Nuclear Assurance Corporation
24 Executive Park West
Atlanta, Georgia 30329
(404) 329-4200
Telex: 542507, 542703

718 Horizon Drive
Grand Junction, Colorado 81501
(303) 241-4337
TWX: 910-929-0314

Weinbergstrasse 9
8001 Zurich, Switzerland
(01) 470344
Telex: 57175

October 4, 1979

Mr. William N. McNeill
Contractor Inspector
U.S. Nuclear Regulatory Commission - Region IV
611 Ryan Plaza Drive
Arlington, TX 76012

POOR ORIGINAL

Dear Bill:

After reviewing NAC's response to your inspection report and then rereading the report, the following information is provided in answer to our telephone conversation on the 28th of September:

On the cited "missing" records, Notice of Deviation, Item A.(2):

1. Copies of the radiographic records were found in the cask data packages for Casks C and D but were filed under a different assembly than for Casks A and B. Copies were submitted under Attachment C of our letter dated September 19, 1979, and included with this response as Attachment 1 together with a paste-up of the drawing showing the weld callout and the title-block.

   The penetrant inspection reports for Weld C-51 are also included in Attachment 1 for all 4 casks.

2. The results of penetrant tests for Welds C-16 on the cask cover were submitted in the referenced letter as Attachment D and are resubmitted together with a paste-up of the drawing showing the weld callout and the titleblock as Attachment 2.

3. The lead pour hole plug, Weld C-5 in the cask flange, not C-51 in the cask base, was found in the appropriate assembly in the cask records. This is included as Attachment 3 with the inspection results attached to the paste-up of the drawing showing the weld callout and the titleblock.

1381 070
7911210 291
14480

NAC has detailed procedures for the unloading and loading operations of the NAC-1 spent fuel shipping casks and maintenance requirements on loading, unloading, quarterly, and annual periods. A summary of the pressure tests that were made on initial acceptance and then for operations and maintenance are summarized in Table I. Some background history on casks -1A through -1D is shown on Table II. As noted, casks NAC-1C and NAC-1D will require an annual maintenance prior to being placed in service.

In response to your question on Item #6 under "4. Findings, c. Comments", the noted flatness deviation was documented prior to lead pour, as noted on the inspection sheet. A paste-up of the manufacturing drawing, E-3769-3, is shown in Attachment 4. Drawing Note 8 calls for "CASK FACE SHALL BE MACHINED. . . ." This operation is performed after lead pour and after the lead pour plug is welded into the flange face, Weld C-5.

It is hoped that this information will be of assistance. If other information is desired, please let me know.

Sincerely,

NUCLEAR ASSURANCE CORPORATION

David A. Webster
Corporate Manager
Quality Assurance

DAW:cnr

Attachments 1 - 4

1381 071

TABLE 1

NAC-1 SPENT FUEL SHIPPING CASKS

ACCEPTANCE & OPERATING/MAINTENANCE TEST REQ'TS

TEST	FABRICATION ACCEPTANCE	OPERATIONS AND MAINTENANCE			
		LOADING	UNLOADING	QUARTERLY	ANNUAL
HYDROSTATIC - NEUTRON SHIELD	• 70 PSIG - 10 MINUTES NO LEAKAGE - EACH TANK. • MANIFOLD 4 TANKS & PRESSURIZE TO 140 PSIG FOR 10 MIN. - NO LEAKAGE				EACH TANK - 70 PSIG NO LEAKAGE - 10 MIN
CAVITY	250 PSIG FOR 10 MINUTES - NO LEAKAGE	80-120 PSIG - NO LEAKAGE	80-120 PSIG - NO LEAKAGE		200 PSIG - NO LEAK IN 10 MINUTES
RING PRESSURE TEST (BETWEEN RINGS)	PRESSURIZED TO 167 PSIG 6 TIMES, BREAKING SEAL BETWEEN TESTS; FINAL TEST TO 1006 PSIG - NO LEAKAGE 10 MINUTE TEST PERIOD EACH TEST	80-100 PSIG FOR 10 MIN. - NO LEAKAGE	10-15 PSIG FOR 10 MIN. - NO LEAKAGE	$167\left(^{+5}_{-0}\right)$ - NO LEAKAGE	1006 PSIG NO LEAK IN 10 MINUTES.

1381 072

POOR ORIGINAL

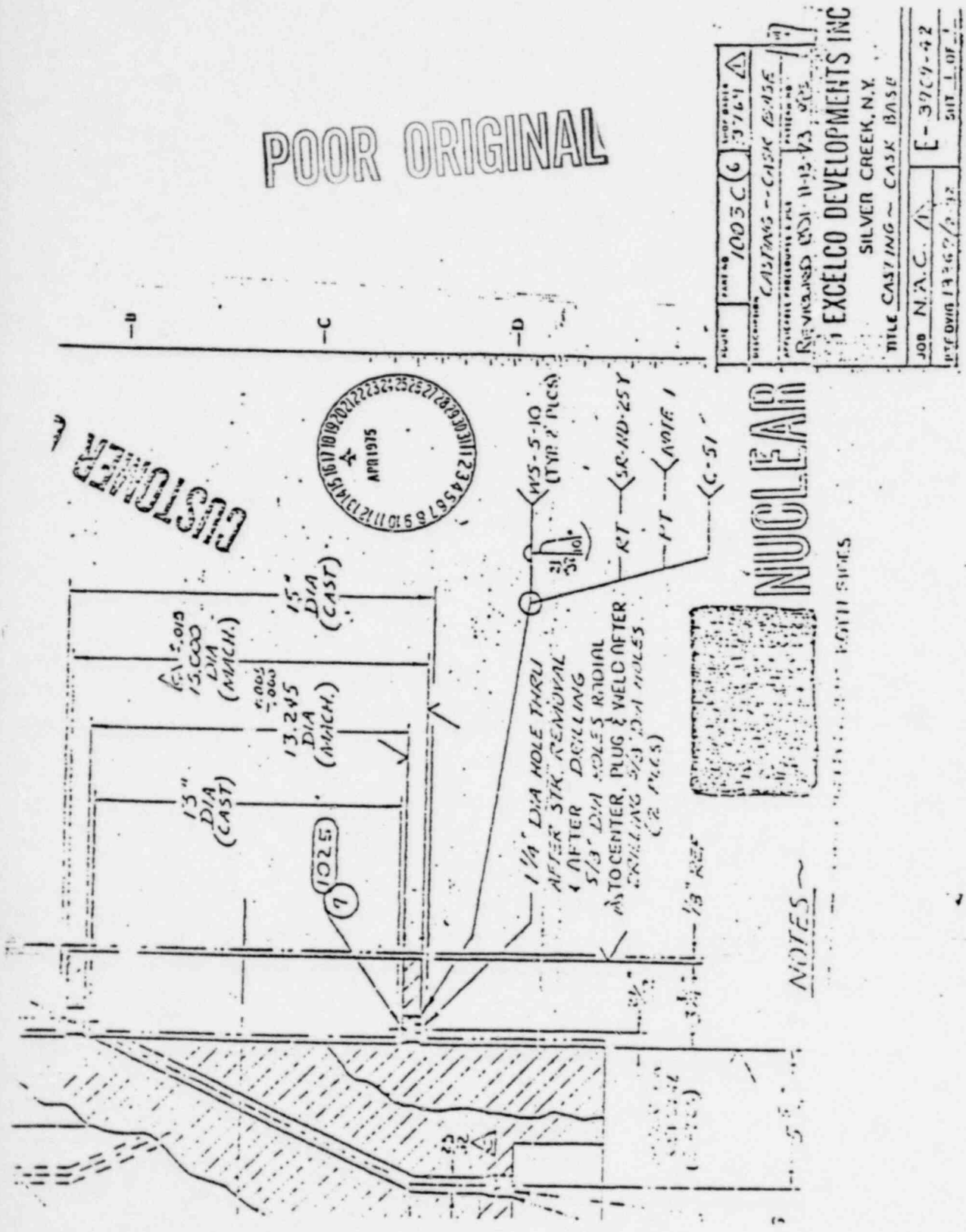
POOR ORIGINAL

TABLE II

NAC-1 SPENT FUEL SHIPPING CASKS

	NAC-1 CASK			
	-1A	-1B	-1C	-1D
FINAL ACCEPTANCE AS EXCELCO	6-6-75	4-10-75	4-10-75	4-10-75
ANNUAL MAINTENANCE	6-16-76	6-13-76	3-16-76	3-5-76
	6-16-77	5-20-77	4-8-77	4-24-77
			3-21-78	4-13-78
QUARTERLY MAINTENANCE				
1977- 3RD QTR	(STORED)	7-14-77	7-12-77	7-11-77
4TH QTR	10-6-77	10-12-77	10-11-77	10-13-77
1978- 1ST QTR	1-16-78	1-12-78	12-10-77	1-11-77
2ND QTR			5-22-78	6-27-78
3RD QTR			8-23-78	(STORED)
4TH QTR			1-5-79	"
1979 1ST QTR			3-27-79	3-26-79
AS OF 12 APRIL 1979				
TOTAL SHIPMENTS	19	88	84	120
TOTAL MILES	68,810	245,155	227,060	318,500
TOTAL ROAD HRS @ 35 MPH(AVG)	1966	7004	6487	9100
NOTE: CASK-1A TO DUKE ON 2-1-78 & -1B ON 3-1-79				
PRESSURE CYCLES:				
NEUTRON SHIELD : 140 PSIG ALL TANKS	1	1	1	1
: 70 PSIG EACH TANK	3	3	4	4
CAVITY · 250 PSIG	1	1	1	1
200 PSIG	3	3	4	4
80-120 PSIG	58	176	168	240
O-RINGS· 1006 PSIG	3	3	4	4
· 167 PSIG	8	9	13	11
· 80-100 PSIG	19	88	84	120
NATURAL FREQUENCY IS 34 HZ (SAR, p. 3-45): TRUK TIRE & SUSPENSION IN			1381	873

POOR ORIGINAL



EXCELCO DEV. | ATTACHMENT 1 Page 2 of 4

SILVER CREEK N. Y.

X-RAY SERIAL NO. C22

JOB or S/O 27.1

MATERIAL S.S. [illegible]

SPECIFICATION ESTI-E71-66

X-RAY STATUS Final

Inspector L.O. Lewis III Date 5/13/74

X-RAY WELDMENT REPORT— Cask Base

POOR ORIGINAL

SEAM NO.	FILM NO.	LOCATION OF DEFECT	TYPE
C22	1-2		OK
	2-3		OK
	3-4		OK
⊕	4-5	(1)	OK
	5-6		OK
	6-7		OK
	7-8		OK
⊕	8-1	(1) (2)	OK
	⊕	Weld joint area —	
	Note:	Radiograph shot in final machined weld area —	
		Film in (B) position —	
		Single wall single image —	
		film (OS) —	
		190-KV	
		4-MA	
		26" - distance	
		2:15 - Min. exposure	
		"A" - Kodak Ultra	
		.005" - Lead screens	

LEGEND

OK— Accepted
TT— Top edge of
T— Top of wel
C— Center of w
B— Bottom of
BB— Bot edge of
OS— Outside
IS— Inside
1— Porosity
2— Scattered por
3— Linear poro
4— Crack (s)
5— Incomplete penetration
6— Incomplete fusion
7— Slag inclusion
8— Tungsten
9— Undercut
10— Base matl. thinning
11— Burn thru
12— Grind marks
13— Surface defect
14— Polish
15— Film/screen defect
16— Re-X-Ray

NOTE: Unit #2 (CS 2) was recerialized and used on Unite #3

1581 075

U.S. Nuclear Inc.

EXCELCO DEVE
SILVER CREEK, N. Y.

X-RAY SERIAL NO. CB4

JOB or S/O 3769

MATERIAL S.S. Casting

SPECIFICATION ASTM-E71-64

X-RAY STATUS Final

Inspector [illegible] Level III Date 6/3/74

X-RAY WELDMENT REPORT— Cask Base #4

SEAM NO.	FILM NO.	LOCATION OF DEFECT	TYPE
CB4	1-2		
	2-3		
	3-4		
±	4-5	(1) (8)	
	5-6		
	6-7		
±	7-1	(1) (8)	
±	Weld plug area —		
	Note: Radiographed in final machined surface —		
	Films on (5) 1st flange —		
	Single exposure films from (OS) —		
	190 KV		
	4 MA		
	36" — Distance		
	2:15 — Min. Exposure		
	"AA" — Kodak Film		
	.005" — Lead screens		

LEGEND

OK— Accepted
TT— Top edge of w
T— Top of weld
C— Center of weld
B— Bottom of we
BB— Bot. edge of w
OS— Outside
IS— Inside
1— Porosity
2— Scattered poros
3— Linear porosity
4— Crack (s)
5— Incomplete penetration
6— Incomplete fusion
7— Slag inclusion
8— Tungsten
9— Undercut
10— Base matl. thinning
11— Burn thru
12— Grind marks
13— Surface defects
14— Polish
15— Film/screen defect
16— Re-X-Ray

[illegible] 6/4/74

POOR ORIGINAL

Form ED-0004

PENETRANT INSPECTION REPORT

PIR # _____

EXCELCO DEVELOPMENTS, INC.
Silvercreek, New York

Page _____ of _____

I.C. NO. E-3769-12 P/O _____

PART NAME BASE S/O 3769

S/N 3769-6 - CB1 & CB3 / CB2 & CB4 INSP. STATUS FINAL

DATE As Listed INSPECTOR [illegible] LEVEL II

AREA/WELD INSP. 100% ACCEPT X REJECT _____

TEST RESULTS: Inspected 100% of Complete Area of Surfaces Acceptable to Requirements As Listed in QC-SR-ND-23L;

4-Pieces

P/N - 3769-6 - CB1 (3/12/74)
P/N - 3769-6 - CB2 (5/16/74)
P/N - 3769-6 - CB3 (3/23/74)
P/N - 3769-6 - CB4 (6/3/74)

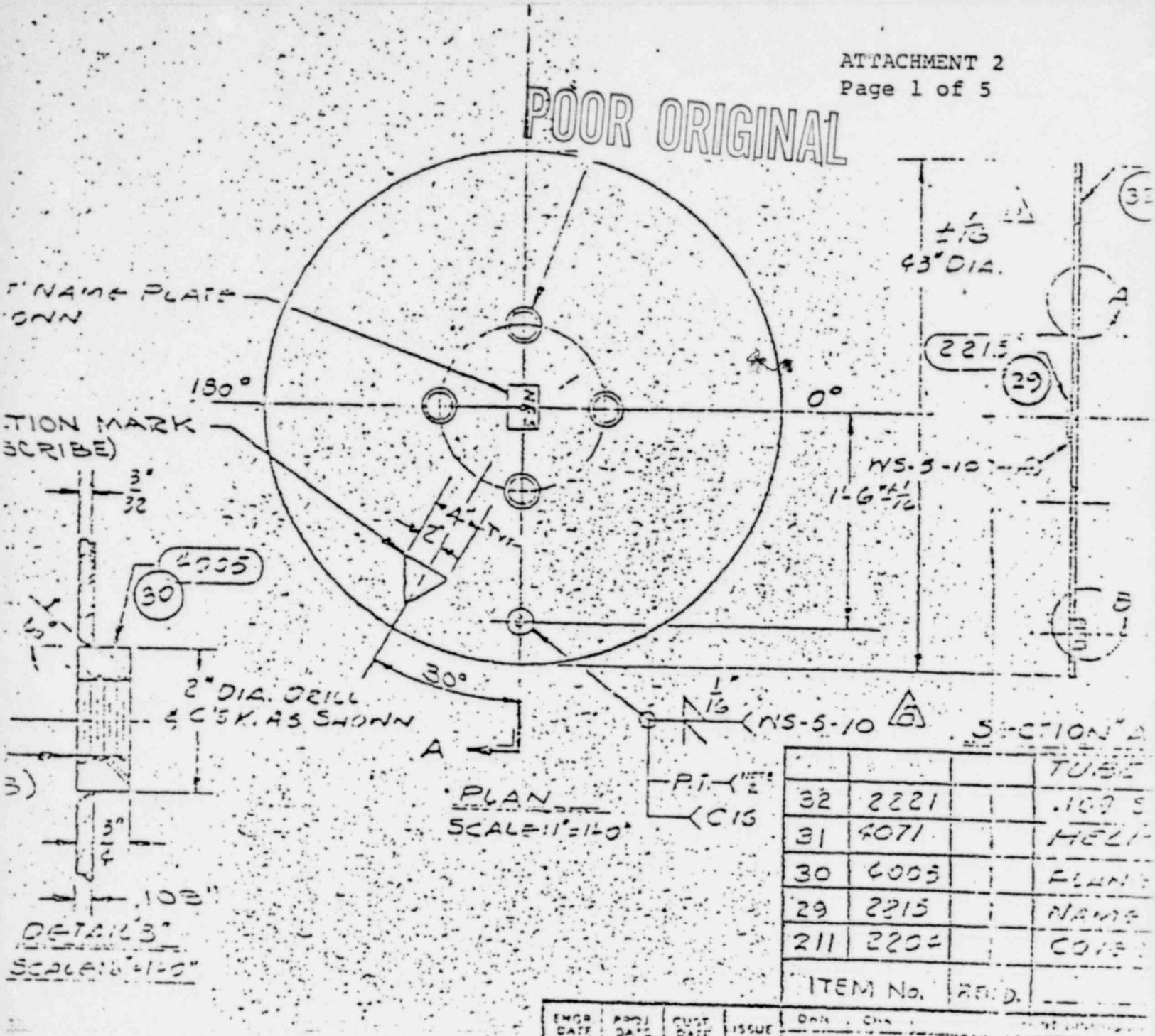
POOR ORIGINAL

REMARKS:

1381 077

NDT Procedure - No. QC-SR-ND-23L
Spotcheck Penetrant (SKL-5) Batch No. - 3C015
Spotcheck Cleaner (SKC-5) Batch No. - 3A137
Spotcheck Developer (SKD-5) Batch No. - 3B044

POOR ORIGINAL



ENGR DATE	PROJ DATE	CUST DATE	ISSUE	DRN DATE	CHK DATE
			0		

UNLESS OTHERWISE SPECIFIED

REVISED ECN 11-5-75 JDS

EXCELCO DEVELOPMENTS INC.
SILVER CREEK, N.Y.

TITLE COVER SUB-ASS'Y.

JOB NO. [illegible]

PT. DWG. 8712 5/4-B

E- 8714-SC

SHT. 1 OF 1

1381 078

PENETRANT INSPECTION REPORT

EXCELCO DEVELOPMENTS, INC.
Silvercreek, New York

Page ____ of ____

DWG. NO E-3769-6 P/O

PART NAME UPPER IMPACT HEAD S/O 3769

S/N 3769-210 TO 3769-211 INSP. STATUS FINAL

DATE 5/3/74 INSPECTOR QCA 3 LEVEL II

AREA/WELD INSP. 100% ACCEPT X REJECT

TEST RESULTS: INSPECTED 100% OF COMPLETE AREA OF WELDS. ACCEPTABLE TO REQUIREMENTS AS LISTED IN SR-ND-23 & U.

UNIT #1

3769-210 (IMPACT HEAD SUB ASSEMBLY) TO 3769-211 (COVER ASSEMBLY)

(C14 & C15)

(C-16 - P.T. INSPECTED - REF. DWG. E 3769-55 REV. 1) BY [illegible] QCA 3

REMARKS:

POOR ORIGINAL

N.D.T. - PROCEDURE - NO. - SR-ND-23 U.
SPOTCHECK PENETRANT (SKL-5) BATCH NO. - 3C015
SPOTCHECK CLEANER (SKC-5) BATCH NO. - 3A137
SPOTCHECK DEVELOPER (SKD-5) BATCH NO. - 3B046

PENETRANT INSPECTION REPORT

EXCELCO DEVELOPMENTS, INC.
Silvercreek, New York

Page ____ of ____

DWG. NO. E-3769-6 P/O ____

PART NAME Upper Impact Head S/O 3769

S/N 3769-210 TO 3769-211 INSP. STATUS FINAL

DATE 5/17/74 INSPECTOR QCA 3 LEVEL II

AREA/WELD INSP. 100% ACCEPT X REJECT ____

TEST RESULTS: Inspected 100% of Complete Area of Welds, Acceptable to Requirements As Listed in SR-ND-23 & U

Unit - #2

3769-210 (~~Impact Head~~ Sub-Assembly) to 3769-211 (Cover Assembly)

(C14 & C15)

(C-16-P.T. Inspected - Ref. Dwg. E-3769-55 Rev. 1) QCA 3

REMARKS:

POOR ORIGINAL

1381 080

N.D.T. - Procedure - No. - SR-ND-23 U.
Spotcheck Penetrant (SKL-5) Batch No. - 3C015
Spotcheck Cleaner (SKC-5) Batch No. - 3A137
Spotcheck Developer (SKD-5) Batch No. - 3B046

PENETRANT INSPECTION REPORT

EXCELDO WELD MENTS, INC.
Silvercreek, New York

PAGE ____ OF ____

DWG. NO. E-3769-6 P/O

PART NAME UPPER IMPACT HEAD S/O 3769 " "

S/N 3769-210 TO 3769-211 INSP. STATUS FINAL

DATE 5/23/74 INSPECTOR [illegible] QCA 3 LEVEL II

AREA/WELD INSP. 100% ACCEPT X REJECT

TEST RESULTS: INSPECTED 100% OF COMPLETE AREA OF WELDS. ACCEPTABLE TO REQUIREMENTS AS LISTED IN SR-ND-23 & 23A

UNIT-#3

3769-210 (IMPACT HEAD SUB ASSEMBLY) TO 3769-211 (COVER ASSEMBLY)

(C14 & C15)

(C-16-P.T. INSPECTED - REF. DWG-E3769-55 REV.1) [signature] QCA 3

REMARKS:

POOR ORIGINAL

N.D.T. - PROCEDURE - NO. -SR-ND-23A.
SPOTCHECK PENETRANT (SKL-5) BATCH NO. - 3C015
SPOTCHECK CLEANER (SKC-5) BATCH NO. - 3A137
SPOTCHECK DEVELOPER (SKD-5) BATCH NO. - 3B046

1381 081

PENETRANT INSPECTION REPORT

EXCELSIOR DEVELOPMENTS, INC.
Silvercreek New York

Page ____ of ____

DWG. NO. E-3769-6 A/O

PART NAME UPPER IMPACT HEAD S/O 3769

S/N 3769-210 TO 3769-211 INSP. STATUS FINAL

DATE 5/28/74 INSPECTOR KA 3 LEVEL II

AREA/WELD INSP. 100% ACCEPT X REJECT

TEST RESULTS: INSPECTED 100% OF COMPLETE AREA OF WELDS.
ACCEPTABLE TO REQUIREMENTS AS LISTED IN SR-ND-23 & U.

(UNIT #4)
3769-210 (IMPACT HEAD SUB ASSEMBLY) TO 3769-211 (COVER ASSEMBLY)

(C14 & C15)

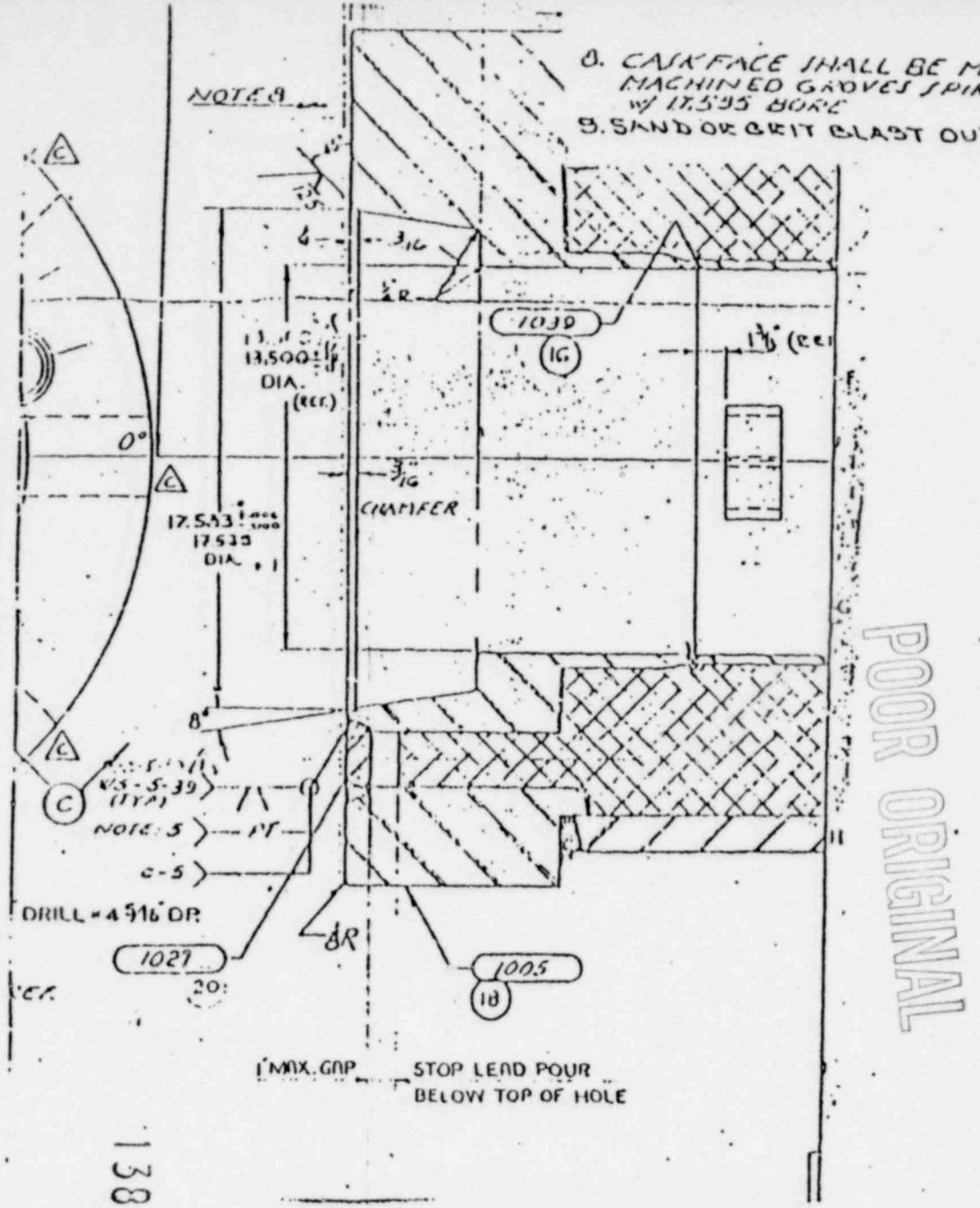
(C-16 - P.T. INSPECTED - REF. DWG. E3769-55 REV. 1) Initialed. EDI 3

REMARKS:

POOR ORIGINAL

N.D.T. - PROCEDURE - NO. - SR-ND-23U.
SPOTCHECK PENETRANT (SKL-5) BATCH NO. - 3C015.
SPOTCHECK CLEANER (SKC-5) BATCH NO. - 3A137
SPOTCHECK DEVELOPER (SKD-5) BATCH NO. - 3B046

1381 082



MATL	PART NO 1200 (201)	
DESCRIPTION BODY ASS'Y		
APPLICABLE SPECIFICATIONS & DWG		
EDI Proprietary W/E/S Fig.		

EXCELCO DEVELOPMENTS INC
SILVER CREEK, N.Y.
TITLE BODY ASS'Y.

JOB 114	E-3769-3
REF DWG 22260-A	SHT 1 OF 1

POOR ORIGINAL

13811 083

Form [illegible]

[illegible]

[illegible] WELDING, INC.
Brewerton, New York

Page ___ of ___

DWG NO. E-3769-5 P.O.

PART NAME Caps to Lid Flange S/O 3769

S/N 3769-20 to 3769-18 INSP. STATUS FINAL

DATE 6/10/74 INSPECTOR QCA 6 LEVEL II

AREA/WELD INSP. 100% ACCEPT X REJECT

TEST RESULTS: Inspected 100% of Complete Area of Welds.
Acceptable to Requirements As Listed in SR-ND-23 & U

(Cask #1)

(5) 3769-20 (Caps) to 3769-18 (Lid Flange)

POOR ORIGINAL

REMARKS:

1381 084

N.D.T. - Procedure - No. -SR-ND-23U.
Spotcheck Penetrant (SKL-5) Batch No. -3C015
Spotcheck Cleaner (SKC-5) Batch No. -3A137
Spotcheck Developer (SKD-5) Batch No. -3B046

FORM III-0004

PIR #_____

PENETRANT INSPECTION REPORT

ENGELHARD INDUSTRIES, INC.
Silvercreek, New York

Page ____ of ____

DWG. NO. E-3769-5 P/O _____

PART NAME CAPS TO LID FLANGE S/O 3769

S/N 3769-20 TO 3769-18 INSP. STATUS FINAL

DATE 6/19/74 (ROOT) 7/8/74 (FULL) INSPECTOR EDI QCA 2 LEVEL II

AREA/WELD INSP. 100% ACCEPT X REJECT _____

TEST RESULTS: INSPECTED 100% OF COMPLETE AREA OF WELDS, ACCEPTABLE TO REQUIREMENTS AS LISTED IN SR-ND-23 & U

(Cask #2)

(C5) 3769-20 (CAPS) TO 3769-18 (LID FLANGE)

POOR ORIGINAL

REMARKS:

1381 085

N.D.T. - PROCEDURE - No. - SR-ND-23 U.
SPOTCHECK PENETRANT (SKL-5) BATCH No. - 3C015
SPOTCHECK CLEANER (SKC-5) BATCH No. - 3A137
SPOTCHECK DEVELOPER (SKD-5) BATCH No. - 3B046

DWG. NO E-3769-5 P.O.

FIELD WELD CAPS TO LID FLANGE S.O. 3769

S/N 3769-20 TO 3769-18 FIN. STATUS FINAL

DATE 9/11/74 INSPECTOR LEVEL II

AREA/WELD INSP. 100% ACCEPT X REJECT

REMARKS: INSPECTED 100% OF COMPLETE AREA OF WELDS ACCEPTABLE TO REQUIREMENTS AS LISTED IN SR-ND-23 & U

(CASK #3)

(C5) 3769-20 (CAPS) TO 3769-18 (LID FLANGE)

POOR ORIGINAL

REMARKS:

1381 086

N.D.T. - PROCEDURE - NO. - SR-ND-23 U.
SPOTCHECK PENETRANT (SKL-5) BATCH NO. - 3C015
SPOTCHECK CLEANER (SKC-5) BATCH NO. - 3A137
SPOTCHECK DEVELOPER (SKD-5) BATCH NO. - 33046

FORM ED-0004

PAGE # _____

PENETRANT INSPECTION REPORT

RACHEL WELDMENTS, INC.
Silvercreek, New York

Page _____ of _____

DWG. NO E-3769-5 P/O _____

PART NAME CAPS TO LID FLANGE S/O 3769

S/N 3769-20 TO 3769-18 INSP. STATUS FINAL

DATE 10/12/74 INSPECTOR [ATI QCA 6] LEVEL II

AREA/WELD INSP. 100% ACCEPT X REJECT _____

TEST RESULTS: INSPECTED 100% OF COMPLETE AREA OF WELDS. ACCEPTABLE TO REQUIREMENTS AS LISTED IN SR-ND-23 & U

(Cask #4)

(C5) 3769-20 (CAPS) TO 3769-18 (LID FLANGE)

POOR ORIGINAL

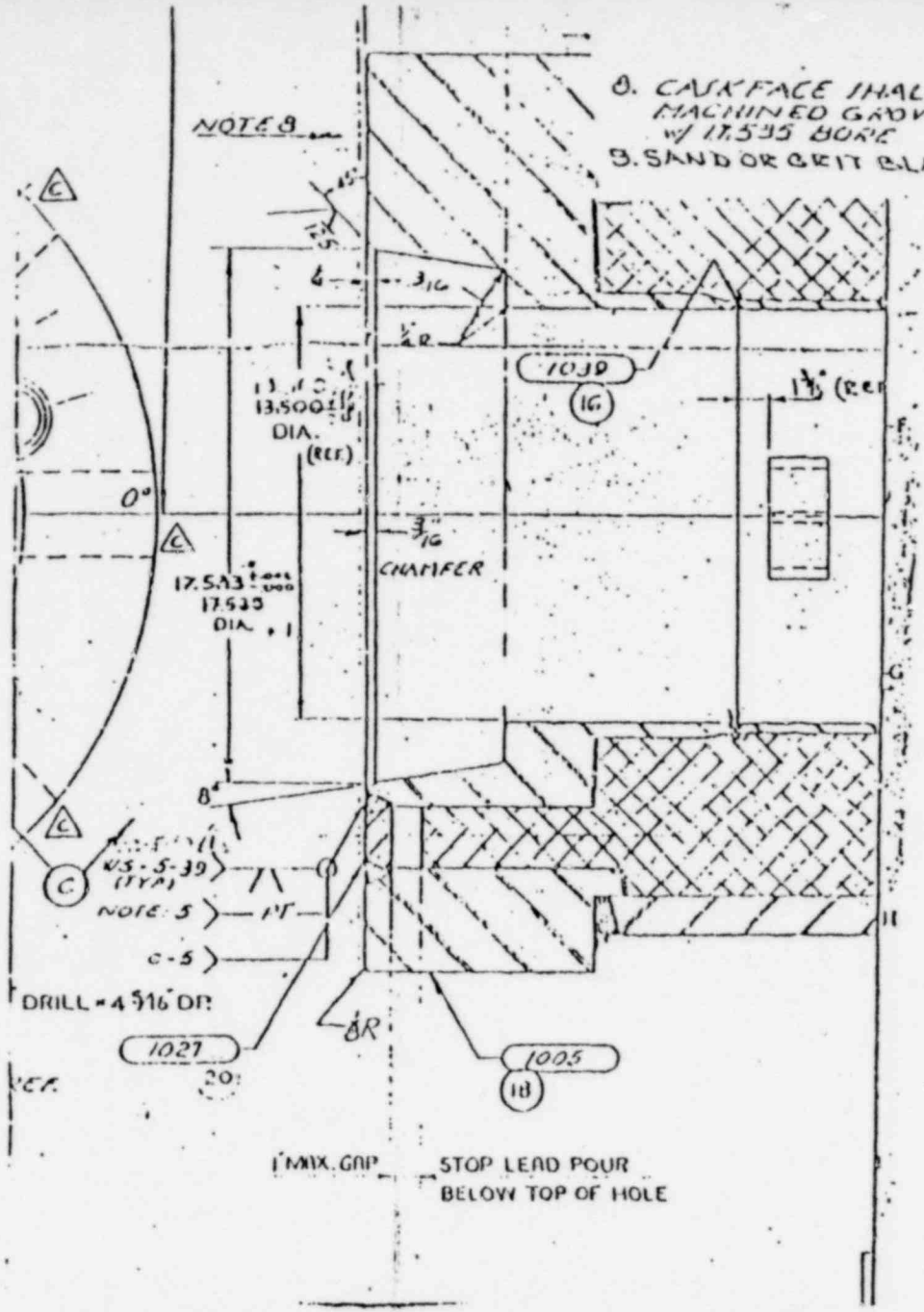
REMARKS:

1381 087

N.D.T. - PROCEDURE - NO. - SR-ND-23 U.
SPOTCHECK PENETRANT (SKL-5) BATCH NO. - 3C015
SPOTCHECK CLEANER (SKC-5) BATCH NO. - 3A137
SPOTCHECK DEVELOPER (SKD-5) BATCH NO. - 3B046

8. CAM FACE SHALL BE MACHINED W/CIRCULAR MACHINED GROVES SPIRAL COINCIDENT W/ 17.535 BORE

9. SAND OR GRIT BLAST OUTER SHELL AFTER LEAD POUR.



POOR ORIGINAL

MOVE	PART NO 1200 (201)	SUPS NO
DESCRIPTION BODY ASS'Y		
APPLICABLE SPECIFICATIONS & REV	PATTERN NO	
EDI DRAWING N/A		

EXCELCO DEVELOPMENTS INC
SILVER CREEK, N.Y.

TITLE BODY ASS'Y.

JOB 114	E-3760-3
REF DWG 22260-1	SHT 1 OF 1

ATTACHMENT 4

1381 088

14480