signature]	9-13-78	[signature]	9-13-78

17 DISPOSITION NOT ACCEPTABLE AS IS

18 REPORT TO MGMT ☐ YES ☒ NO

EVALUATION/JUSTIFICATION

DUPLICATE NCI. SEE NCI 4606 AND NCI 4608 FOR ACTION RESOLUTION

19 BY	DATE	20 TECHNICAL APPROVAL	DATE	21 Q.A. APPROVAL	DATE
F. W. Reynolds	3/21/79	D. Fuleze	3-22-79	[signature]	3-29-79

22 ACTION/INSPECTION REQUIRED	23 ASSIGNED TO	24 PERFORMED BY	DATE
Remove NCI tape & Q-1B tags (2)	SVTE	EaCole	4-4-79

25	DATE	26 QA APPROVAL	DATE
Michael Bore	3/26/79	[signature]	3-29-79

ACTION/INSPECTION EXCEPTIONS OR REMARKS

DISTRIBUTION	PROJECT FILE	GEN SUPT		Elect		Hawley		Elect		
NUMBER OF COPIES		2		1	1	1		1		
		2		1	1	1		1		

27 FINAL Q.A. REVIEW [signature] DATE 4-6-79

DUKE POWER COMPANY
CONSTRUCTION DEPARTMENT
PROJECT CATAWBA

RECORD COPY

NONCONFORMING ITEM REPORT

Serial no. 3581

INITIAL DISTRIBUTION

1. DESCRIPTION OF NONCONFORMANCE (Requirements not met, how and when discovered)	ITEM NO.	VENDOR NO.	MPS NO.	VENDOR	2. Document(s) Violated
	1361.00-1	NA	NA	DG. OBRIEN	P3A-ES01

DG. OBRIEN PENETRATION, SERIAL NUMBER 2228D HAS LOW GAS PRESSURE. PRESSURE READING ON GAGE IS 14 LBS. AT 81° F. CORRECTED TO 72°, USEING A CORRECTION FACTOR OF .055, PRESSURE IS 13.50. P3A E-501 GIVES A TOLERANCE OF 15 LBS PLUS OR MINUS 1 AT 72° F.

3. LOCATION OF NONCONFORMANCE WARE HOUSE #1

4. METHOD USED TO MARK 1 (ONE) Q1B TAG

5. ORIGINATED ☐ CONST. ☒ Q.C. ☐ Q.A.
By [signature] Date 7/26/78

6. SENIOR ENGINEER REVIEW ☐ CONST. ☒ Q.C. ☐ Q.A.
By [signature] (13) Date 7-26-78

FINAL DISTRIBUTION

7. RESOLUTION: RESPONSIBLE FOR RESOLUTION: ☒ CONST. ☐ DESIGN ☐ Q.A. ☐ ______ DIV. Elec.

Partical Resolution

① THE GAS PRESSURE OF THIS PENETRATION WILL BE MONITORED EVERY 2 WEEKS FOR A THREE MONTH PERIOD. THE DATA WILL BE RECORDED ON THE ATTACHED FORM 78170 AND ON P3A-ES01. ACTION TO BE TAKEN WILL BE STATED AFTER EVALUATION OF 3 month data.

② Design Engineering Electrical has changed storage Requirements to 15 lbs @ 72°F +1, -2 (lbs). Therefore the Penetration (#2228D) is within ~~Requirement~~ Requirements. Remove Tag & Tape.

② [signature] 10/23/78

Nuclear Safety Related ☒ Yes ☐ No Safety Class N/A Resolution by ① [signature] Date 7/28/78

8. APPROVAL ② DL Freeze 10-25-78 ① DL Freeze 7-28-78 ~~Design Eng~~ (Const.) Date

① RA Morgan 8-1-78 ② [signature] 10-26-78 Quality Assurance Date

COMPLETED FILE

9. ACTION TAKEN PER RESOLUTION: 15

① This PENETRATION WAS MONITORED EVERY 2 WEEKS FOR 3 MONTHS AS IN ① ABOVE

② TAPE AND TAG REMOVED ACCORDING TO EVALUATION BY DESIGN ENGINEERING AND J. BRENT EBERT

ACTION PERFORMED BY ② [signature] DATE 11-3-78 ACTION INSPECTED BY ① [signature] DATE 10-20-78

DISTRIBUTION		PROJECT MANAGER	PROJECT ENGINEER	SENIOR QC ENGR.	SENIOR CONST. ENGR.	W.C. SUPV.	CONST. ENGR. SUPV.	GEN. SUPT.		QA DIV. VENDOR	DESIGN ENGINEERING	QA DIV. [illegible] SERVICES	SENIOR QA ENGR.	AUTH. INSP.
						Hooway			Elect					
NUMBER OF COPIES	INITIAL			1		1		2	1				1	
	FINAL			1		1		2	1				1	
ACTION / INSPECTION ASSIGNMENT						① A I ②								

FORM 78 ( ) | REV 0

Q-IA 3581

DUKE POWER COMPANY
CONSTRUCTION DEPARTMENT
PROJECT CATAWBA

DATE 7/28/78

ELECTRICAL PENETRATION STORAGE LOG

TYPE B 43 ACCEPTANCE — PSI AT — °F

SERIAL NO 2228 D ± — PSI

YEAR	8-11-78	8-24-78	9-8-78	9-22-78	10-6-78	PRESSURE / TEMPERATURE / INITIALS						
	~~JAN~~	~~FEB~~	~~MAR~~	~~APR~~	~~MAY~~	~~JUN~~	JUL	AUG	SEP	OCT	NOV	DEC
1978	~~14.21~~	~~14.90~~	13.98	~~14.42~~	~~14.17~~ 13.94	13.94						
	~~79°~~	~~82°~~	~~84°~~	~~78°~~	~~78°~~	~~73°~~						
	LER	LER	LER	LER	LER	LER						

REMARKS

FOR USE AS EVALUATION DATA FOR NCI 3581

pse
7/28/78

DUKE POWER COMPANY
CONSTRUCTION DEPARTMENT
PROJECT CATAWBA

RECORD COPY

NONCONFORMING ITEM REPORT

Serial no. C 3785

1. DESCRIPTION OF NONCONFORMANCE (Requirements not met, how and when discovered)	ITEM NO.	VENDOR NO.	MPS NO.	VENDOR	2. Document(s) Violated
	1361-00-1[illegible]	~~DG OBRIEN~~	N/A	DG OBRIEN	P3A E 503
THESE FOUR (4) ELECTRICAL PENETRATIONS HAD LOW GAS PRESSURE AT P3A INSPECTION TIME ON 8-24-78. SERIAL NUMBERS ARE AS FOLLOWS: 2230D, ON P3A E-503; 2211D ON P3A E-505; 2213D ON P3A E-507; P3A E-508 - 2214D. SPECIFIED TEMPERATURE IS 15 LBS AT 72°F. LOWEST RECORDED PRESSURE WAS 13 LBS AT 82°F					P3A E 505 P3A E 507 P3A E 508

3. LOCATION OF NONCONFORMANCE WAREHOUSE #1

4. METHOD USED TO MARK FOUR (4) QI B TAGS

5. ORIGINATED ☐ CONST. ☒ Q.C. ☐ Q.A. By [signature] Date 8-30-78

6. SENIOR ENGINEER REVIEW ☐ CONST. ☒ Q.C. ☐ Q.A. By [signature] (QC) Date 8-30-78

7. RESOLUTION: RESPONSIBLE FOR RESOLUTION: ☐ CONST. ☒ DESIGN ☐ Q.A. ☐ ______ DIV Electrical

Repressurize these penetrations to 15 psig with commercial grade, safety related SF_6 gas using the gauge on the penetrations. After 15 minutes record (1) penetration flange temperature, (2) barometric pressure, and (3) gauge pressure of the penetration. Wait a minimum of two weeks and record the same readings. Compensate the second gauge reading for changes in barometric pressure and temperature from the first to the second reading. If the corrected second reading differs from the first reading by less than 1 psig the penetration is acceptable. If the corrected second reading differs from the first reading by more than 1 psig then notify Design for disposition.

Nuclear Safety Related ☒ Yes ☐ No Safety Class 1E Resolution by [signature] 9/15/78

8. APPROVAL [signature] 9/19/78 Design Engr./Supt. Date — [signature] Quality Assurance 9-25-78 Date

9. ACTION TAKEN PER RESOLUTION: 25 15

Action Performed As Per Resolution
PENETRATIONS ON P3A S/NUMBERS E-508 SER/NO. 2214D E-507 PENETRATION S/N 2213D, E505 PENE. S/N 2211D ARE NOW ACCEPTABLE PER RESOLUTION THIS NCI. PENETRATION ON P3A E503 S/N 2230D STILL HAS LOW PRESSURE AFTER RESOLUTION PER THIS NCI. NCI 5446 HAS BEEN WRITTEN TO DOCUMENT DISCREPENCIES LER 4-20-79

ACTION PERFORMED BY T. E. Potts DATE 4-10-79 ACTION INSPECTED BY [signature] DATE 4-20-79

10. DISTRIBUTION		PROJECT MANAGER	PROJECT ENGINEER	SENIOR QC ENGR	SENIOR CONST ENGR	QC SUPV	CONST ENG SUPV	STR SUPT		QA DIV VENDOR	DESIGN ENGRING	QA DIV PROC NON SERVICES	SENIOR QA ENGR	AUTH INSP
						Hanks			Elect				Bove	
NUMBER OF COPIES	INITIAL			1		1		2	1				1	
	FINAL			1		1		2	1				1	
ACTION / INSPECTION ASSIGNMENT						I		A						

QA FINAL REVIEW [signature] DATE 5-9-79

INITIAL DISTRIBUTION / FINAL DISTRIBUTION / COMPLETED FILE

NCI 3785 4-6-79 RLH LER 4-30-79

[redacted]	PENET. NO.	BP.	PENET. G. PRESS	TEMP. °F
E-508	2214D	29.43	15	66°
E-507	2213D	29.43	15	66°
E-505	2211D	29.43	15	66°
E-503	2230D	29.43	15	66°

BA NO	PENET. NO.	TEMP DIFF	CORRECTION FACTOR	PENET GAGE PRESSURE	CORRECTED BAROMETRIC PRESSURE		ABSOLUTE PRESSURE
E 508	2214D	72°-66=6	X.055 = .33	+ 15	+ 14.45	=	29.78
E [redacted]	2213D	72°-66=6	X.055 = .33	+ 15	+ 14.45	=	29.78
E-505	2211D	72°-66=6	X.055 = .33	+ 15	+ 14.45	=	29.78
E-503	2230D	72°-66=6	X.055 = .33	+ 15	+ 14.45	=	29.78

NCI: 3785 4-20-79 LER

REPRESSURIZED CALCULATIONS SHEET 2 OF 2

	PENET. NO	B.P.	PENET. G. PRESS.	TEMP. °F
E-508	2214D	29.59	15	72
E-507	2213D	29.59	15	72
E-505	2211D	29.59	15	72
E-503	2230D	29.59	15	72

3A NO	PENET. NO.	TEMP. DIFF	CORRECT. FACTOR	PENET. GAGE PRESSURE	CORRECTED BARMETRIC PRESSURE	ABSOLUTE PRESSURE
E-508	2214D	$72° - \overset{72°}{\cancel{72°}} = 0$	× .055 = 0	+ 15	+ 14.52	= 29.52
E	2213D	$72° - \overset{72°}{\cancel{72°}} = 0$	× .055 = 0	+ 15	+ 14.52	= 29.52
E-505	2211D	$72° - \overset{72°}{\cancel{72°}} = 0$	× .055 = 0	+ 15	+ 14.52	= 29.52
E-503	2230D	$72° - \overset{72°}{\cancel{72°}} = 0$	× .055 = 0	+ 9	+ 14.52	= 23.52

Initial Gas Pressure as compared to Gas Pressure 2 weeks later

	Gas Pressure 4-6-79	Absolute 4-20-79	
#2214D	29.78	29.52	
2213D	29.78	29.52	
2211D	29.78	29.52	
2230D	29.78	23.52	New NCI written #5496

FORM Q-1 REVISION 9

DUKE POWER COMPANY
CONSTRUCTION DEPARTMENT
RECORD COPY CATAWBA

NONCONFORMING ITEM REPORT

USE BLACK BALL POINT PEN ONLY

2. REQUISITION NO.: N/A
3. VENDOR/LOCATION: N/A
4. DOCUMENTS VIOLATED: M-41B sh 9 R-0; M-40 Rev 5; CNS-1390-01-00-0022 Rev 0
5. MPS. PO NO: N/A
6. MECH/ELEC SYSTEM: RN both units
☒ YES ☐ NO
8. IDENTIFICATION METHOD: ☒ Q-HB's 4 ☐ OTHER ☐ NOT PRACTICAL

7. LOCATION OF ITEM: Nuclear Service Water Pump House
16. SERIAL NO: 5125

13. DESCRIPTION OF ITEM AND STATEMENT OF PROBLEM

During a routine inspection, it was observed that the following Cables in Nuclear Safty Related Channel A have become damaged due to Construction Activities. Broken Armor is the only apparent damage. The Electrical Cables Affected are 1*RN515, 1*RN519, 1*RN521, 1*RN523

14. EVALUATION/DISPOSITION RESPONSIBILITY: ☒ CONST ~~☒ DESIGN~~ ☐ QA ☐ NSSS DIV CEEL

11. ORIGINATED: JC Byers DATE 3-13-79
13. SENIOR REVIEW: [signature] DATE 3-13-79
15. Q.A. REVIEW: [signature] DATE 3-13-79

17. DISPOSITION: UNACCEPTABLE (SEE BELOW)
18. REPORT TO MGMT ☐ YES ☒ NO

EVALUATION/JUSTIFICATION: REPULL CABLES AS SHOWN ON ATTACHED COPIES OF CABLE CARDS. WHEN DAMAGED CABLES ARE TAKEN OUT, TERMINATION CARDS SHALL BE RETURNED TO QA VAULT.

19. BY: J. W. Bean DATE 3-19-79
20. TECHNICAL APPROVAL: [signature] DATE 3-19-79
21. Q.A. APPROVAL: H D Mason DATE 3/20/79

22. ACTION/INSPECTION REQUIRED

Action/Inspection Required	23 Assigned To	27 Performed By	Date
REPULL CABLES, SCRAP DAMAGED CABLES, TURN OLD TERMINATION CARDS IN TO QA.	CEST	ERM	3-26-79
RE-INSPECT CABLES	SVTE	LER	3-26-79

25. BY: J. W. Bean DATE 3-19-79
26. Q.A. APPROVAL: H D Mason DATE 3/20/79

ACTION/INSPECTION EXCEPTIONS OR REMARKS

DISTRIBUTION	PROJECT ENGR	CON SUPT	Sr Const Engr	Sr QC Engr	QA Engr	Elec.
NUMBER OF COPIES (2 INITIAL, 1 FINAL)	2 / 1	Elect 1	Elect 1	Elect 1	Elect 1	

29. FINAL Q.A. REVIEW: [signature] DATE 3-26-79

INITIAL DISTRIBUTION — CESN — FINAL DISTRIBUTION

CABLE INSTALLATION D . A

ACCT. No. 09074
DATE - 3-16-79

CABLE NUMBER - 1# RN 515 SYSTEM - ORIGINATOR - JRG
TYPE/COLOR - 3X10G2 RED COMPUTED LENGTH - 24.0 RES. CODE - 2

FROM- 1EMXQ MOTOR CONTROL CENTER (600 VAC ESS AUX PWR SYS)
DRAWING NUMBER - CNWT-1752-01.13
TO - 1RN011A PH BLDG 612+06
DRAWING NUMBER - CN-1760-01.01
COMMENTS
ROUTING SEQUENCE -
9508 9575 9504

CERTIFIED CORRECT:
FOREMAN - DATE - LENGTH ACT - MANHOURS
INSPECTOR - DATE - FROM REEL # -

RES CODE 2 ACCT No-09074
CABLE NUMBER 1# RN 515
TYPE - 3X10 G2 RED SYS. -
FROM - 1EMXQ MOTOR CONTROL CENTER (600 VAC ESS AUX PWR SYS)
DRAWING NUMBER - CNWT-1752-01.13
TO - 1RN011A PH BLDG 612+06
DRAWING NUMBER - CN-1760-01.01

TERMINATOR - DATE -

INSPECTOR - DATE -

RES. CODE 2 ACCT. No-09074
CABLE NUMBER - 1#RN515
TYPE - 3X10G2 RED SYS. -
FROM - 1EMXQ MOTOR CONTROL CENTER (600 VAC ESS AUX PWR SYS)
DRAWING NUMBER - CNWT-1752-01.13
TO - 1RN011A PH BLDG 612+06
DRAWING NUMBER - CN-1760-01.01

TERMINATOR - DATE -

INSPECTOR - DATE -

CABLE NUMBER - 1# RN515
RES. CODE 2

CABLE NUMBER - 1# RN515
RES. CODE 2

CABLE INSTALLATION DATA

ACCT # - 09074
DATE - 3-16-79

CABLE NUMBER - 1# RN 519 SYSTEM - ORIGINATOR - JRG
TYPE/COLOR - 3X10GZ RED COMPUTED LENGTH - 260 RES. CODE - 2

FROM- 1EMXQ MOTOR CONTROL CENTER (600VAC ESS AUX PWR SYS)
DRAWING NUMBER - CNWT-1752-01.13
TO - 1RN028A PH BLDG 602+11
DRAWING NUMBER - CN-1760-01.01
COMMENTS
ROUTING SEQUENCE - 9508 9575 9504

CERTIFIED CORRECT:
FOREMAN - DATE - LENGTH ACT -
INSPECTOR - DATE - MANHOURS -
FROM REEL # -

RES. CODE 2 ACCT NO 09074
CABLE NUMBER 1# RN 519
TYPE - 3X10GZ RED SYS. -
FROM - 1EMXQ MOTOR CONTROL CENTER (600 VAC ESS AUX PWR SYS)
DRAWING NUMBER - CNWT-1752-01.13
TO - 1RN028A PH BLDG 602+11
DRAWING NUMBER - CN-1760-01.01

TERMINATOR - DATE -

INSPECTOR - DATE -

RES. CODE 2 ACCT NO 09074
CABLE NUMBER - 1# RN519
TYPE - 3X10GZ RED SYS. -
FROM - 1EMXQ MOTOR CONTROL CENTER (600VAC ESS AUX PWR SYS)
DRAWING NUMBER - CNWT-1752-01.13
TO - 1RN028A PH BLDG 602+11.
DRAWING NUMBER - CN-1760-01.01

TERMINATOR - DATE -

INSPECTOR - DATE -

CABLE NUMBER - 1# RN519
RES CODE 2

CABLE NUMBER - 1# RN519
RES. CODE 2

CABLE INSTALLATION D..iA

ACCT #09074
DATE - 3-16-79

CABLE NUMBER - 1# RN 521 | SYSTEM - | ORIGINATOR - JRG
TYPE/COLOR - 3X10 GZ RED | COMPUTED LENGTH - 26.0 | RES. CODE - 2

FROM- 1EMXQ MOTOR CONTROL CENTER (600VAC ESS. AUX PWR SYS)
DRAWING NUMBER - CNWT-1752-01.13
TO - 1RN 030A PH BLDG 602+11
DRAWING NUMBER - CN-1760-01.01
COMMENTS
ROUTING SEQUENCE - 9508 9575 9504

CERTIFIED CORRECT:
FOREMAN - DATE - LENGTH ACT -
INSPECTOR - DATE - MANHOURS -
FROM REEL # -

REB. CODE 2 ACCT # 09074
CABLE NUMBER 1# RN521
TYPE - 3X10GZ RED SYS. -
FROM - 1EMXQ MOTOR CONTROL CENTER (600 VAC ESS AUX. PWR SYS)
DRAWING NUMBER - CNWT-1752-01.13
TO - 1RN030A PH BLDG 602+11
DRAWING NUMBER - CN-1760-01.01
TERMINATOR - DATE -
INSPECTOR - DATE -

REB. CODE 2 ACCT # 09074
CABLE NUMBER - 1# RN521
TYPE - 3X10GZ RED SYS. -
FROM - 1EMXQ MOTOR CONTROL CENTER (600 VAC ESS. AUX. PWR. SYS)
DRAWING NUMBER - CNWT-1752-01.13
TO - 1RN030A PH BLDG 602+11
DRAWING NUMBER - CN-1760-01.01
TERMINATOR - DATE -
INSPECTOR - DATE -

CABLE NUMBER - 1# RN 521
REB. CODE - 2

CABLE NUMBER - 1# RN521
REB CODE - 2

CABLE INSTALLATION DATA

ACCT. NO. - 09074

DATE - 3-16-79

CABLE NUMBER - 1# RN 523 | SYSTEM - | ORIGINATOR - JRG
TYPE/COLOR - 3X10G2 RED | COMPUTED LENGTH - 40.0 | RES. CODE - 2

FROM - 1EMXO MOTOR CONTROL CENTER (600 VAC ESS. AUX PWR SYS)
DRAWING NUMBER - CNWT-1752-01.12
TO - 1RN036A PH BLDG 608+03
DRAWING NUMBER - CN-1760-01.01
COMMENTS
ROUTING SEQUENCE - 9509 9508 9575 9504 9503

CERTIFIED CORRECT:
FOREMAN - DATE - LENGTH ACT -
INSPECTOR - DATE - MANHOURS -
FROM REEL # -

RES CODE - 2 ACCT#09074
CABLE NUMBER 1# RN523
TYPE - 3X10G2 RED SYS. -
FROM - 1EMXO MOTOR CONTROL CENTER (600 VAC ESS. PWR. SYS)
DRAWING NUMBER - CNWT-1752-01.12
TO - 1RN036A PH BLDG. 608+03
DRAWING NUMBER - CN-1760-01.01

TERMINATOR - DATE -

INSPECTOR - DATE -

RES. CODE - 2 ACCT. NO-09074
CABLE NUMBER - 1# RN523
TYPE - 3X10G2 RED SYS. -
FROM - 1EMXO MOTOR CONTROL CENTGR (600 VAC ESS. PWR. SYS)
DRAWING NUMBER - CNWT-1752-01.12
TO - 1RN036A PH BLDG 608+03
DRAWING NUMBER - CN-1760-01.01

TERMINATOR - DATE -

INSPECTOR - DATE -

CABLE NUMBER - 1# RN523
RES. CODE - 2

CABLE NUMBER - 1# RN523
RES. CODE - 2

FORM C-1A REVISION 9

DUKE POWER COMPANY
CONSTRUCTION DEPARTMENT
PROJECT CATAWBA

RECORD COPY

NONCONFORMING ITEM REPORT

USE BLACK BALL POINT PEN ONLY

1. POSITION NO. NA	3. VENDOR/LOCATION NA	4. DOCUMENTS VIOLATED M-40 Rev. 5; M-41B #9 Rev. 0; CNS 1390.01-00-0022 Rev. 0
2. MPS PO NO. NA	6. /ELEC SYSTEM RN both units	
7. ☑ YES ☐ NO	8. IDENTIFICATION METHOD: TAG NO. 3 ☐ ONLY TAPE ☐ OTHER ☐ NOT PRACTICAL	

9. LOCATION OF ITEM: Nuclear Service Water Pump House

10. SERIAL NO. 5124

12. DESCRIPTION OF ITEM AND STATEMENT OF PROBLEM

During a routine inspection it was observed that the following electrical cables in Nuclear Safety Related Channel B have become damaged due to construction activities. The electrical cables affected are 1*RN517, 1*RN525, 1*RN527. Broken armor is the only apparent damage.

14. EVALUATION/DISPOSITION RESPONSIBILITY ☒ CONST ~~☒ DESIGN~~ 3/16/79 ☐ QA ☐ NSSS DIV CEEL

11. ORIGINATOR	DATE	13. SENIOR ENGR REVIEW	DATE	15. Q A REVIEW	DATE
Ron McAfee	3-13-79	[signature]	3-13-79	[signature]	3-13-79

17. DISPOSITION: UNACCEPTABLE (SEE BELOW)

18. REPORT TO MGMT ☐ YES ☒ NO

EVALUATION/JUSTIFICATION: REPULL CABLES AS SHOWN ON ATTACHED COPIES OF CABLE CARDS. WHEN DAMAGED CABLES ARE TAKEN OUT, TERMINATION CARDS SHALL BE RETURNED TO QA VAULT.

19. BY	DATE	20. TECHNICAL APPROVAL	DATE	21. Q A APPROVAL	DATE
J. N. Brown	3-19-79	DL Freeze	3-19-79	H D Mason	3/20/79

22. ACTION/INSPECTION REQUIRED	23. ASSIGNED TO	24. PERFORMED BY	DATE
REPULL CABLES, SCRAP DAMAGED CABLES, TURN OLD TERMINATION CARDS IN TO QA	CEST	EKM	3-26-79
RE-INSPECT CABLES	SVTE	LER	3-26-79

25. BY J. N. Brown DATE 3-19-79 26. QA APPROVAL H D Mason DATE 3/21/79

ACTION/INSPECTION EXCEPTIONS OR REMARKS

DISTRIBUTION	PROJECT ENGR	CEN SUPT		Elect	Elect		Elect	Elect		BR PROGRAMMER
NUMBER OF COPIES		2								

29. FINAL Q A REVIEW [signature] DATE 3-26-79

CABLE INSTALLATION DATA

ACCT. No - 09074

DATE - 3-16-79

CABLE NUMBER - 1#RN 517 SYSTEM - ORIGINATOR - JRG
TYPE/COLOR - 3X10 GZ YEL. COMPUTED LENGTH - 23.0 RES. CODE - 8

FROM - 1EMXR MOTOR CONTROL CENTER (600VAC ESS AUX PWR SYS)
DRAWING NUMBER - CNWT-1752-01.14
TO - 1RN020B PH BLDG. 609+06
DRAWING NUMBER - CN-1760-01.01
COMMENTS
ROUTING SEQUENCE - 9548 9545 9544

CERTIFIED CORRECT:
FOREMAN - DATE - LENGTH ACT -
INSPECTOR - DATE - MANHOURS -
FROM REEL # -

ACCT No 09074 RES. CODE 8
CABLE NUMBER 1#RN517
TYPE - 3X10 GZ YEL SYS. -
FROM - 1EMXR MOTOR CONTROL CENTER (600VAC ESS AUX PWR SYS)
DRAWING NUMBER - CNWT-1752.01-14
TO - 1RN020B PH BLDG609+06
DRAWING NUMBER - CN-1760-01.01
TERMINATOR - DATE -
INSPECTOR - DATE -

RES. CODE 8 ACCT No 09074
CABLE NUMBER - 1#RN517
TYPE - 3X10 GZ YEL. SYS. -
FROM - 1EMXR MOTOR CONTROL CENTER (600VAC ESS AUX PWR SYS)
DRAWING NUMBER - CNWT-1752.01-14
TO - 1RN020B PH BLDG 609+06
DRAWING NUMBER - CN-1760-01.01
TERMINATOR - DATE -
INSPECTOR - DATE -

CABLE NUMBER - 1#RN 517
RES. CODE 8

CABLE NUMBER - 1#RN 517
RES. CODE 8

CABLE INSTALLATION DATA

Acct # 09074
DATE - 3-16-79

CABLE NUMBER - 1# RN 525
TYPE/COLOR - 3X10G2 YEL
SYSTEM -
COMPUTED LENGTH - 18.0
ORIGINATOR - JRG
RES. CODE - 8

FROM - 2EMXP MOTOR CONTROL CENTER
DRAWING NUMBER - CNWT-2752-01.12
TO - 1RN037B PH BLDG 608+03
DRAWING NUMBER - CN-1760-01.01
COMMENTS
ROUTING SEQUENCE - 9549 9548 9545 9546

CERTIFIED CORRECT:
FOREMAN - DATE -
INSPECTOR - DATE -

LENGTH ACT -
MANHOURS -
FROM REEL # -

Acct #09074 RES. CODE 8
CABLE NUMBER 1# RN 525
TYPE - 3X10G2 YEL SYS. -
FROM - 2EMXP MOTOR CONTROL CENTER
DRAWING NUMBER - CNWT-2752-01.12
TO - 1RN037B PH BLDG 608+03
DRAWING NUMBER - CN-1760-01.01
TERMINATOR - DATE -
INSPECTOR - DATE -

RES. CODE 8 Acct. #09074
CABLE NUMBER - 1# RN 525
TYPE - 3X10G2 YEL SYS. -
FROM - 2EMXP MOTOR CONTROL CENTER
DRAWING NUMBER - CNWT-2752-01.12
TO - 1RN037B PH BLDG 608+03
DRAWING NUMBER - CN-1760-01.01
TERMINATOR - DATE -
INSPECTOR - DATE -

CABLE NUMBER - 1# RN 525
RES. CODE 8

CABLE NUMBER - 1# RN 525
RES CODE 8

CABLE INSTALLATION DATA

ACCT # 09074
DATE – 3-16-79

CABLE NUMBER – 1#RN 527 SYSTEM – ORIGINATOR – JRG
TYPE/COLOR – 3X10G2 YEL COMPUTED LENGTH – 30.0 RES. CODE – 8

FROM– 1EMXR MOTOR CONTROL CENTER (600 VAC ESS AUX PWR SYS)
DRAWING NUMBER – CNWT-1752-01.14
TO – 1RN038B PH BLDG 602+11
DRAWING NUMBER – CN-1760-01.02
COMMENTS
ROUTING SEQUENCE – 9548 9545 9544 9543

CERTIFIED CORRECT:
FOREMAN – DATE – LENGTH ACT –
INSPECTOR – DATE – MANHOURS –
FROM REEL # –

RES CODE 8 ACCT # 09074
CABLE NUMBER 1#RN527
TYPE – 3X10G2 YEL SYS. –
FROM – 1EMXR MOTOR CONTROL CENTER (ESS AUX PWR SYS - 600VAC)
DRAWING NUMBER – CNWT-1752-01.14
TO – 1RN038B PH BLDG 602+11
DRAWING NUMBER – CN-1760-01.02
TERMINATOR – DATE –
INSPECTOR – DATE –

RES CODE 8 ACCT # 09074
CABLE NUMBER – 1#RN527
TYPE – 3X10G2 YEL SYS. –
FROM – 1EMXR MOTOR CONTROL CENTER (600VAC ESS AUX PWR SYS)
DRAWING NUMBER – CNWT-1752-01.14
TO – 1RN038B PH BLDG 602+11
DRAWING NUMBER – CN-1760-01.02
TERMINATOR – DATE –
INSPECTOR – DATE –

CABLE NUMBER – 1#RN527
RES. CODE 8

CABLE NUMBER – 1#RN527
RES. CODE 8

15. Bill Whitlock [illegible] 8949

FORM Q-1A REVISION 9

DUKE POWER COMPANY
CONSTRUCTION DEPARTMENT
PROJECT CATAWBA

NONCONFORMING ITEM REPORT

USE BLACK BALL POINT PEN ONLY

1. REGISTRATION NO.: N/A
2. GROUP LOCATION: N/A
3. DOCUMENTS VIOLATED: CN-1915-05 Rev 4; CN-1915-05 Rev 6
4. SPEC/PO NO.: N/A
5. ELEC SYSTEM: EWC
7. YES ☐ NO
8. IDENTIFICATION METHOD: ☒ Q-18 ___1___ NCT TAPE; ☐ OTHER; ☐ NOT PRACTICAL

9. LOCATION OF ITEM: Reactor Bldg #1 Annulus Azimuth 148°15' Elev. 572'+0

10. SERIAL NO.: 5032

12. DESCRIPTION OF ITEM AND STATEMENT OF PROBLEM

Cable Tray Hanger HR1-234 Is Not Attached to Shell Wall Per Detail H 1915-05. CN 1915-05 Calls for Connection Detail Nos. 1, 7, 8, 13, or 21 to be Used where applicable, Detail No. 23 was Used.

14. EVALUATION/DISPOSITION RESPONSIBILITY: ☐ CONST ☒ DESIGN ☐ QA ☐ NSSS BY DEEL

ORIGINATED	DATE	15. SENIOR REVIEW	DATE	16. QA REVIEW	DATE
JC Byers	3-1-79	[signature]	3-5-79	[signature]	3-6-79

17. DISPOSITION

18. REPORT TO MGMT: ☐ YES ☒ NO

EVALUATION/JUSTIFICATION

This detail is ok to use.

Mark S. Tully

See CN-1915-05 Rev. 5 for design change.

[signature] 7/21/79

19. BY	DATE	20. TECHNICAL APPROVAL	DATE	21. Q.A. APPROVAL	DATE
C.W. Whitlock	7-16-79	DJ Allen	7-25-79	TC Roberts	7-27-79

22. ACTION/INSPECTION REQUIRED

ACTION/INSPECTION REQUIRED	23. ASSIGNED TO	24. PERFORMED BY	DATE
① Craft personnel working in the Reactor building and annulus areas shall be re-instructed in the requirements of QA procedure R-3. Renewed emphasis shall be placed on the fact that drawings shall not be deviated from without prior Design Engineering approval. Document training on QA form V-1A	STST	[signature]	3-10-80
② Remove NCT tape & Q-18 tag (1)	SVTE	JC Byers	8-30-79

25.	DATE	26. QA APPROVAL	DATE
Michael R. Bowe	8/22/79	R.A. Morgan	8-23-79

ACTION/INSPECTION EXCEPTIONS OR REMARKS

DISTRIBUTION	PROJECT ENGR	GEN SUPT	CONST	QC	DESIGN	QA	[illegible]	ANI		
	2	1	1	1	1	1				
	2	1	1	1	1	1				

27. C L Driggers 3-11-80

DUKE POWER COMPANY
CONSTRUCTION DEPARTMENT
PROJECT CATAWBA

RECORD COPY

NONCONFORMING ITEM REPORT

USE BLACK BALL POINT PEN ONLY

2 REQ. NO./CONTR. NO.	N/A
3 VENDOR/LOC.	N/A
DOCUMENTS VIOLATED	CN-1915-05 Rev 4; CN-1915-03 Rev 6
5 MPS PO NO	N/A
6 MECH/ELEC SYSTEM	EWC
	YES ☐ NO
8 IDENTIFICATION METHOD	Q-1B3 ___ ONLY TAPE; ☐ OTHER; ☐ NOT PRACTICAL

9 LOCATION OF ITEM: Reactor Bldg #1 Annulus Azimuth 148°15' Elev. 572'+0

16 SERIAL NO: 5032

10 DESCRIPTION OF ITEM AND STATEMENT OF PROBLEM

Cable Tray Hanger HR1-234 Is Not Attached to Shell Wall Per Detail H 1915-05. CN1915-05 Calls for Connection Detail Nos 1, 7, 8, 13, or 21 to be Used where applicable, Detail No. 23 was Used.

14 EVALUATION/DISPOSITION RESPONSIBILITY ~~☒ CONST~~ (MKO 3/5/79) ☒ DESIGN ☐ QA ☐ NSSS DIV DEEL

11 ORIGINATED	DATE	13 SENIOR ENGR REVIEW	DATE	15 Q A REVIEW	DATE
JC Byers	3-1-79	[signature]	3-5-79	[signature]	3-6-79

17 DISPOSITION

18 REPORT TO MGMT ☐ YES ☐ NO

EVALUATION/JUSTIFICATION

19 BY	DATE	20 TECHNICAL APPROVAL	DATE	21 Q A APPROVAL	DATE

22 ACTION/INSPECTION REQUIRED	23 ASSIGNED TO	27 PERFORMED BY	DATE

25 BY	DATE	26 Q A APPROVAL	DATE

28 INSPECTION EXCEPTIONS OR REMARKS

DISTRIBUTION	PROJECT FILE	GEN SUPT	Elect	Elect	Elect	Elect	Elect	Elect
NUMBER OF COPIES		2		1	1	1	1	1

29 FINAL Q A REVIEW DATE

DUKE POWER COMPAN.
CONSTRUCTION DEPARTMENT
PROJECT Catawba

QUALITY ASSURANCE TRAINING RECORD

THIS IS TO CERTIFY THAT THE QUALITY ASSURANCE TRAINING WAS HELD ON 1 21 5179
MO. DAY YR.

THE FOLLOWING TOPICS AND REFERENCES WERE DISCUSSED:	QA	ASME	PROCEDURE	COVER SHEET REV.
QA PROCEDURE R-3	R-3			9
DESIGN DRAWING AND SPECIFICATION VARIATION				
IN REFERANCE to NCI 5032				

INSTRUCTOR L. R. Lash DURATION 1 HOURS

ATTENDEES':

CREW NO. 1 3 2 ALL ☐ PART ☑

SOCIAL SEC. NO.	NAME	SOCIAL SEC. NO.	NAME
244-37-3724	Larry McGinnis		
245-02-4425	Bobby Buchanan		
244-74-9356	Hoyle F. Lynn, Jr		
251-68-1593	Billy Ramsey		
243-19-3128	Kevin M. Wiles		

2 REQUISITION NO. N/A | VENDOR/LOCATION N/A | DOCUMENTS VIOLATED CNBM 1717-01.10, M-41B sec ... | DUKE POWER COMPANY CONSTRUCTION DEPARTMENT PROJECT CATAWBA

RECORD COPY

NONCONFORMING ITEM REPORT

USE BLACK BALL POINT PEN ONLY

3 MPS PO NO N/A | 6 ELEC SYSTEM ATC

7 ☒ YES ☐ NO | 8 IDENTIFICATION METHOD ☒ NCI TAG ☐ OTHER ☐ NOT PRACTICAL

9 LOCATION OF ITEM Warehouse #1 | 10 SERIAL NO 4957

13 DESCRIPTION OF ITEM AND STATEMENT OF PROBLEM

Cabinet 1EATC-10 was sent to Wylie Lab for testing. Before going to Wylie Lab cabinet was inspected according to M-41B on Fabrication and found to be correct. Cabinet was returned with legs missing. This was in violation of CNBM 1717-01.10 which calls for legs. Also a ½" hole was burned in bottom of Cabinet, which would not make this a NEMA 4 encloser

14 EVALUATION/DISPOSITION RESPONSIBILITY ☒ CONST ☐ DESIGN ☐ QA ☐ NSSS DIV CEEL

11 ORIGINATED Jerry Coleman DATE 9-27-78 | 13 SENIOR ENGR REVIEW DL Freeze DATE 2-22-79 | 15 QA REVIEW [signature] DATE 2-22-79

17 DISPOSITION NOT ACCEPTABLE AS IS | 18 REPORT TO MGMT ☐ YES ☒ NO

EVALUATION/

① TL McMinn, Design Eng. was notified and will change Bill of materials for 1EATC10 to remove legs from cabinet.

② Repair ½" hole using attached criteria.

19 BY [signature] DATE 3/14/79 | 20 TECHNICAL APPROVAL DL Freeze DATE 3-14-79 | 21 QA APPROVAL [signature] DATE 3-14-79

22 ACTION/INSPECTION REQUIRED

ACTION/INSPECTION REQUIRED	23 ASSIGNED TO	24 PERFORMED	DATE
① Repair Cabinet in accordance with Attached Procedure.	3/14/79 CNF WLST	[signature]	3-21-79
② Visual Inspection of welds Satisfactory	SVTW	[signature]	3-21-79
③ Touch-up coatings IAW ~~[illegible]~~ Acceptable stds.	CEST	[signature]	3-21-79
④ Remove NCI tag (1) when repair is satisfactorily completed.	SVTE	[signature]	3-22-79
⑤ Assure that B/m is revised	SVTE	J Coleman	5-30-79

25 [signature] DATE 3/14/79 | 26 QA APPROVAL [signature] DATE 3-14-79

28 INSPECTION EXCEPTIONS OR REMARKS

DISTRIBUTION | ELEC | PM | ELEC | ELEC ENG

NUMBER OF COPIES: 1 1 1 1 1 1 1 1

27 [illegible] REVIEW E L B[illegible] DATE 6-5-79

Form 184 (5-76)

Dev./Station _____ Unit ____ File No. _____

Subject WELDING CRITERIA FOR NCI # 4957

By JSE Date 3/14/79

Sheet No. ____ of _____ Problem No. _____ Checked By _____ Date _____

(1) WELDING SHALL BE IN ACCORDANCE WITH QA PROCEDURE M-21 AND CP-22.

(2) ALL MATERIAL TO BE A-36.

(3) PLACE BACKING MATERIAL OVER HOLE ON THE INSIDE OF THE CABINET.

(4) ADD WELD METAL USING FWDS L-250 OR L-350.

(5) FINAL REPAIR TO RECEIVE A VISUAL INSPECTION.

1. ...ON NO. [illegible]	2. VENDOR/LOCATION D.G. O'Brien	4. DOCUMENTS VIOLATED P3A E-512	DUKE POWER COMPANY CONSTRUCTION DEPARTMENT PROJECT Catawba Pg 1 of 2
5. MPS PO NO N/A	6. MECH/ELEC SYSTEM EZA		RECORD COPY
7. [illegible] ☒ YES ☐ NO	8. IDENTIFICATION METHOD ☒ Q-18 ... 7 ... TAPE ☐ OTHER ☐ NOT PRACTICAL		NONCONFORMING ITEM REPORT USE BLACK BALL POINT PEN ONLY

9. LOCATION OF ITEM: Warehouse #1

10. SERIAL NO.: 4749

10. DESCRIPTION OF ITEM AND STATEMENT OF PROBLEM

Electrical penetration 9311E on P3A E-512 has low gas pressure in violation of requirements on P3A. Pressure is 12.53. Specified pressure is 15, -2, +1.

14. EVALUATION/DISPOSITION RESPONSIBILITY ☒ CONST ☐ DESIGN ☐ QA ☐ NSSS DIV CEEL

11. ORIGINATED	DATE	12. SENIOR ... REVIEW	DATE	15. Q A REVIEW	DATE
Ron McAfee	1-26-79	[signature]	1-26-79	[signature]	1-29-79

17. DISPOSITION: NOT ACCEPTABLE AS IS

18. REPORT TO MGMT ☐ YES ☒ NO

EVALUATION/JUSTIFICATION

Craft & QC to use Installation Spec. CNS 1390.01-00-0068 in determining if penetration is acceptable.

19. BY	DATE	20. TECHNICAL APPROVAL	DATE	21. Q A APPROVAL	DATE
[signature]	4/3/79	DL [signature]	4-3-79	[signature]	4-6-79

22. ACTION/INSPECTION REQUIRED	23. ASSIGNED TO	PERFORMED BY	DATE
① Electrical craft work complete	CEST	[signature]	4.11.79
② QC verification that penetration is acceptable & remove tag & tape. QC to document inspection on attached sheet - [initials] 4/5/79	SVTE	[signature]	4-12-79
③ QA Elect. to review and approve documentation if acceptable.	QAEC	[signature]	5/23/79

25. BY	DATE	26. Q A APPROVAL	DATE
[signature]	4/3/79	[signature]	4-6-79

2?. INSPECTION EXCEPTIONS OR REMARKS

DISTRIBUTION	[illegible]	[illegible]	Elect	Elect		Mech		
NUMBER OF COPIES	[illegible]	2	1	1	1	1	1	

27. FINAL Q.A. REVIEW C [signature] DATE 5-24-79

Organization ... Unit ... File No. NCI 4749

Subject Penetration serial No 9311E

By ... Date ...

Sheet No. ... of ... Problem No. NCI 4749 Checked By ... Date ...

Note: Initial the blank beside each procedure section as the work is satisfactorily completed. Show "N/A" and initial in blanks for requirements not applicable to this job.

Section:

Limits & Precautions:

6.2 LER

6.3 LER

Procedure:

7.1	LER			7.5	N/A	NCI	N/A
7.2	LER			7.6	N/A	NCI	N/A
7.3	LER			7.7	N/A		
7.4	N/A	NCI	N/A	7.8	LER		

Comments:

If NCI report needs to be initiated or if further explaination is needed for clarification; it shall be recorded below or on attached sheets.

NO PROBLEMS ENCOUNTERED FOLLOWING CNS 1390.01-00-0068.

By
Michael R. Bore 4/3/79
Harmason 4/5/79
Keller 5/21/79

QA Approval
M.R. Bore 5/23/79

2. DISPOSITION NO.	3. VENDOR/LOCAT	4. DOCUMENTS VIOLATED	DUKE POWER COMPANY CONSTRUCTION DEPARTMENT PROJECT Catawba Pg 1 of 2
N/A	D.G. O'Brien	P3A E-583	RECORD COPY
5. MPS PO NO	6. MECH/ELEC SYSTEM		NONCONFORMING ITEM REPORT
N/A	EZA		USE BLACK BALL POINT PEN ONLY
☒ YES ☐ NO	8. IDENTIFICATION METHOD ☒ TAG 1 ☒ TAPE ☐ OTHER ☐ NOT PRACTICAL		

7. LOCATION OF ITEM: Warehouse #1

16. SERIAL NO: 4748

10. DESCRIPTION OF ITEM AND STATEMENT OF PROBLEM

Electrical penetration 5824 E on P3A E-583 has low gas pressure in violation of requirements on P3A. Pressure is 12.95. Specified pressure is 15, -2, +1.

14. EVALUATION/DISPOSITION RESPONSIBILITY ☒ CONST ☐ DESIGN ☐ QA ☐ NSSS DIV CEEL

11. ORIGINATED	DATE	13. SENIOR QC REVIEW	DATE	15. Q.A. REVIEW	DATE
Ron McAfee	1-26-79	L.R. Dawson	1-26-79	R.A. Morgan	1-29-79

17. DISPOSITION: NOT ACCEPTABLE AS IS

18. REPORT TO MGMT ☐ YES ☒ NO

EVALUATION/JUSTIFICATION

CRAFT & QC to use Installation Specification CNS-1390.01-00-0068 in determining if penetration is acceptable.

19. BY	DATE	20. TECHNICAL APPROVAL	DATE	21. Q.A. APPROVAL	DATE
B. Elliott	4/3/79	DL Freeze	4-3-79	R.A. Morgan	4-6-79

22. ACTION/INSPECTION REQUIRED	23. ASSIGNED TO	PERFORMED BY	DATE
① ELECTRICAL CRAFT WORK complete	CEST	J.E. McKinney	4-11-79
② QC VERIFICATION that penetration acceptable & Remove tag & tape. QC to document inspection on attached sheet - [illegible] 4/5/79	SUTE	[illegible]	5-23-79
③ QA Eng Elect to review and approve documentation if acceptable.	QAEC	M.E. Bove	5/23/79

25. BY	DATE	26. Q.A. APPROVAL	DATE
B. Elliott	4/3/79	R.A. Morgan	4-6-79

27. INSPECTION EXCEPTIONS OR REMARKS

DISTRIBUTION			Elect		Elect		Elect			
NUMBER OF COPIES		2	1	1	1		1	1		
		2	1	1	1		1			

FINAL Q.A. REVIEW: C. L. O'Brien DATE 5-24-79

Dept./Station ________ Unit ____ File No. NCI 4748

Subject Penetration serial No. ~~5824 F~~ 5824 F

________ By ________ Date ________

Sheet No. __ of ____ Problem No. NCI 4748 ____ Checked By ________ Date ________

Note: Initial the blank beside each procedure section as the work is satisfactorily completed. Show "N/A" and initial in blanks for requirements not applicable to this job.

Section:

Limits & Precautions:

6.2 LER

6.3 LER

Procedure:

7.1	LER			7.5	N/A	NCI	N/A
7.2	LER			7.6	N/A	NCI	N/A
7.3	LER			7.7	N/A		
7.4	N/A	NCI	N/A	7.8	LER		

Comments:

If NCI report needs to be initiated or if further explaination is needed for clarification; it shall be recorded below or on attached sheets.

NO PROBLEMS ENCOUNTERED FOLLOWING CNS 1390.01-00-0060 LER EQCI

By
Michael R. [signature] 4/13/79
[signature] 4/5/79
[initials] 4/10/79

QA Approval
[signature] 5/23/79
CID

DUKE POWER COMPANY
CONSTRUCTION DEPARTMENT
PROJECT Catawba

RECORD COPY — Pg. 1 of 2

NONCONFORMING ITEM REPORT

USE BLACK BALL POINT PEN ONLY

1. [illegible] NO.: N/A
2. [illegible] PO NO.: N/A
3. VENDOR/LOCAL: D.G. O'Brien
4. DOCUMENTS VIOLATED: P3A E501
6. MECH/ELEC SYSTEM: EZA
7. ☒ YES ☐ NO
8. IDENTIFICATION METHOD: ☒ [illegible] 1 [illegible] TAPE ☐ OTHER ☐ NOT PRACTICAL
9. LOCATION OF ITEM: Warehouse #1
10. SERIAL NO.: 4747

10. DESCRIPTION OF ITEM AND STATEMENT OF PROBLEM

Electrical penetration 2228D on P3A E-501 has low gas pressure in violation of requirement on P3A. Pressure is 12.73. Specified pressure is 15, -2, +1.

14. EVALUATION/DISPOSITION RESPONSIBILITY: ☒ CONST ☐ DESIGN ☐ QA ☐ NSSS DIV CEEL

11. ORIGINATOR: Ron McAfee DATE 1-26-79
13. SENIOR ENGR. REVIEW: [signature] DATE 1-26-79
15. Q.A. REVIEW: [signature] DATE 1-29-79

17. DISPOSITION: NOT ACCEPTABLE AS IS
18. REPORT TO MGMT. ☐ YES ☒ NO

EVALUATION/JUSTIFICATION

Craft & QC to use Installation Spec CNS 1390.01-00-0068 to determine if penetration is acceptable.

19. BY: [signature] DATE 4/3/79
20. TECHNICAL APPROVAL: [signature] DATE 4-3-79
21. Q.A. APPROVAL: [signature] DATE 4-6-79

22. ACTION/INSPECTION REQUIRED	23. ASSIGNED TO	PERFORMED BY	DATE
① Electrical Craft work complete	CEST	[signature]	4-11-79
② QC verification that penetration is acceptable & remove tag & tape. QC to document inspection on attached sheet - [signature] 4/5/79	SVTE	[signature]	4-12-79
③ QA Elect. to review and approve documentation if acceptable.	QAEC	[signature]	5/23/79

25. BY: [signature] DATE 4/3/79
27. QA APPROVAL: [signature] DATE 4-6-79

INSPECTION, EXCEPTIONS OR REMARKS

DISTRIBUTION / NUMBER OF COPIES: [illegible] 2, 2; Elect 1, 1; Elect 1, 1; Elect 1, 1; 1, 1; 1, 1; 1, 1

29. [illegible] REVIEW: [signature] DATE 5-24-79

/Station ______ Unit ______ File No. NCI 4747

Subject Penetration Serial No 2228D

______ By ______ Date ______

Sheet No. __ of ____ Problem No. NCI 4747 Checked By ______ Date ______

Note: Initial the blank beside each procedure section as the work is satisfactorily completed. Show "N/A" and initial in blanks for requirements not applicable to this job.

Section:

Limits & Precautions:

6.2 LER

6.3 LER

Procedure

7.1 LER			7.5 N/A	NCI	N/A
7.2 LER			7.6 N/A	NCI	N/A
7.3 LER			7.7 N/A		
7.4 N/A	NCI	N/A	7.8 LER		

Comments:

If NCI report needs to be initiated or if further explaination is needed for clarification; it shall be recorded below or on attached sheets.

NO PROBLEMS FOUND AFTER FOLLOWING PROCEDURE CNS 1390.01-00-0016

LER QC ELECTRICAL INSPECTOR

By

Michael R. Rowe 4/3/79

Mason 4/3/79

[signature] 5/24/79

QA Approval

[signature] 5/28/79

DUKE POWER COMPANY
CONSTRUCTION DEPARTMENT
PROJECT Catawba

RECORD COPY

NONCONFORMING ITEM REPORT

USE BLACK BALL POINT PEN ONLY

DEY

2. ... NO. N/A | 3. VENDOR/LOCATION N/A | DOCUMENTS VIOLATED CN1915-03 R.5

5. MPS PO NO N/A | 6. ... /ELEC SYSTEM EWC

YES ☒ NO ☐ | IDENTIFICATION METHOD Q-1B's 3 ... TAPE ☐ OTHER ☐ NOT PRACTICAL

7. LOCATION OF ITEM Reactor Bldg #1 Annulus Azimuth 356°, 349°, 342° Elev. 571'+11"

SERIAL NO 4717

DESCRIPTION OF ITEM AND STATEMENT OF PROBLEM

Three HR1-250 cable tray hangers are not properly connected to the wall using connection detail 27, CN 1915-03 R.5. Detail 27 indicates that the tubular steel is to be centered on the 3/8"x4"x7" steel plate. The tubular steel member is welded within an inch of the end of the plate. (4" side of the plate) AP

JCA 1-26-78

(Electrical)

14 EVALUATION/DISPOSITION RESPONSIBILITY ☐ CONST ☒ DESIGN ☐ QA ☐ NSSS DIV DEEL

ORIGINATED	DATE	13 SENIOR ... REVIEW	DATE	15 Q.A. REVIEW	DATE
Ron McAfee	1-23-79	[signature]	1-23-79	RAMorg	1-29-79

17 DISPOSITION

18 REPORT TO MGMT ☐ YES ☒ NO

EVALUATION/JUSTIFICATION

Location of the tube steel on the plate is not critical as long as there is enough clearance to allow the 3/16" fillet weld to be made. Since there is 1" to seat a 3/16" weld this is O.K. See CN-1915-03 Rev 7 for design change. (MST)

[signature] 7/21/79

19 BY	DATE	20 TECHNICAL APPROVAL	DATE	21 Q.A. APPROVAL	DATE
C.W. Whitlock	7-16-79	DY Weller	7-25-79	TC Roberts	7-27-79

22 ACTION/INSPECTION REQUIRED	23 ASSIGNED TO	PERFORMED BY	DATE
① Craft personnel to be re-instructed in the requirements of QA procedure R-3, emphasis shall be placed on the fact that drawings shall not be deviated from without prior Design Engineering approval. Document Training on QA Form V-1K.	STST	C. Lucy	8-22-79
② Remove NCI tape & Q-1B tags (3)	6VTE	R.D. Ivey	8-23-79

25 ...	DATE	26 Q.A. APPROVAL	DATE
Michael Bove	8/14/79	RAMorg	8-16-79

.../INSPECTION EXCEPTIONS OR REMARKS

DISTRIBUTION			Elect		Elect	Elect	
NUMBER OF COPIES	2 2		1 1	1 1	1 1	1 1	

27 ... REVIEW S. L. [signature] DATE 9-25-79

INITIAL DISTRIBUTION

FINAL DISTRIBUTION

FORM V-1 | REVISION 1

DUKE POWER COMPANY
CONSTRUCTION DEPARTMENT
PROJECT Catawba

QUALITY ASSURANCE TRAINING RECORD

THIS IS TO CERTIFY THAT THE QUALITY ASSURANCE TRAINING WAS HELD ON 8/22/79
MO. DAY YR.

THE FOLLOWING TOPICS AND REFERENCES WERE DISCUSSED:	QA	ASME	PROCEDURE	COVER SHEET REV.
Procedure RB				9
Concerning NCI-4717				

INSTRUCTOR C. R. Cox DURATION 1 HOURS

ATTENDEES':

CREW NO. 132 ALL [ ] PART [X]

SOCIAL SEC. NO.	NAME	SOCIAL SEC. NO.	NAME
248-02-9987	James M. Parrish		
244-74-9356	Gary Young, Jr.		
295.02.4425	Bobby J. Buchanan		
251-68-1593	Billy Ramsey		
253-80-3993	Keith Queen		
247-32-3924	Larry McKinnis		
250-80-0031	Timothy Randall Smith		
249-92-2765	Alan Dale Belk		
266-96-6422	Michael L Everson		
249-76-4316	Charles A Foster		
249-92-9806	Johnny Thompson		
250-70-6107	C. R. Cox		

FORM Q-1A REVISION 9

CONSTR COMPANY DEPARTMENT

PROJECT CATAWBA

RECORD COPY

NONCONFORMING ITEM REPORT

USE BLACK BALL POINT PEN ONLY

2. REQUISITION NO.: N/A

3. VENDOR/LOCATION: (W)

DOCUMENTS VIOLATED: QA PROCEDURE P3A E-7

5. MPS PO NO: N/A

6. MECH/ELEC SYSTEM: NV

7. ☐ YES ☐ NO

8. IDENTIFICATION METHOD: Q-1B3 2 ONLY TAPE ☐ OTHER ☐ NOT PRACTICAL

9. LOCATION OF ITEM: AB Elev. 543 @ 55 & 56 JJ Unit #1

10. SERIAL NO.: 2606

13. DESCRIPTION OF ITEM AND STATEMENT OF PROBLEM: CENTRIFUGAL CHARGING PUMP MOTOR 1S-76-75E31363 HAS THERMOCOUPLING BROKEN OUT OF HOUSING AT MOTOR BEARING (REAR) LOCATION OF THERMOCOUPLINGS IN ELECTRICAL QC OFFICE

14. EVALUATION/DISPOSITION RESPONSIBILITY: ☒ CONST ☐ DESIGN ☐ QA ☐ NSSS DIV Elect (QE)

15. ORIGINATED	DATE	13. SENIOR ENGR REVIEW	DATE	15. Q A REVIEW	DATE
Jennis L. Budisill	1-9-79	[signature]	1-9-79	R.A. Morgan	1-9-79

17. DISPOSITION: NOT ACCEPTABLE AS IS

18. REPORT TO MGMT: ☐ YES ☒ NO

EVALUATION/JUSTIFICATION

TO CORRECT DEFICIENCY WESTINGHOUSE ON SITE REPRESENTATIVE NOTIFIED OF PROBLEM AND REQUESTED TO OBTAIN NEW THERMOCOUPLES. WESTINGHOUSE IS REQUESTED TO REPLACE BROKEN UNITS WHEN NEW THERMOCOUPLES RECEIVED ON SITE

19. BY	DATE	20. TECHNICAL APPROVAL	DATE	21. Q A APPROVAL	DATE
K.A. Reynolds	3-16-79	DL Freeze	3-16-79	R.A. Morgan	3-29-79

22. ACTION/INSPECTION REQUIRED	23. ASSIGNED TO	27. PERFORMED BY	DATE
ORDER NEW THERMOCOUPLES. CEMC (W) ED OWENS HAS ORDERED THERMOCOUPLES	^	Tom Weir	4-5-79
~~NOTIFY QC ELECTRICAL PRIOR TO PERFORMING WORK~~ CEMC (W)			
VERIFY NEW THERMOCOUPLES HAVE BEEN RECEIVED	CEMC (W) ~~QC ELEC INSP~~	Tom Weir	3-28-80
~~REMOVE TAGS & TAPE PRIOR TO INSTALLING OF NEW THERMOCOUPLES~~ SVTE			
~~INSTALL NEW THERMOCOUPLES~~ CEMC (W)			
REMOVE TAGS - SCRAP OLD THERMOCOUPLES - NEW THERMOCOUPLES WILL BE INSTALLED LATER DURING NORMAL CONSTRUCTION WORK.	SVTE	W. Bettis	3-31-80

Tom Weir 3-28-80 (W) QC Shropshire 3/28/80

25. BY	DATE	26. Q A APPROVAL	DATE
K.A. Reynolds	3-16-79	R.A. Morgan	3-29-79

ACTION/INSPECTION EXCEPTIONS OR REMARKS

DISTRIBUTION		Elect	Housing	Bat		W	Tom Weir
NUMBER OF COPIES	2	1 1	1	1			
	2	1 1	1 1	1		1	1

29. FINAL Q A REVIEW: C L Briggs DATE 4-8-80

FORM Q-1A REVISION 9

R COMPANY
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PROJECT CATAWBA

RECORD COPY

NONCONFORMING ITEM REPORT

USE BLACK BALL POINT PEN ONLY

Field	Entry
2. REQUISITION NO.	N/A
3. VENDOR/LOC.	(W)
DOCUMENTS VIOLATED	-3 PROCEDURE P3A E-4
5. MPS PO NO	N/A
6. /ELEC SYSTEM	NI
7.	☒ YES ☐ NO
8. IDENTIFICATION METHOD	☒ ... 2 ... TAPE ☐ OTHER ☐ NOT PRACTICAL
9. LOCATION OF ITEM	ELEVATION 543' A/B Col. LINES GG-HH 53 & 54 UNIT 1
16. SERIAL NO.	4607

10. DESCRIPTION OF ITEM AND STATEMENT OF PROBLEM
SAFETY INJECTION PUMP MOTOR - 1S-76-75F47622 HAS THERMOCOUPLING BROKEN OUT OF HOUSING AT REAR MOTOR BEARING LOCATION OF THERMOCOUPLING IN ELECTRICAL QUALITY CONTROL OFFICE

14. EVALUATION/DISPOSITION RESPONSIBILITY ☒ CONST ☐ DESIGN ☐ QA ☐ NSSS DIV Elect. (68)

11. ORIGINATED	DATE	13. SEC./ENGR. REVIEW	DATE	15. Q.A. REVIEW	DATE
Travis L. Rudisill	1-9-79	[signature]	1-9-79	[signature]	1-9-79

17. DISPOSITION NOT ACCEPTABLE AS IS

18. REPORT TO MGMT. ☐ YES ☒ NO

EVALUATION/JUSTIFICATION

TO CORRECT DEFICIENCY WESTINGHOUSE ON SITE REPRESENTATIVE NOTIFIED OF PROBLEM AND REQUESTED TO OBTAIN NEW THERMOCOUPLES. WESTINGHOUSE IS REQUESTED TO REPLACE BROKEN UNITS WHEN NEW THERMOCOUPLES RECEIVED ON SITE

19. BY	DATE	20. TECHNICAL APPROVAL	DATE	21. Q.A. APPROVAL	DATE
H. H. Reynolds	3-16-79	DL Fuzzy	3-16-79	HD Mason	3-20-79

22. ACTION/INSPECTION REQUIRED	23. ASSIGNED TO	27. PERFORMED BY	DATE
ORDER NEW THERMOCOUPLES CEMC (RP)		Tom Weir	4-3-79
ED OWENS HAS ORDERED THERMOCOUPLES			
~~NOTIFY QC ELECTRICAL PRIOR TO PREFORMING WORK CEMC (RP)~~			
VERIFY NEW THERMOCOUPLES HAVE BEEN RECEIVED	CEMC (W) ~~QC ELECT INSP~~	Tom Weir	3-28-80
~~REMOVE TAGS & TAPE PRIOR TO INSTALLING OF NEW THERMOCOUPLES SVTE~~			
~~INSTALL NEW THERMOCOUPLES CEMC (RP)~~			
REMOVE TAGS - SCRAP OLD THERMOCOUPLES - NEW THERMOCOUPLES WILL BE INSTALLED LATER DURING NORMAL CONSTRUCTION WORK.	SVTE	W. Betts	3-31-80
(1) Tom Weir 3-28-80 #(1) JC Shropshire 3/28/80			

25. BY	DATE	26. QA APPROVAL	DATE
H. H. Reynolds	3-16-79	HD Mason	3-20-79

INSPECTION/INSPECTION EXCEPTIONS OR REMARKS

DISTRIBUTION

DISTRIBUTION		Elect		Manning		Elect			TOM WEIR	W	
NUMBER OF COPIES	2	1	1	1		1			1	1	
	2	1	1	1	1	1			1	1	

28. FINAL Q.A. REVIEW C L Bazzle DATE 4-8-80

FORM Q-1A REVISION 9

DUKE POWER COMPANY
CONSTRUCTION DEPARTMENT
PROJECT CATAWBA

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NONCONFORMING ITEM REPORT

USE BLACK BALL POINT PEN ONLY

2. REQUISITION NO. N/A	3. VENDOR/LOC (W)	DOCUMENTS VIOLATED P-3 PROCEDURE P3A E-133	
5. MPS PO NO N/A	6. MECH/ELEC SYSTEM NV		
☒ YES ☐ NO	8. IDENTIFICATION METHOD ☒ Q-1B'S 2 ONLY TAPE ☐ OTHER ☐ NOT PRACTICAL		

9. LOCATION OF ITEM: A/B ELEV. 543' JJ-55-54 UNIT #1

10. SERIAL NO.: 4608

10. DESCRIPTION OF ITEM AND STATEMENT OF PROBLEM:
CENTRIFUGAL CHARGING PUMP MOTOR HAS THERMOCOUPLING BROKEN OUT OF MOTOR HOUSING AT FRONT BEARING. MOTOR SERIAL NO. 2S-76-74F31363
LOCATION OF THERMOCOUPLING IN ELECTRICAL QUALITY CONTROL OFFICE

14. EVALUATION/DISPOSITION RESPONSIBILITY ☒ CONST ☐ DESIGN ☐ QA ☐ NSSS DIV Elect (08)

11. ORIGINATED	DATE	13. SENIOR ENGR REVIEW	DATE	15. Q.A. REVIEW	DATE
[signature]	1-9-78	[signature]	1-9-79	[signature]	1-9-79

17. DISPOSITION: NOT ACCEPTABLE AS IS

18. REPORT TO MGMT ☐ YES ☒ NO

EVALUATION/JUSTIFICATION

TO CORRECT DIFFICIENCY, WESTINGHOUSE ON SITE REPRESENTATIVE NOTIFIED OF PROBLEM AND REQUESTED TO OBTAIN NEW THERMOCOUPLES. WESTINGHOUSE IS REQUESTED TO REPLACE BROKEN UNITS WITH NEW THERMOCOUPLES WHEN REPLACEMENTS RECEIVED ON SITE

19. BY	DATE	20. TECHNICAL APPROVAL	DATE	21. Q.A. APPROVAL	DATE
[signature]	3-16-79	DL [signature]	3-16-79	[signature]	3-29-79

22. ACTION/INSPECTION REQUIRED	23. ASSIGNED TO	27. PERFORMED BY	DATE
ORDER NEW THERMOCOUPLES CEMC (W)		Tom Weir	9-3-79
ED OWENS HAS ORDERED THERMOCOUPLES			
~~NOTIFY QC ELECTRICAL PRIOR TO PERFORMING CEMC (W) WORK~~			
VERIFY NEW THERMOCOUPLES HAVE BEEN RECEIVED	CEMC (W)	Tom Weir	3-28-80
~~REMOVE TAGS & TAPE PRIOR TO INSTALLING SVTE OF NEW THERMOCOUPLES~~	~~QC ELEC INSP~~		
~~INSTALL NEW THERMOCOUPLES CEMC (W)~~			
REMOVE TAGS - SCRAP OLD THERMOCOUPLES - NEW THERMOCOUPLES WILL BE INSTALLED LATER DURING NORMAL CONSTRUCTION WORK.	SVTE	W. Bettis	3-31-80
(1) Tom Weir 3-28-80 NV (1) QC Shropshire			3/28/80

25. BY	DATE	26. QA APPROVAL	DATE
[signature]	3-16-79	[signature]	3-29-79

28. INSPECTION/EXCEPTIONS OR REMARKS

DISTRIBUTION										W	TOM WEIR
NUMBER OF COPIES	2		Beck	Haney		Elec E					
	2	1	1	1	1	1			1	1	

29. CLOSED & REVIEW: C L Bryan DATE 4-8-80

FORM Q-1 REVISION 9

JCM

DUKE POWER COMPANY
CONSTRUCTION DEPARTMENT
PROJECT Catawba

RECORD COPY

NONCONFORMING ITEM REPORT

USE BLACK BALL POINT PEN ONLY

2. REQUISITION NO. N/A
3. VENDOR/LOCATION Frank Elec.
4. DOCUMENTS VIOLATED Procedure M-41, M-41B Serial #4 Rev #1
5. MPS PO NO N/A
6. MECH/ELEC SYSTEM EOA
YES ☒ NO ☐
8. IDENTIFICATION METHOD ☒ Q-1B's 1 ONLY TAPE ☐ OTHER ☐ NOT PRACTICAL

9. LOCATION OF ITEM Control Room El. 594' Col. 57 AA
10. SERIAL NO. 4617

12. DESCRIPTION OF ITEM AND STATEMENT OF PROBLEM

During routine inspection it was noted that factory welds on Main Control Board 2MC1 are broken.

14. EVALUATION/DISPOSITION RESPONSIBILITY ☐ CONST ☒ DESIGN ☐ QA ☐ NSSS DIV Elect. 40.

11. ORIGINATED Roy T. Humbree DATE 1-9-79
13. SENIOR ENGR REVIEW [signature] DATE 1-9-79
15. Q A REVIEW [signature] DATE 1-9-79

17. DISPOSITION REPAIR
18. REPORT TO MGMT ☐ YES ☒ NO

EVALUATION/JUSTIFICATION

Grind broken welds off smooth and reweld with 3/16 inch fillet weld all around. Welding to be per AWS-D1.1 ~~Rev 2 1974.~~ TR

19. BY J Mumford DATE 2-5-79
20. TECHNICAL APPROVAL TC McMeekin 2/5/79
21. Q A APPROVAL TC Roberts DATE 2-19-79

22. ACTION/INSPECTION REQUIRED	23. ASSIGNED TO	PERFORMED BY	DATE
~~Craft shall do all welding in accordance with CP-22~~	~~WEST~~		
~~Remove Q-1B tag~~ (RDG 7-2-79)	SVTE		
NOTE: ~~RAZemon 3/6/79~~			
NCI 5916 Supersedes This NCI — DAJenkins 7-2-79			

[signature] DATE 3-2-79
27. QA VERIFICATION [signature] DATE 3-8-79

ACTION/EXCEPTIONS OR REMARKS Q-1B tag removed iaw NCI 5916 ~~DAJenkins 7-2-79~~

DISTRIBUTION: West, Harley, Elect, Poss, Mech QA

[signature] 7-6-79

(LES)

FORM Q-1 REVISION 9

JCM

DUKE POWER COMPANY
CONSTRUCTION DEPARTMENT
PROJECT Catawba

RECORD COPY

NONCONFORMING ITEM REPORT

USE BLACK BALL POINT PEN ONLY

1 [illegible] NO. N/A	3 VENDOR/LOCATION Frank Elec.	4 DOCUMENTS VIOLATED Procedure M-41 M-41B Serial #4 Rev #1
2 MPS PO NO N/A	6 MECH/ELEC SYSTEM EOA	
☒ YES ☐ NO	8 IDENTIFICATION METHOD ☒ Q-1B'S 2 ONLY TAPE ☐ OTHER ☐ NOT PRACTICAL	

9 LOCATION OF ITEM Control Room El. 594 Col. 58 AA'

10 SERIAL NO 4618

11 DESCRIPTION OF ITEM AND STATEMENT OF PROBLEM

During routine inspection it was noted that factory welds on Main Control Board 2MC5 are broken.

INITIAL DISTRIBUTION

CESE

14 EVALUATION/DISPOSITION RESPONSIBILITY ☐ CONST ☒ DESIGN ☐ QA ☐ NSSS DIV Elect HQ

12 ORIGINATED	DATE	13 SENIOR ENGR REVIEW	DATE	15 Q A REVIEW	DATE
Roy I. Hembree	1-9-79	R Rawson	1-9-79	[signature]	1-9-79

17 DISPOSITION REPAIR

18 REPORT TO MGMT ☐ YES ☒ NO

EVALUATION/JUSTIFICATION

Grind broken welds off smooth and reweld with 3/16 inch fillet weld all around. Welding to be per AWS-D1.1-~~Rev 2 1979~~ TRC

FINAL DISTRIBUTION

19 BY	DATE	20 TECHNICAL APPROVAL	DATE	21 Q A APPROVAL	DATE
J Mumford	2-5-79	T M Martin	2/5/79	TC Roberts	2-19-79

22 ACTION/INSPECTION REQUIRED	23 ASSIGNED TO	27 PERFORMED BY	DATE
Craft shall do all welding in accordance with CP-22.	WLST	J L Christy	4-6-79
Remove Q-1B tag. RB Rawson 3/2/79	SVTE	R. Hembree	4-6-79

	DATE	26 QA APPROVAL	DATE
[signature]	3-2-79	[signature]	3-5-79

[illegible] OR RETURNED

Weld Hanway Elect Ross Mech QA

29 [signature] 4-12-79

2 REQUISITION NO. NA | 3 [illegible] LOCATION G[illegible] | DOCUMENTS VIOLATED Procedure M-4 Rev. 5

DUKE POWER COMPANY
CONSTRUCTION DEPARTMENT
PROJECT Catawba

RECORD COPY

NONCONFORMING ITEM REPORT

USE BLACK BALL POINT PEN ONLY

5 MPS PO NO: NA | 6 MECH/ELEC SYSTEM: EPL | Serial #8 Rev. 0

[illegible] ☒ YES ☐ NO | 8 IDENTIFICATION METHOD: ☒ OHBS 2 ☒ NCI TAPE ☐ OTHER ☐ NOT PRACTICAL

9 LOCATION OF ITEM: Auxiliary Building EL 554' Battery Room Col. "55" "DD"

16 SERIAL NO: 4666

10 DESCRIPTION OF ITEM AND STATEMENT OF PROBLEM

During routine inspection of Battery Rack 1EBB it was found that the Plastic Cell Strips (Part # 504-106349-003) Are not installed properly. Because of the low temperature the strips Are not Adhering to the racks.

14 EVALUATION/DISPOSITION RESPONSIBILITY ☒ CONST ☐ DESIGN ☐ QA ☐ NSSS DIV Elect [illegible]

11 ORIGINATED: Roy Hembree DATE 1-16-79 | 13 SENIOR ENGR REVIEW [signature] DATE 1-16-79 | 15 Q.A. REVIEW [signature] DATE 1-17-79

17 DISPOSITION: see below | 18 REPORT TO MGMT ☐ YES ☒ NO

EVALUATION/JUSTIFICATION

Failure of the plastic cell strips to adhere to the metal racks appears to be due to the stiffness and contorted shape of the plastic strips caused by low temperatures. The low temperatures may also detract from the bonding qualities [illegible] the cement.

Raise the temperature of the metal rack and plastic cell strips by heating the Battery Cubicle. Re-install or complete installation of the plastic cell strips.

19 BY: W B Haasch [illegible] DATE | 20 TECHNICAL APPROVAL: DC Freeze DATE 1-17-79 | 21 Q.A. APPROVAL: [signature] DATE 1-17-79

22 ACTION/INSPECTION REQUIRED

ACTION/INSPECTION REQUIRED	23 ASSIGNED TO		27 PERFORMED BY	DATE
① Remove NCI Tape and Tags	QC	15	R. Hembree	1-18-79
② Heat Battery Cubicle	Craft	29	T.E. Potts	1-19-79
③ Re-install or complete installation of Plastic Cell Strips	Craft	29	T.E. Potts	1-19-79
④ Inspect Battery Racks	QC	15	R. Hembree	1-19-79

25 [illegible]: W B Haasch DATE 17 Jan 79 | 26 Q.A. APPROVAL: [signature] DATE 1-17-79

[illegible] ACTION/INSPECTION EXCEPTIONS OR REMARKS

DISTRIBUTION	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
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[illegible] Q.A. REVIEW [signature] DATE 1-24-79

FORM Q-1A REVISION 3

DUKE POWER COMPANY
CONSTRUCTION DEPARTMENT
PROJECT Catawba

RECORD COPY

NONCONFORMING ITEM REPORT

USE BLACK BALL POINT PEN ONLY

2 REQUISITION NO. NA	3 VENDOR/BUILDING G...	DOCUMENTS VIOLATED Procedure M-41 Rev... M-41B Serial #8 Rev 0	
5 MPS PO NO NA	6 MECH/ELEC SYSTEM EPL		
☒ YES ☐ NO	8 IDENTIFICATION METHOD ☒ Q-1B5 2 ☒ NCI TAPE ☐ OTHER ☐ NOT PRACTICAL		

9 LOCATION OF ITEM Auxiliary Building EL. 554' Battery Room Col. "54" "DD"

10 SERIAL NO 4667

13 DESCRIPTION OF ITEM AND STATEMENT OF PROBLEM

During routine inspection of Battery Rack 1EBA it was found that the Plastic Cell Strips (Part # 504-106344-003) Are not installed properly. Because of the low temperature the strips Are not Adhereing to the racks.

14 EVALUATION/DISPOSITION RESPONSIBILITY ☒ CONST ☐ DESIGN ☐ QA ☐ NSSS DIV Elect (05)

11 ORIGINATED	DATE	13 SENIOR REVIEW	DATE	15 Q.A. REVIEW	DATE
Roy Hembree	1-16-79	[signature]	1-16-79	R A Morg	1-17-79

17 DISPOSITION see below

18 REPORT TO MGMT ☐ YES ☒ NO

EVALUATION/JUSTIFICATION

Failure of the Plastic Cell strips to adhere to the metal racks appears to be due to the stiffness and contorted shape of the plastic strips caused by low temperatures. The low temperatures may also detract from the bonding qualities of the cement.

Raise the temperature of the metal rack and plastic cell strips by heating the Battery Cubicle. Re-install or complete installation of the plastic cell strips.

19 BY	DATE	20 TECHNICAL APPROVAL	DATE	21 Q.A. APPROVAL	DATE
WB Mausch	17 Jan 79	DC [signature]	1-17-79	R A Morg	1-17-79

22 ACTION/INSPECTION REQUIRED	23 ASSIGNED TO	PERFORMED BY	DATE
(1) Remove NCI Tape and Tags	QC (15)	R. Hembree	1-18-79
(2) Heat Battery Cubicle	Craft (29)	J.E. Potts	1-19-79
(3) Re-install or Complete installation of plastic cell strips.	Craft (29)	J.E. Potts	1-19-79
(4) Inspect battery racks	QC (15)	R. Hembree	1-19-79

25	DATE	26 Q.A. APPROVAL	DATE
WB Mausch	17 Jan 79	R A Morg	1-17-79

27 INSPECTION EXCEPTIONS OR REMARKS

DISTRIBUTION								
NUMBER OF COPIES	2	1	1	1	1			
	2	1	1	1	1			

29 FINAL Q.A. REVIEW [signature] DATE 1-29-79

FORM [illegible] REVISION 9

DUKE POWER COMPANY
CONSTRUCTION DEPARTMENT
PROJECT Catawba

RECORD COPY

NONCONFORMING ITEM REPORT

USE BLACK BALL POINT PEN ONLY

4-1-79

1. REPORT NO. [illegible]
3. VENDOR/LOCATION N/A
4. DOCUMENTS VIOLATED: CN2892-05; CN 1903-04; QA Procedure M-41B serial 2
5. MPS PO NO. N/A
6. /ELEC SYSTEM EWC
7. YES ☒ NO ☐
8. IDENTIFICATION METHOD: ☒ NO-IDS 1 ONLY TAPE; ☐ OTHER; ☐ NOT PRACTICAL

9. LOCATION OF ITEM 560' elevation Auxiliary Building Column Lines HH and 59

10. SERIAL NO. N/A 4584

L.E.

12. DESCRIPTION OF ITEM AND STATEMENT OF PROBLEM: Hanger 2HA33C was modified and now exceeds design drawing widths on both CN2892-05 Revision 2 schedule and CN 1903-04 Revision 5 Seismic Standard: MHS 18 detail.

14. EVALUATION/DISPOSITION RESPONSIBILITY ☐ CONST ☒ DESIGN ☐ QA ☐ NSSS DIV Elec. 40

11. ORIGINATED	DATE	13. SENIOR ENGR REVIEW	DATE	15. Q.A. REVIEW	DATE
W M Hoffner	1/3/79	[signature]	1-3-79	R A Morgan	1-4-79

17. DISPOSITION

18. REPORT TO MGMT ☐ YES ☒ NO

EVALUATION/JUSTIFICATION

HANGER IS OK AS SHOWN ON THE ATTACHED SKETCH. (WHICH IS AS BUILT.)

MARK TULLY
4/13/79

19. BY	DATE	20. TECHNICAL APPROVAL	DATE	21. Q.A. APPROVAL	DATE
R.D. Abernathy	8-2-79	D G Allen	8-6-79	T C Roberts	8-28-79

TE [illegible]

22. ACTION/INSPECTION REQUIRED	23. ASSIGNED TO	24. PERFORMED BY	DATE
~~No further Action Required~~ 9/13/79	~~NA~~	~~NA~~	~~NA~~
No action Required			
J. Everett 10-15-79			

25. ~~H D Mason~~ 9/4/79 DATE ~~9/4/79~~ 26. QA APPROVAL H D Mason DATE 10-15-79

28. ACTION/INSPECTION EXCEPTIONS OR REMARKS

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NUMBER OF COPIES		2	1	1	1	1					
		2	1		1	1					

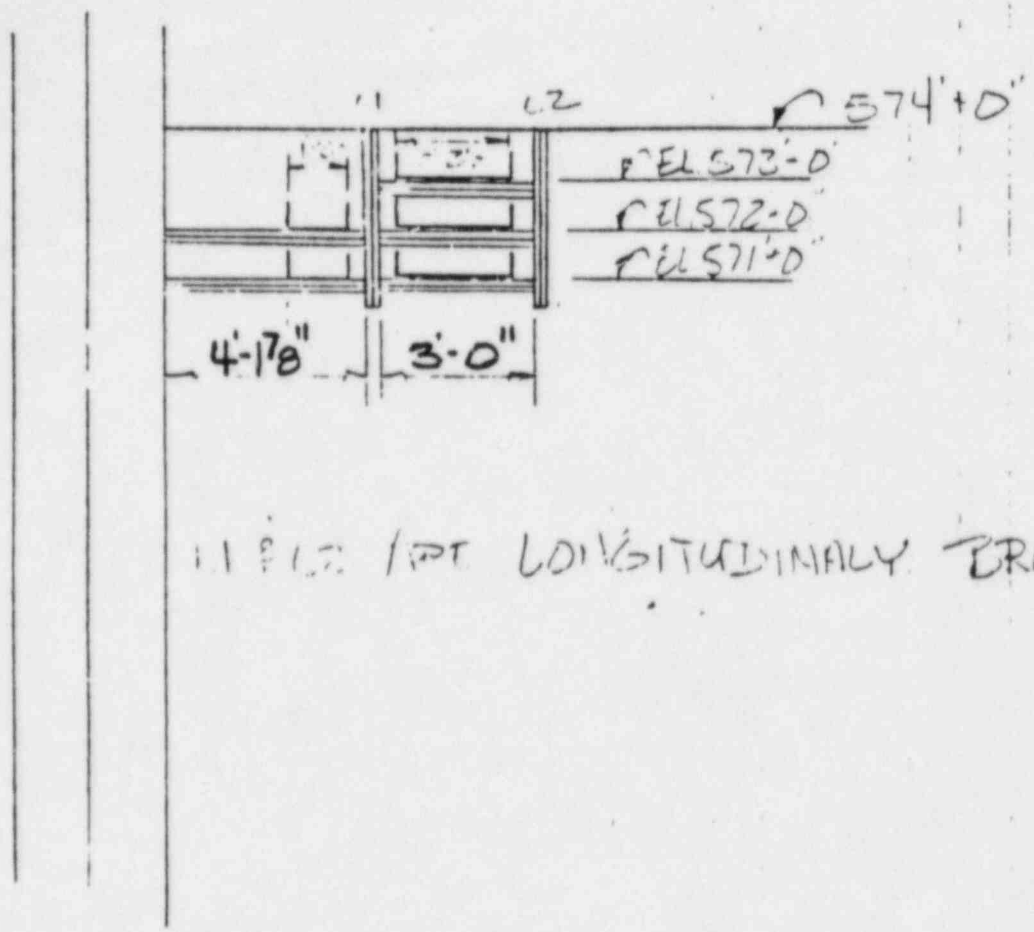
29. FINAL Q.A. REVIEW C L Douglas DATE 10-22-79

NCI ~~4884~~ 4584

Date 4-4-79

Checked By

Date



LONGITUDINALY BRACED

BY	DATE	TECHNICAL APPROVAL	DATE	Q.A. APPROVAL	DATE
R.D. Abernathy	9-25-79	[signature]	10/2/79	TC Roberts	10-3-79

FORM Q-1A REVISION 9

DUKE POWER COMPANY
CONSTRUCTION DEPARTMENT
PROJECT CATAWBA

Pg 1 of 5

RECORD COPY

NONCONFORMING ITEM REPORT

USE BLACK BALL POINT PEN ONLY

1. REQUISITION NO.	N/A
2. MPS PO NO.	N/A
3. VENDOR/LOCATION	DG OBRIEN
4. DOCUMENTS VIOLATED	P3A E-558
6. MECH/ELEC SYSTEM	EZA
7.	☐ YES ☐ NO
8. IDENTIFICATION METHOD	☒ Q-1B-N 1 ☐ HOLD TAPE ☐ OTHER ☐ NOT PRACTICAL
9. LOCATION OF ITEM	WAREHOUSE #1
10. SERIAL NO.	4566

10. DESCRIPTION OF ITEM AND STATEMENT OF PROBLEM: ELECTRICAL PENETRATION 4250F ON P3A E558 HAS LOW GAS PRESSURE IN VIOLATION TO REQUIREMENTS ON P3A. PRESSURE IS 11.5. P3A STATES A TOLERANCE OF (+) PLUS 1 MINUS (-) 2

14. EVALUATION/DISPOSITION RESPONSIBILITY: ☒ CONST (N/A) ✓ DESIGN ☐ QA ☐ NSSS ☐ OTHER Elect. (40)

11. ORIGINATED	DATE	15. SENIOR ENGR. REVIEW	DATE	15. Q.A. REVIEW	DATE
Glenn L. Rudisill	12-29-78	William D. Ryon	12/29/78	R.A. Moore	1-2-79

17. DISPOSITION: PERFORM ATTACHED PROCEDURE

18. REPORT TO MGMT ☐ YES ☒ NO

EVALUATION/JUSTIFICATION: THE ATTACHED PROCEDURE ALLOWS THE FIELD TO DETERMINE IF A problem EXISTS WHICH CAN BE REPAIRED IN THE FIELD OR if the penetration must be RETURNED TO THE manufacturer for REPAIR.

19. [illegible]	DATE	20. TECHNICAL APPROVAL	DATE	21. Q.A. APPROVAL	DATE
Paul M McBride	3/12/79	[signature]	3/15/79	TC Roberts	3-19-79

22. ACTION/INSPECTION REQUIRED	23. ASSIGNED TO	27. PERFORMED BY	DATE
1) Electrical Craft to notify QC Electrical prior to beginning work and to perform the steps outlined in the attached procedure.	CEST	[signature]	4-11-79
2) Q.C. Electrical to witness all of the steps outlined in the attached procedure and certify that the steps were performed correctly by initialling the the blanks specified on the attached procedure checklist.	SVTE	LER	4-17-79
3) Review & Approve attached Procedure results	QAEC	M Bove	4/24/79

25.	DATE	26. Q.A. APPROVAL	DATE
Michael R Bove	4/3/79	RA Moore	4-4-79

ACTION/INSPECTION EXCEPTIONS OR REMARKS

DISTRIBUTION	PROJECT ENGR	CON SUPT	[illegible]	Elect	[illegible]	Heavey	[illegible]	Elect	[illegible]	ANI
NUMBER OF COPIES	2	1	1	1	1	1	1	1		

29. FINAL Q.A. REVIEW: [signature] DATE 4-27-79

Catawba

ATTACHMENT 10
NCI #4566

1.0 TITLE: Procedure for Corrective Action for Electric Penetrations which have a Marginal or Possibly Unacceptable SF_6 Leak Rate (Types A through M)

2.0 PURPOSE: To specify courses of action for Electric Penetrations which have a questionable leak rate due to low SF_6 pressure readings.

3.0 SCOPE: This specification applies to Electrical Penetration Types A-M installed at Catawba Nuclear Station.

4.0 REFERENCES:

4.1 CNM1361.00-6 Sh. 1 (D.G. O'Brien No. R31E5046 Sh. 1) Low Voltage Power Electric Penetration Installation Drawing

4.2 CNM1361.00-7 Sh. 1 (D.G. O'Brien No. R31E5047 Sh. 1) Instrumentation and Control Electric Penetration Installation Drawing

4.3 CNM1361.00-8 Sh. 1 (D.G. O'Brien No. R31E5048 Sh. 1) Medium Voltage Power Electric Penetrations.

5.0 Test Equipment/Tools:

5.1 A bottle of commercial grade SF_6 which has been designated for Electrical Penetration use.

5.2 Regulator, hoses or piping, and fittings to attach SF_6 bottle to penetration under test.

5.3 Wrenches as required for above.

5.4 Bottle of soap solution which may be obtained from the NDE office.

6.0 LIMITATIONS AND PRECAUTIONS:

6.1 Do not over torque the fill valve. It is fully closed when shut finger tight.

6.2 To prevent air from being injected into penetration.

6.2.1 Loosely connect SF_6 source to the penetration but DO NOT open the penetration fill valve.

6.2.2 Crack open SF_6 bottle supply or regulator valve and flush the fill line with SF_6.

6.2.3 Tighten all fill connections and then shut off SF_6 supply or regulator valve.

6.3 Do not allow soap solution to get into the ends of the connector modules and clean up all soap solution after using.

ATTACHMENT TO
NCI # 4566

7.0 PROCEDURE:

7.1 Pressurize the penetration assembly to 17 psig with the commercial grade SF_6 specified in Section 5.0 while heeding the precautions in Section 6.

7.2 Close the fill valve and remove the source of SF_6.

7.3 Using a soap solution check all fittings and welds on the pressure gauge assembly and tubing. DO NOT ALLOW SOAP SOLUTION TO GET INTO MODULE CONNECTOR ENDS.

7.4 If a leak is found at a weld joint then a non-conforming item report should be issued.

7.5 If a leak is found at the end of the fill connection then tighten the fill valve.

NOTE

THIS VALVE IS FULLY CLOSED WHEN SHUT FINGER TIGHT.

7.5.1 If the leak has stopped:

7.5.1.1 Decrease the pressure to 15 psig; record the pressure, flange temperature and barometric pressure.

7.5.1.2 Wait at least two (2) days minimum [three (3) days maximum] and record the flange temperature and pressure and barometric pressure.

a. If there is no indication of pressure loss when corrected for temperature and barometric pressure changes, then the penetration is acceptable for use.

b. If there is an indication of pressure loss when corrected for temperature and barometric then a non-conforming item report should be issued.

7.5.2 If the leak has not stopped, the valve may be faulty and a non-conforming item report should be issued.

7.6 If a leak is found in the valve body or at the valve stem a non-conforming item report should be issued.

7.7 If a leak is found where the pressure gauge screws into the mounting assembly.

7.7.1 Decrease pressure to 3 psig, remove pressure gauge, wrap gauge threads with teflon tape, and re-insert gauge.

NOTE

THE PRECEDING STEP MUST BE DONE EXPEDITIOUSLY.

7.7.2 Re-pressurize the unit to 17 psig and repeat the bubble check of the gauge connection.

7.7.2 If no further leaks are observed then decrease the pressure to 15 psig, record pressure, flange temperature and barometric pressure and monitor for at least two (2) days.

a. If there is no indication of pressure loss when corrected for temperature and barometric pressure, then the penetration is acceptable for use.

b. If the gauge fitting still leaks repeat 7.7.

7.8 If no leaks are found by bubble check:

7.8.1 Pressurize the penetration to 17 psig with commercial grade SF_6 specified in Section 5.0 while heeding the precautions in Section 6.0.

7.8.2 Decrease the pressure to 15 psig; record pressure, flange temperature and barometric pressure.

7.8.3 Wait two (2) days minimum [three (3) days maximum] and record the flange temperature, pressure and barometric pressure.

7.8.3.1 If there is no indication of pressure loss when corrected for temperature and barometric pressure changes, then the penetration is acceptable for use.

7.8.3.2 If there is still indication of pressure loss when corrected as above, then contact Design Engineering for further instructions or disposition.

Catawba Nuclear Station NCI 4566

Procedure Checklist.

5 5 NCI 4566

Note: Initial the blank beside each procedure section as the work is satisfactorily completed. Show "N/A" and initial in blanks for requirements not applicable to this job.

Section:

Limits & Precautions:

6.2 LER

6.3 LER

Procedure:

7.1	LER			7.5	N/A	NCI	N/A
7.2	LER			7.6	N/A	NCI	N/A
7.3	LER			7.7	N/A		
7.4	N/A	NCI	N/A	7.8	LER		

Comments:

IF NCI report needs to be initiated or if further explaination is needed for clarification; it shall be recorded below or on attached sheets.

NO PROBLEMS ENCOUNTERED FOLLOWING CNS 1390.01-00-0068

By Michael R. Gore 4/3/79

QA Approval J. F. Gore 4/24/79

FORM Q-1A REVISION 9

DUKE POWER COMPANY
CONSTRUCTION DEPARTMENT
PROJECT CATAWBA

RECORD COPY

NONCONFORMING ITEM REPORT

USE BLACK BALL POINT PEN ONLY

1. REQUISITION NO. N/A	3. VENDOR IDENTIFICATION N/A	DOCUMENTS VIOLATED QA PROCEDURE M-41B SERIAL No. 3 SECTION 5
2. MFR. PO NO. N/A	6. MECH./ELEC. SYSTEM ELWC	
7. N... YES ☐ NO	8. IDENTIFICATION METHOD ☒ QC HOLD TAG ☐ OTHER ☐ NOT PRACTICAL	

9. LOCATION OF ITEM: ELECT. PENE. EL. 577'+0" COLS. AA & BB & 52-45

10. SERIAL NO. 4541

10. DESCRIPTION OF ITEM AND STATEMENT OF PROBLEM

AIR DUCT SUPPORTS ARE ATTACHED TO ELECTRICAL TRAY HANGERS.

14. EVALUATION/DISPOSITION RESPONSIBILITY ☒ CONST. ☐ DESIGN ☐ QA ☐ NSSS DIV. CIVIL (U)

11. ORIGINATED	DATE	13. SENIOR ... REVIEW	DATE	15. Q.A. REVIEW	DATE
W. L. Roberts	12/20/78	S.K. Dawson	12-20-78	RAMorg	1-2-79

17. DISPOSITION: see below. No cause for nonconformance. Acceptable as is.

18. REPORT TO MGMT ☐ YES ☒ NO

EVALUATION/JUSTIFICATION: Investigation finds that the above duct supports are temporary and are bolted to unistrut members of permanent cable tray hangers. This practice is acceptable.

19. BY	DATE	20. TECHNICAL APPROVAL	DATE	21. Q.A. APPROVAL	DATE
G.A. Heineck	1-9-79	DL Freeze	1-11-79	RAMorg	1-15-79

22. ACTION/INSPECTION REQUIRED	23. ASSIGNED TO	24. PERFORMED BY	DATE
Remove tape & tags	QC Elec.	W L Roberts	1-15-79

25.	DATE	26. QA APPROVAL	DATE
G.A. Heineck	1-9-79	RAMorg	1-15-79

28. ACTION/INSPECTION EXCEPTIONS OR REMARKS

DISTRIBUTION	PROJECT ENGR.	GEN. SUPT.	... CONST. ENGR.	SUPERV. QC Elect.	... Engr.	... CA Elect.	... Engr.	... Elect.	...	...	ANI	Johnson		
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24 ...	2		1	1			1					2		

29. M D Johnson DATE 1-16-79

FORM Q-1A REVIS 9

DUKE POWER COMPANY
CONSTRUCTION DEPARTMENT
PROJECT CATAWBA

RECORD COPY

NONCONFORMING ITEM REPORT

USE BLACK BALL POINT PEN ONLY

2 REQUISITION NO.	N/A
3 LOCATION	N/A
4 DOCUMENTS VIOLATED	Q1 PARA. 1; R-3 PARA. II
5 PO NO	N/A
6 MECH/ELEC SYSTEM	EWC
7	YES ☐ NO
8 IDENTIFICATION METHOD	TAGS 2 NCI TAPE; ☐ OTHER; ☐ NOT PRACTICAL

9 LOCATION OF ITEM: CMH 4 SOUTHEAST OF REACTOR BUILDING NUMBER I

16 SERIAL NO: 4497

10 DESCRIPTION OF ITEM AND STATEMENT OF PROBLEM: TWO (2) CABLE SUPPORTS ON THE EAST SIDE HAVE BEEN FABRICATED AND INSTALLED. THERE IS NO DETAIL COVERING THESE CABLE SUPPORTS ON CN-1938-04, REV. 3.

14 EVALUATION/DISPOSITION RESPONSIBILITY: ☒ CONST ☐ DESIGN ☐ QA ☐ NSSS — ELECT. QE

11 ORIGINATED: W. G. Roberts DATE 12/14/78 — 13 SENIOR REVIEW: [signature] DATE 12-14-78 — 15 Q A REVIEW: [signature] DATE 12-15-78

17 DISPOSITION: ACCEPTABLE AS IS

18 REPORT TO MGMT ☐ YES ☒ NO

EVALUATION/JUSTIFICATION

① DRAWING # CN 1938-04 REV 4 HAS BEEN RECEIVED SHOWING THE DETAILS NEEDED FOR THIS INSTALLATION.

CRAFT PERSONNEL TO BE INSTRUCTED IN QA PROCEDURE R-3.

19 BY: [signature] DATE 1/2/79 — 20 TECHNICAL APPROVAL: [signature] DATE 1-2-79 — 21 Q A APPROVAL: RAMorgan DATE 1-3-79

22 ACTION/INSPECTION REQUIRED	23 ASSIGNED TO	PERFORMED BY	DATE
① VERIFY DRAWING & WORK & REMOVE TAGS & TAPE	[illegible]	W. G. Roberts	1-[illegible]-79
② INSTRUCT PERSONNEL. Attach evidence of instruction to this copy of NCI	[illegible]	[signature]	1-18-78

24: [signature] DATE 1/3/79 — 26 QA APPROVAL: RAMorgan DATE 1-3-79

28 ACTION/INSPECTION EXCEPTIONS OR REMARKS

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FORM V-1A | REVISION 1

NCI 4457

DUKE POWER COMPANY
CONSTRUCTION DEPARTMENT
PROJECT Catawba

QUALITY ASSURANCE TRAINING RECORD

THIS IS TO CERTIFY THAT THE QUALITY ASSURANCE TRAINING WAS HELD ON 1 / 9 / 79 (MO. / DAY / YR.)

THE FOLLOWING TOPICS AND REFERENCES WERE DISCUSSED:	QA	ASME	PROCEDURE	COVER SHEET REV.
Design Drawing And Specification	x		R-3	9
Variation				

INSTRUCTOR Wayne A Hyatt DURATION 30 min. (HOURS)

CREW NO. 80 ALL ☐ PART ☒

ATTENDEES':

SOCIAL SEC. NO.	NAME	SOCIAL SEC. NO.	DATE
	Fred A Osborne		
	Larry L Cotton		
	Gary Hone		
	Rick Queen		

FORM Q-1A REVISION 9

DUKE POWER COMPANY
CONSTRUCTION DEPARTMENT
PROJECT CATAWBA

RECORD COPY

NONCONFORMING ITEM REPORT

USE BLACK BALL POINT PEN ONLY

1 CR NO N/A	2 VENDOR/LOCATION N/A	DOCUMENTS VIOLATED H-5, CP-23, (CP-23B)
MPS PO NO N/A	/ELEC SYSTEM EWC	
7 ☐ YES ☐ NO	8 IDENTIFICATION METHOD ☐ Q-HRS ___ ☐ Q-TAPE ☐ OTHER ☒ NOT PRACTICAL	

9 LOCATION OF ITEM: NUCLEAR SERVICE WATER PUMP HOUSE.

10 SERIAL NO: 4496

10 DESCRIPTION OF ITEM AND STATEMENT OF PROBLEM: 1/2" BOLTS USED THROUGHOUT NUCLEAR SERVICE WATER PUMP HOUSE CABLE TRAY SUPPORT SYSTEM ARE NOT IDENTIFIED PER. CP-23 (CP-23B). THE PROBLEM IS INCREASED BY THE FACT THAT DESIGN DRAWINGS CN-1940-01, 02 DO NOT DESIGNATE A TYPE OF BOLT MATERIAL.

NOT IDENTIFIED WITH Q-1B TAG - AREA TOO EXTENSIVE.

14 EVALUATION/DISPOSITION RESPONSIBILITY ☐ CONST ☒ DESIGN ☐ QA ☐ NSSS OTHER Elect. HU

11 ORIGINATED	DATE	13 SENIOR ENGR REVIEW	DATE	15 Q.A. REVIEW	DATE
[signature]	12/13/78	[signature]	12-13-78	[signature]	12-15-78

17 DISPOSITION HEM 4/25/79 / Acceptable - Pending approval of test results | 18 REPORT TO MGMT ☒ [signature] 4/12/79

EVALUATION/JUSTIFICATION

~~Based on the attached letter by RG Mallaney dated Feb 2, 1979 and the attached certifications from Sure-loc and Southeastern Bolt and screw, it has been established that all bolting material (½"ϕ) was either A 307 or SAE J429 Grade 2 which is equivalent to A 307. Design drawings designating bolting material have been revised to indicate that all bolts used on cable tray hanger connections shall be ASTM A 307 or equivalent.~~

(SEE ATTACHED SHEET)

[signature] 2/26/79

[signature] 2/26/79

19 BY	DATE	20	DATE	21 Q.A. APPROVAL	DATE
W E [signature]	2-26-79	E. L. Karg Jr.	2/26/79	T C Roberts	2-28-79

22. ACTION/INSPECTION REQUIRED	23 ASSIGNED TO	24 PERFORMED BY	DATE
	~~QCME~~	~~THE HEM~~	
1) Perform test in accordance with Attachments	~~SRG~~ CECV	T.H. Robertson	2/7/81
2) When results of testing program have been evaluated by Design Elect., attach to this NCI. HEM 4/25/79	CEEL	J.W. Powell	3.25.81
3) Test results found to be acceptable by Design Elect. HEM 4/25/79 for all bolts received of the types tested JWE 10-19-79	CEEL	J.W. Powell	3-25-81
4) Test results found to be unacceptable by Design Elect. See NCI No. ______. HEM 4/25/79	CEEL	N/A	

① T.H. Robertson 12/10/80 ② [signature] 12/10/80

BY	DATE	QA APPROVAL	DATE
J. W. Powell	4-25-79	[signature] HEM	4-25-79

ACTION/INSPECTION EXCEPTIONS OR REMARKS

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129

[signature] 3-27-81

CCI 4496 – Rev. 1

17. ~~The 1/2" diameter bolts used in the nuclear safety related cable tray support~~ systems are to be equivalent in strength to ASTM A-307 bolts. All appropriate design drawings have been revised to indicate this.

To verify that all 1/2" diameter bolts used meet this strength requirement, a random sample of each bolt size shall be secured by Construction from those bolts which are not identified by appropriate markings. The sample sizes shall be in accordance with B W Logan's attached letter of 3/29/79. These samples shall then be tested in accordance with C L Ray's attached test procedure of 3/20/79.

The results of this testing program shall be sent to Design Engineering/ Electrical Division for determination of acceptability.

19. By: _____ Date: 4/18/79

20. Technical Approval: D J Owen Date: 4/18/79

21. ~~QA Approval:~~ T C Peluso Date: 4-19-79

(SEE REVISION 2 - ATTACHED)

NCI 4496 - Revision 2

17. The ½" diameter bolts used in the nuclear safety related cable tray support systems are to be equivalent in strength to ASTM A-307 bolts. All appropriate design drawings have been revised to indicate this.

To verify that all ½" diameter bolts used meet this strength requirement, a random sample of each bolt size shall be secured by Construction from those bolts which are not identified by appropriate markings. The sample sizes shall be in accordance with B W Logan's attached letter of 3/29/79. These samples shall then be sent to a qualified outside testing laboratory by the Construction Department, to be tested in accordance with ASTM A-307 requirements. The results of this testing program shall be sent to the Design Engineering Electrical Division for determination of acceptability.

In order to prevent reoccurance of this problem, several changes have been implemented. First, all appropriate design documents have been revised to specifically state the material/grade requirements for bolting materials. Second, the Purchase Requisitions for all bolting materials are checked for the inclusion of applicable material/grade requirements. Third, Mill Power Supply has committed that no vendor or material substitutions will be made without the prior approval of responsible Design Engineering personnel.

19. By: _____ Date: 11/24/80

20. Technical Approval: D J Allen Date: 11/26/80

21. QA Approval: T C Roberts Date: 12-3-80

See attached addendum dated 3-16-81

4496

March 29, 1979

D G Owen

Subject: Determination of Sample Size for Catawba
Electrical Bolting Material Problem
File: CN-1388.00

The testing of sample bolts to make an inference about the ability of an entire lot to meet tensile strength criteria is a two part statistical problem. The first part involves the determination of an appropriate sample size, and the second part is concerned with the acceptance or rejection of the lot based upon the results of the tests.

The following procedure is proposed to 1) determine an appropriate sample size for each of the bolt lots in question, and 2) establish a criteria for accepting or rejecting the lot based upon the test results. In order to establish the procedure, the following assumptions must be made:

1) Since the number of bolt manufacturers represented in the questioned lots cannot be determined, each lot shall be approached as an unknown quantity.

2) The bolts used at Catawba Nuclear Station are not significantly different from those used at McGuire Nuclear Station. This allows the use of McGuire test results to estimate physical parameters which are needed to determine sample sizes. The Catawba test results will indicate the validity of this assumption.

3) The accuracy of torque wrenches used to tighten bolts is $\pm$ 5% of the set value. This is used to determine the allowable error in measuring tensile strength. The test should not expect accuracy better than that of the wrenches used to tighten the bolts.

4) An acceptable confidence factor is 99% or roughly three standard deviations (3σ) from the mean value.

Based upon these assumptions the following expression* should be used to determine sample sizes

$$n = \left[\frac{3\sigma}{E}\right]^2$$

where n is the number of samples, σ is one standard deviation from the mean tensile strength calculated from McGuire test results, and E is the allowable error in the tensile strength measurement and is based on McGuire data. This expression means that if n samples are tested, there is better than a 99% chance the estimated tensile strength for the lot will lie within the allowable error limit.

*From Introduction to Probability and Statistics, pp. 182, 197

REFERENCES

1. ASTM Standard A 307-76b, "Standard Specification for Carbon Steel Externally and Internally Threaded Standard Fasteners."

2. ASTM Standard E 122-72, "Standard Recommended Practice for Choice of Sample Size to Estimate the Average Quality of a Lot or Process."

3. William Mendenhall, Introduction to Probability and Statistics, Duxbury Press, 1971.

4. McGuire NCI Report No. 4444.

CALCULATIONS

For 99% confidence

Bolt size	σ	E	$n=\left[\frac{3\sigma}{E}\right]^2$	N	$n_L=n\left[\frac{N}{N+n}\right]$*
1/2 X 15/16	1214	480	58	107,500	-
1/2 X 1 3/16	455	480	8	15,000	-
1/2 X 1 1/2	1214	545	45	51,000	-
1/2 X 1 3/4	1214	480	58	1,600	56
1/2 X 2	1214	480	58	1,000	55
1/2 X 2 1/4	1214	480	58	500	52
1/2 X 2 1/2	1214	480	58	10,000	-

For 95% confidence

Bolt Size	σ	E	$n=\left[\frac{2\sigma}{E}\right]^2$	N	$n_L=n\left[\frac{N}{N+n}\right]$*
1/2 X 1 3/4	1214	480	26	1,600	-
1/2 X 2	1214	480	26	1,000	25
1/2 X 2 1/4	1214	480	26	500	25

*ASTM Standard E 122-72, Section 5, p 1045

When a tested bolt size from McGuire closely corresponds to a questioned bolt size from Catawba, the McGuire test data* for that bolt size shall be used in calculating the Catawba sample size. When a Catawba bolt size does not correspond to a tested McGuire bolt size, the McGuire values which give the most conservative estimate of sample size, i.e., the largest observed standard deviation and the smallest allowable error bound, shall be used in the sample size determination.

The following table will summarize the suggested sample sizes** for each of the questioned bolt sizes:

Bolt Size	Quantity Issued	Suggested Sample Size Confidence 95%	99%
1/2" X 15/16"	107,500	-	58
1/2" X 1 3/16"	15,000	-	8
1/2" X 1 1/2"	51,000	-	45
1/2" X 1 3/4"	1,600	26	(56)
1/2" X 2"	1,000	25	(55)
1/2" X 2 1/4"	500	25	(52)
1/2" X 2 1/2"	10,000	-	58
		245	332

For the 1 3/4, 2 and 2 1/4 inch bolts, a 95% confidence level is suggested to reduce the number of samples to a more realistic value. Also, the reason only eight samples were required of the 1 3/16 inch bolts is that the McGuire data for the 1 1/4 inch bolts displayed a fairly small standard deviation.

After testing the bolts from Catawba, a mean value for tensile strength and a standard deviation about the mean should be calculated for each bolt size. ASTM Standard A 307-76b sets the minimum acceptable tensile strength for Class A bolts at 8500 lbf. Acceptance or rejection of a bolt size lot should be determined by the following procedure:

1) Calculate a mean and a standard deviation from test data
2) Subtract 8500 from the mean value
3) Divide the result (from 2) by the calculated standard deviation
4) If this quotient is greater than 2, accept the lot. This gives 95% confidence that the bolts in the lot have tensile strengths greater than the mean less 2σ.
5) If the quotient is less than 2
   a) reject the lot or,
   b) repeat the test using the same sample size or,
   c) find the true percentage from a standard normal distribution table and determine if it is acceptable. For instance, 1.645σ give 90% confidence.

* McGuire NCI Report No. 4444
** Calculations are attached.

If you have questions or comments on the above procedures, please notify me.

Bruce W. Logan

B W Logan
Assistant Design Engineer

BWL/lge

attachments

cc: L E Suther
S B Garman
C J Hager

17. EVALUATION OF TEST RESULTS

In order to complete the statistical process of determining whether or not the sample bolts meet the mechanical strength criteria of ASTM A-307 bolts, the attached test results for each of the samples must be evaluated according to the established acceptance procedure (See B W Logan's attached letter dated 3/29/79).

The evaluation of the test results for the 1/2" bolts is summarized in Tables I and II. For the lot of 1/2" x 15/16" bolts, a Rockwell "B" hardness test determines whether the bolts conform to the mechanical requirements. As shown in Table I, the results indicate that the mean value is greater than two standard deviations from both the upper and lower limits of the hardness requirements. Therefore the respective sample of 1/2" x 15/16" bolts is acceptable to the standards of ASTM A-307 bolts. The remaining samples were tested in regards to their conformance to the mechanical tensile strength requirements. The evaluation of their test results is summarized in Table II and indicates that the respective samples are also acceptable. In conclusion, the test results have determined that the subject bolts meet the mechanical requirements for ASTM A-307 bolts with a 95% confidence level.

19. By: Douglas W Vass / [signature] Date: 3/16/81

20. Technical Approval [signature] Date: 3/17/81

21. QA Approval TC Roberts Date: 3-23-81

BOLT SIZE	SAMPLE SIZE	MEAN (1)	STANDARD DEVIATION (2)	REQUIRED RANGE		$\frac{(1)-(3)}{(2)}$	$\frac{(4)-(1)}{(2)}$	ACCEPTABLE LOT?
				MIN (3)	MAX (4)			
1/2" x 15/16"	58	92.95	2.62	69	100	9.14	2.69	YES

TABLE I

EVALUATION OF HARDNESS TEST RESULTS

FOR 1/2" BOLTS

BOLT SIZE	SAMPLE SIZE	MEAN (1)	STANDARD DEVIATION (2)	MIN TENSILE STRENGTH (LBS) (3)	$\frac{(1)-(3)}{(2)}$	ACCEPTABLE LOT ?
1/2" x 1-3/16"	8	10825.00	738.24	8500.	3.15	YES
1/2" x 1-1/2"	45	12415.55	232.04	8500.	16.87	YES
1/2" x 1-3/4"	26	11723.07	505.61	8500.	6.37	YES
1/2" x 2"	25	11612.00	172.17	8500.	18.08	YES
1/2" x 2-1/4"	25	13436.00	392.51	8500.	12.58	YES
1/2" x 2-1/2"	58	12484.48	111.29	8500.	35.80	YES

TABLE II

EVALUATION OF TENSILE STRENGTH TEST RESULTS

FOR 1/2" BOLTS

LAW ENGINEERING TESTING COMPANY

501 MINUET LANE
P O BOX 11297 • CHARLOTTE NORTH CAROLINA 28220
(704) 523-2022

REPORT OF ROCKWELL "B" HARDNESS INSPECTION

Client:	Duke Power Company	Office:	Charlotte Metals
Project:	Catawba Nuclear Station Newport, South Carolina	Date:	February 4, 1981
		Lab. No.	CHS 81-016

Client's P. O. No.: G 2494-41

Material: Reported as Carbon Steel Externally Threaded Standard Fastner ASTM A307 (See Below) Grade A

Heat No.: Unknown

Date Tested: 2/2/81

Procedure: In accordance with ASTM A307-78 and ASTM E18-79

EQUIPMENT CALIBRATION

Readings	Average Reading	Calibration Standard	Reading Correction, %
--	84.1	81.6	97.0
--	87.3	81.6	93.5

ROCKWELL "B" HARDNESS RESULTS

LETCo. Piece No.	Bolt Size (In)	Average Reading	Corrected Reading	Comments
1-23-81-1	1/2" x 15/16"	92.0	89	--
1-23-81-2	1/2" x 15/16"	97.1	94	--
1-23-81-3	1/2" x 15/16"	92.2	89	--
1-23-81-4	1/2" x 15/16"	95.6	93	--
1-23-81-5	1/2" x 15/16"	98.3	95	--
1-23-81-6	1/2" x 15/16"	98.0	95	--
1-23-81-7	1/2" x 15/16"	97.3	94	--
1-23-81-8	1/2" x 15/16"	97.5	95	--
1-23-81-9	1/2" x 15/16"	99.2	96	--
1-23-81-10	1/2" x 15/16"	98.0	95	--
1-23-81-11	1/2" x 15/16"	99.0	95	--
1-23-81-12	1/2" x 15/16"	98.3	94	--
1-23-81-13	1/2" x 15/16"	99.3	95	--
1-23-81-14	1/2" x 15/16"	96.5	92	--

ROCKWELL "B" HARDNESS RESULTS
Continued

LETCo. Piece No.	Bolt Size (In)	Average Reading	Corrected Reading	Comments
1-23-81-15	1/2" x 15/16"	97.8	93	--
1-23-81-16	1/2" x 15/16"	96.6	92	--
1-23-81-17	1/2" x 15/16"	95.6	91	--
1-23-81-18	1/2" x 15/16"	100.0	96	--
1-23-81-19	1/2" x 15/16"	99.8	95	--
1-23-81-20	1/2" x 15/16"	98.7	94	--
1-23-81-21	1/2" x 15/16"	100.6	95	--
1-23-81-22	1/2" x 15/16"	95.7	90	--
1-23-81-23	1/2" x 15/16"	99.3	94	--
1-23-81-24	1/2" x 15/16"	97.5	92	--
1-23-81-25	1/2" x 15/16"	100.7	95	--
1-23-81-26	1/2" x 15/16"	99.0	94	--
1-23-81-27	1/2" x 15/16"	98.8	93	--
1-23-81-28	1/2" x 15/16"	100.2	95	--
1-23-81-29	1/2" x 15/16"	99.7	94	--
1-23-81-30	1/2" x 15/16"	100.0	95	--
1-23-81-31	1/2" x 15/16"	98.2	93	--
1-23-81-32	1/2" x 15/16"	102.8	97	--
1-23-81-33	1/2" x 15/16"	99.7	94	--
1-23-81-34	1/2" x 15/16"	96.3	91	--
1-23-81-35	1/2" x 15/16"	100.3	95	--
1-23-81-36	1/2" x 15/16"	97.2	92	--
1-23-81-37	1/2" x 15/16"	98.5	93	--
1-23-81-38	1/2" x 15/16"	95.3	90	--
1-23-81-39	1/2" x 15/16"	99.3	94	--
1-23-81-40	1/2" x 15/16"	99.8	94	--
1-23-81-41	1/2" x 15/16"	98.2	91	--
1-23-81-42	1/2" x 15/16"	99.2	92	--
1-23-81-43	1/2" x 15/16"	99.2	92	--
1-23-81-44	1/2" x 15/16"	101.2	94	--
1-23-81-45	1/2" x 15/16"	96.8	90	--
1-23-81-46	1/2" x 15/16"	98.0	91	--
1-23-81-47	1/2" x 15/16"	98.0	91	--
1-23-81-48	1/2" x 15/16"	97.0	90	--
1-23-81-49	1/2" x 15/16"	100.2	93	--

ROCKWELL "B" HARDNESS RESULTS
Continued

LETCo. Piece No.	Bolt Size (In)	Average Reading	Corrected Reading	Comments
1-23-81-50	1/2" x 15/16"	100.0	93	--
1-23-81-51	1/2" x 15/16"	89.7	83	--
1-23-81-52	1/2" x 15/16"	98.3	91	--
1-23-81-53	1/2" x 15/16"	100.8	94	--
1-23-81-54	1/2" x 15/16"	102.2	95	--
1-23-81-55	1/2" x 15/16"	90.8	84	--
1-23-81-56	1/2" x 15/16"	102.7	96	--
1-23-81-57	1/2" x 15/16"	101.0	94	--
1-23-81-58	1/2" x 15/16"	102.5	95	--
Required Range.....			69 thru 100.....	

Inspector: Richard H. Morris

Reviewed by:
Edward M. Beck, P. E.
Metals Department Manager

Respectfully submitted,
LAW ENGINEERING TESTING COMPANY

Larry B. Coble, Metals Laboratory Supervisor

LAW ENGINEERING TESTING COMPANY

GEOTECHNICAL, ENVIRONMENTAL & CONSTRUCTION MATERIALS CONSULTANTS

501 MINUET LANE
P.O. BOX 11297 • CHARLOTTE, NORTH CAROLINA 28220
(704) 523-2022

REPORT OF MECHANICAL TENSION TEST

Client: Duke Power Company

Project: Catawba Nuclear Station
Newport, South Carolina

Office: Charlotte Metals

Date: February 4, 1981

Lab. No. CHS 81-016

Client P. O. No.: G 2494-41

Material: Reported as Carbon Steel Externally Threaded Standard Fastener ASTM A307 (See Below) Grade A

Heat No.: Unknown

Date Tested: 2/3/81

Procedure: In accordance with ASTM A307-78 and ASTM A370-77

TEST RESULTS

LETCo. Piece No.	Bolt Size (In)	Threads Per Inch	Area (In^2)	Ultimate Load (Lbs)
1-23-81-1	1/2" x 1-3/16"	13	0.1419	10,900
1-23-81-2	1/2" x 1-3/16"	13	0.1419	10,550
1-23-81-3	1/2" x 1-3/16"	13	0.1419	10,400
1-23-81-4	1/2" x 1-3/16"	13	0.1419	12,400
1-23-81-5	1/2" x 1-3/16"	13	0.1419	10,050
1-23-81-6	1/2" x 1-3/16"	13	0.1419	10,250
1-23-81-7	1/2" x 1-3/16"	13	0.1419	10,850
1-23-81-8	1/2" x 1-3/16"	13	0.1419	11,200
Minimum				8,500
1-23-81-1	1/2" x 1-1/2"	13	0.1419	12,500
1-23-81-2	1/2" x 1-1/2"	13	0.1419	12,250
1-23-81-3	1/2" x 1-1/2"	13	0.1419	12,300
1-23-81-4	1/2" x 1-1/2"	13	0.1419	12,150
1-23-81-5	1/2" x 1-1/2"	13	0.1419	12,500
1-23-81-6	1/2" x 1-1/2"	13	0.1419	12,250
1-23-81-7	1/2" x 1-1/2"	13	0.1419	12,100
1-23-81-8	1/2" x 1-1/2"	13	0.1419	12,000
1-23-81-9	1/2" x 1-1/2"	13	0.1419	12,500
1-23-81-10	1/2" x 1-1/2"	13	0.1419	12,650
1-23-81-11	1/2" x 1-1/2"	13	0.1419	12,150
1-23-81-12	1/2" x 1-1/2"	13	0.1419	12,300

Duke Power Company
Catawba Nuclear Station
LETCo. Job No. CHS 81-016
February 4, 1981

MECHANICAL TENSION TEST
Continued

LETCo. Piece No.	Bolt Size (In)	Threads Per Inch	Area (In^2)	Ultimate Load (Lbs)
1-23-81-13	1/2" x 1-1/2"	13	0.1419	12,700
1-23-81-14	1/2" x 1-1/2"	13	0.1419	12,400
1-23-81-15	1/2" x 1-1/2"	13	0.1419	12,650
1-23-81-16	1/2" x 1-1/2"	13	0.1419	12,450
1-23-81-17	1/2" x 1-1/2"	13	0.1419	12,400
1-23-81-18	1/2" x 1-1/2"	13	0.1419	12,500
1-23-81-19	1/2" x 1-1/2"	13	0.1419	12,750
1-23-81-20	1/2" x 1-1/2"	13	0.1419	12,600
1-23-81-21	1/2" x 1-1/2"	13	0.1419	12,200
1-23-81-22	1/2" x 1-1/2"	13	0.1419	12,200
1-23-81-23	1/2" x 1-1/2"	13	0.1419	12,350
1-23-81-24	1/2" x 1-1/2"	13	0.1419	12,800
1-23-81-25	1/2" x 1-1/2"	13	0.1419	12,350
1-23-81-26	1/2" x 1-1/2"	13	0.1419	12,300
1-23-81-27	1/2" x 1-1/2"	13	0.1419	12,450
1-23-81-28	1/2" x 1-1/2"	13	0.1419	12,650
1-23-81-29	1/2" x 1-1/2"	13	0.1419	12,800
1-23-81-30	1/2" x 1-1/2"	13	0.1419	12,150
1-23-81-31	1/2" x 1-1/2"	13	0.1419	12,850
1-23-81-32	1/2" x 1-1/2"	13	0.1419	12,550
1-23-81-33	1/2" x 1-1/2"	13	0.1419	12,600
1-23-81-34	1/2" x 1-1/2"	13	0.1419	12,100
1-23-81-35	1/2" x 1-1/2"	13	0.1419	12,550
1-23-81-36	1/2" x 1-1/2"	13	0.1419	12,450
1-23-81-37	1/2" x 1-1/2"	13	0.1419	12,200
1-23-81-38	1/2" x 1-1/2"	13	0.1419	12,150
1-23-81-39	1/2" x 1-1/2"	13	0.1419	12,750
1-23-81-40	1/2" x 1-1/2"	13	0.1419	12,100
1-23-81-41	1/2" x 1-1/2"	13	0.1419	12,650
1-23-81-42	1/2" x 1-1/2"	13	0.1419	12,400
1-23-81-43	1/2" x 1-1/2"	13	0.1419	12,700
1-23-81-44	1/2" x 1-1/2"	13	0.1419	12,100
1-23-81-45	1/2" x 1-1/2"	13	0.1419	12,200
Minimum				8,500

Duke Power Company
Catawba Nuclear Station
LETCo. Job No. CHS 81-016
February 4, 1981

MECHANICAL TENSION TEST
Continued

LETCo. Piece No.	Bolt Size (In)	Threads Per Inch	Area (In^2)	Ultimate Load (Lbs)
1-23-81-1	1/2" x 1-3/4"	13	0.1419	11,700
1-23-81-2	1/2" x 1-3/4"	13	0.1419	12,050
1-23-81-3	1/2" x 1-3/4"	13	0.1419	12,300
1-23-81-4	1/2" x 1-3/4"	13	0.1419	12,100
1-23-81-5	1/2" x 1-3/4"	13	0.1419	11,750
1-23-81-6	1/2" x 1-3/4"	13	0.1419	11,650
1-23-81-7	1/2" x 1-3/4"	13	0.1419	11,700
1-23-81-8	1/2" x 1-3/4"	13	0.1419	12,300
1-23-81-9	1/2" x 1-3/4"	13	0.1419	11,700
1-23-81-10	1/2" x 1-3/4"	13	0.1419	12,250
1-23-81-11	1/2" x 1-3/4"	13	0.1419	12,200
1-23-81-12	1/2" x 1-3/4"	13	0.1419	11,550
1-23-81-13	1/2" x 1-3/4"	13	0.1419	12,300
1-23-81-14	1/2" x 1-3/4"	13	0.1419	12,100
1-23-81-15	1/2" x 1-3/4"	13	0.1419	10,400
1-23-81-16	1/2" x 1-3/4"	13	0.1419	11,650
1-23-81-17	1/2" x 1-3/4"	13	0.1419	11,550
1-23-81-18	1/2" x 1-3/4"	13	0.1419	10,550
1-23-81-19	1/2" x 1-3/4"	13	0.1419	11,700
1-23-81-20	1/2" x 1-3/4"	13	0.1419	11,700
1-23-81-21	1/2" x 1-3/4"	13	0.1419	12,200
1-23-81-22	1/2" x 1-3/4"	13	0.1419	11,750
1-23-81-23	1/2" x 1-3/4"	13	0.1419	11,700
1-23-81-24	1/2" x 1-3/4"	13	0.1419	11,650
1-23-81-25	1/2" x 1-3/4"	13	0.1419	11,600
1-23-81-26	1/2" x 1-3/4"	13	0.1419	10,700
Minimum				8,500

Duke Power Company
Catawba Nuclear Station
LETCo. Job No. CHS 81-016
February 4, 1981

MECHANICAL TENSION TEST
Continued

LETCo. Piece No.	Bolt Size (In)	Threads Per Inch	Area (In^2)	Ultimate Load (Lbs)
1-23-81-1	1/2" x 2"	13	0.1419	11,950
1-23-81-2	1/2" x 2"	13	0.1419	11,200
1-23-81-3	1/2" x 2"	13	0.1419	11,650
1-23-81-4	1/2" x 2"	13	0.1419	11,600
1-23-81-5	1/2" x 2"	13	0.1419	11,800
1-23-81-6	1/2" x 2"	13	0.1419	11,450
1-23-81-7	1/2" x 2"	13	0.1419	11,600
1-23-81-8	1/2" x 2"	13	0.1419	11,600
1-23-81-9	1/2" x 2"	13	0.1419	11,700
1-23-81-10	1/2" x 2"	13	0.1419	11,650
1-23-81-11	1/2" x 2"	13	0.1419	11,550
1-23-81-12	1/2" x 2"	13	0.1419	11,750
1-23-81-13	1/2" x 2"	13	0.1419	11,750
1-23-81-14	1/2" x 2"	13	0.1419	11,550
1-23-81-15	1/2" x 2"	13	0.1419	11,700
1-23-81-16	1/2" x 2"	13	0.1419	11,650
1-23-81-17	1/2" x 2"	13	0.1419	11,750
1-23-81-18	1/2" x 2"	13	0.1419	11,600
1-23-81-19	1/2" x 2"	13	0.1419	11,450
1-23-81-20	1/2" x 2"	13	0.1419	11,150
1-23-81-21	1/2" x 2"	13	0.1419	11,650
1-23-81-22	1/2" x 2"	13	0.1419	11,750
1-23-81-23	1/2" x 2"	13	0.1419	11,600
1-23-81-24	1/2" x 2"	13	0.1419	11,500
1-23-81-25	1/2" x 2"	13	0.1419	11,700
Minumum				8,500

Duke Power Company
Catawba Nuclear Station
LETCo. Job No. CHS 81-016
February 4, 1981

MECHANICAL TENSION TEST
Continued

LETCo. Piece No.	Bolt Size (In)	Threads Per Inch	Area (In^2)	Ultimate Load (Lbs)
1-23-81-1	1/2" x 2-1/4"	13	0.1419	13,600
1-23-81-2	1/2" x 2-1/4"	13	0.1419	12,000
1-23-81-3	1/2" x 2-1/4"	13	0.1419	13,500
1-23-81-4	1/2" x 2-1/4"	13	0.1419	13,400
1-23-81-5	1/2" x 2-1/4"	13	0.1419	13,650
1-23-81-6	1/2" x 2-1/4"	13	0.1419	12,850
1-23-81-7	1/2" x 2-1/4"	13	0.1419	13,650
1-23-81-8	1/2" x 2-1/4"	13	0.1419	13,450
1-23-81-9	1/2" x 2-1/4"	13	0.1419	13,450
1-23-81-10	1/2" x 2-1/4"	13	0.1419	12,950
1-23-81-11	1/2" x 2-1/4"	13	0.1419	13,700
1-23-81-12	1/2" x 2-1/4"	13	0.1419	14,000
1-23-81-13	1/2" x 2-1/4"	13	0.1419	13,750
1-23-81-14	1/2" x 2-1/4"	13	0.1419	13,400
1-23-81-15	1/2" x 2-1/4"	13	0.1419	13,600
1-23-81-16	1/2" x 2-1/4"	13	0.1419	13,450
1-23-81-17	1/2" x 2-1/4"	13	0.1419	13,500
1-23-81-18	1/2" x 2-1/4"	13	0.1419	13,450
1-23-81-19	1/2" x 2-1/4"	13	0.1419	13,200
1-23-81-20	1/2" x 2-1/4"	13	0.1419	13,950
1-23-81-21	1/2" x 2-1/4"	13	0.1419	13,250
1-23-81-22	1/2" x 2-1/4"	13	0.1419	13,600
1-23-81-23	1/2" x 2-1/4"	13	0.1419	13,600
1-23-81-24	1/2" x 2-1/4"	13	0.1419	13,500
1-23-81-25	1/2" x 2-1/4"	13	0.1419	13,450
Minimum				8,500

MECHANICAL TENSION TEST
Continued

LETCo. Piece No.	Bolt Size (In)	Threads Per Inch	Area (In^2)	Ultimate Load (Lbs)
1-23-81-1	1/2" x 2-1/2"	13	0.1419	12,450
1-23-81-2	1/2" x 2-1/2"	13	0.1419	12,550
1-23-81-3	1/2" x 2-1/2"	13	0.1419	12,450
1-23-81-4	1/2" x 2-1/2"	13	0.1419	12,600
1-23-81-5	1/2" x 2-1/2"	13	0.1419	12,400
1-23-81-6	1/2" x 2-1/2"	13	0.1419	12,550
1-23-81-7	1/2" x 2-1/2"	13	0.1419	12,600
1-23-81-8	1/2" x 2-1/2"	13	0.1419	12,550
1-23-81-9	1/2" x 2-1/2"	13	0.1419	12,600
1-23-81-10	1/2" x 2-1/2"	13	0.1419	12,700
1-23-81-11	1/2" x 2-1/2"	13	0.1419	12,600
1-23-81-12	1/2" x 2-1/2"	13	0.1419	12,550
1-23-81-13	1/2" x 2-1/2"	13	0.1419	12,500
1-23-81-14	1/2" x 2-1/2"	13	0.1419	12,450
1-23-81-15	1/2" x 2-1/2"	13	0.1419	12,550
1-23-81-16	1/2" x 2-1/2"	13	0.1419	12,600
1-23-81-17	1/2" x 2-1/2"	13	0.1419	12,600
1-23-81-18	1/2" x 2-1/2"	13	0.1419	12,350
1-23-81-19	1/2" x 2-1/2"	13	0.1419	12,350
1-23-81-20	1/2" x 2-1/2"	13	0.1419	12,650
1-23-81-21	1/2" x 2-1/2"	13	0.1419	12,450
1-23-81-22	1/2" x 2-1/2"	13	0.1419	12,550
1-23-81-23	1/2" x 2-1/2"	13	0.1419	12,450
1-23-81-24	1/2" x 2-1/2"	13	0.1419	12,700
1-23-81-25	1/2" x 2-1/2"	13	0.1419	12,650
1-23-81-26	1/2" x 2-1/2"	13	0.1419	12.550
1-23-81-27	1/2" x 2-1/2"	13	0.1419	12,300
1-23-81-28	1/2" x 2-1/2"	13	0.1419	12,550
1-23-81-29	1/2" x 2-1/2"	13	0.1419	12,350
1-23-81-30	1/2" x 2-1/2"	13	0.1419	12,450
1-23-81-31	1/2" x 2-1/2"	13	0.1419	12,500
1-23-81-32	1/2" x 2-1/2"	13	0.1419	12,400
1-23-81-33	1/2" x 2-1/2"	13	0.1419	12,350
1-23-81-34	1/2" x 2-1/2"	13	0.1419	12,450
1-23-81-35	1/2" x 2-1/2"	13	0.1419	12,500
1-23-81-36	1/2" x 2-1/2"	13	0.1419	12,350
1-23-81-37	1/2" x 2-1/2"	13	0.1419	12,450
1-23-81-38	1/2" x 2-1/2"	13	0.1419	12,350

MECHANICAL TENSION TEST
Continued

LETCo. Piece No.	Bolt Size (In)	Threads Per Inch	Area (In^2)	Ultimate Load (Lbs)
1-23-81-39	1/2" x 2-1/2"	13	0.1419	12,300
1-23-81-40	1/2" x 2-1/2"	13	0.1419	12,250
1-23-81-41	1/2" x 2-1/2"	13	0.1419	12,500
1-23-81-42	1/2" x 2-1/2"	13	0.1419	12,450
1-23-81-43	1/2" x 2-1/2"	13	0.1419	12,450
1-23-81-44	1/2" x 2-1/2"	13	0.1419	12,500
1-23-81-45	1/2" x 2-1/2"	13	0.1419	12,300
1-23-81-46	1/2" x 2-1/2"	13	0.1419	12,500
1-23-81-47	1/2" x 2-1/2"	13	0.1419	12,600
1-23-81-48	1/2" x 2-1/2"	13	0.1419	12,400
1-23-81-49	1/2" x 2-1/2"	13	0.1419	12,450
1-23-81-50	1/2" x 2-1/2"	13	0.1419	12,450
1-23-81-51	1/2" x 2-1/2"	13	0.1419	12,200
1-23-81-52	1/2" x 2-1/2"	13	0.1419	12,500
1-23-81-53	1/2" x 2-1/2"	13	0.1419	12,500
1-23-81-54	1/2" x 2-1/2"	13	0.1419	12,450
1-23-81-55	1/2" x 2-1/2"	13	0.1419	12,550
1-23-81-56	1/2" x 2-1/2"	13	0.1419	12,650
1-23-81-57	1/2" x 2-1/2"	13	0.1419	12,600
1-23-81-58	1/2" x 2-1/2"	13	0.1419	12,500
Minimum				8,500

MECHANICAL TENSION TEST
Continued

LETCo. Piece No.	Bolt Size (In)	Threads Per Inch	Area (In^2)	Ultimate Load (Lbs)
1-23-81-1	3/8" x 1"	16	0.0775	5,650
1-23-81-2	3/8" x 1"	16	0.0775	5,700
1-23-81-3	3/8" x 1"	16	0.0775	5,500
1-23-81-4	3/8" x 1"	16	0.0775	5,500
1-23-81-5	3/8" x 1"	16	0.0775	5,550
1-23-81-6	3/8" x 1"	16	0.0775	5,600
1-23-81-7	3/8" x 1"	16	0.0775	5,400
1-23-81-8	3/8" x 1"	16	0.0775	5,500
1-23-81-9	3/8" x 1"	16	0.0775	5,650
1-23-81-10	3/8" x 1"	16	0.0775	5,250
1-23-81-11	3/8" x 1"	16	0.0775	5,700
[illegible]23-81-12	3/8" x 1"	16	0.0775	5,700
[illegible]23-81-13	3/8" x 1"	16	0.0775	5,500
1-23-81-14	3/8" x 1"	16	0.0775	5,650
1-23-81-15	3/8" x 1"	16	0.0775	5,600
1-23-81-16	3/8" x 1"	16	0.0775	5,750
1-23-81-17	3/8" x 1"	16	0.0775	5,600
1-23-81-18	3/8" x 1"	16	0.0775	5,550
1-23-81-19	3/8" x 1"	16	0.0775	5,700
1-23-81-20	3/8" x 1"	16	0.0775	5,450
1-23-81-21	3/8" x 1"	16	0.0775	5,650
1-23-81-22	3/8" x 1"	16	0.0775	5,750
1-23-81-23	3/8" x 1"	16	0.0775	5,600
1-23-81-24	3/8" x 1"	16	0.0775	5,650
1-23-81-25	3/8" x 1"	16	0.0775	5.550
1-23-81-26	3/8" x 1"	16	0.0775	5,550
1-23-81-27	3/8" x 1"	16	0.0775	5,650
1-23-81-28	3/8" x 1"	16	0.0775	5,650
1-23-81-29	3/8" x 1"	16	0.0775	5,550
1-23-81-30	3/8" x 1"	16	0.0775	5,750
1-23-81-31	3/8" x 1"	16	0.0775	5,400
1-23-81-32	3/8" x 1"	16	0.0775	5,600
Minimum				4,650

MECHANICAL TENSION TEST
Continued

LETCo. Piece No.	Bolt Size (In)	Threads Per Inch	Area (In^2)	Ultimate Load (Lbs)
1-23-81-1	3/8" x 1-1/4"	16	0.0775	7,600
1-23-81-2	3/8" x 1-1/4"	16	0.0775	7,400
1-23-81-3	3/8" x 1-1/4"	16	0.0775	7,350
1-23-81-4	3/8" x 1-1/4"	16	0.0775	7,600
1-23-81-5	3/8" x 1-1/4"	16	0.0775	7,300
1-23-81-6	3/8" x 1-1/4"	16	0.0775	7,350
1-23-81-7	3/8" x 1-1/4"	16	0.0775	7,750
1-23-81-8	3/8" x 1-1/4"	16	0.0775	7,650
1-23-81-9	3/8" x 1-1/4"	16	0.0775	7,250
1-23-81-10	3/8" x 1-1/4"	16	0.0775	7,350
1-23-81-11	3/8" x 1-1/4"	16	0.0775	7,650
1-23-81-12	3/8" x 1-1/4"	16	0.0775	7,650
1-23-81-13	3/8" x 1-1/4"	16	0.0775	7,750
1-23-81-14	3/8" x 1-1/4"	16	0.0775	7,750
1-23-81-15	3/8" x 1-1/4"	16	0.0775	7,300
1-23-81-16	3/8" x 1-1/4"	16	0.0775	7,650
1-23-81-17	3/8" x 1-1/4"	16	0.0775	7,550
1-23-81-18	3/8" x 1-1/4"	16	0.0775	7,650
1-23-81-19	3/8" x 1-1/4"	16	0.0775	7,250
1-23-81-20	3/8" x 1-1/4"	16	0.0775	7,200
1-23-81-21	3/8" x 1-1/4"	16	0.0775	7,100
1-23-81-22	3/8" x 1-1/4"	16	0.0775	7,750
1-23-81-23	3/8" x 1-1/4"	16	0.0775	7,350
1-23-81-24	3/8" x 1-1/4"	16	0.0775	7,400
1-23-81-25	3/8" x 1-1/4"	16	0.0775	7,750
1-23-81-26	3/8" x 1-1/4"	16	0.0775	7,700
1-23-81-27	3/8" x 1-1/4"	16	0.0775	7,300
1-23-81-28	3/8" x 1-1/4"	16	0.0775	7,250
1-23-81-29	3/8" x 1-1/4"	16	0.0775	7,250
1-23-81-30	3/8" x 1-1/4"	16	0.0775	7,300
1-23-81-31	3/8" x 1-1/4"	16	0.0775	7,500
1-23-81-32	3/8" x 1-1/4"	16	0.0775	7,600
Minimum				4,650

MECHANICAL TENSION TEST
Continued

LETCo. Piece No.	Bolt Size (In)	Threads Per Inch	Area (In^2)	Ultimate Load (Lbs)
1-23-81-1	3/8" x 1-1/2"	16	0.0775	5,750
1-23-81-2	3/8" x 1-1/2"	16	0.0775	6,100
1-23-81-3	3/8" x 1-1/2"	16	0.0775	5,900
1-23-81-4	3/8" x 1-1/2"	16	0.0775	5,700
1-23-81-5	3/8" x 1-1/2"	16	0.0775	6,300
1-23-81-6	3/8" x 1-1/2"	16	0.0775	6,350
1-23-81-7	3/8" x 1-1/2"	16	0.0775	6,450
1-23-81-8	3/8" x 1-1/2"	16	0.0775	6,050
1-23-81-9	3/8" x 1-1/2"	16	0.0775	6,100
1-23-81-10	3/8" x 1-1/2"	16	0.0775	5,850
1-23-81-11	3/8" x 1-1/2"	16	0.0775	5,800
1-23-81-12	3/8" x 1-1/2"	16	0.0775	6,300
1-23-81-13	3/8" x 1-1/2"	16	0.0775	5,800
1-23-81-14	3/8" x 1-1/2"	16	0.0775	5,900
1-23-81-15	3/8" x 1-1/2"	16	0.0775	6,000
1-23-81-16	3/8" x 1-1/2"	16	0.0775	6,300
1-23-81-17	3/8" x 1-1/2"	16	0.0775	6,300
1-23-81-18	3/8" x 1-1/2"	16	0.0775	5,850
1-23-81-19	3/8" x 1-1/2"	16	0.0775	5,800
1-23-81-20	3/8" x 1-1/2"	16	0.0775	6,000
1-23-81-21	3/8" x 1-1/2"	16	0.0775	5,900
1-23-81-22	3/8" x 1-1/2"	16	0.0775	6,250
1-23-81-23	3/8" x 1-1/2"	16	0.0775	5,950
1-23-81-24	3/8" x 1-1/2"	16	0.0775	6,350
1-23-81-25	3/8" x 1-1/2"	16	0.0775	6,000
1-23-81-26	3/8" x 1-1/2"	16	0.0775	6,100
1-23-81-27	3/8" x 1-1/2"	16	0.0775	5,900
1-23-81-28	3/8" x 1-1/2"	16	0.0775	5,800
1-23-81-29	3/8" x 1-1/2"	16	0.0775	6,650
1-23-81-30	3/8" x 1-1/2"	16	0.0775	5,950
1-23-81-31	3/8" x 1-1/2"	16	0.0775	6,300
1-23-81-32	3/8" x 1-1/2"	16	0.0775	6,000
Minimum				4,650

MECHANICAL TENSION TEST
Continued

LETCo. Piece No.	Bolt Size (In)	Threads Per Inch	Area (In^2)	Ultimate Load (Lbs)
1-23-81-1	3/8" x 2 1/2"	16	0.0775	7,100
1-23-81-2	3/8" x 2-1/2"	16	0.0775	6,900
1-23-81-3	3/8" x 2-1/2"	16	0.0775	7,100
1-23-81-4	3/8" x 2-1/2"	16	0.0775	7,750
1-23-81-5	3/8" x 2-1/2"	16	0.0775	7,600
1-23-81-6	3/8" x 2-1/2"	16	0.0775	7,500
1-23-81-7	3/8" x 2-1/2"	16	0.0775	7,500
1-23-81-8	3/8" x 2-1/2"	16	0.0775	7,500
1-23-81-9	3/8" x 2-1/2"	16	0.0775	7,100
1-23-81-10	3/8" x 2-1/2"	16	0.0775	7,600
1-23-81-11	3/8" x 2-1/2"	16	0.0775	7,050
1-23-81-12	3/8" x 2-1/2"	16	0.0775	7,500
1-23-81-13	3/8" x 2-1/2"	16	0.0775	7,100
1-23-81-14	3/8" x 2-1/2"	16	0.0775	6,900
1-23-81-15	3/8" x 2-1/2"	16	0.0775	7,600
1-23-81-16	3/8" x 2-1/2"	16	0.0775	7,250
1-23-81-17	3/8" x 2-1/2"	16	0.0775	6,800
1-23-81-18	3/8" x 2-1/2"	16	0.0775	7,100
1-23-81-19	3/8" x 2-1/2"	16	0.0775	7,500
1-23-81-20	3/8" x 2-1/2"	16	0.0775	7,490
1-23-81-21	3/8" x 2-1/2"	16	0.0775	7,350
1-23-81-22	3/8" x 2-1/2"	16	0.0775	7,000
1-23-81-23	3/8" x 2-1/2"	16	0.0775	6,800
1-23-81-24	3/8" x 2-1/2"	16	0.0775	7,550
1-23-81-25	3/8" x 2-1/2"	16	0.0775	7,450
1-23-81-26	3/8" x 2-1/2"	16	0.0775	7,450
1-23-81-27	3/8" x 2-1/2"	16	0.0775	6,850
1-23-81-28	3/8" x 2-1/2"	16	0.0775	7,250
1-23-81-29	3/8" x 2-1/2"	16	0.0775	7,600
1-23-81-30	3/8" x 2-1/2"	16	0.0775	7,450
1-23-81-31	3/8" x 2-1/2"	16	0.0775	7,450
1-23-81-32	3/8" x 2-1/2"	16	0.0775	7,350
Minimum				4,650

Inspector(s): Larry E. Coble
Mark S. Westall

Reviewed by:

Edward M. Beck, P.E.
Metals Department Manager

Respectfully submitted,
LAW ENGINEERING TESTING COMPANY

Larry E. Coble, Metals Laboratory Supervisor

LAW ENGINEERING TESTING COMPANY

geotechnical, environmental & construction materials consultants
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(704) 523-2022

REPORT OF CHEMICAL ANALYSIS

Client: DUKE POWER COMPANY
Project: CATAWBA NUCLEAR STATION
Newport, South Carolina

Office: Charlotte Metals
Date: February 9, 1981
Lab. No. CHS 81-016

Client P. O. No.: G2494-41
Material: Reported as Carbon Steel Externally Threaded Standard Fastener ASTM A-307 (See Below) Grade A
Heat No.: Unknown
Date Tested: 2/9/81
Procedure: In accordance with ASTM A-307-78, ASTM A-36-77, and ASTM E-30-77

TEST RESULTS

LETCo. Piece No.	Elements					Size		
	Carbon	Manganese	Phosphorus	Sulfur	Silicon			
[redacted]1-59	0.13	0.40	0.02	0.02	0.18	1/2"	x	15/16"
1-23-81-9	0.15	0.51	0.01	0.01	0.16	1/2"	x	1-3/16"
1-23-81-46	0.15	0.49	0.02	0.02	0.24	1/2"	x	1-1/2"
1-23-81-27	0.16	0.50	0.02	0.02	0.15	1/2"	x	1-3/4"
1-23-81-38	0.19	0.33	0.02	0.02	0.15	1/2"	x	2"
1-23-81-26	0.15	0.48	0.01	0.02	0.15	1/2"	x	2-1/4"
1-23-81-58	0.16	0.37	0.01	0.01	0.15	1/2"	x	2-1/2"
1-23-81-32	0.12	0.29	0.01	0.01	0.13	3/8"	x	3/4"
1-23-81-33	0.18	0.38	0.02	0.02	0.22	3/8"	x	1"
1-23-81-33	0.21	0.84	0.02	0.02	0.44	3/8"	x	1-1/4"
1-23-81-33	0.18	0.36	0.02	0.02	0.12	3/8"	x	1-1/2"
1-23-81-33	0.16	0.36	0.02	0.01	0.14	3/8"	x	2-1/2"
Required A-307	——	——	[illegible]	0.15	——			
Required A-36	0.26	——	[illegible]	0.05	0.15 to 0.30			

Note: The single values are the [illegible] allowed in the required section.
Item 1-23-81-33, 3/8" x 1-1/[illegible]" exceeds the maximum of silicon per basic material specification.

Inspector(s): Larry E. Coble
J. Sidney Pace, Jr.

Reviewed by: _____
Edward M. Beck, P. E.
Corporate Consultant/Metals

Respectfully submitted,
LAW ENGINEERING TESTING COMPANY

_____
Larry E. Coble, Metals Laboratory Supervisor

NUCLEAR REGULATORY COMMISSION

Docket No. 50-413 Official Exh. No. 53

In the matter of Catawba

Staff ✓ IDENTIFIED ✓

Applicant _____ RECEIVED _____

Consumer Advocate _____ REJECTED _____

Intervenor _____ DATE 11/7/83

Other _____ Witness Ron Graham

Reporter _____