

May 6, 1988

Director Office of Inspection and Enforcement  
The Nuclear Regulatory Commission  
Washington, DC 20555

Re: Reporting of Defects and Noncompliance - 10CFR Part 21  
Date on which the information on such defects or failure to  
comply was obtained on May 3, 1988.

Dear Sir:

It has been determined by Nutherm International, Inc., that a potential defect may exist in some Bussmann manufactured Buss KTK-R Fuse Blocks with part numbers 2078, 2079 and 2080 (Attachment 1). The specific item in question on the fuse block is a clip (spring) which pushes the fuse against an electrical contact.

The above conclusion is based on the following evaluation:

1. Review of Nutherm's Nonconformance Reports. The following NCR's identify cracks, breakage and/or loss of clips.
  - a) NCR #1752, Rev. 0 (Attachment 2)
  - b) NCR #1798, Rev. 0 (Attachment 3)
  - c) NCR #1826, Rev. 0 (Attachment 4)
  - d) NCR #1827, Rev. 0 (Attachment 5)
  - e) NCR #1848, Rev. 0 (Attachment 6)
2. Nutherm's request for independent laboratory testing for hardness of 10 specimen (clips) by St. Louis Testing Laboratories, Inc. The test results indicate that the hardness may have been a determining factor leading to breakage of the specimen. (Attachment 7).
3. Telephone conversation between Nutherm's Quality Assurance Manager and Bussmann Quality Assurance Manager confirmed that a generic problem may exist with some of the clips used on Bussmann part numbers 2078, 2079 and 2080 (Attachment 8).

Nutherm's purchasing records have been reviewed in order to determine on which project job numbers the subject parts had been shipped. The specific project numbers are identified in Attachment 9.

8805110115  
PDR  
ADOCK 05000237  
DCD

IE19  
1/1

Nuclear Regulatory Commission  
Page 2  
May 6, 1988

The project job numbers identified from purchasing records have been reviewed to identify if any of the subject part numbers were actually used. Our purchasing records indicate that job #C-1167, BE-1214, GPC-2039, TVA-2139, BPC-2475(in house), PSE-2755 were originally assigned the above referenced part number(s).

A review of the shipping documents associated with the above ref. job numbers, have been performed to confirm if any of the above Part Nos. actually has been shipped to customers. Listed below are the results from this review.

1. PROJECT JOB #: C-1167 (Attachment 10)  
Client: Commonwealth Edison Company.

- A) Dresden Station, Units #2 and #3  
Rural Route #1  
Morris (Divine), IL 60450

Attention: Edward Netzel, QA Superintendent  
Rural Route #1  
Morris, IL 60450  
(815) 942-2920 Ext. 405

Date Shipped: May 4, 1984  
Client Order No.: 278995

(Telephone notification made to: William Betourne, QA Engineer, on May 3, 1988 at (815) 942-2920 ext. 638).

- B) Quad Cities Station Units 1 and 2  
3 Miles N of Cordova on Route 84  
1 Mile W of Route 84  
Cordova, IL 61242

Attention: James Wethington, QA Superintendent  
22710 206th Avenue North  
Cordova, IL 61242  
(309) 654-2241 Ext. 2532

Date Shipped: December 16, 1983

Client Order No.: 278996

(Telephone notification made to: J. Wethington on May 03, 1988

- C) (cc to QA Manager - Walter Shewski, Commonwealth Edison, P.O. Box 767, Chicago, IL 60690).

Nuclear Regulatory Commission  
Page 3  
May 6, 1988

2. PROJECT JOB #: BE-1214 (Attachment 11)  
Client: Boston Edison Co.

A) Pilgrim Station  
Route #1 Rocky Hill Road  
Plymouth, MA 02360

Attention: Nancy Desmond, QC Division Mgr.  
Rocky Hill Road  
Plymouth, MA 02360  
(617) 747-8324

Date Shipped: August 3, 1983  
Client Order No.: 56871 Edison Code 736126EA  
(Telephone notification made to: Lonnie Johnson on May 3, 1988).

3. PROJECT JOB #: GPC-2039 (Attachment 12)  
Client: Georgia Power Company

A) Georgia Power Company  
E. I. Hatch Nuclear Plant #2  
Corporate Licensing  
L. T. Guzwa  
P.O. Box 4545  
Atlanta, GA 30302

cc Attention: Steve Tipps, NSC(Nuclear Safety &  
Compliance  
P.O. Box 439  
Baxley, GA 31513  
(912) 367-7851 Ext. 2378

Date Shipped: July 10, 1986  
Client Order No.: PEHA-01140  
(Telephone notificaton made to Tom Metzler, Nuclear Power Safety  
Supervisor, on May 3, 1988).

4. PROJECT JOB #: TVA-2139 (Attachment 13)  
Client: Tennessee Valley Authority

A) Tennessee Valley Authority  
Sequoyah Nuclear Plant  
near Soddy-Daisy, TN

Nuclear Regulatory Commission  
Page 4  
May 6, 1988

Attention: Tennessee Valley Authority  
Procurement Quality Assurance Branch  
Attention: Darrel Armentrout, Branch  
Chief  
400 W Summit Hill Drive  
Knoxville, TN 37902  
(615) 632-7725

Date Shipped: August 8, 1986  
Client Order No.: 86PLF-839091 c/o #2  
(Telephone notification made to Stan Smith on May 3, 1988).

5. PROJECT JOB #: PSE-2755 (Attachment 14)  
Client: Public Service Electric and Gas

A) Public Service Electric and Gas  
Salem Nuclear Power Plant

Attention: Mike Rosenzweig, Mgr of QA &  
Procurement  
PSE of New Jersey  
Nuclear Department  
P.O. 236  
Hancocks Bridge, NJ 08038  
(609) 339-4780

Date Shipped: November 13, 1987  
Client Order No.: Pl-229707  
(Telephone notification made to: M. Rosenzweig on May 3, 1988)

Telephone notification identifying the above possible part 21 and the utilities in question was made to Mr. Mark Ring of the Nuclear Regulatory Commission, Region III, on May 3, 1988 telephone number (312) 790-5500.

The clip (spring) specimens were obtained from several test and production units. Some specimens failed after seismic testing. The specimens were given identifying numbers as shown in Attachment 15.

The specimens were selected as follows:

Specimen No.

Control 1 and 2	Were randomly taken from stock inventory.
3068-1 and 2	Were taken from production units.
3067-1 and 2	Were taken from production units.
2502-1 and 2	Were taken from Equipment Qualification Units.
2543-1 and 2	Were taken from Equipment Qualification Units.

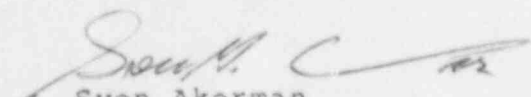
From the graphs as shown in Attachment 16, it is observed that failure resulted in specimens whose outside edge had a Knoop hardness in excess of 450 (knoop) at the .001" distance from the edge.


The potential safety hazard which is created or could be created is the loss of function for that circuit containing the Part No's in question.

The corrective action taken to prevent further supply of Bussmann Buss KTK-R Fuse Blocks is stated in Attachment 17.

Nutherm International advises the utilities listed herein to conduct an investigation to determine if the subject Fuse Blocks are presently installed at their facilities and assure themselves that the clips are functioning as intended.

Personnel informing the commission.

  
Sven Akerman  
Quality Assurance Manager

  
William J. Eckert  
Chairman of the Board

SV/11h

Section 2-1  
Fuseblocks For Power Distribution Fuses—600 Volts (or Less)

# Class G (Buss SC Fuses)

ATTACHMENT 1  
Page 1 of 1

- Molded one-piece thermosetting plastic
- Side barriers for isolation
- U.L. Listed
- 0 to 30 ampere box terminals accept 6 to 14 gauge copper wire—60 ampere box terminals accept 4 to 14 gauge copper wire
- All blocks have two mounting holes for #8 screws. This prevents chance of block rotating after installation.

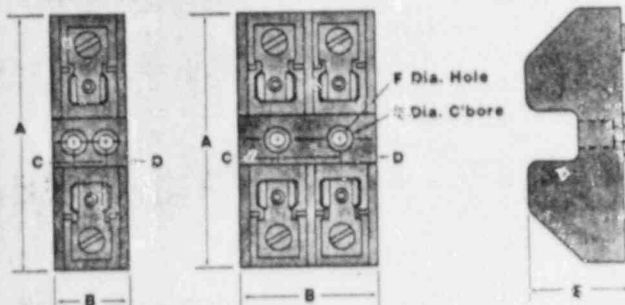
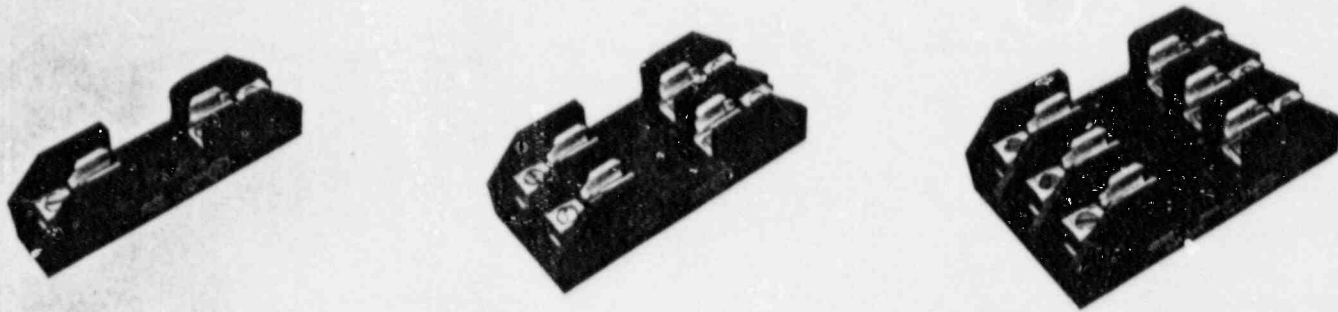


Figure 1. Fuseblocks for SC 1 to SC 30.

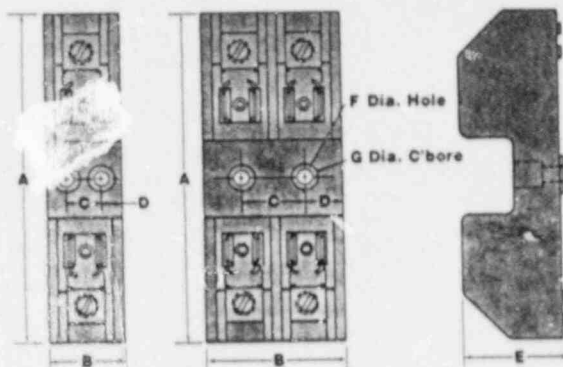


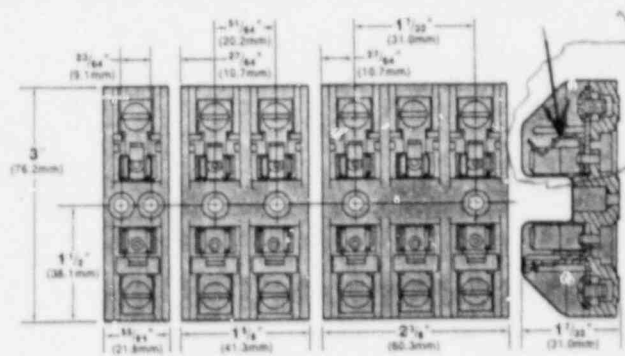
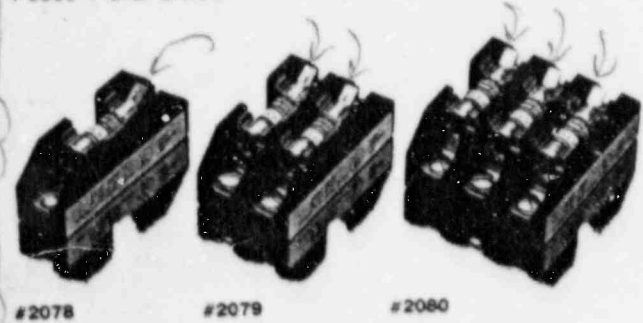
Figure 2. Fuseblocks for SC 35 to SC 60.

### Class G Dimension Fuseblocks (For Type SC Fuses)

Volts	Amps	Pole	Fuseblocks Terminal Type	L <sub>10</sub>	Dimensions in Inches							Dimensions in Metric (mm)														
					A	B	C	D	E	F	G	A	B	C	D	E	F	G								
300	15	1	2087 2961 2891	1 1/2	360	1/4							21.8	9.1	6.4											
		2	2090 2917 2894	3	765	27/64	17/32	169	330	76.2	41.3	19.4	10.7	31.0	4.3	8.4										
	20	1	2088 2962 2892	1	360	1/4								21.8	9.1	6.4	31.0									
		2	2091 2918 2895	3	765	27/64	17/32	169	330	76.2	41.3	19.4	10.7	31.0	4.3	8.4										
	600	30	1	2089 2963 2893	1	360	1/4								21.8	9.1	6.4									
			2	2092 2919 2896	3	765	27/64	17/32	169	330	76.2	41.3	19.4	10.7	31.0	4.3	8.4									
35		1	—	2964	1	437	17/64																			
		2	—	2920	2	830	37/64	1 1/8	169	330	108.0	45.2	21.1	12.3	32.9	4.3	8.4									
60		1	—	2968	2	1660	37/64																			
		3	—	—	2968	2	1660	37/64																		

## Class CC For Buss KTK-R Fuses

- Molded phenolic
- Side barriers
- Rated at 30 amperes; 600 volts
- Rejection type accepts only Class CC (Buss KTK-R) Fuses
- U.L. Listed.



Mounting Holes: .168 (4.27mm) Dia. Hole, .330 (8.38mm) Dia. C'bore



NONCONFORMANCE REPORT

NCR NO. REV. NO. PAGE

1752 0 1

501 SOUTH ELEVENTH STREET/MT. VERNON, ILLINOIS 62864

1. DATE ISSUED 2. INSPECTOR

2/19/88 BPC 2/19/88

3. CONTRACT NO. OR NI PO NO 18691-E-518(Q)

4. NI JOB REF. NO BPC-2475

5. PROJECT NAME CONNECTICUT YANKEE

5. UNIT/TAG/NTL/DOC. NO MCC 12-11 IC

7. CLASS OF NONCONFORMANCE PLEASE MARK AS APPLICABLE MATERIAL X DOCUMENTATION IMPLEMENTATION INCOMING INPROCESS X TEST LAB OTHER

8. IDENTIFICATION OF ITEM, PROCESS, OR DOCUMENTATION

FUSE BLOCK BUSS 2079

9. DESCRIPTION OF NONCONFORMANCES ATTACH EXTRA SHEETS, SKETCHES, PHOTOGRAPHS, ETC. AS NECESSARY

FUSE CLIP IS MISSING FROM FUSE BLOCK LINE END.

ATTACHMENT 2 PAGE 1 of 1

10. DISPOSITION CLASSIFICATION

USE AS IS REWORK REPAIR RETEST OTHER X

11. DISPOSITION AND/OR JUSTIFICATION LIST ALL DRAWING CHANGES REQUIRED WHEN APPLICABLE

SCRAP

12. ACTION TO PREVENT RECURRENCE

NONE

13. CAUSE CODE

de

14. DISPOSITIONED BY DATE Stephen J. Smith 2/22/88

15. AFFECTED DEPARTMENT REVIEW DATE Wayne S. Miller 2/26/88 Karen E. Ford 3/3/88

16. ENGINEERING REVIEW OF DISPOSITION DATE T. Stombush 2/22/88

17. QA REVIEW OF DISPOSITION DATE Ronald J. Kuylen 2/23/88

18. QUALITY ASSURANCE VERIFICATION OF CORRECTIVE ACTION AND/OR DISPOSITION DATE Bob [Signature] 3/4/88

18A. 10CFR PART 21 REPORTABILITY YES NO INITIALS [Signature]

DATE 3/8/88



NONCONFORMANCE REPORT

NCR NO. REV. NO. PAGE

1798 0 1

1. DATE ISSUED 2. INSPECTOR

3/7/88 B/M 3/7/88

501 SOUTH ELEVENTH STREET/MT. VERNON, ILLINOIS 62754

3. CONTRACT NO. OR NI PO NO.

18691-E-518(Q)

4. NI JOB REF. NO.

BPC-2475

5. PROJECT NAME

CONNECTICUT YANKEE

5. UNIT/TAG/NTL/DOC. NO.

13-42D

7. CLASS OF NONCONFORMANCE PLEASE MARK AS APPLICABLE

MATERIAL  DOCUMENTATION  IMPLEMENTATION   
INCOMING  INPROCESS  TEST LAB  OTHER

8. IDENTIFICATION OF ITEM, PROCESS, OR DOCUMENTATION

Buss 2079 FUSE BLOCK

9. DESCRIPTION OF NONCONFORMANCES ATTACH EXTRA SHEETS, SKETCHES, PHOTOGRAPHS, ETC. AS NECESSARY

FUSE BLOCK IS MISSING FUSE CLIP. APPEARS TO HAVE BEEN BROKEN OFF, WILL NOT HOLD FUSE CORRECTLY IN BLOCK.

ATTACHMENT 3  
Page 1 of 1

10. DISPOSITION CLASSIFICATION

USE AS IS  REWORK  REPAIR  RETEST  OTHER

11. DISPOSITION AND/OR JUSTIFICATION LIST ALL DRAWING CHANGES REQUIRED WHEN APPLICABLE

SCRAP  
SHOP TO REMOVE DEFECTIVE UNIT  
SHOP TO REINSTALL NEW UNIT

12. ACTION TO PREVENT RECURRENCE

NONE

13. CAUSE CODE

10

14. DISPOSITIONED BY DATE

Stephen J. ... 3/8/88

15. AFFECTED DEPARTMENT REVIEW DATE

... 3/14/88 / ... 3/22/88

16. ENGINEERING REVIEW OF DISPOSITION DATE

R. Stambush 3/8/88

17. QA REVIEW OF DISPOSITION DATE

Ronald Heifner 3/10/88

18. QUALITY ASSURANCE VERIFICATION OF CORRECTIVE ACTION AND/OR DISPOSITION DATE

... 3/23/88

18A. 10CFR PART 21 REPORTABILITY

YES  NO   
INITIALS ...

DATE 3/23/88





NONCONFORMANCE REPORT

NCR NO. 1826 REV. NO. 0 PAGE 1

1 SOUTH ELEVENTH STREET/MT. VERNON, ILLINOIS 62064

1. DATE ISSUED 3-24-88 2. INSPECTOR Rgp

3. CONTRACT NO. OR NI PO NO 2475-02

4. NI JOB REF. NO BPC-2475

5. PROJECT NAME

5. UNIT/TAG/NTL/DOC. NO NTL P/N 2502

7. CLASS OF NONCONFORMANCE PLEASE MARK AS APPLICABLE MATERIAL \_\_\_\_\_ DOCUMENTATION \_\_\_\_\_ IMPLEMENTATION \_\_\_\_\_ INCOMING \_\_\_\_\_ INPROCESS \_\_\_\_\_ TEST LAB [X] OTHER \_\_\_\_\_

8. IDENTIFICATION OF ITEM, PROCESS, OR DOCUMENTATION

Fuse Holder mfg. Cussmann P/N 2079

9. DESCRIPTION OF NONCONFORMANCES ATTACH EXTRA SHEETS, SKETCHES, PHOTOGRAPHS, ETC. AS NECESSARY

Function after seismic applied a load of 33.0 amps. The fuse holder failed to carry the load. One of the pressure clips that hold the fuses in place is broken.

ATTACHMENT 4 PAGE 1 of 1

10. DISPOSITION CLASSIFICATION

USE AS IS \_\_\_\_\_ REWORK \_\_\_\_\_ REPAIR \_\_\_\_\_ RETEST \_\_\_\_\_ OTHER [X]

11. DISPOSITION AND/OR JUSTIFICATION LIST ALL DRAWING CHANGES REQUIRED WHEN APPLICABLE

DOCUMENT TEST RESULTS DISCONTINUE TESTING

SEI-162 uk 3/29/88

12. ACTION TO PREVENT RECURRENCE

NONE

13. CAUSE CODE

07

14. DISPOSITIONED BY [Signature] DATE 3/25/88

15. AFFECTED DEPARTMENT REVIEW [Signature] DATE 3/28/88

16. ENGINEERING REVIEW OF DISPOSITION [Signature] DATE 3/25/88

17. QA REVIEW OF DISPOSITION [Signature] DATE 3/28/88

18. QUALITY ASSURANCE VERIFICATION OF CORRECTIVE ACTION AND/OR DISPOSITION

[Signature] DATE 3/29/88

18A. 10CFR PART 21 REPORTABILITY

YES [X] NO [ ] INITIALS [Signature]

DATE 3/31/88

1827	0	1
1. DATE ISSUED 3-24-88		2. INSPECTOR Gap

301 SOUTH ELEVENTH STREET/MT. VERNON, ILLINOIS 62864

3. CONTRACT NO. OR NI PO NO 2475-02	4. NI JOB REF. NO BPC-2475
5. PROJECT NAME	5. UNIT/TAG/NTL/DOC. NO NTL P/N 2543

7. CLASS OF NONCONFORMANCE PLEASE MARK AS APPLICABLE

MATERIAL \_\_\_\_\_ DOCUMENTATION \_\_\_\_\_ IMPLEMENTATION \_\_\_\_\_  
 INCOMING \_\_\_\_\_ INPROCESS \_\_\_\_\_ TEST LAB  OTHER \_\_\_\_\_

8. IDENTIFICATION OF ITEM, PROCESS, OR DOCUMENTATION  
 Fuse Holder Mfg. Bussmann P/N 2079

9. DESCRIPTION OF NONCONFORMANCES ATTACH EXTRA SHEETS, SKETCHES, PHOTOGRAPHS, ETC. AS NECESSARY

Function after seismic applied a load of 33.0 amps. The fuse holder failed to carry the load. One of the pressure clips that hold the fuses in place is broken.

ATTACHMENT 5  
Page 1 of 1

10. DISPOSITION CLASSIFICATION

USE AS IS \_\_\_\_\_ REWORK \_\_\_\_\_ REPAIR \_\_\_\_\_ RETEST \_\_\_\_\_ OTHER

11. DISPOSITION AND/OR JUSTIFICATION LIST ALL DRAWING CHANGES REQUIRED WHEN APPLICABLE

DOCUMENT TEST RESULTS  
 DISCONTINUE TESTING

SEI-162 ech 3/29/88

12. ACTION TO PREVENT RECURRENCE NONE	13. CAUSE CODE 07
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14. DISPOSITIONED BY Steph W. [Signature]	DATE 3/25/88	15. AFFECTED DEPARTMENT REVIEW J. J. [Signature]	DATE 3/28/88
--	-----------------	---	-----------------

16. ENGINEERING REVIEW OF DISPOSITION R. Stombersh	DATE 3/25/88	17. QA REVIEW OF DISPOSITION Carol [Signature]	DATE 3/28/88
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18. QUALITY ASSURANCE VERIFICATION OF CORRECTIVE ACTION AND/OR DISPOSITION

[Signature] DATE 3/30/88

18A. 10CFR PART 21 REPORTABILITY YES  NO

INITIALS [Signature] DATE 4-29-88



NONCONFORMANCE REPORT

NCR NO. REV. NO. PAGE

1848 0 1

501 SOUTH ELEVENTH STREET/MT. VERNON, ILLINOIS 62164

1. DATE ISSUED 2. INSPECTOR

3/29/88 BNL 3/29/88

3. CONTRACT NO. OR NI PO NO

18691-E-518(Q) BPC-2475

4. NI JOB REF. NO

BPC-2475

5. PROJECT NAME

CONNECTICUT YANKEE

5. UNIT/TAG/NTL/DOC. NO

MCC- 12-11 3B

7. CLASS OF NONCONFORMANCE PLEASE MARK AS APPLICABLE

MATERIAL X DOCUMENTATION IMPLEMENTATION INCOMING INPROCESS X TEST LAB OTHER

8. IDENTIFICATION OF ITEM, PROCESS, OR DOCUMENTATION

BUSS FUSE BLOCK 2079

9. DESCRIPTION OF NONCONFORMANCES ATTACH EXTRA SHEETS, SKETCHES, PHOTOGRAPHS, ETC. AS NECESSARY

PRESSURE CLIP ON FUSE BLOCK FOUND TO BE CRACKED. WHEN FLEXED, IT BROKE OFF EASILY.

ATTACHMENT 6 PAGE 1 of 1

10. DISPOSITION CLASSIFICATION

USE AS IS REWORK REPAIR RETEST OTHER X

11. DISPOSITION AND/OR JUSTIFICATION LIST ALL DRAWING CHANGES REQUIRED WHEN APPLICABLE

PRODUCTION TO REMOVE FUSEBLOCK SCRAP PRODUCTION TO REINSTALL FUSEBLOCK

12. ACTION TO PREVENT RECURRENCE

NONE

13. CAUSE CODE

86

14. DISPOSITIONED BY DATE

Stephen J. ... 3/29/88

15. AFFECTED DEPARTMENT REVIEW DATE

Wayne S. Miller 4/5/88 Rodney Elliott 4/11/88

16. ENGINEERING REVIEW OF DISPOSITION DATE

TJ Stambrook 3/29/88

17. QA REVIEW OF DISPOSITION DATE

Ronald J. ... 3/30/88

18. QUALITY ASSURANCE VERIFICATION OF CORRECTIVE ACTION AND/OR DISPOSITION DATE

Bob ... 4/11/88

18A. 10CFR PART 21 REPORTABILITY

YES NO INITIALS BNL

DATE 4.27.88

# St. Louis Testing Laboratories, Inc.



2810 CLARK AVENUE  
ST. LOUIS, MO 63103-2574  
531-8080 Area Code 314

*Chemical, Metallurgical, Physical, Non-Destructive,  
Spectrographic, Environmental Testing & Analyses  
Investigations, Inspections, Field Services*



**ST. LOUIS TEST**

April 13, 1988  
Report No. 88-2467  
Lab No. 88P1143  
PO No. 2475-15  
Job No. BPC-2475

NUTHERM INTERNATIONAL  
501 S. 11th  
Mt. Vernon, Il. 62864  
  
Attention: Myra Miller

ATTACHMENT 7  
page 1 of 3

## REPORT OF ANALYSIS

MATERIAL: Ten (10) samples  
SUBJECT: Microhardness per ASTM E-384.

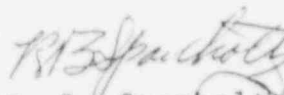
Ret. ATTACHMENT 15  
pages 1-2

### PROCEDURE AND RESULTS:

Cross sections were removed from each of the 10 submitted samples in the longitudinal direction, encapsulated, ground, and polished for micro-examination in accordance with ASTM E-3.

Microhardness surveys were then taken in accordance with ASTM E-384 to determine the overall hardness. The microhardness surveys, Knoop, were taken at given increments from the outside surface inward using a test load of 500 grams force and converting to Rockwell hardness readings in accordance with ASTM E-140 for reference only. For details of the microhardness surveys see Appendix A.

Respectfully submitted,

  
R. B. Spanholtz  
Metallurgist



*ATTACHMENT 7  
page 2 of 3*

Nutherm  
Lab No. 88P1143  
Page -2-

APPENDIX A

Readings taken from outside surface inward at increments of .001", .002", .007", .013", .018", .023", and .024" (inside surface).

<u>Sample</u>	<u>Knoop No.</u>	<u>Rockwell "C"</u>
Control #1	379	37.9
	438	42.6
	471	45.3
	487	46.5
	475	45.7
	411	40.8
	346	34.5
	Control #2	366
438		42.9
475		45.7
480		46.0
458		44.0
438		42.9
358		35.8
N&L 2502-1 <i>(BROKEN - Ref. ATT. 15 page 2)</i>		458
	506	47.8
	510	48.8
	514	48.3
	510	48.8
	506	47.8
	450	43.9
	N&L 2502-2	450
492		46.8
506		47.8
492		46.8
506		47.8
478		45.9
363		36.3
N&L 2543-1 <i>(BROKEN - Ref. ATT. 15 page 2)</i>		466
	510	48.0
	514	48.3
	518	48.5
	514	48.3
	592	46.8
	434	42.6

*Ref. Attachment 15  
pages 1-2*

**Saint Louis  
Testing  
Laboratories, Inc.**



2810 Clark Avenue  
St. Louis, Missouri 63103  
314/531-8080

ATTACHMENT 7  
page 3 of 3

Nutherm  
Lab No. 88P1143  
Page -3-

<u>Sample</u>	<u>Knoop</u>	<u>Rockwell "C"</u>
N&L 2543-2	358	35.8
	458	44.4
	510	48.0
	524	48.9
	514	48.3
	510	48.0
	466	45.0
N&L 3067-1 (BROKEN - Ref. ATT. 15 page 1)	487	46.5
	524	48.9
	510	48.0
	524	48.9
	624	48.9
	510	48.0
	382	38.2
N&L 3067-2 (BROKEN - Ref. ATT. 15, page 1)	458	44.4
	492	46.8
	510	48.0
	506	47.8
	506	47.8
	492	46.8
	358	35.8
N&L 3068-1	438	42.9
	506	47.8
	518	48.5
	500	47.4
	518	48.5
	500	47.4
	385	38.5
N&L 3068-2 (BROKEN - Ref. ATT. 15 page 1)	471	45.3
	500	47.4
	524	48.9
	510	48.0
	510	48.0
	500	47.4
	382	38.2

Ref. ATTACHMENT 15  
pages 1-2

Ref. BOB CARLSON  
QA Manager  
P.O. Box 14460  
ST. LOUIS, MO. 63178

Telephone (314) 527-1647  
Telex 44841

ATTACHMENT 8  
Page 1 of 1

TO FILE

SUBJECT Bussman Fuse Holders

"RECORD OF Telephone conversation P/N 2078, 2079 and 2080  
Between SVEN AKERMAN QA MGR  
NUTHEIM AND BOB CARLSON QA MGR  
Bussman

MESSAGE

DATE 4-29-88

MR CARLSON stated that:

1. He is aware of the cracking and breakage problem of the spring (clip) on some Bussman Buss KTK-R fuse Blocks with Part# 2078, 2079 and 2080.
2. Without knowing the lot/date code marked on the shipping box, it was impossible for him to track the heat treat information on the specific clips in question. Further, he stated that Bussman is currently in the process of placing the lot/date code on the items in addition to the shipping boxes, where possible

SIGNED

REPLY

DATE

3. He suspected that improper heat treating of the clips is probably the cause for the brittleness.

Their heat treat procedure has been revised to verify that required acceptance criteria has been met in their present Heat treating activities.

SIGNED



MEMORANDUM

ATTACHMENT 9  
Page 1 of 1

TO: Sven

FROM: Myra *mm*

DATE: April 28, 1988

SUBJECT: Bussmann 2078, 2079 and 2080

I have reviewed purchasing records for subject fuse blocks. Below shows purchase history. Please let me know if you need anything further.

	<u>QTY</u> <u>ORDERED</u>	<u>QTY</u> <u>RECEIVED</u>	<u>DATE</u> <u>RECEIVED</u>	<u>P.O.#</u>	<u>PROJECT</u>
2078	20	20	7-05-83	1214-6	BE-1214*
	10	Pulled from Stock 8-05-86 1214-6			
<hr/>					
2079	20	20	7-05-83	1214-6	BE-1214*
	10	10	12-08-83	1167-28	C-1167
	10	9	5-28-86	2039-01	GPC-2039
		1	6-11-86		
	4	4	8-06-86	2139-04	TVA-2139
	6	4	10-12-87	2755-02	PSE-2755
		2	10-13-87		
	1	1	3-01-88	2475-12	BPC-2475**
	1	1	3-17-88	2475-13	BPC-2475**
	20 Pulled From Stock 10-24-83				C-1167
	3 Pulled From Stock		5-16-86	1214-6	GPC-2039
	1 Pulled From Stock		8-29-84	1167-28	BE-1214
<hr/>					
2080	2(E.Q.)	2	6-12-86	2039-01R.1	GPC-2039
	6	6	5-28-86	2039-01	GPC-2039

\* Used 10 2079 and 0 2078 on BE-1214.

\*\* Not used on BPC-2475, Replaced with Marathon 6M30A2SP



ATTACHMENT 10  
Page 1072

BILL OF MATERIAL

SYM	ITEM	DESCRIPTION	MANUFACTURER	MFG. PART NO.	UNIT OF MEASURE	QTY.	REVISIONS
	IMPLEX RECEPTACLE		HUBBELL	5382	PC	8	
	FUSE BLOCK	RECEPTACLE TYPE	SUBSON	2079	PC	16	
	FUSE	1 1/2" x 1 1/2" LONG 10 AMP	SUBSON	KTK-R10	PC	32	
	FUSE	9/16" x 2" LONG 15 AMP	SUBSON	FRN-R15	PC	8	
	FUSE	9/16" x 2" LONG 30 AMP	SUBSON	FRN-R30	PC	8	
	MINIDUCT	NYLON HIGH TEMPERATURE	PANDUIT	NE1.5 x 3/4E	PC	AS REQ'D	REVISED 2/22/84 ADDED BEST LOOKS, REVISED DIMENSIONS, REVISED MANUFACTURER NAME, NUMBER AND CAL- IBRATION, ADDED NOTES AND 2, REVISED ITEM 15 TAG NUMBERS, ITEM 1 PUT ON HOLD.
	MINIDUCT COVER	NYLON HIGH TEMPERATURE	PANDUIT	NE1.5/4E	PC	AS REQ'D	
	MINIDUCT COVER	NYLON HIGH TEMPERATURE	PANDUIT	NE4 x 4/4E	PC	AS REQ'D	
	MINIDUCT COVER	NYLON HIGH TEMPERATURE	PANDUIT	NE4/4E	PC	AS REQ'D	
	MINIDUCT COVER	NYLON HIGH TEMPERATURE	PANDUIT	NE3 x 3/4E	PC	AS REQ'D	
	MINIDUCT COVER	NYLON HIGH TEMPERATURE	PANDUIT	NE3/4E	PC	AS REQ'D	
	CONDUIT HUB	90° NYLON INSULATED CONNECTOR	THOMAS & BETTS	5240	PC	AS REQ'D	
	CONDUIT HUB	NYLON INSULATED STRAIGHT CONNECTOR	THOMAS & BETTS	5123	PC	AS REQ'D	
	PLASTIC BUSHING	1.5 DIAMETER MOUNTING HOLE	HEYCO	6240 (BLACK)	PC	96	
	FUSE BLOCK	2500/70 AMP 1 POLE	MORGAN	RF30A15	PC	36	

THIS BILL OF MATERIAL IS A PART OF THE CONTRACT AND SHALL BE KEPT WITH THE CONTRACT.

**NUATHERM INTERNATIONAL**  
501 So 11th St (648)244-6000  
MT VERNON, IL 62864


**BILL OF MATERIAL**  
PROJECT: DRISBORN & QUAD CITIES  
CLIENT: COMMONWEALTH EDISON  
CLIENT PO: 278855 & 278856  
NUATHERM REF NO: C-1157  
TAG NO. 7013-25011-73

7013-25011-73  
PAGE 1072 OF 6

ATTACHMENT 10  
page 2 of 2

2/3-7541-48A	2-263-140A	3-2391-01C
2/3-7541-48B	2-263-140B	3-2391-01D
3-263-143A	2-263-146A	3-1471A
3-263-143B	2-263-146B	3-1471B
3-263-147A	2-1471A	3-2391-03
3-263-147B	2-1471B	3-2391-05
3-1641-12	2-1001-191A	⑤ 1-1472A
3-1641-16A	2-1001-191B	1-1472B
3-1641-16B	2-1001-193A	2-1472A
3-1473A	2-1001-193B	2-1472B
3-1473B	4-7541-39A	2-1501-120A
SPARE	4-7541-39B	2-1501-120B
SPARE	SPARE	3-1501-120A
SPARE	SPARE	3-1501-120B
SPARE	2-263-149A	② 1-1001-192A
2001-73A	2-263-149B	1-1001-192B
201-73B	2-263-140A	1-1001-194A
202-73A	2-263-140B	1-1001-194B
202-73B	2-263-146A	1-263-141A
202-73A	2-263-146B	1-263-141B
202-73B	2-1501-90A	1-263-142A
203-73A	2-1501-90B	1-263-142B
203-73B	2-1501-92A	1-263-146A
① 1-1001-191A	2-1501-92B	1-263-146B
1-1001-191B	2-1641-10	1-2391-10A
1-1001-193A	2-1641-14A	1-2391-10B
1-1001-193B	2-1641-14B	1-2391-10C
1-263-139A	2-2391-01A	1-2391-10D
1-263-139B	2-2391-01B	1-2391-04
1-263-140A	2-2391-01C	1-2391-05
1-263-140B	2-2391-01D	1-1472A
1-263-146A	2-1471A	1-1472B
1-263-146B	2-1471B	1-1635A
1-2391-01A	2-2391-03	1-1635B
1-2391-01B	2-2391-05	1-1001-196A
1-2391-01C	2/3-7541-46A	1-1001-196B
1-2391-01D	2/3-7541-46B	SPARE
1-2391-02	3-263-149A	SPARE
1-2391-03	3-263-149B	2-263-141A
1-1471A	3-263-140A	2-263-141B
1-1471B	3-263-140B	
1-1632A	3-263-146A	
1-1632B	3-263-146B	
2-263-139A	3-1501-90A	
2-263-139B	3-1501-90B	
2-2391-02	3-1501-92A	
2-2391-03	3-1501-92B	
2-2391-01A	3-1641-10	
2-2391-01B	3-1641-14A	
2-2391-01C	3-1641-14B	
2-2391-01D	3-1641-148	

△ HOLD REMOVED FROM ITEM 1  
REVISED ITEM 1 SERIAL NUMBER  
AND CALIBRATION, ADDED NOTE  
3 TO ITEM 2A

△ REVISED TAG NUMBERS	TOLERANCES UNLESS SPECIFIED <b>NONE</b>	 <b>Nutherm International, Inc.</b> 618/244-8000 501 South 11th Street, Mt. Vernon, Illinois 62864
△ ADDED BOLT LOCKS, REVISED TRANSMITTER MODEL NUMBERS AND ADDED NOTES 1 & 2. REVISED ITEM 1B TAG NOS. HOLD ITEM 1	ENG. APPROV. <i>[Signature]</i> Q1 APPROV. <i>[Signature]</i> DATE <i>11/1/03</i>	
REVISION	SCALE: NONE	TITLE: <b>BILL OF MATERIAL</b> DATE: 11/1/03 2013-95-011-23

△  
△  
△  
△

**BILL OF MATERIAL**

*Attachment 11  
page 1 of 1*

SYMBOL NUMBER	SYM	ITEM	DESCRIPTION	MANUFACTURER	MFR. PART NO.	UNIT OF MEASURE	QTY.
		POWER SUPPLY	115V/1PH/012 INPUT 24 VDC OUTPUT @ 20 APPS	ELMA ENGINEERING	164C52E1-4	PC	2
		CONTROL RELAY		AGASTAT	OPBM	PC	34
		RELAY SOCKET		AGASTAT	CR0001	PC	34
		LOCK STRAP		AGASTAT	CR0133	PC	34
		ALIGNMENT PIN		AGASTAT	CR0188	PC	34
		TERMINAL BLOCK		GENERAL ELECTRIC	EB25A12W	PC	37
		TERMINAL BLOCK		GENERAL ELECTRIC	EB25A08W	PC	2
		TERMINAL BLOCK		GENERAL ELECTRIC	EB25A04WC	PC	3
		CARD FILE	WITH PREWIRED CALIBRATION	ROSEMOUNT	710DU0CF	PC	2
		MASTER TRIP UNIT	SCALE OF 9.5 TO 85.5" H <sub>2</sub> O	ROSEMOUNT	710DU0TTXXX	PC	1
		SLAVE TRIP UNIT		ROSEMOUNT	710DU0TS	PC	1
		CALIBRATION UNIT		ROSEMOUNT	710DU0CL	PC	1
		CARD SPACE		ROSEMOUNT	710DU0BT	PC	22
		BLANK PANEL		ROSEMOUNT	710DU0BC	PC	1
		CALIBRATOR		ROSEMOUNT	710DU0BC	PC	1
		BLANK PANEL		ROSEMOUNT	710DU0BC	PC	1
		BUBBAR		ROSEMOUNT	710-0019-001	PC	6
		INDICATING LIGHT	RED LENS 24 VOLT DC	WESTINGHOUSE	449D187610	PC	12
		KEYSWITCH	2 POSITION KEY REMOVABLE IN LEFT POSITION	CUTLER-HAMMER	10250T16111	PC	2
		CONTACT BLOCK	1 NO CONTACT 1 NC CONTACT	CUTLER-HAMMER	10250T48	PC	2
		FUSE BLOCK	REJECTION BLOCK	BUSSMAN	2079	PC	2
		FUSE BLOCK	NON-REJECTION	BUSSMAN	2807	PC	5
		FUSE	UTILITY CIRCUIT	BUSSMAN	FNM-15	PC	1
		FUSE	120 VAC TO POWER SUPPLY	BUSSMAN	FNM-10	PC	2
		FUSE	FCT 120 V POWER, RELAY OUTPUT, INDICATORS	BUSSMAN	BAF-1	PC	6
		FUSE	ROSEMOUNT EQUIPMENT	BUSSMAN	KTK-R10	PC	4
		INSTRUMENT CABLE	16 GA. SHIELD PAIR, TINNED COPPER STRAND, IEEE-383-1974	ROCKBESTOS			
		24 VDC POWER & CONTROL CABLE	18 GA. TINNED COPPER STRAND IEEE-383-1974	ROCKBESTOS			

REV. NO.	REV. DATE	REVISIONS
1		REVISED POWER SUPPLY, REVISED WIRE MFR, ADDED FUSE BLOCK & FUSE
2		REVISED FUSE BLOCKS
3		REVISED FUSE SIZES.

PRO ENG: 5-4-85  
 ENG APPROV: [Signature]  
 D.A. AP: [Signature]

**NUTHERM INTERNATIONAL**

501 So 11th St (648)244-60  
 MT VERNON, IL 62864

TITLE: BILL OF MATERIAL

PROJECT: PILGRIM  
 CLIENT: BECO  
 CLIENT PO: 56871  
 NUTHERM REF. NO: BE-1214  
 TRK NO: C2228A1 C2228A2  
 C2229B1 C2229B2  
 5001-54989-28

NUTHERM REF. NO BE-1214  
 C2228A1 C2228A2  
 C2229B1 C2229B2



MT. VERNON, IL 62864 (618) 244-6000

CERTIFICATE  
OF  
COMPLIANCE

No.:	CC-2039-2	Rev. No.:	0	Page:	10F5
By:	<i>man</i>	Approved:	<i>RF</i>		
Date:	<i>7/10/86</i>	Date:	<i>7/10/86</i>		

1.0 OBJECTIVE

1.1 To certify that the items listed in Section 2.1.7 have been engineered, manufactured, inspected, packaged, and shipped in accordance with the Quality Assurance Manual and contractual provisions of NUTHERM International, Inc.

2.0 SCOPE

2.1 Applies to:

- 2.1.1 Client: Georgia Power Company
- 2.1.2 Class: 1E Equipment
- 2.1.3 Contract No.: PEHA-01140 and C.O. #1 & #2
- 2.1.4 Power Plant: E.I. Hatch Nuclear Plant, Unit #2
- 2.1.5 NUTHERM QA Manual No.: QA-N-10179 Rev. 4
- 2.1.6 NUTHERM Reference No.: GPC-2039
- 2.1.7 Description of Parts: See Page 2 through 5

ATTACHMENT 12  
page 1 of 5

3.0 RESPONSIBILITY

3.1 The Quality Assurance Manager has the responsibility to ensure that the contract has been executed in accordance with Section 2.0.

4.0 CERTIFICATION

4.1 I certify that the items listed in Section 2.1.7 have been produced in accordance with NUTHERM'S QA Manual No. QA-N-10179-4 and with contractual provisions.

*Ronald J. Heifner*

Ronald J. Heifner  
Quality Assurance Manager



MT. VERNON, IL 62864 (618) 244-6000

CERTIFICATE OF COMPLIANCE

No.:	Rev. No.:	Page:
CC-2039-2	0	20F5
By: <i>M. M. M.</i>	Approved: <i>[Signature]</i>	
Date: <i>7/10/86</i>	Date: <i>7/10/86</i>	

P.O. ITEM  
ITEM

DESCRIPTION

QUANTITY

01

Bussman Ferrule type Fuseblocks for Class "CC" Fuses, 600 Volts or less, two poles, 30 amps maximum current rating, phenolic, with screw terminals, P/N 2079. Tag ID. (1) - 2H11-P617, DCR 85-266, (2) - 2H11P618, DCR 85-266, (3) Spare, DCR 85-266

3

ATTACHMENT 12  
Page 2 of 5

03

Bussman type Limitron (KTK-R) Fuses, Non-time-delay Ferrule type, 13/32" x 1 1/2" dimensions, 600 volts or less, 3 amps, P/N KTK-R3. Tag ID. (1) Q2E41A\*\*\*\*F40\*\*, 2H11-P620, DCR 85-265, (2) Q2E11A\*\*\*\*F33A\*, 2H11-P617, DCR 85-266, (3) Q2E11A\*\*\*\*F34A\*, 2H11-P617, DCR 85-266, (4) Q2E11A\*\*\*\*F33B\*, 2H11-P618, DCR 85-266, (5) Q2E11A\*\*\*\*F34B\*, 2H11-P618, DCR 85-266, (6) Q2E51A\*\*\*\*F38\*\*, 2H11-P621, DCR 85-267, (7) Q2E11A\*\*\*\*F32\*\*, 2H11-P617, DCR 85-269, (8) SPARE, DCR 85-265, (9) SPARE, DCR 85-266, (10) SPARE, DCR 85-266, (11) SPARE, DCR 85-267, (12) Spare DCR 85-269

12

07

Bussman type Fusetron (FRN) fuses, dual-element Ferrule type, 9/16" x 2" dimensions, 250 volts or less, 5 amps, P/N FRN-R5. Tag ID. (1) Q2R44\*\*\*\*F1\*\*, 2H11-P652, DCR 84-134, (2) Q2R44\*\*\*\*F2\*\*, 2H11-P652, DCR 84-134, (3) Q2R44\*\*\*\*F3\*\*, 2H11-P652, DCR 84-134, (4) Q2R44\*\*\*\*F4\*\*, 2H11-P652, DCR 84-134, (5) SPARE, DCR 84-134, (6) SPARE, DCR 84-134

6

P.O. ITEM  
ITEM

DESCRIPTION

QUANTITY

08

Bussman type fusetron (FRN) fuses, dual-element ferrule type, 9/16" x 2" dimensions, 250 volts or less, 5 amps, P/N FRN-R5, (1) Q2A71B\*\*\*\*F72A\*, 2H11-P609, DCR 84-112, (2) Q2A71B\*\*\*\*F72B\*, 2H11-P611, DCR 84-112, (3) Q2A71B\*\*\*\*F72C\*, 2H11-P609, DCR 84-112, (4) Q2A71B\*\*\*\*F72D\*, 2H11-P611, DCR 84-112, (5) SPARE, DCR 84-112, (6) SPARE, DCR 84-112

6

*ATTACHMENT 12  
page 3 of 5*

09

Bussman type NTN-R dummy fuses, 9/16" x 2" dimensions, 250 volts or less, 30 amps, P/N NTN-R-30. Tag ID. (1) Q2A71B\*\*\*\*F72A\*, 2H11-P609, DCR 84-112, (2) Q2A71B\*\*\*\*F72B\*, 2H11-P611, DCR 84-112, (3) Q2AQ71B\*\*\*\*F72C\*, 2H11-P609, DCR 84-112, (4) Q2A71B\*\*\*\*F72D\*, 2H11-P611, DCR 84-112, (5) SPARE, DCR 84-112, (6) SPARE, DCR 84-112

6

10

Bussman Ferrule type Fuseblocks for Class "CC" fuses, 600 volts or less, three poles, 30 amps maximum current rating, phenolic, with screw terminals, P/N 2080. Tag ID. (1) 2H11-P620, DCR 85-265, (2) 2H11-P621, DCR 85-267, (3) 2H11-P617, DCR 85-269, (4) SPARE, DCR 85-265, (5) SPARE, DCR 85-267, (6) SPARE, DCR 85-269

6

*[Hand-drawn cloud-like border around item 10 description]*

CERTIFICATE  
OF  
COMPLIANCE

No.:  
CC-2039-2

Rev. No.: 0  
Page: 4 OF 5

By: *man*

Approved: *AK*

Date: 7/10/86

Date: 7/10/86

P.O. ITEM  
ITEM

DESCRIPTION

QUANTITY

11

Bussman type Limitron (KTK-R) fuses, Non-time-delay Ferrule type, 13/32" x 1 1/2" dimensions, 600 volts or less, 10 amps, P/N KTK-R10. Tag ID. (1) Q2E41A\*\*\*\*F1\*\*\*, 2H11-P620, DCR 85-265, (2) Q2E41A\*\*\*\*F2\*\*\*, 2H11-P620, DCR 85-265, (3) 12E51A\*\*\*\*F1\*\*\*, 2H11-P621, DCR 85-267, (4) Q2E51A\*\*\*\*F2\*\*\*, 2H11-P621, DCR 85-267, (5) Q2E11A\*\*\*\*F1A\*\*, 2H11-P617, DCR 85-269, (6) Q2E11A\*\*\*\*F2A\*\*, 2H11-P617, DCR 85-269, (7) SPARE, DCR 85-265, (8) SPARE, DCR 85-265, (9) SPARE, DCR 85-267, (10) SPARE, DCR 85-267, (11) SPARE, DCR 85-269, (12) SPARE, DCR 85-269

12

ATTACHMENT 12  
Page 4 of 5

14

Bussman Ferrule type Fuseblocks for Class "CC" fuses, 600 volts or less, two poles, 30 amps maximum current rating, phenolic, with screw terminals, P/N 2079. Tag ID (1) 2H21-P285, DCR 85-264, (2) 2H21-P286, DCR 85-264, (3) 2H21-P287, DCR 85-264, (4) 2H21-P288, DCR 85-264, (5) 2H21-P289, DCR 85-264, (6) 2H21-P290, DCR 85-264, (7) 2H21-P198, DCR 86-012, (8) 2H21-P199, DCR 86-012, (9) SPARE, DCR 85-264, (10) SPARE, DCR 86-012

10



MT. VERNON, IL 62864 (618) 244-6000

CERTIFICATE OF COMPLIANCE

No.:	Rev. No.:	Page:
CC-2039-2	0	5 OF 5
By: <i>MLM</i>	Approved: <i>AK</i>	
Date: <i>7/10/86</i>	Date: <i>7/10/86</i>	

<u>P.O. ITEM</u>	<u>DESCRIPTION</u>	<u>QUANTITY</u>
------------------	--------------------	-----------------

15

Bussman type Limitron (KTK-R) fuses, Non-time-delay Ferrule type, 13/32" x 1 1/2" dimensions, 600 volts or less, 10 amps, P/N KTK-R10. Tag ID.

(1) Q2R42A\*\*\*\*F1\*\*\*, 2H21-P285, DCR 85-264, (2) Q2R42A\*\*\*\*F2\*\*\*, 2H21-P285, DCR 85-264, (3) Q2R42A\*\*\*\*F3\*\*\*, 2H21-P286, DCR 85-264, (4) Q2R42A\*\*\*\*F4\*\*\*, 2H21-P286, DCR 85-264, (5) Q2R42A\*\*\*\*F5\*\*\*, 2H21-P287, DCR 85-264, (6) Q2R42A\*\*\*\*F6\*\*\*, 2H21-P287, DCR 85-264, (7) Q2R42A\*\*\*\*F7\*\*\*, 2H21-P288, DCR 85-264, (8) Q2R42A\*\*\*\*F8\*\*\*, 2H21-P288, DCR 85-264, (9) Q2R4A\*\*\*\*F9\*\*\*, 2H21-P289, DCR 85-264, (10) Q2R42A\*\*\*\*F10\*\*, 2H21-P289, DCR 85-264, (11) Q2R42A\*\*\*\*F11\*\*, 2H21-P290, DCR 85-264, (12) Q2R42A\*\*\*\*F12\*\*, 2H21-P290, DCR 85-264, (13) Q2R42B\*\*\*\*F1\*\*\*, 2H21-P198, DCR 86-012, (14) Q2R42B\*\*\*\*F2\*\*\*, 2H21-P198, DCR 86-012, (15) Q2R42B\*\*\*\*F3\*\*\*, 2H21-P199, DCR 86-012, (16) Q2R42B\*\*\*\*F4\*\*\*, 2H21-P199, DCR 86-012, (17) SPARE, DCR 85-264, (18) SPARE, DCR 85-264, (19) SPARE, DCR 86-012, (20) SPARE, DCR 86-012

20

ATTACHMENT 12  
page 5 of 5





MT. VERNON, IL 62864 (618) 244-6000

CERTIFICATE  
OF  
COMPLIANCE

No.:  
CC-2139-2

Rev. No.: Page:  
0 1 OF 2

By: *mam*

Date: *8/8/86*

Approved: *[Signature]*

Date: *8/8/86*

1.0 OBJECTIVE

1.1 To certify that the items listed in Section 2.1.7 have been engineered, manufactured, inspected, packaged, and shipped in accordance with the Quality Assurance Manual and contractual provisions of NUTHERM International, Inc.

*ATTACHMENT 13  
Page 1 of 2*

2.0 SCOPE

2.1 Applies to:

2.1.1 Client: Tennessee Valley Authority

2.1.2 Class: 1E Equipment

2.1.3 Contract No.: 86P LF-839091 and Option Exercise #1 and C.O. #2

2.1.4 Power Plant: Sequoyah Nuclear Plant

2.1.5 NUTHERM QA Manual No.: QA-N-10179 Rev. 4

2.1.6 NUTHERM Reference No.: TVA-2139

2.1.7 Description of Parts: See Page 2 OF 2

3.0 RESPONSIBILITY

3.1 The Quality Assurance Manager has the responsibility to ensure that the contract has been executed in accordance with Section 2.0.

4.0 CERTIFICATION

4.1 I certify that the items listed in Section 2.1.7 have been produced in accordance with NUTHERM'S QA Manual No. QA-N-10179-4 and with contractual provisions.

Ronald J. Heifner  
Quality Assurance Manager



MT. VERNON, IL 62864 (618) 244-6000

CERTIFICATE OF COMPLIANCE

No.: CC-2139-2	Rev. No.: 0	Page: 2 OF 2
By: <i>man</i>	Approved: <i>RL</i>	
Date: <i>8/8/86</i>	Date: <i>8/8/86</i>	

P.O. ITEM  
NUMBER

DESCRIPTION

QUANTITY

*ATTACHMENT 13  
PAGE 2 of 2*

3 Fuse, 5-A 600-V AC, current limiting, nontime delay, 200KA RMS symmetrical interrupting rating, UL listed, Class CC, rejection ferrule feature with overall dimensions 13/32" x 1-1/2", Bussman Cat. No. KTK-R5. 14

4 Fuse, 8-A, 600-V AC, same as item 3 except shall be Bussman Cat. No. KTK-R8. 8

5 Fuse block, single-pole, 30-A 600-V AC, molded phenolic base, with side barriers rejection type acceptance feature for 13/32" x 1 1/2", UL Class CC fuses, screw type terminals, UL listed, Bussman Cat. No. 2078. 14

6 Same as item 5 above, except shall be 2-pole, Bussman Cat. No. 2079. 4

# CERTIFICATE OF COMPLIANCE

Date: November 16, 1987

CC-2755-1 Rev. 0

Page 1 of 2

## 1.0 OBJECTIVE

1.1 To certify that the items listed in Section 2.1.7 have been engineered, manufactured, inspected, packaged, and shipped in accordance with the Quality Assurance Manual and contractual provisions of NUTHERM International, Inc.

ATTACHMENT 14  
Page 1 of 2

## 2.0 SCOPE

### 2.1 Applies to:

2.1.1 Client: Public Service Electric and Gas

2.1.2 Class: 1E Equipment

2.1.3 Contract No.: Pl-229707 as modified by our exception letter of September 24, 1987 and your concurrence by R. Atkisson, Jr.

2.1.4 Power Plant: Salem

2.1.5 NUTHERM QA Manual No.: QA-N-10179-5 Rev. 0

2.1.6 NUTHERM Reference No.: PSE-2755

2.1.7 Item Description: See Page 2 of 2

## 3.0 RESPONSIBILITY

3.1 The Quality Assurance Manager has the responsibility to ensure that the contract has been executed in accordance with Section 2.0.

## 4.0 CERTIFICATION

4.1 I certify that the items listed in Section 2.1.7 have been produced in accordance with NUTHERM'S QA Manual No. QA-N-10179-5 and with contractual provisions.

**Nutherm**  
INTERNATIONAL, INC.

MT. VERNON, IL 62864. (618) 244-6000

# CERTIFICATE OF COMPLIANCE

Date: November 16, 1987

CC-2755-1 Rev. 0

Page 2 of 2

ITEM	QUANTITY ON ORDER	QTY SHIPPED	QTY B/O	DESCRIPTION
1	6 Sets	6 Sets	0	G.E. Selector Switches, Type CR2940, 2 position with 4 N.C. and 4 N.O. Contacts; Indicator Light, G.E. Type ET16, 120 VAC Service, Red Lens; Bussmann Fuse Block, 2 pole, P/N 2079

ATTACHMENT 14  
page 2 of 2

## CERTIFICATE OF COMPLIANCE

PREPARED BY: Mary Ann McCann  
Mary Ann McCann  
Quality Assurance

Date: 11/16/87

REVIEWED AND APPROVED BY: Ronald J. Helfner  
Ronald J. Helfner  
Manager  
Quality Assurance

Date: 11/16/87

**Nutherm**  
INTERNATIONAL, INC.

MT. VERNON, IL 62864. (618) 244-6000

TITLE MICROHARDNESS TEST

Project No. \_\_\_\_\_  
Book No. 108

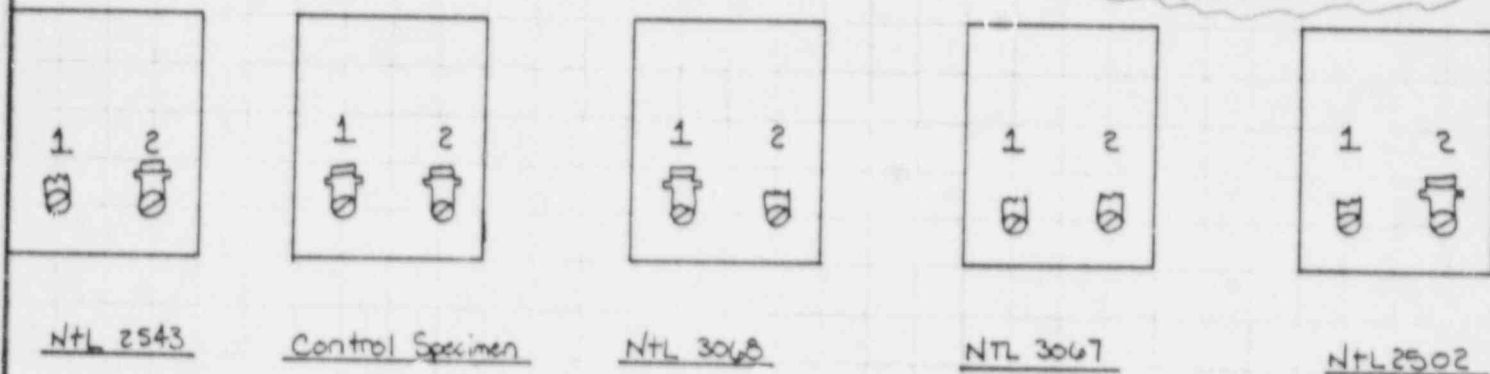
From Page No. \_\_\_\_\_

ATTACHMENT 15  
PAGE 1 OF 2

Purpose: The purpose of this test program is to determine the Hardness of Several Bussmann Fuse Block Spring clips.

Procedure: the Spring clip specimens were obtained from several test and production specimens. Some specimens failed after seismic testing. The specimens were given ntl no's. as outlined below.

Ref. ATTACHMENT 7  
PAGES 1-3



two Specimens were obtained from each unit. The Specimens were given numbers to identify unit and location from where they were taken.

<u>Specimen no.</u>	<u>Description</u>
Control #1	left side Spring clip from control Specime
Control #2	Right side Spring clip from control Specir
3068-#1	left side Spring clip from unit 3068 (Former Production unit)
3068-#2	Right side Spring clip from unit 3068 (Former Production unit, Broken)
3067-#1	left side Spring clip from unit 3067 (Former Production unit, Broken)
3067-#2	Right side Spring clip from unit 3067 (Former production unit, Broken)

From Page No. \_\_\_\_\_

ATTACHMENT 15  
page 2 of 2

TABLE 1 CONT.

Ref. ATTACHMENT 7  
pages 1-3

<u>Specimen No.</u>	<u>DESCRIPTION</u>
2502-1	left side Spring clip from NTL 2502 (Former E.G. Sample, Broken)
2502-2	Right Side Spring clip from NTL 2502 (Former E.G. Sample)

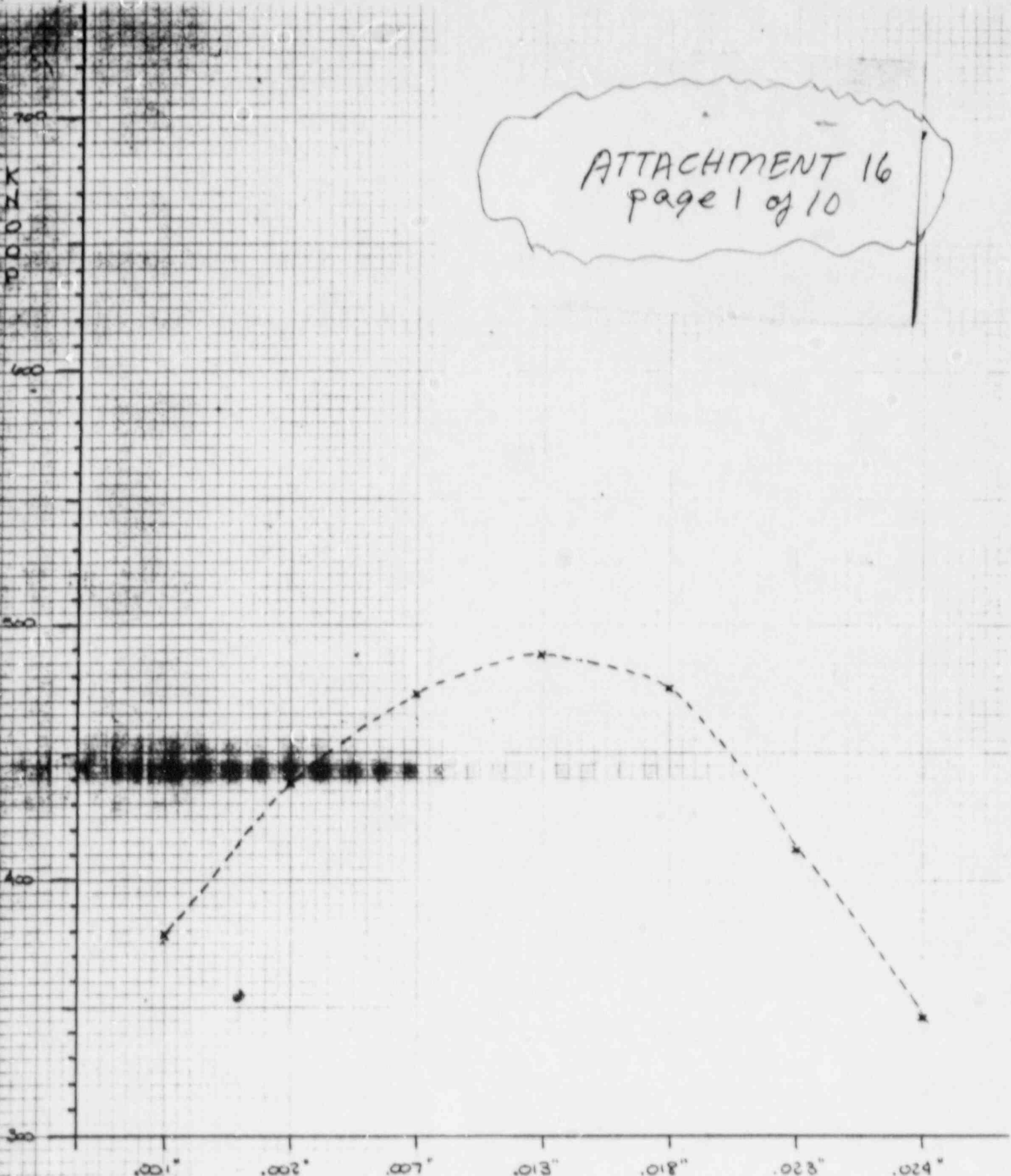
removal procedure: The specimens were removed by Drilling out the Brass rivet holding the specimens to the block. Care was taken not to allow heat build up in the specimens, during removal, that might alter the heat treatment.

Shipping procedure: Immediately following removal, the specimens were placed within individual containers and marked with their specimen no's.

Table 1 (Addendum)

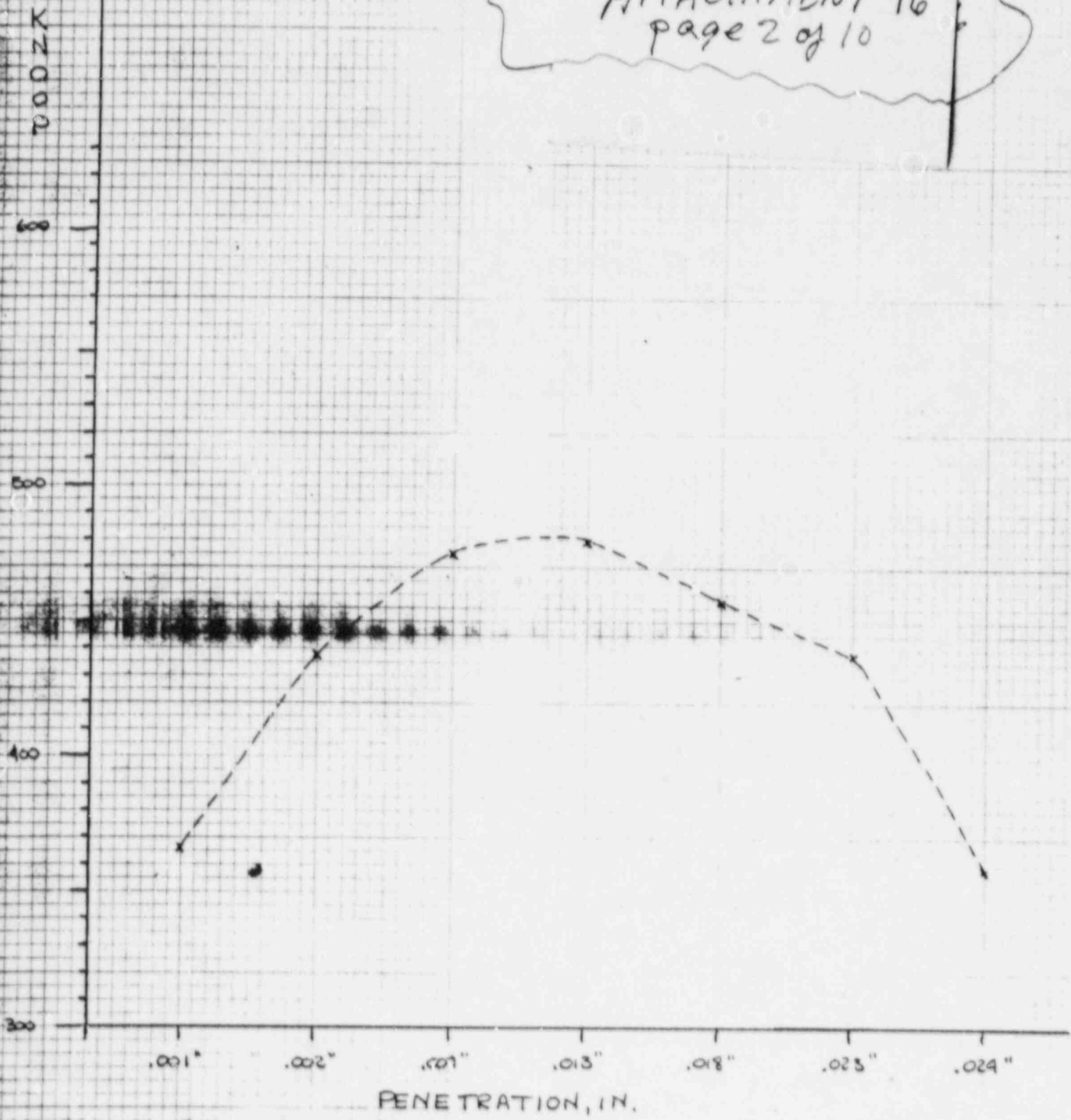
<u>Specimen No.</u>	<u>Description</u>
2543-1	left side Spring clip from NTL 2543 (Former E.G. Sample, Broken)
2543-2	Right Side Spring clip from NTL 2543 (Former E.G. Sample)

ATTACHMENT 16  
page 1 of 10



PENETRATION, IN  
Control # 1

ATTACHMENT 16  
page 2 of 10



CONTROL # 2



ATTACHMENT 16  
page 3 of 10

00027

8

8

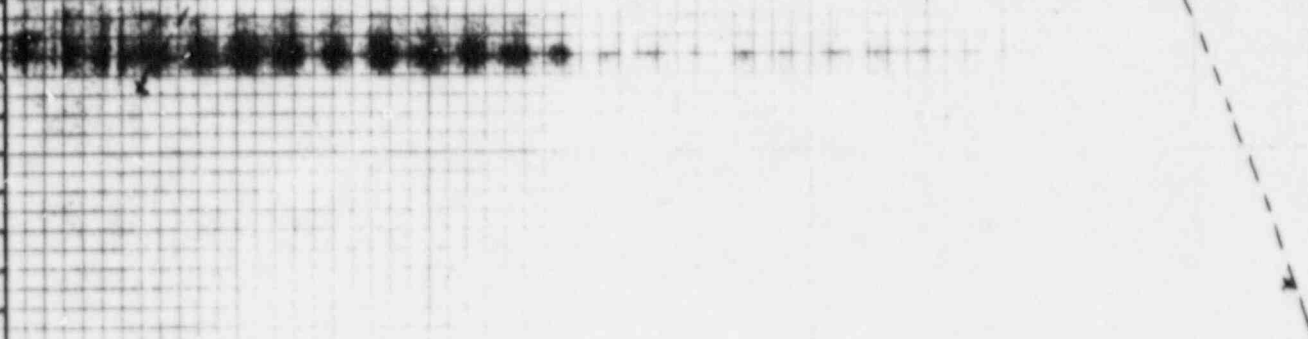
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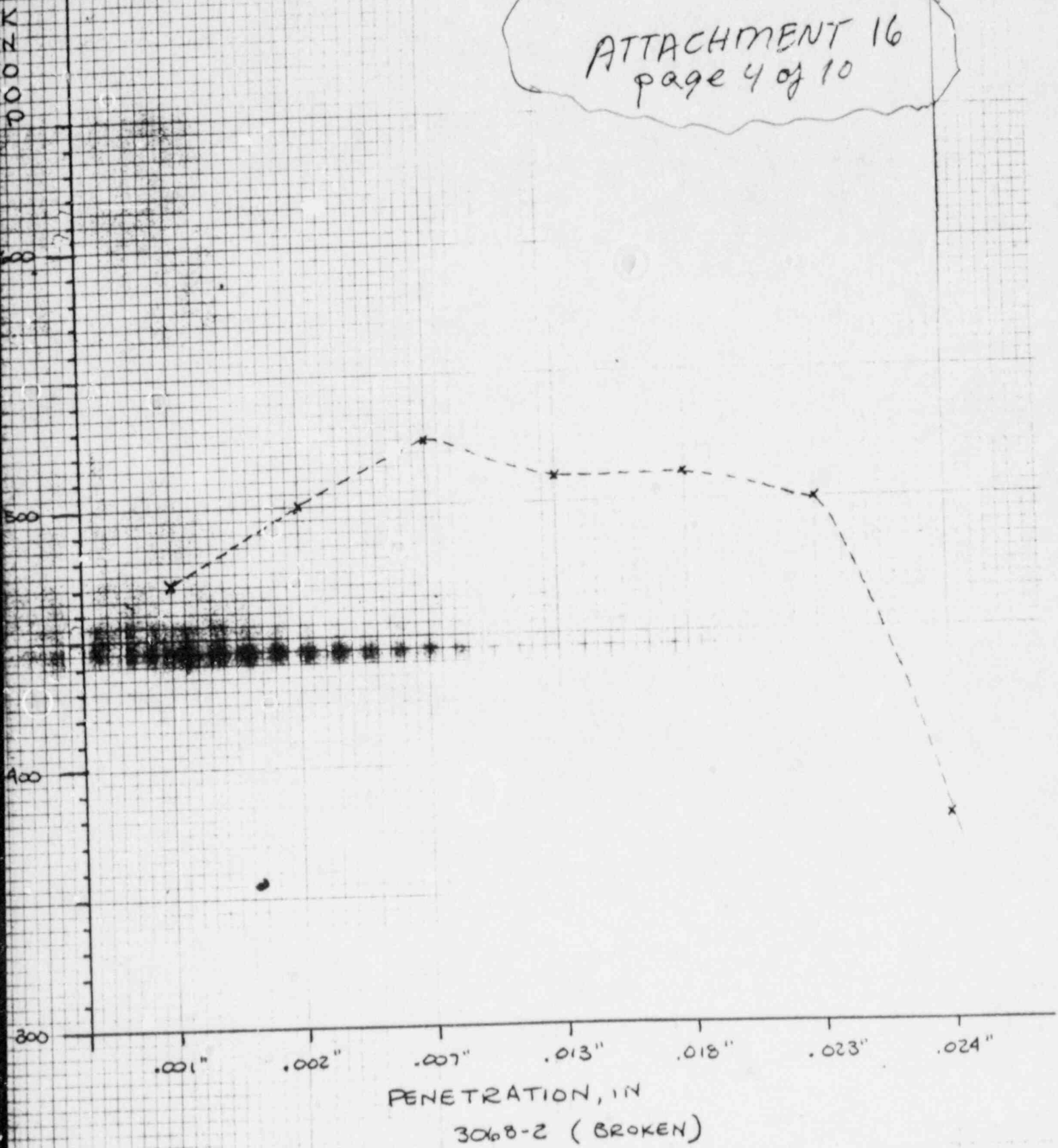
.001" .002" .007" .013" .018" .023" .024"

PENETRATION, IN

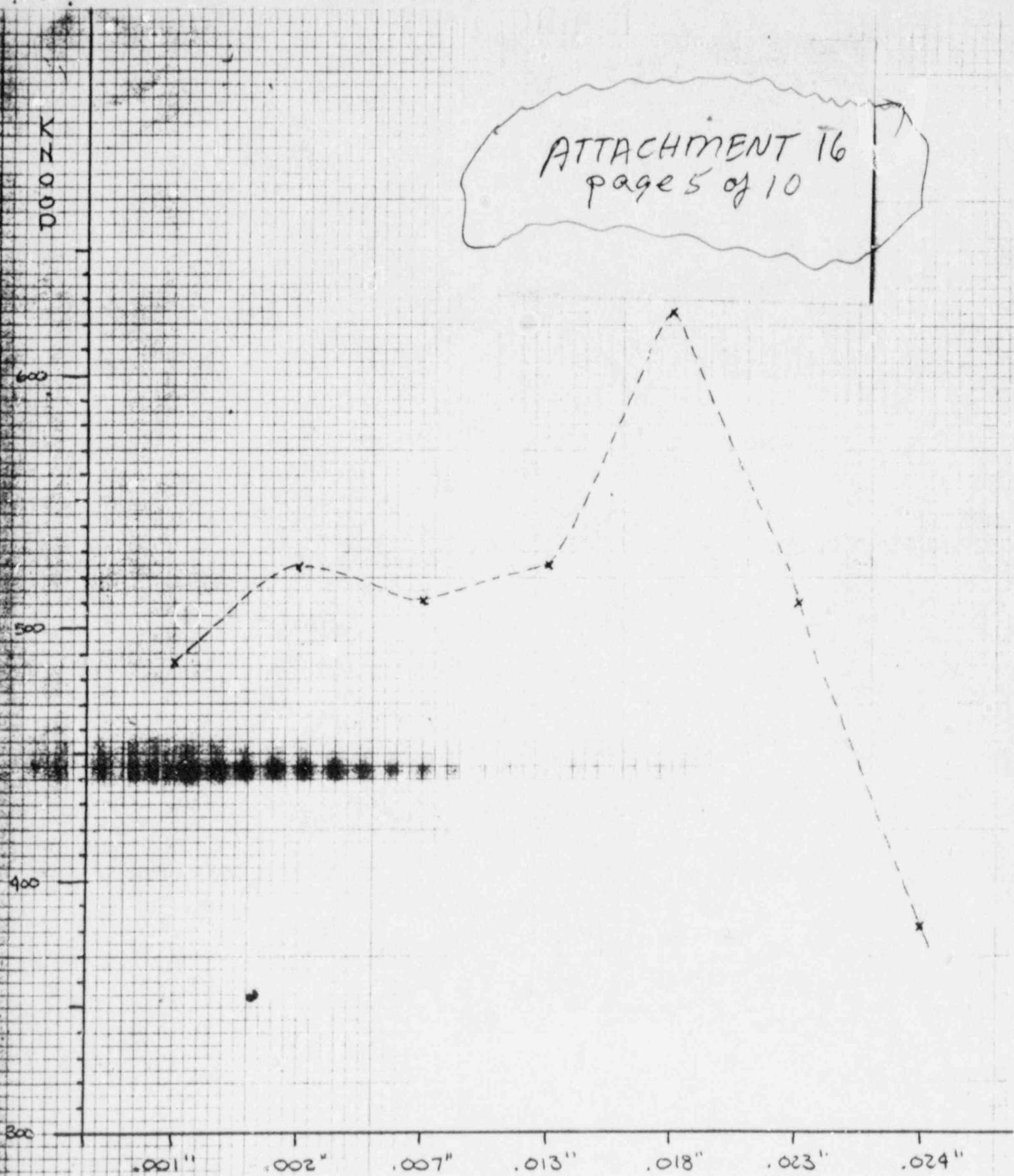
3068-1



ATTACHMENT 16  
page 4 of 10

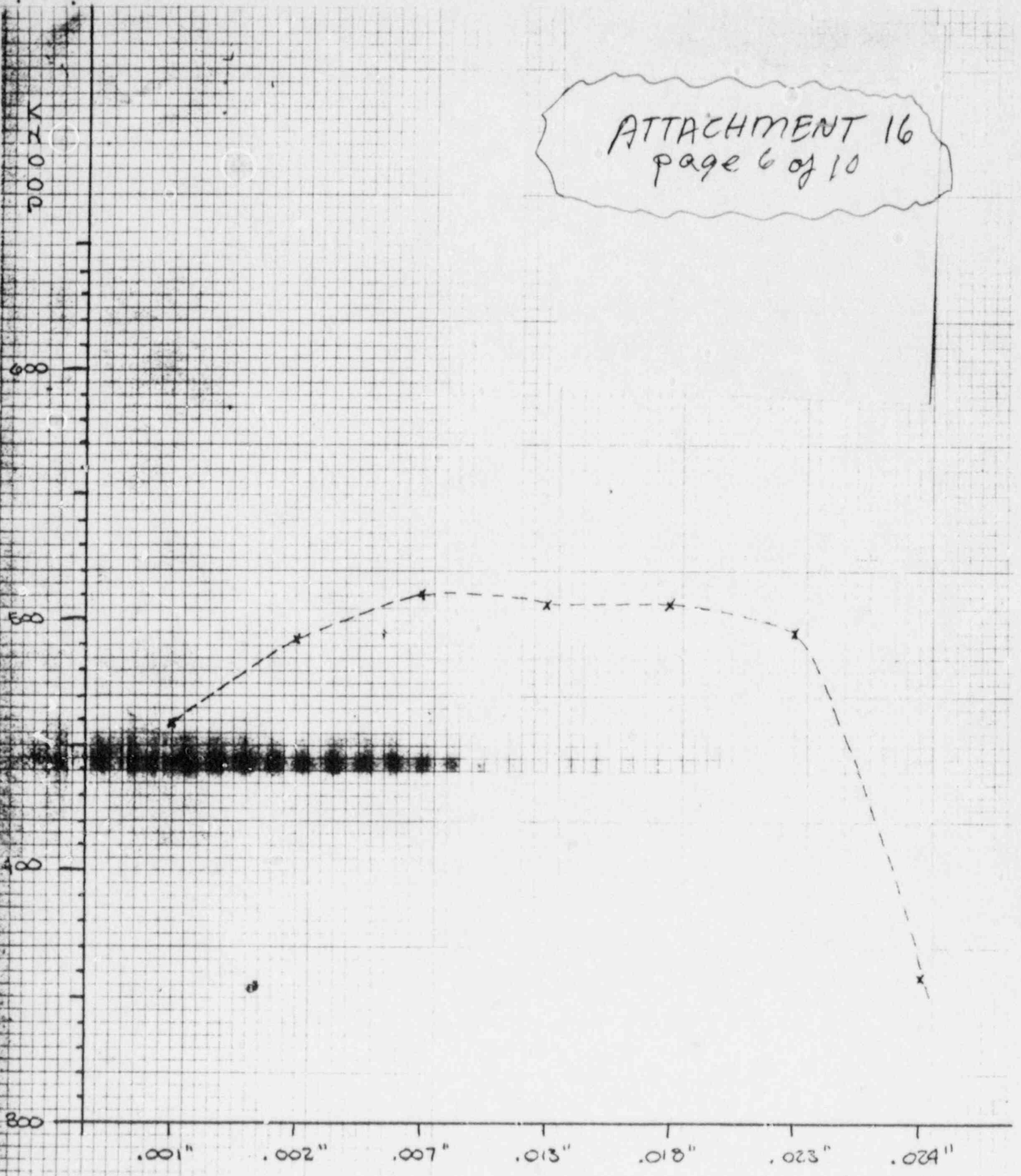


ATTACHMENT 16  
page 5 of 10



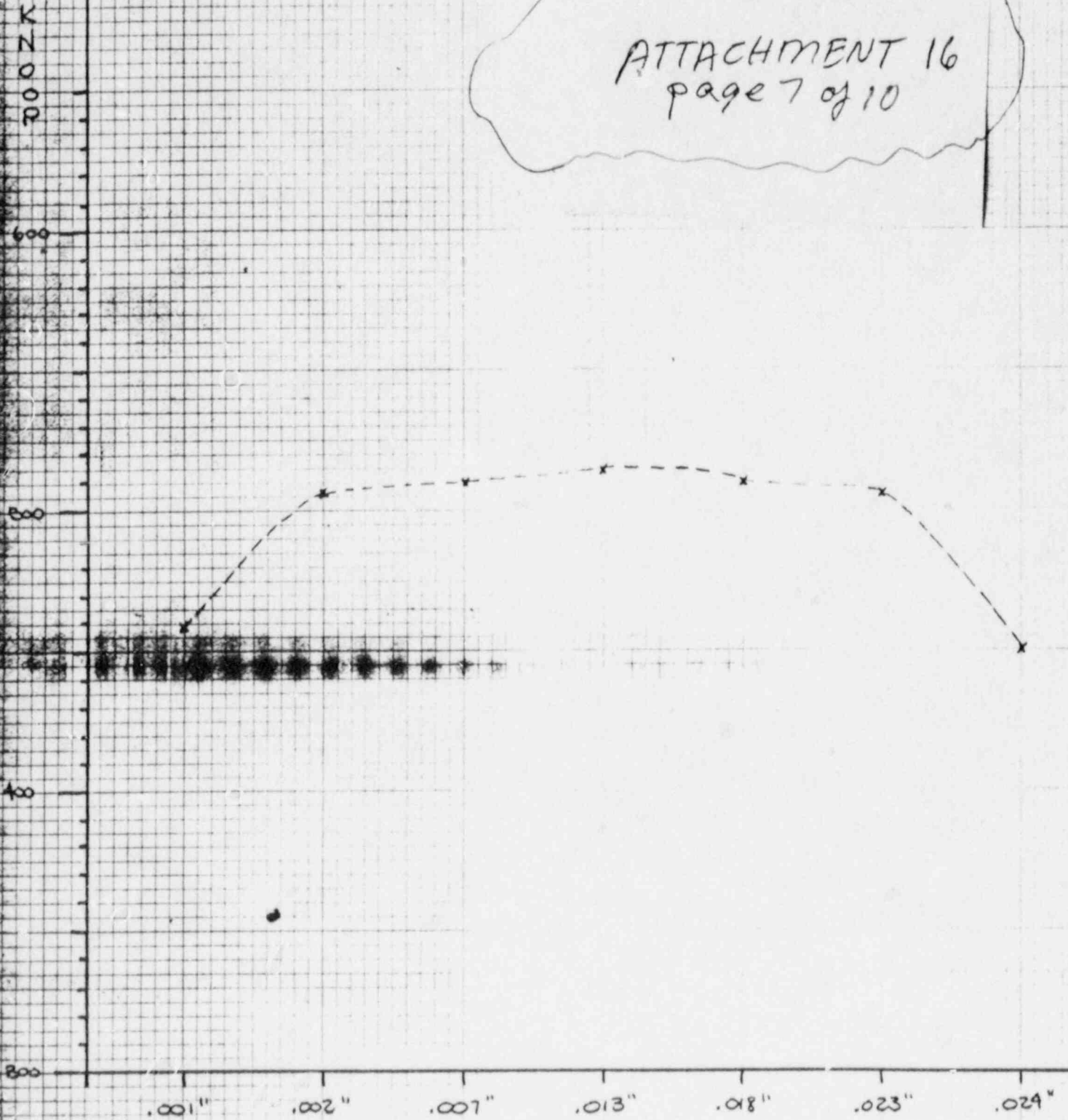
PENETRATION, IN  
3067-1 (BROKEN)

ATTACHMENT 16  
page 6 of 10



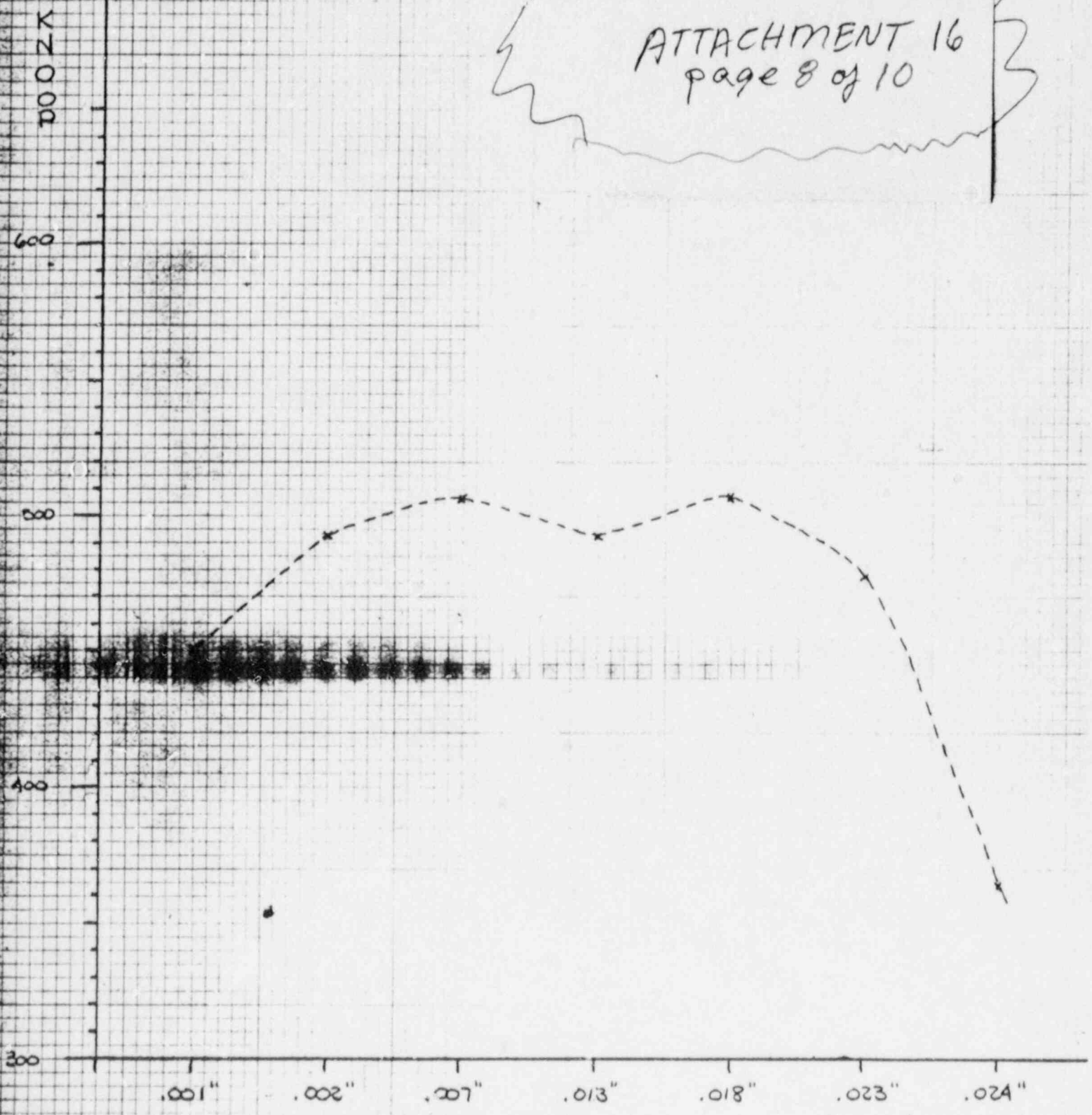
PENETRATION, IN  
3067-2 (BROKEN)

ATTACHMENT 16  
page 7 of 10



PENETRATION, IN  
2502-1 (BROKEN)

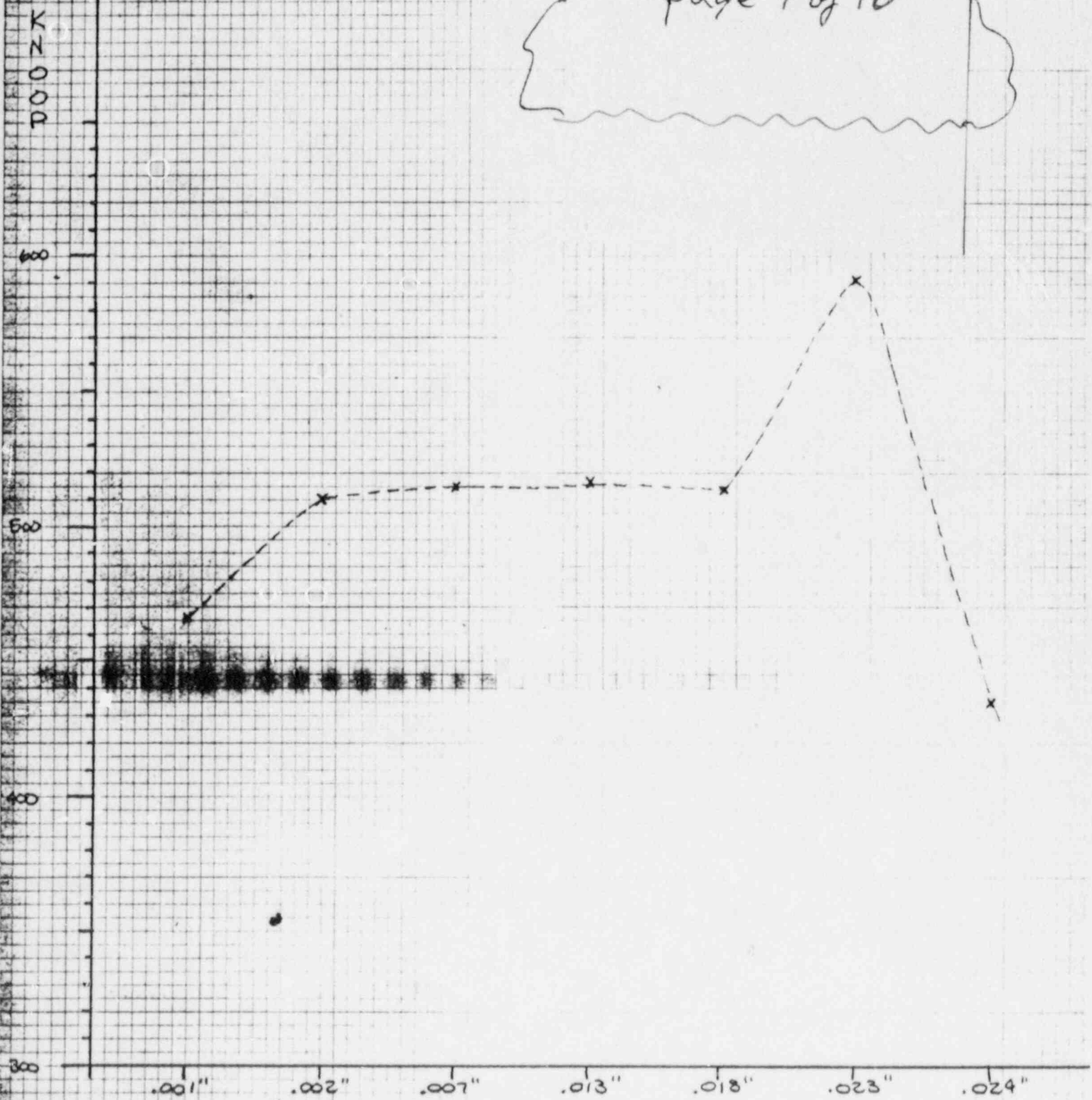
ATTACHMENT 16  
page 8 of 10



PENETRATION, IN

2502-2

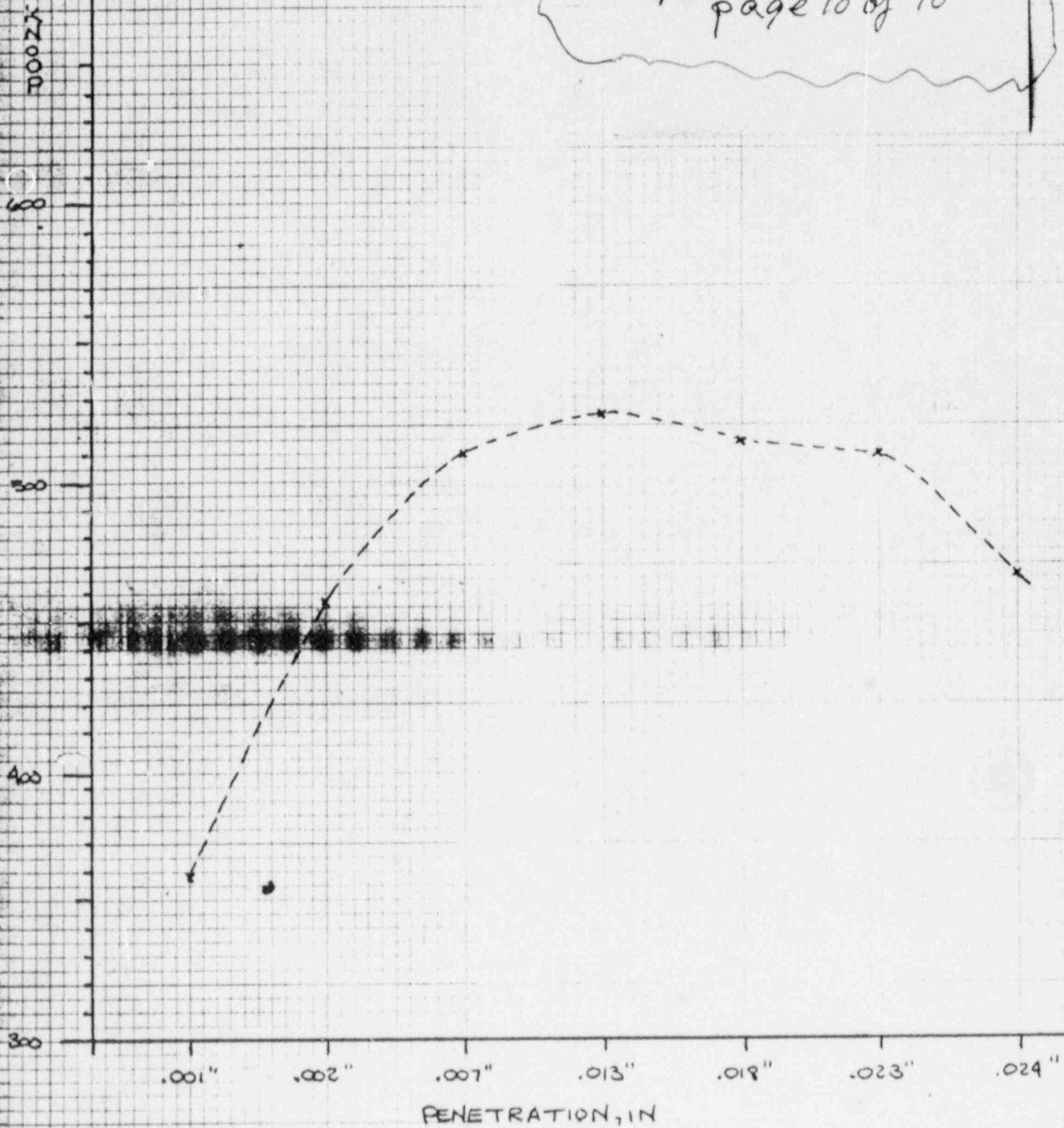
ATTACHMENT 16  
page 9 of 10



PENETRATION, IN

2543-1 (BROKEN)

ATTACHMENT 16  
page 10 of 10



2543-2



MEMORANDUM

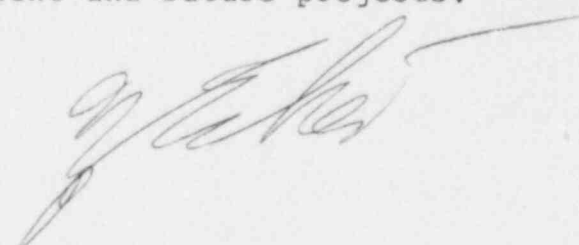
TO: All Personnel  
FROM: William Eckert  
DATE: May 05, 1988  
SUBJECT: Bussmann Buss KTK-R Fuse Blocks

Your are hereby notified that Nutherm International has suspended the use of Bussmann Buss KTK-R Fuse Blocks with Part Numbers 2078, 2079, and 2080.

All personnel are responsible for notifying the Quality Assurance Manager if and when they become aware of our projects containing one or more of the above parts.

This suspension applies to all present and future projects.

WJE/taw



ATTACHMENT 17  
page 1 of 1