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page 1

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V29468

RS 8182-1/108

ASSEMBLY BOOK DSP 202 (Penetrator)

VOLUME 1 OF 1

8182-1//000108

00010001 A

Sandia National Laboratories

DEPARTMENT OF ENERGY DECLASSIFICATION REVIEW	
1ST REVIEW-DATE: 2-21-96	DETERMINATION [CIRCLE NUMBER(S)]
AUTHORITY: DADC DADC DADD	1. CLASSIFICATION RETAINED
NAME:	2. CLASSIFICATION CHANGED TO:
2ND REVIEW-DATE: 3-28-05	3. CONTAINS NO DOE CLASSIFIED INFO
AUTHORITY: ADD	4. COORDINATE WITH:
NAME: Nancy Connell	5. CLASSIFICATION CANCELLED
	6. CLASSIFIED INFO BRACKETED
	7. OTHER (SPECIFY): C.G.S. ON.

Fol. pp: 2; 20-23; 35; 38, 39, 57-62.

5/8/07

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Gayle Cain
CLASSIFIED BY

Division Supervisor
TITLE

8182 — ORG.

5-30-85 — DATE

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SF 1005-1 (7-73)

(E) 4, 209

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REVISIONS					
SYM	ZONE	DESCRIPTION	PREPARED BY	DATE	CHK	INSP
A		GREEN, 8272/CLARIN, 8152		9/1/85		

RS8182-1-108

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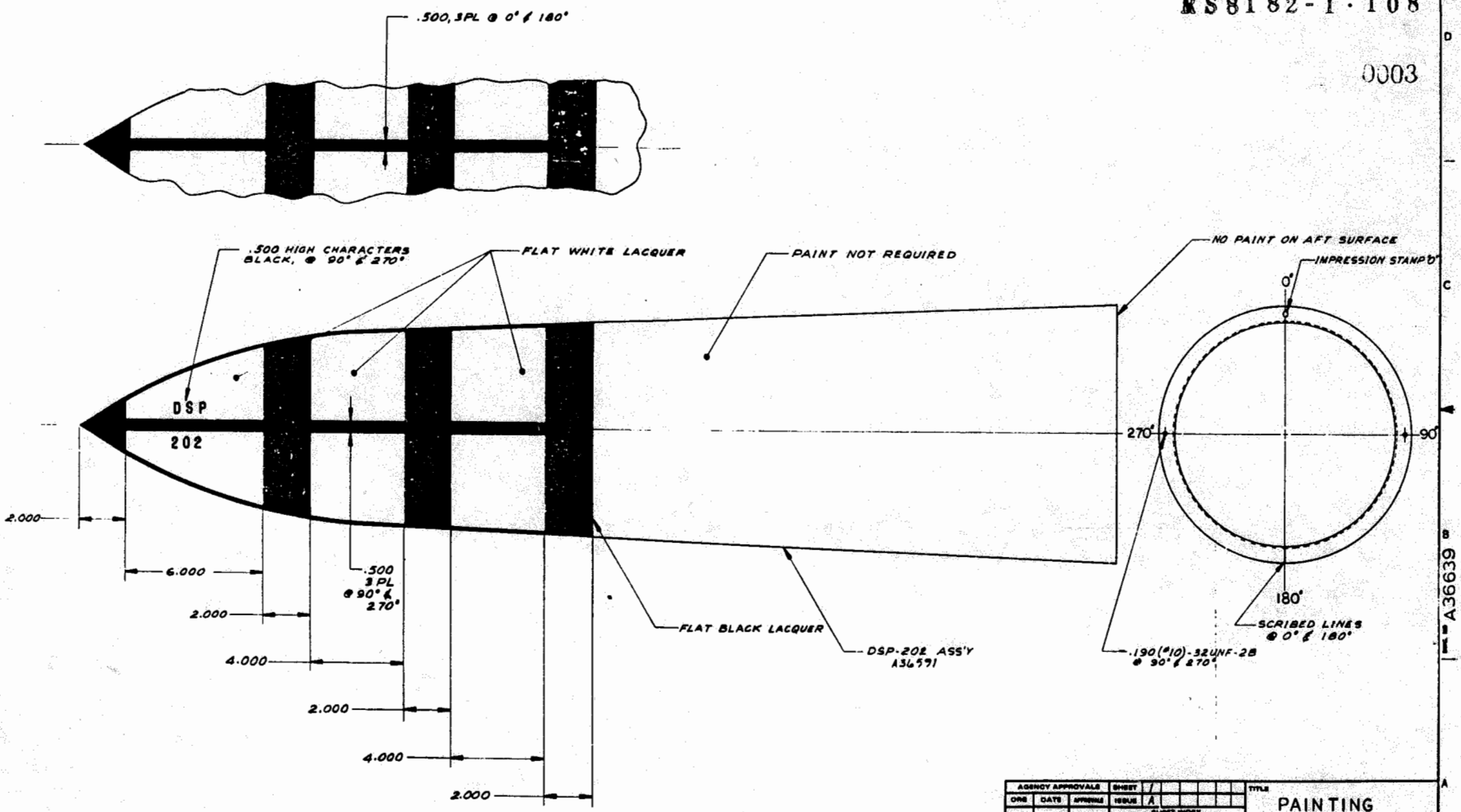

AGENCY APPROVALS			SHEET	1
ORG	DATE	APPROVAL	ISSUE	A

SHEET INDEX

PAINT CLASSIFICATION: SRD

OWS CLASSIFICATION LEVEL: UNCLASSIFIED

TITLE: PAINTING DSP-202

SIZE: D | FSCM NO: 14214 | DWG NO: A36639

SCALE: 1/2 | SHEET 1 OF 1

WASH-OFF FILM

A36639

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ASSEMBLY RECORD

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0004

RS8182-1-100

DOCUMENT DATE	DRAWING NO.	ISSUE	PROGRAM NO.	UNIT NO.
8-6-85	A36591	A	Penetrator	DSP-202 2011067

NO. REC'D	DRAWING NUMBER	PART NAME	ITEM NO.	SERIAL NO.	WEIGHT	REC'D BY
1	A35237	CASE	1	#2	263.6 lb	
1	A35353	FWD COMPONENT SUPPORT A	2			
1	CD317130	MC3343	3			
1	A35307	FWD SUPPORT 10907	4	002	7.8	
1	A35290	TM FWD SUPPORT 10901	5	002	22.8	
1	A35342	ISOLATOR	6	—	—	—
1		BSS TM ASSY	7	949737	15.0 lb	
1	A35286	AFT TM SUPPORT 10905	8	X-003	89.6	
1	A35335	PRELOAD RING, TM	9	None	1.2	
1	A35336	RETAINING NUT, TM	10	None	1.6	
1	A35343	FWD THREADED RING	11	None	1.8	
1	A35344	CAP	12	#2	1.4	
1	A35345	AFT SUPPORT 010990	13	# 002	9.2	
1	A35346	AFT COMPONENT SUPPORT PLATE	14	None	5.4	
1	A35349-A	AFT COMPONENT SUPPORT A	15	None	13.0	
2	A35352	COMP. M/U BALLAST	16	See 15	1	
1	A35351	AFT COMPONENT SUPPORT C	17	None	.8	
1	A35347	AFT STIFFENER	18	None	3 lb	
1	A35348	AFT THREADED RING	19	None	1.6 lb	
1	A35315	COVER	20	—		
1	A35415	SPACER	21	None	.2	
1	A35392	KEY	22	—		
1	A35391	PLUG	23	—		

ASSEMBLED UNIT INSPECTED AND ACCEPTED FOR SHIPMENT

NAME | ORG. | DATE

TEST ASSEMBLY GROUP USE ONLY

ASSEMBLY START DATE	ASSEMBLY COMPLETION DATE

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LS 7812-U (11-84)

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RS8182-1-1[illegible] 0005

ASSEMBLY RECORD

DOCUMENT DATE			
8-6-85			
DRAWING NO.	ISSUE	PROGRAM NO.	UNIT NO.
A36591	A	PENETRATOR	DSP 202

NO. REC'D	DRAWING NUMBER	PART NAME	ITEM NO.	SERIAL NO.	WEIGHT	REC'D BY
1	A35393	ADAPTER	24			
1	A35531	JAM NUT	25	Nut + Lap screws	.6	[illegible]
1	A35495	UMBILICAL SUPPORT, 15P	26	See Item 17		
1	A35380	FWD COMPONENT SUPPORT B	27			[illegible]
1	A35496	UMBILICAL CLAMP, 15P	28	See Item 17		
ARS	A35753	SHIM	29	—		[illegible]
1	A35463	ALIGNMENT KEY	30	None	24gm	[illegible]
1	MS9388-019	O-RING	31	See Item 17		
1	A35361	PIN A, THREADED	32	See Item 8		
1	A35363	BLOCK	33	" "		
1	A35362	PIN, THREADED B	34	See Item 14		
3		PCB 305, ACCELEROMETER	35	See Instrum		
4		SCREW, CAP, SOC HD	36	—		[illegible]
6		SCREW, CAP, SOC HD	37	—		
1		SCREW, CAP, SOC HD	38			
2		CABLE CLAMP	39	—		
2		SCREW, CAP,SOC HD	40	—		
4		SCREW, CAP, SOC HD	41	—		
2		SCREW, CAP, SOC HD	42	—		
1	MS9388-032	O-RING	43	—		
1	MS9388-175	O-RING	44	—		
1	A36503	SPACER, BSS	45	Nom	3.2	[illegible]
ARS	A36086	MYLAR SHIM	46			

ASSEMBLED UNIT INSPECTED AND ACCEPTED FOR SHIPMENT

NAME

ORG.

TEST ASSEMBLY GROUP USE ONLY

ASSEMBLY START DATE	ASSEMBLY COMPLETION DATE

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LS 7812-U (11-84)

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FSCM NO. 14214

SS-A36591

J.E.COLLINS,8152,x2159
D.DIEMER,8272
FM

RS8182-1·108

ASSEMBLY PROCEDURE, DSP-202 EARTH PENETRATOR

Page	1	2	3	4	5	6	7	8	9
Issue	A	A	A	A	A	A	A	A	A

Design Agency Control Number	Issue	Release/Change No.	Date
SS-A36591-000	A		07-18-85

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1. GENERAL.

1.1 Scope. This specification and drawing A36591 define the minimum requirements for the assembly of the DSP-202 earth penetrator.

1.2 Verification of Performance. All assembly steps and verification checks shall be initialed, in the space provided, by the person completing the activity.

1.3 Deviations. Significant deviations from these procedures or drawing A36591 shall be documented by a waiver signed by the responsible engineer. Sequence of assembly is not mandatory.

1.4 Loctite. Apply Loctite 242 to all threaded fasteners that do not have self-locking features, unless otherwise specified.

1.5 Torque Table.

TABLE 1. TIGHTENING TORQUE FOR SCREWS

Screw Size	Torque (pound-inches)
.086-56 (2-56)	2
.112-40 (4-40)	5-7
.138-32 (6-32)	8-9
.164-32 (8-32)	16-18
.190-24 (10-24)	18-20
.190-32 (10-32)	28-30
.250-20 (1/4-20)	60-65
.250-28 (1/4-28)	80-90
.312-24 (5/16-24)	11 pound-feet
.375-16 (3/8-16)	17 pound-feet
.375-24 (3/8-24)	19 pound-feet
.500-20 (1/2-20)	40 pound-feet
.500-13 (1/2-13)	38 pound-feet
.375-24 (3/8-24) Lug Bolts	36 pound-feet

2. DOCUMENTS AND EQUIPMENT

2.1 The following document forms a part of this specification to the extent stated herein.

A36591 DSP-202 Assembly

2.2 The following equipment is required for the inspection and assembly of the DSP-201 earth penetrator.

A33472	Assembly Stand
A35535	Preloading Assembly, DSP-201
A35562	Preloading Assembly "B", DSP-201
A35653	Pulling Fixture, DSP-201
A35590	Lifting Plate
A35589	Umbilical Wrench
A35540	Wrench, TM Nut
A35661	Mandrel, DSP-201
A35704	Threaded Rod, DSP-201
A36181	Lifting Fixture, DSP-200 Series
A36216	Support Block, FWD
A36215	Support Block, AFT

3. Requirements.

3.1 Inspection of Parts.

a. A mold of the inside forward section of the case (A35237) is required for inspection.

1. Vapor degrease the case, mold mandrel (A35661), and threaded rod (A35704).

2. Cover the inside of the case with fluorocarbon mold release (SNLL Cat. No. 678036). Do not use a silicone mold release.

3. Mount the case in the assembly stand and position the case nose down and in a vertical position.

4. Insert the mold mandrel into the case and check the mandrel for proper alignment.

(a) Spray the threaded end of the threaded rod with mold release.

(b) Insert the threaded rod into the center of the mandrel and tighten it until it bottoms out on the case, but does not lift the mandrel.

5. Pot the inside forward section of the case using one of the following compounds:

J.M.

(a) DC 3110 Mold Compound

(b) Salastic J

(c) RTV 630

Fill the case until the compound is approximately 14.20" from the aft end of the case.

6. Allow the compound to cure.

7. Mark the mold to indicate the zero degree and 180 degree marks with respect to the case.

8. Remove the mold from the case.

(a) Remove the rod assembly.

(b) Mount the pulling fixture (A35653) and remove the mold from the case.

9. Mark the mold with the appropriate mating case number (DSP-201, DSP-202, etc.).

10. Remove the case from the assembly stand and ship the case and mold to Division 8184-2 for inspection.

K.B.

3.1 continued

b. Have all the parts inspected.
NDE PT inspection OK

c. Reject all parts not meeting the drawing specifications.

d. Preassemble all parts to determine if they fit properly.

e. Determine and document the weight of each component in the DSP-202 assembly.

f. Clean all parts for assembly. The fluorocarbon mold release can be removed with acetone.

3.2 Fit Checking and Shimming the TM Support Assembly.

a. Mount the forward support (A35307) to the TM forward support (A35290) using two 1/4-28 x 1" long S.H.C.S. Torque the screws to 80 pound-inches.

b. Install threaded pin "A" (A35361) into plug (A35391).

c. Install plug (A35391) into the aft TM support (A35286) using two 10-32 x 1/2" long S.H.C.S. Torque to 20 pound-inches.

d. Attach the aft TM support (A35286) to the forward TM support assembly.

Place shims (A35753) between the forward TM support and the aft TM support until there is approximately .002" clearance between the case and the aft TM support shoulder when the forward TM support shoulder bottoms on the case. Use four 3/8-24 x 5/8" long S.H.C.S. to attach the aft TM support the forward TM support. Torque to 19 pound-feet. Shims .038
See Notes

e. Attach the lifting plate (A35590) to the aft TM support (A35286).

f. Lower the TM support assembly into the case, checking the angular orientation and the clearance between the case supporting shoulders and the TM support assembly. Use Plastigauge to check the clearance. Note the distance from the aft end of the case to pin "A" (A35361).
12.610 - .250

g. Remove the TM support assembly.

h. Remove the forward suport (A35307) from the TM support assembly.

3.3 Forward TM Support Assembly (A35290).

a. Install accelerometer AZ-1 (PCB 305). Torque the accelerometer To ~~15~~ 20 pound-inches. Record model number and serial number. Pack cotton around the accelerometer and its leads to 1/2 inch from the top of the access hole.

Model No. 305M34 Serial No. 3822

b. Mount forward support (A35307) using two 1/4-28 x 1" long S.H.C.S. Pot the interface with Sylgard 184. Torque the screws to 80 pound-inches.

c. Install accelerometer AX-1 (PCB 305). Torque the accelerometer to ~~15~~ 20 pound-inches. Record model number and serial number. Bond the leads to the flat surface inside the forward TM support, using the bonding agent depicted in 3.3.h.

Model No. 305M34 Serial No. 3810

d. Tape the accelerometer leads such that they will not be broken during the remainder of the assembly of the forward TM support.

e. Assemble the mock-up section. Ray Gott of Division 8315 will be responsible for the potting operations.

1. Check the mock-up for the addition of two 1/4" diameter steel bars at right angles. Mount the mock-up in the forward component support "A" (A35353) and "B" (A35380). Use Sylgard 184 shims to centralize the mock-up in the foam. Remove aft component support "B". Pot the mock-up into forward component support "A" using Sylgard 184. Allow the potting material to cure, then pot the mock-up into the aft component support "B". JM

2. Place the mock-up assembly into the cover (A35315). Use Sylgard 184 shims to centralize the mock-up assembly foam inside the cover. Pot the assembly with Sylgard 184. The zero degree mark inside the case must be aligned with the mark on the aft end of the mock-up assembly. Attach the cover to the forward support using 4 10-32 x 5/8" long 1.8 lb S.H.C.S. Torque to 20 pound-inches. Allow potting material to cure. JM

f. Pot accelerometer AZ-1. The Sylgard 184 should be poured until it is flush with the outer surface of the forward TM support. JM

g. Pot accelerometer AX-1 and pot the leads where they penetrate the forward TM support walls. JM

Apply Sylgard primer inside the holes in the forward TM support before applying Sylgard 186. Pot both holes.

h. Bond accelerometer leads from AX-1 and AZ-1 to the bottom of the 180° groove in the TM support assembly. Do not attach the wires past Sta. 31.15.

The bonding agent used to attach the leads consists of the following:

1. Ten parts of EPON 828.
2. One part of CAB-O-SIL.
3. Six parts of Versamid 125 (hardening agent).

Ray Gott will supply the materials and complete the bonding operation.

3.4 Potting TM Support Assembly to the Case. RS8182-1-108

a. Spray fluorocarbon mold release on the exterior of the TM support assembly.

b. Place enough Sylgard 184 in the forward end of the case to fill to station 31.15 after assembly with the TM support. (Approximately 24.2 cubic inches.)

c. Install the TM support assembly, being careful to control the angular orientation.

d. Remove the lifting plate.

e. Install cap (A35344).

f. Install the preloading assembly (A35535) without the weldment assembly (A35545).

g. Press the TM support assembly until the aft TM support shoulder is .002 " from the case. Check the distance from the aft end of the case to pin "A" to determine if the TM support assembly is in the proper position.

h. Position the accelerometer wires and remove the excess potting material.

i. Check the continuity of the forward accelerometers.

j. Allow the potting compound to cure for 16 hours.

k. Remove the preloading assembly.

l. Remove the cap and place the accelerometer wires inside the TM cavity.

m. Install the cap and insert the aft support (A35345).

n. Attach the weldment assembly (A35545) to the forward thread ring (A35343).

o. Install the forward thread ring and tighten with the weldment assembly.

p. Ship the case assembly to Division 8444, Building 923, for radiography.

RS8182-1·108

3.5 Radiography

a. Radiograph the mock-up section of the penetrator. The TM package shall not be installed and the accelerometers will be shielded with lead when being x-rayed. The time required for radiography is approximately two days. The cobalt 60 machine will be used; 1.25 mev gamma rays. (Lutz Dahlke, 8444, is the contact.) _____

b. Ship the case assembly to Building 913, Room 106F, when radiography is completed. _____

3.6 TM Installation. (H. D. "Whitey" Sorenson will conduct TM installation and checks.)

a. Install the BSS spacer (A36503) into the aft TM support. _____

b. Install insolator (A35342) into the aft BSS spacer. _____

c. Insert the BSS-TM into the aft TM support. Record the data recovery system serial number. Serial Number 949737. _____

d. Install the alignment key (A35463) into the aft TM support. _____

e. Attach the cable assemblies to the TM package. _____

f. Install the TM preload ring (A35335) into the aft TM support. Apply Moly lubricant to the preloading ring before installation. _____

g. Install the TM retaining nut (A35336) into the aft TM support. Apply Moly lubricant to the retaining nut before installation. _____

1. Attach the TM nut wrench (A35540) to the retaining nut with 5/16 - 24 UNF x 3/4" long S.H.C.S.

2. Install the TM retaining nut and torque to 60 pound-feet.

3. Remove the TM nut wrench.

h. Install the cable clamps on the preload ring. _____

i. Install the solder tabs and make the accelerometer connections (leads for AZ-2). Bond the and accelerometer leads to the aft hemisphere area in the slots. D.B.

j. Place the compression pads over the solder tabs. _____

k. Spray mold release on cap (A35344). Install the cap using 10-32 x 1/2" long S.H.C.S. Torque to ~~20~~ 30 pound-inches. _____

l. Position the umbilical cable and install the cable clamp on the cap using 10-32 x 3/8" long S.H.C.S. _____

3.6 continued

m. Add ~~Sylgard 184~~ RTV-11 100gm + 9 drops to fill the voids around the aft TM support and on the accelerator ~~and strain gauge leads.~~

n. Install the aft support (A35345) and the forward threaded ring (A35343). Apply Moly lubricant to the forward threaded ring before installation. Position the umbilical cable and AZ-2 leads.

o. Install the preload assembly and preload the aft support to 16,000 psi. Tighten the forward threaded ring to ____ pound-feet. Unknown

3.7 Aft Component Support Plate

a. Install accelerometer AZ-2 (PCB 305) to the aft component support plate (A35346) and torque to 15 pound-inches. Install the solder tab. Bond the wires to the plate surface and fill the recess with Sylgard 184. Record the model number and serial number of the accelerometer.

Model Number 305M34 Serial Number 3824

b. Install the threaded pin "B" (A35362) to the aft component support plate using block (A35363).

3.8 Aft Section Assembly

a. Insert the foam spacer (A35415) while positioning the umbilical cable and the TM leads to AZ-2.

b. Insert 0.005 inch thick Mylar shim (A36086) and the aft component support plate assembly and position the wiring. Fill the space between the case and the edge of the component support plate with Sylgard 184.

1. Connect AZ-2 to a solder tab. 5 MIN EPOX

2. Pot the wires. Bond the wires to the plate surface and fill the hole in the aft component support plate and the spacer with ~~Sylgard 184.~~ RTV- 40gm + 3 drops D.B.

c. Insert the aft component support "A" (A35349).

Route the umbilical cable through the cable way.

d. Install the two component mock-up units (A35352), the aft component support "B" (A35350), and aft component support "C" (A35351).

Place mylar shims under aft component support "C" until it is flush with aft component support "A".

Total thickness of shim stock used = B-83 I.C. Pad

e. Fasten the key (A35392) to the aft stiffener (A35347) using 6-32 x 5/16" long S.H.C.S. Torque to 9 pound-inches.

f. Fill the cableway in the aft component support "A" with ~~Sylgard 186.~~ RTV 120gm + 9 drops

3.8 continued

g. Install the aft stiffener (A35347) and check the clearance between the stiffener and foam parts. Shim the aft end of the foam parts with mylar until 10,000 pounds of force is required to bottom the stiffener on the shoulder of the case. Use preloading assembly "B" (A35562) for loading.

Total thickness of shim stock used = B-52 I.C. Box Pad

h. Remove the preloading assembly "B", aft stiffener and shims.

i. Solder the leads from the umbilical connector to the solder tab. + check TM

Move to 3.8e

j. Replace the shims.

k. Install the O-ring on the aft stiffener.

l. Install the aft stiffener.

Position the umbilical connector in the "D" hole and attach to the aft stiffener with jam nut (A35531).

m. Install the aft threaded ring (A35348). Apply Moly lubricant to the aft threaded ring before installation.

n. Install preloading assembly "B". Preload the aft assembly to ≈16,000 lbs and tighten the aft threaded ring. Install jam nut and torque to ~~90 pound-inches.~~ 40 FT-# Break

o. Install protective cover on the connector after the photographs have been taken.

3.9 Accelerometer Response Testing.

3.10 Painting of Penetrator. Paint the penetrator per SNLL drawing (A35706).

3.11 Photographs. Photograph the penetrator at various stages of assembly (subassembly levels, instrumentation stages, etc.).

3.12 Mass Properties Tests

a. Send the penetrator to Durwood "Woody" Green, Building 978, for mass properties testing.

b. Measure and record the following mass properties:

Weight _____ lbs.

Longitudinal C.G. _____ inches

Moment of inertia

Roll _____ lb. in^2

Pitch _____ lb. in^2

Yaw _____ lb. in2

4. NOTES

None

Move to Page 2

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RS8182-1 108

CLASSIFIED MATERIAL
IDENTIFICATION TAG

MATERIAL CLASSIFICATION

SECRET
RESTRICTED DATA

ORG.	CMO
8182	820

SNLL U.S. GOVT.

C011067

SRD
DSP-202

Penetrator

OTHER:
Top assembly
A36591 SN-2

THIS TAG IS UNCLASSIFIED

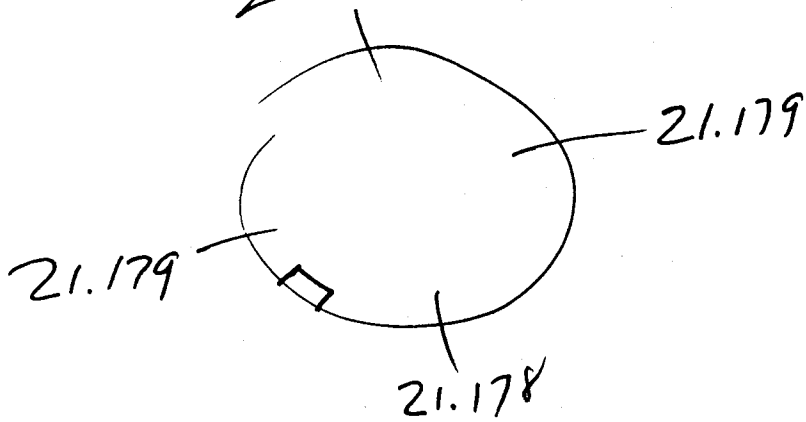
SF 2730-KD(4-84)

UNCLASSIFIED

UNCLASSIFIED

DSP-202

RS8182-1·108



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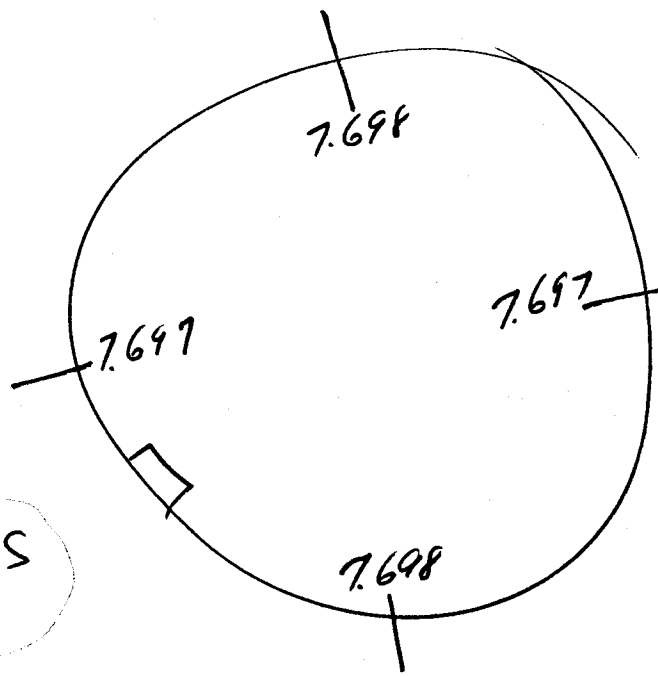
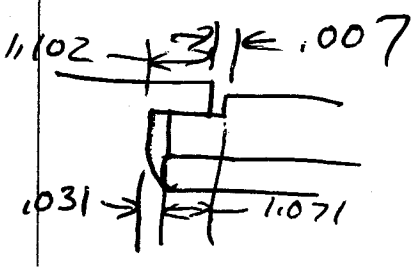


-7.6975
13.4815

.031
.007
.038 SHIMS

CASE INSIDE ASSY

13.4865
-13.4815
.005
+.002
.007 GAP BETWEEN TM SUPTS



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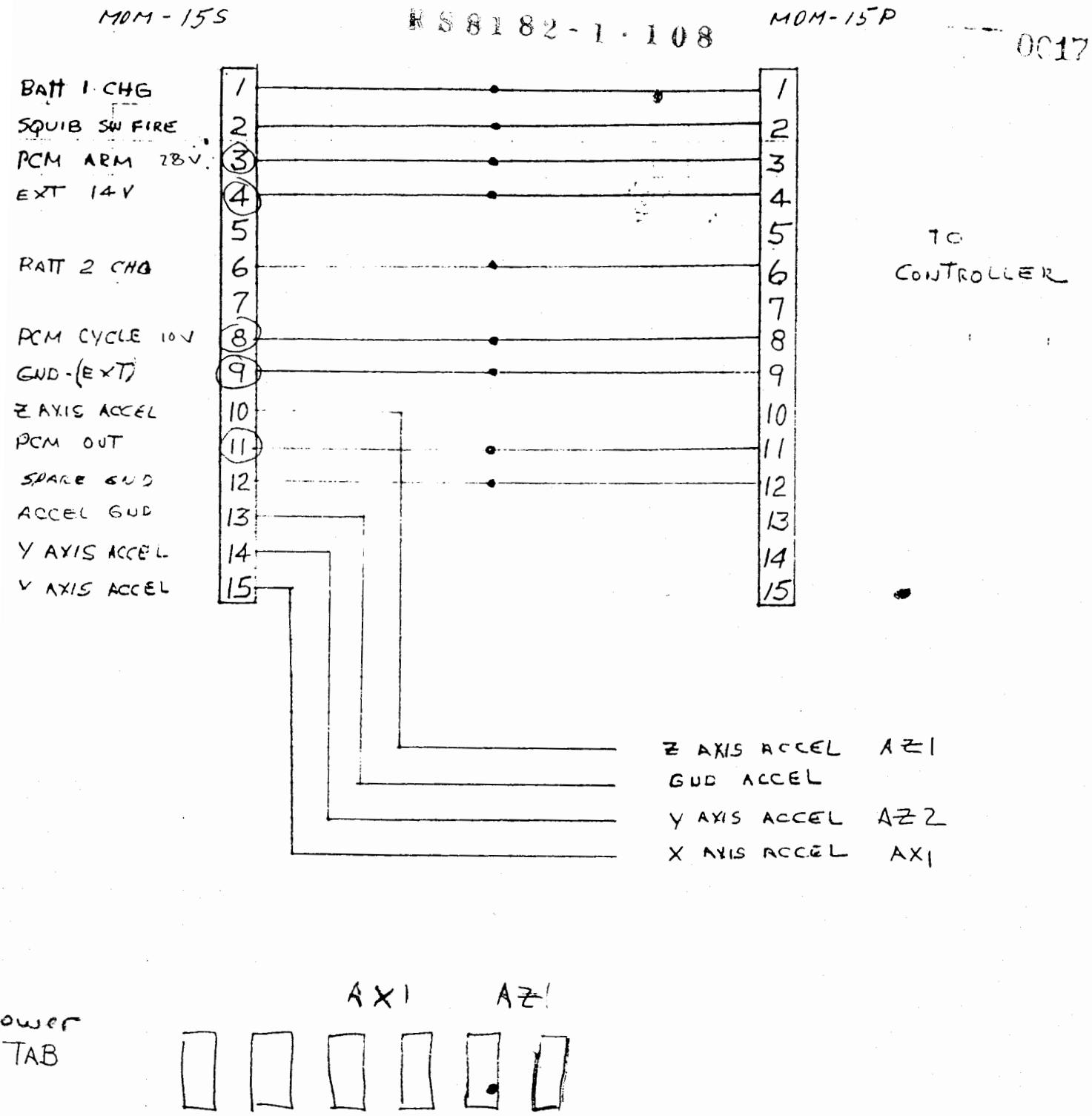
DSP 202 UMBILICAL & INSTRUMENTATION CABLE



DSP-282

Accelerometer Calibration

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Mfg. PCB MOD 305 M34

RS8182-1-108

N	LOCATION	E° TEMP.	pC/g. SENS.	mV/g*	Remarks
3810	AX-1	AMB		.0745	@* 100 Hz 20G ± 33537
3822	AZ-1	"		.0630	39482
3824	AZ-2	"		.0585	42735

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By

Date 7-15-85

SNLL E463-1 Page No.

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Sandia National Laboratories

Livermore, California 94550

RS8182-1-108

0010

date: September 23, 1985

to: W. R. Bolton - 8152
Attn: J. E. Collins

from: P. D. Gildea - 8183

ject: Mass Properties Experimental Determination

Ref. 9965002

1.0 Program No. SEP Part No. DSP-202

2.0 Results

2.1 Weight: 447.45 ± 0.45 lbs. true mass

2.2 Centers of Gravity

(A) XBAR = 19.940 ± 0.005 in. forward from aft of projectile

(B) YBAR = 0.001 ± 0.002 in. towards 270 deg. from geometric center

(C) ZBAR = 0.001 ± 0.002 in. towards 180 deg. from geometric center

(D) RBAR = 0.002 in. @ 230 deg.

2.3 Moments of Inertia, about Ref. Axis through its Centers of Gravity

(A) IXX = 5,832.5 lb-in^2 (1.25888 slug ft^2) ± 0.5%

(B) IYY = 54,564 lb-in^2 (11.77705 slug ft^2) ± 0.5%

(C) IZZ = 54,564 lb-in^2 (11.77705 slug ft^2) ± 0.5%

2.4 Products of Inertia - Not Requested

2.5 Projectile Length = n/reqd ± 0.005 in.

Test Conductor: D. R. Green - 8183/mam

Log No. 1997

Copy to:
S. Cain, 8182
K. Tschritter, 8182-1
P. D. Gildea, 8183

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```
=================================================================================
*DRAWING #: A35237, REV. 'B'                    *SERIAL #: 202                  *
*PART NAME: CASE, DSP 202                       *OPERATOR: K.A.HONTZ            *
*           J.COLLINS, EXT. 2139                *    DATE: 07/15/85   0560.100 *
---------------------------------------------------------------------------------
*DIMENSIONS: INCHES                                                             *
=================================================================================

=================================================================================
 ______FEATURE_____ :          :          :      :      :          :       :       :
 No. : M*M # : Type : ACTUALS :NOMINALS :+ TOL.:- TOL.:          :Dev.Nom:Dev.Tol:
=================================================================================


              BALL STYLUS # 0 QUALIFIED, DIA =    .0779",N =  5

  1     1/32  OD YZ CYLINDER

              X AXIS ORIENTED

              YZ ORIGIN SET

  2     2/16  +X PLANE

              Y & Z AXES ALIGNED

              X ORIGIN SET
              PCS  1 ESTABLISHED

              TOLERANCING: ON

=================================================================================
 ______FEATURE_____ :          :          :      :      :          :       :       :
 No. : M*M # : Type : ACTUALS :NOMINALS :+ TOL.:- TOL.:          :Dev.Nom:Dev.Tol:
=================================================================================


  3     3/16  +X PLANE
             Pierce Point
                 X= -13.4865  -13.4840    .0040  -.0040           .0025     +++
             Attitude
              AX/Y= -179.981
              AX/Z= -179.825
              ay/z=  -96.197

              X ORIGIN SET
              PCS  2 ESTABLISHED

  4     4/16  +X PLANE
             Pierce Point
                 X=  -3.5611   -3.5660    .0060  -.0060          -.0049    ----
             Attitude
              AX/Y=  179.951
              AX/Z= -179.588
              ay/z=  -83.285

  5     5/16  OD YZ CIRCLE
               DIA=   4.5208    4.5150    .0050  -.0050           .0058   .0008
                 Y=   -.0013
                 Z=   -.0261

  6     6/16  OD YZ CIRCLE
```

No.	M*M #	Type	ACTUALS	NOMINALS	+ TOL.	- TOL.	Dev.Nom	Dev.Tol

3	3/16	+X PLANE						
		Pierce Point						
		X=	-13.4865	-13.4840	.0040	-.0040	.0025	+++
		Attitude						
		AX/Y=	-179.981					
		AX/Z=	-179.825					
		ay/z=	-96.197					
		X ORIGIN SET						
		PCS 2 ESTABLISHED						
4	4/16	+X PLANE						
		Pierce Point						
		X=	-3.5611	-3.5660	.0060	-.0060	-.0049	----
		Attitude						
		AX/Y=	179.951					
		AX/Z=	-179.588					
		ay/z=	-83.285					
5	5/16	OD YZ CIRCLE						
		DIA=	4.5208	4.5150	.0050	-.0050	.0058	.0008
		Y=	-.0013					
		Z=	-.0261					
6	6/16	OD YZ CIRCLE						
		DIA=	5.6353	5.6200	.0050	-.0050	.0153	.0103
		Y=	-.0022					
		Z=	-.0234					
		PCS 1 RECALLED						
		PCS 1 TRANSLATED BY						
		X=	-9.0000					
		Y=	0.0000					
		Z=	0.0000					
		PCS 3 ESTABLISHED						
7	7/32	OD YZ CONE						
		DIA=	6.7377					
		Pierce Point						
		Y=	-.0001					
		Z=	-.0104					
		Attitude						
		AX/Y=	-179.991					
		AX/Z=	-179.847					
		ay/z=	-93.242					
		Included Angle						
		IANG=	8.013					

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```
=================================================================================
*DRAWING #: A35237, REV. 'B'                    *SERIAL #: 202                  *
*PART NAME: CASE, DSP 202                       *OPERATOR: K.A.HONTZ            *
*           J.COLLINS, EXT. 2139                *    DATE: 07/15/85   0560.100 *
---------------------------------------------------------------------------------
*DIMENSIONS: INCHES                                                             *
=================================================================================

=================================================================================
 ______FEATURE_____ :          :          :      :      :          :       :      :
 No. : M*M # : Type : ACTUALS :NOMINALS :+ TOL.:- TOL.:          :Dev.Nom:Dev.Tol:
=================================================================================


              BALL STYLUS # 0 QUALIFIED, DIA =    .7072",N =  5

  1     1/ 8  OD YZ CONE

              X AXIS ORIENTED

              YZ ORIGIN SET

  2     2/ 4  -X PLANE

              Y & Z AXES ALIGNED

              X ORIGIN SET
              PCS  1 ESTABLISHED

              TOLERANCING: ON

=================================================================================
 ______FEATURE_____ :          :          :      :      :          :       :      :
 No. : M*M # : Type : ACTUALS :NOMINALS :+ TOL.:- TOL.:          :Dev.Nom:Dev.Tol:
=================================================================================


              BALL STYLUS # 0 QUALIFIED, DIA =    .3139",N = 15

  3     3/ 1  -X POINT
                X=    -.0009

              X ORIGIN SET
              PCS  2 ESTABLISHED

=================================================================================
 ______FEATURE_____ :          :          :      :      :          :       :      :
 No. : M*M # : Type : ACTUALS :NOMINALS :+ TOL.:- TOL.:          :Dev.Nom:Dev.Tol:
=================================================================================


  4     4/32  OD YZ CONE
               DIA=  11.0036   10.9980    .0025  -.0025          .0056   .0031
             Pierce Point
                 Y=   -.0002
                 Z=    .0002
             Attitude
              AX/Y= -180.000
              AX/Z=  179.993
              ay/z=   91.325
```

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```
            IANG=     4.725

            PCS 2 TRANSLATED BY
            X=   -13.2500
            Y=     0.0000
            Z=     0.0000
            PCS  3 ESTABLISHED

5    RCL    OD YZ CONE(4)
             DIA=    9.9102    9.9100    .0025  -.0025          .0002       +
           Pierce Point
               Y=    -.0002
               Z=     .0018
           Attitude
            AX/Y= -180.000
            AX/Z=  179.993
            ay/z=   91.325
           Included Angle
            IANG=     4.725

            PCS   2 RECALLED
```

FEATURE No.	M*M #	Type	ACTUALS	NOMINALS	+ TOL.	- TOL.		Dev.Nom	Dev.Tol

```
            PCS 2 TRANSLATED BY
            X=   -31.9720
            Y=     0.0000
            Z=     0.0000
            PCS  4 ESTABLISHED

6     5/32  OD YZ CONE
             DIA=    8.1596    8.1600    .0025  -.0025         -.0004       -
           Pierce Point
               Y=    0.0000
               Z=     .0010
           Attitude
            AX/Y=  179.999
            AX/Z= -179.998
            ay/z=  -62.391
           Included Angle
            IANG=     5.358
```

FEATURE No.	M*M #	Type	ACTUALS	NOMINALS	+ TOL.	- TOL.		Dev.Nom	Dev.Tol

```
            BALL STYLUS # 0 QUALIFIED, DIA =     .3140",N = 15

            PCS   2 RECALLED

7     6/ 1  +X POINT
              X=  -44.3879
```

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*DRAWING #: A35237, REV. 'B' *SERIAL #: 202 *
*PART NAME: CASE, DSP 202 *OPERATOR: K.A.HONTZ *
* J.COLLINS, EXT. 2139 * DATE: 07/15/85 0560.100 *

*DIMENSIONS: INCHES *

FEATURE No.	M*M #	Type	ACTUALS	NOMINALS	+ TOL.	- TOL.		Dev.Nom	Dev.Tol
		STYLUS 0 ACTIVE							
1	1/16	OD YZ CONE							

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RS8182-1-108

```
=================================================================================
*DRAWING #: A35237, REV. 'B'                    *SERIAL #: 202                  *
*PART NAME: CASE, DSP 202                       *OPERATOR: K.A.HONTZ            *
*           J.COLLINS, EXT. 2139                *    DATE: 07/15/85   0560.100 *
---------------------------------------------------------------------------------
*DIMENSIONS: INCHES                                                             *
=================================================================================

=================================================================================
 ______FEATURE_____ :          :          :      :      :          :      :      :
 No. : M*M # : Type : ACTUALS :NOMINALS :+ TOL.:- TOL.:          :Dev.Nom:Dev.Tol:
=================================================================================

                BALL STYLUS # 0 QUALIFIED, DIA =     .3141",N =  5

  1      1/16  OD YZ CONE

                X AXIS ORIENTED

                YZ ORIGIN SET

  2      2/ 4  -X PLANE

                Y & Z AXES ALIGNED

                X ORIGIN SET
                PCS  1 ESTABLISHED

                TOLERANCING: ON

=================================================================================
 ______FEATURE_____ :          :          :      :      :          :      :      :
 No. : M*M # : Type : ACTUALS :NOMINALS :+ TOL.:- TOL.:          :Dev.Nom:Dev.Tol:
---------------------------------------------------------------------------------

                BALL STYLUS # 0 QUALIFIED, DIA =     .0747",N =  5

                BALL STYLUS # 0 QUALIFIED, DIA =     .0724",N =  5

  3      3/ 1  -X POINT
                  X=  -18.7494  -18.7500    .0050  -.0050          -.0006      -

                BALL STYLUS # 0 QUALIFIED, DIA =     .0357",N =  5

  4      4/ 1  -X POINT
                  X=  -12.0841  -12.0850    .0150  -.0150          -.0009      -

  5      5/ 1  -X POINT
                  X=   -3.4924   -3.4950    .0050  -.0050          -.0026     ---

  6      6/ 1  -X POINT
                  X=   -4.3417   -4.3450    .0050  -.0050          -.0033     ---

  7      7/ 1  -X POINT
                  X=  -10.2032

  8            PTP DIST
                  X=  -5.8615   -5.8700    .0100  -.0100          -.0085    ----
```

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No.	M*M #	Type	ACTUALS	NOMINALS	+ TOL.	- TOL.	Dev.Nom	Dev.Tol
9	8/ 4	-X PLANE						
		Pierce Point						
		X=	.6048					
		Attitude						
		AX/Y=	.101					
		AX/Z=	.019					
		ay/z=	10.479					
		X AXIS ORIENTED						
		X ORIGIN SET						
		ICS->PCS						
		PCS 2 ESTABLISHED						
10	9/ 1	-X POINT						
		X=	-10.2048					
11	10/ 1	-X POINT						
		X=	-12.8353					
12		PTP DIST						
		X=	-2.6305	-2.6250	.0250	-.0250	.0055	+
13	11/ 2	2PT Y SLOT						
		W=	.4018	.3900	.0050	-.0050	.0118	.0068
		Y=	.1494					
14	12/ 1	-Z POINT						
		Z=	-4.3473					
15	13/ 1	-Z POINT						
		Z=	-4.5730					
16		PTP DIST						
		Z=	-.2257	-.2300	.0100	-.0100	-.0043	--

FEATURE								
No.	M*M #	Type	ACTUALS	NOMINALS	+ TOL.	- TOL.	Dev.Nom	Dev.Tol
17	14/ 1	-X POINT						
		X=	-4.3438					
18	15/ 1	-X POINT						
		X=	-4.8458					
19		PTP DIST						
		X=	-.5020	-.4950	.0250	-.0250	.0070	++
20	16/ 2	2PT Y SLOT						
		W=	.3923	.3900	.0050	-.0050	.0023	++
		Y=	.1565					
21	17/ 1	-Z POINT						
		Z=	-4.6074					

--

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No.	M*M #	Type	ACTUALS	NOMINALS	+ TOL.	- TOL.	Dev.	Nom. Dev.	Tol.
17	14/ 1	-X POINT							
		X=	-4.3438						
18	15/ 1	-X POINT							
		X=	-4.8458						
19		PTP DIST							
		X=	-.5020	-.4950	.0250	-.0250	.0070		++
20	16/ 2	2PT Y SLOT							
		W=	.3923	.3900	.0050	-.0050	.0023		++
		Y=	.1565						
21	17/ 1	-Z POINT							
		Z=	-4.6074						
22	18/ 1	-Z POINT							
		Z=	-4.7221						
23		PTP DIST							
		Z=	-.1147	-.1090	.0050	-.0050	.0057	.0007	

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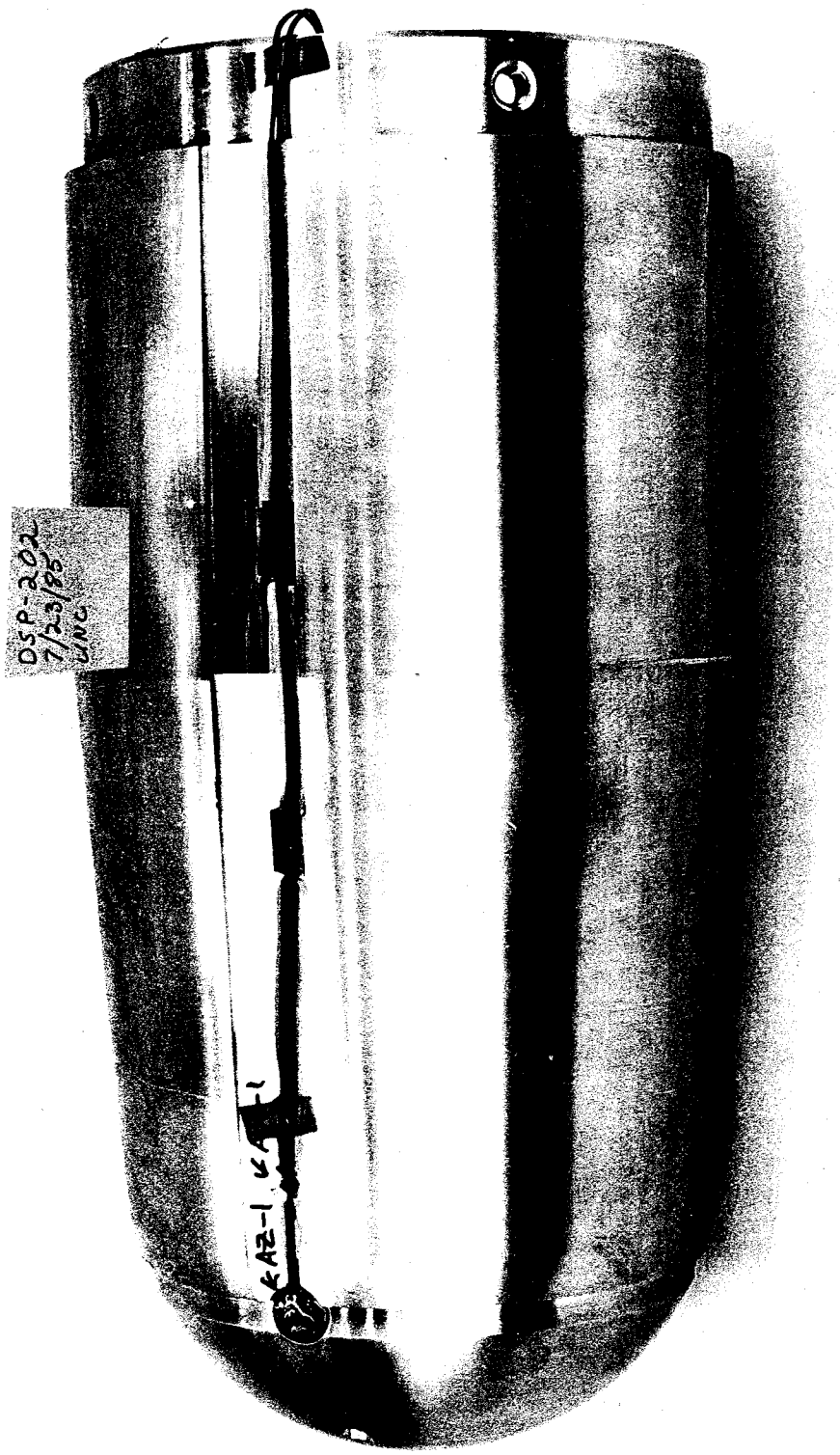
FS8182-1-108



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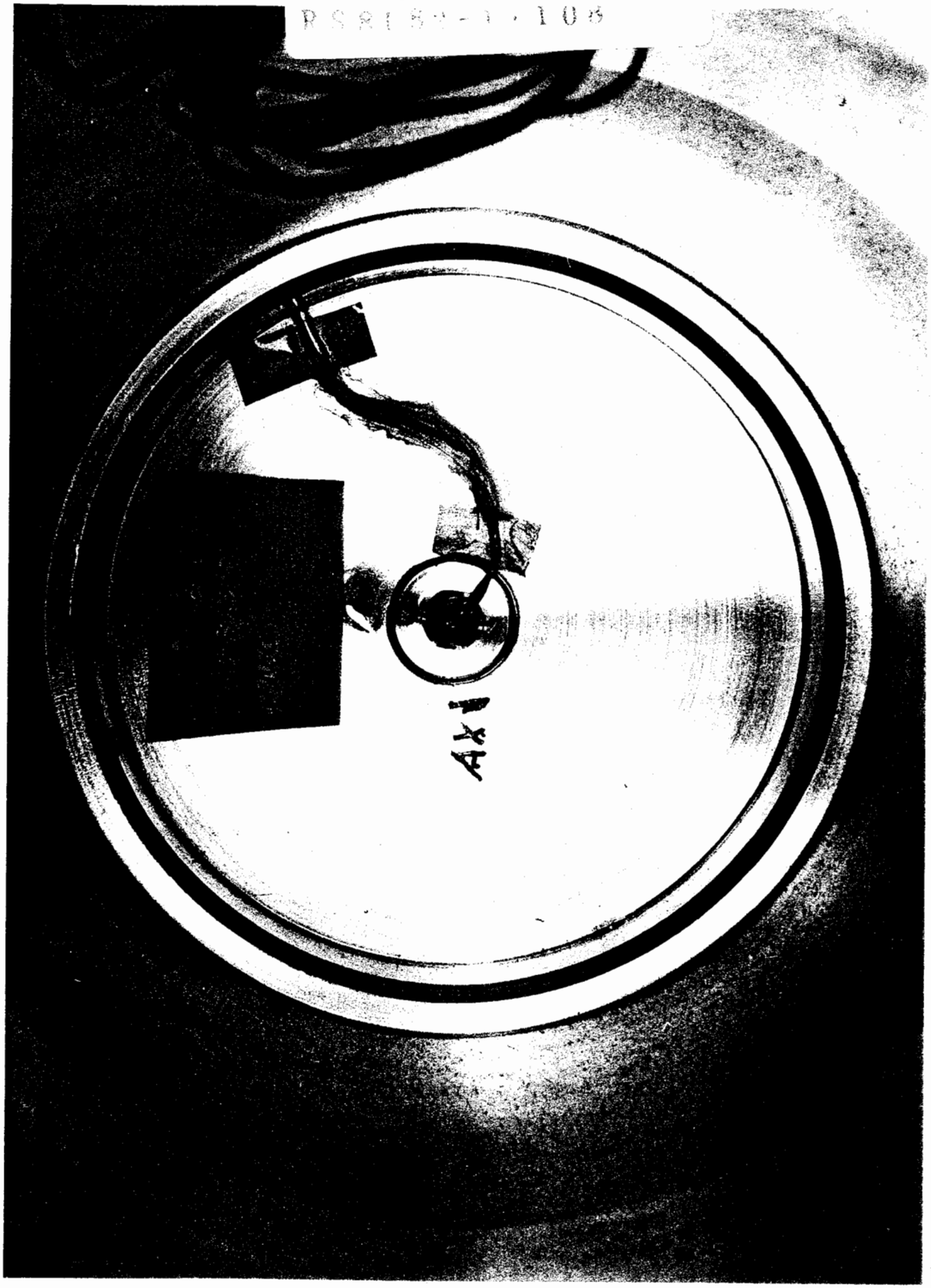

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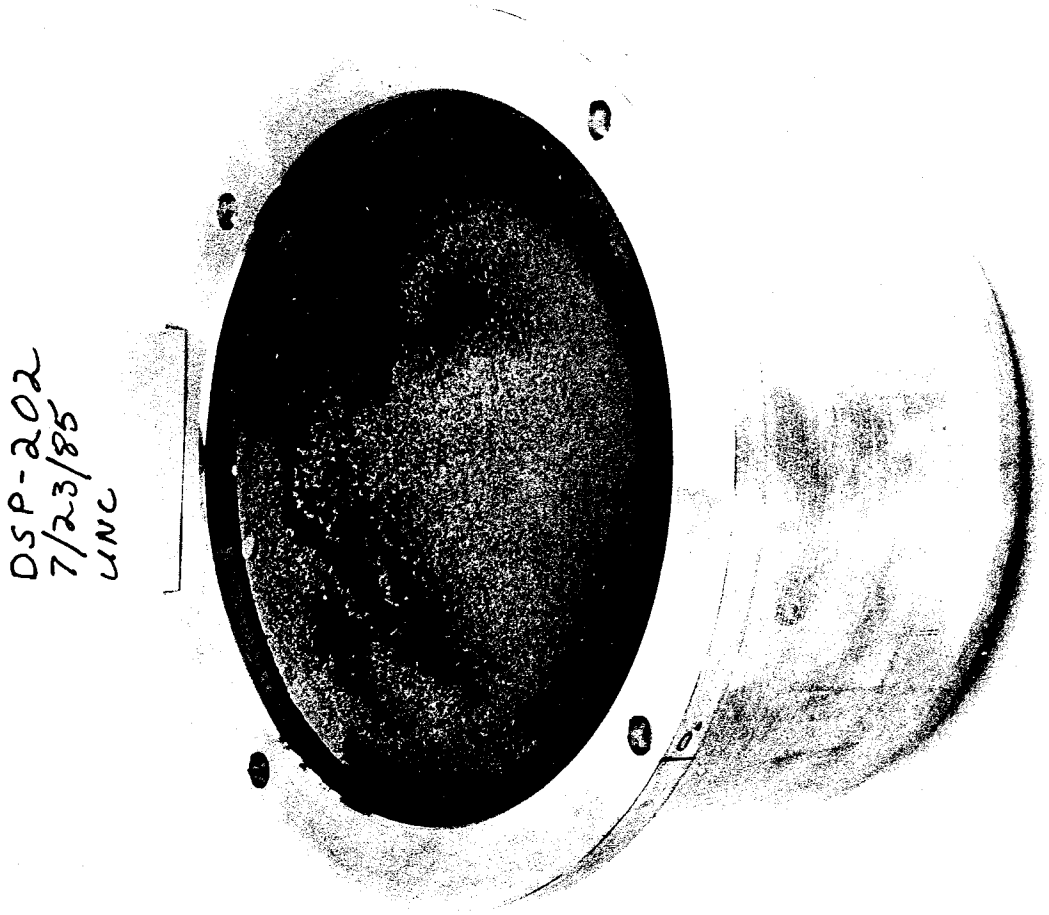

DSP-202
7/23/85
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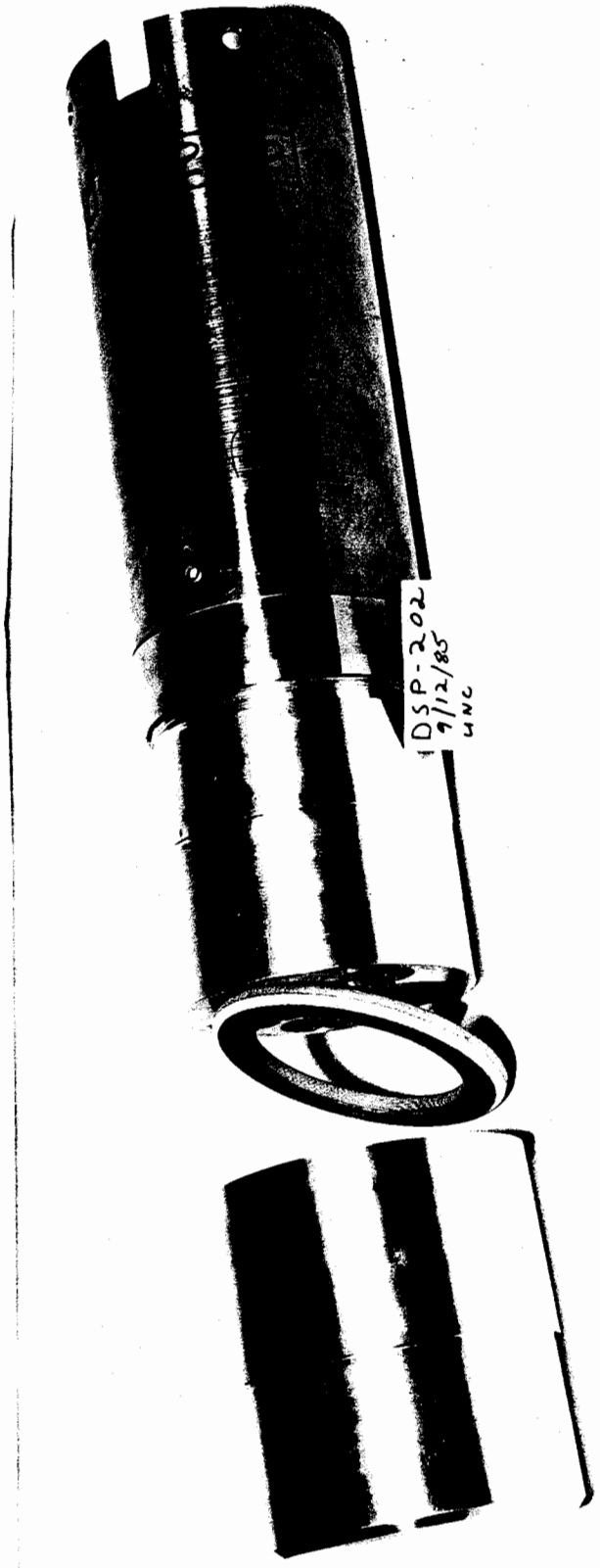
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9/12/85
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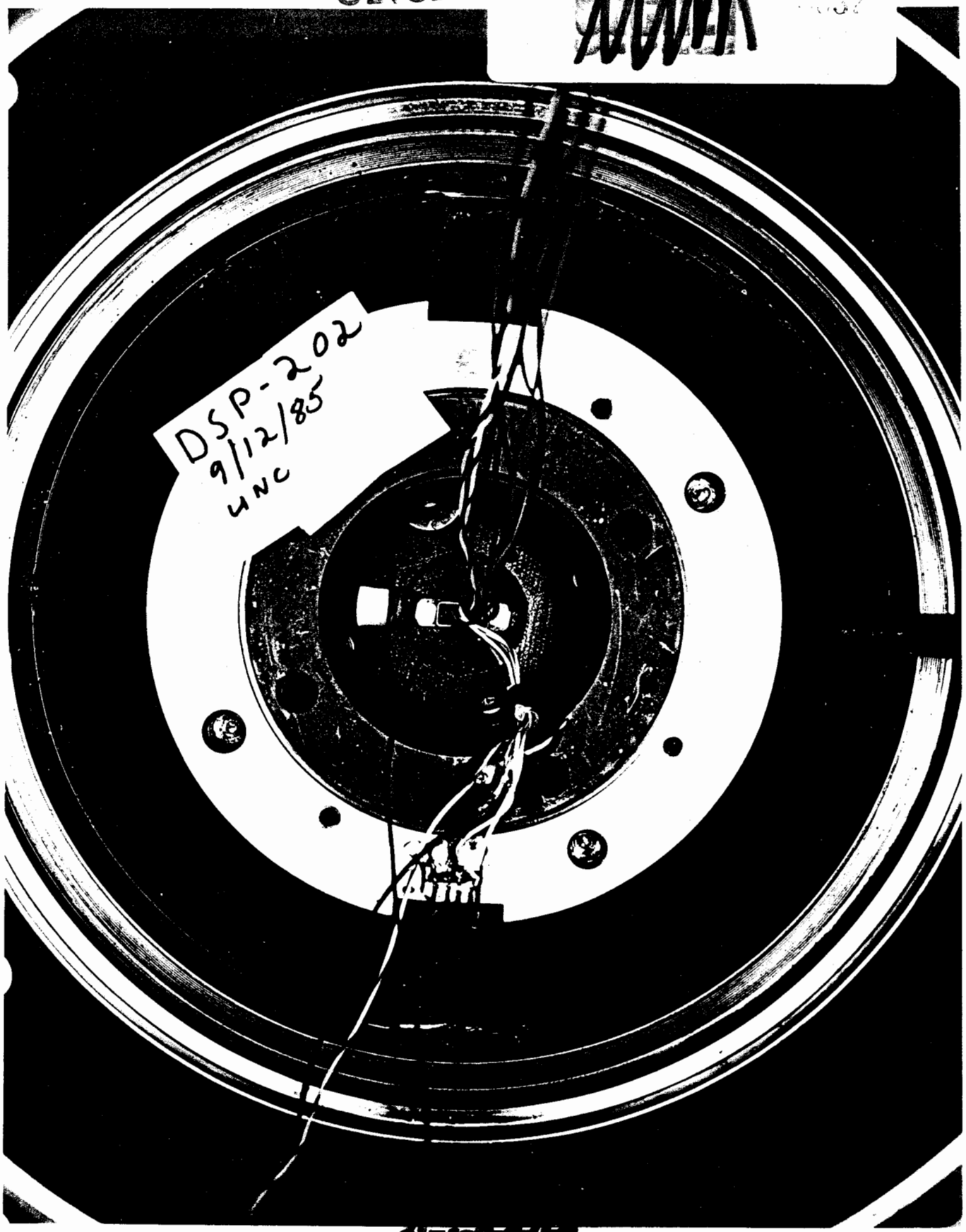

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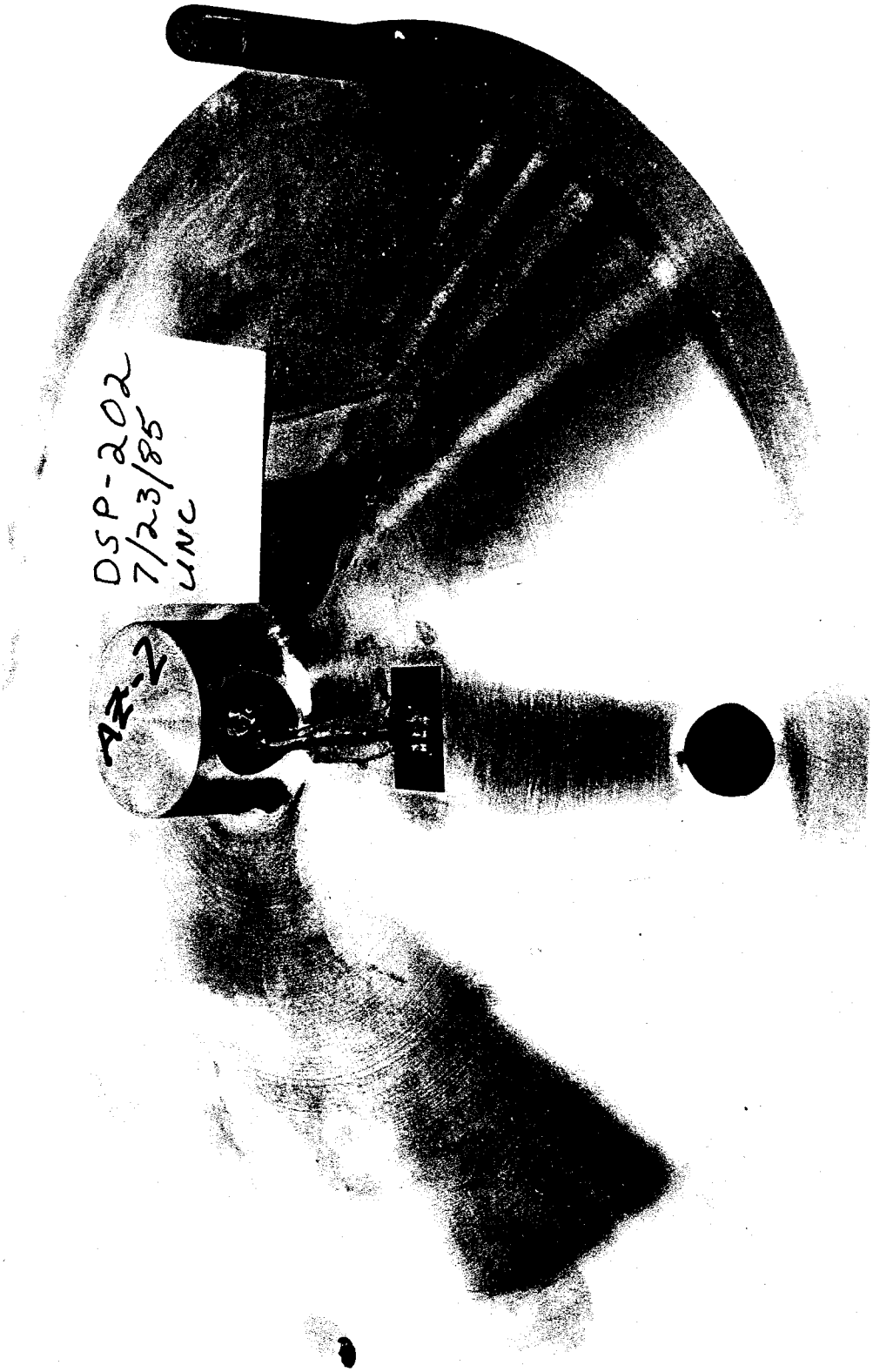
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7/23/85
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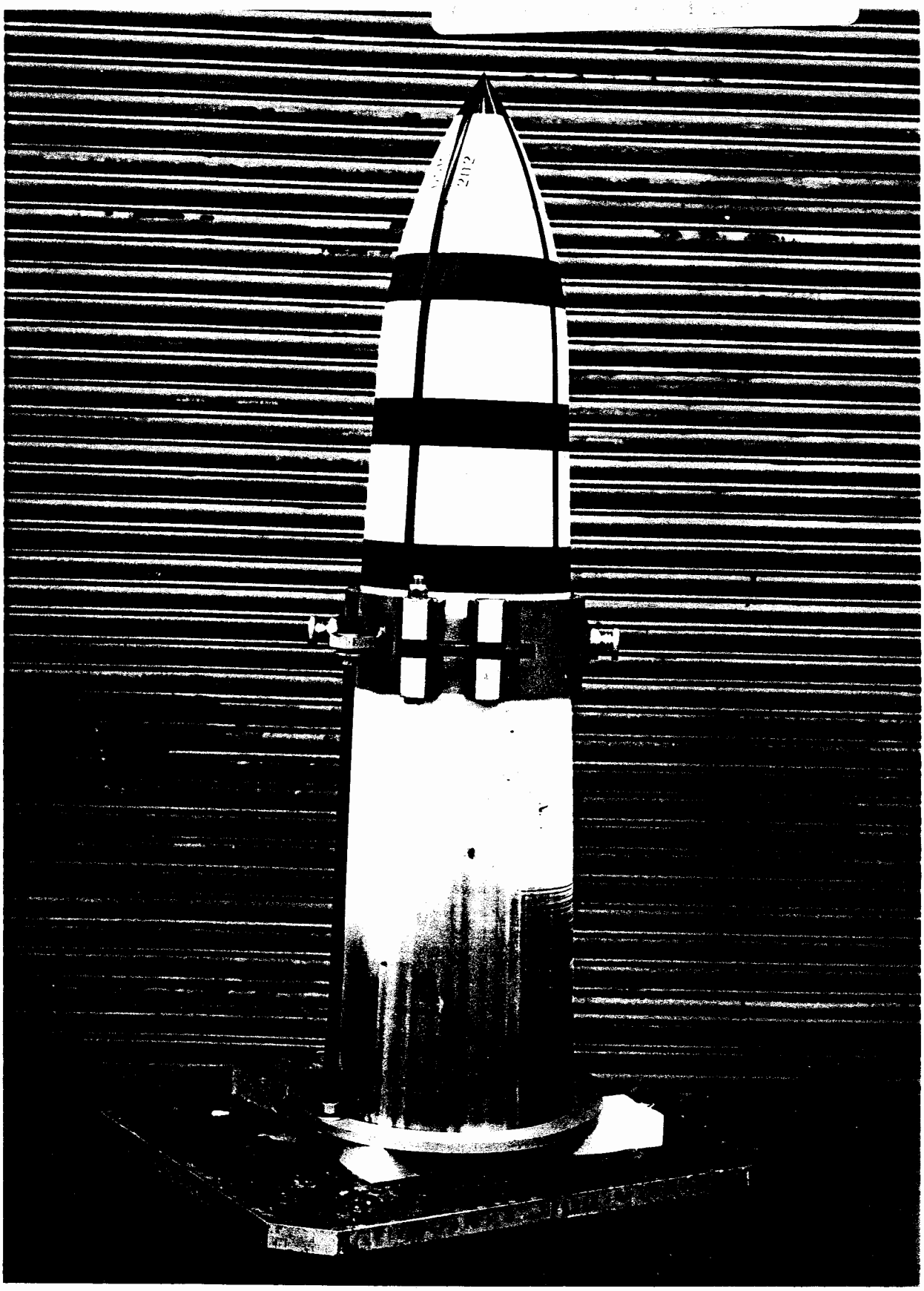
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D.S.P-202
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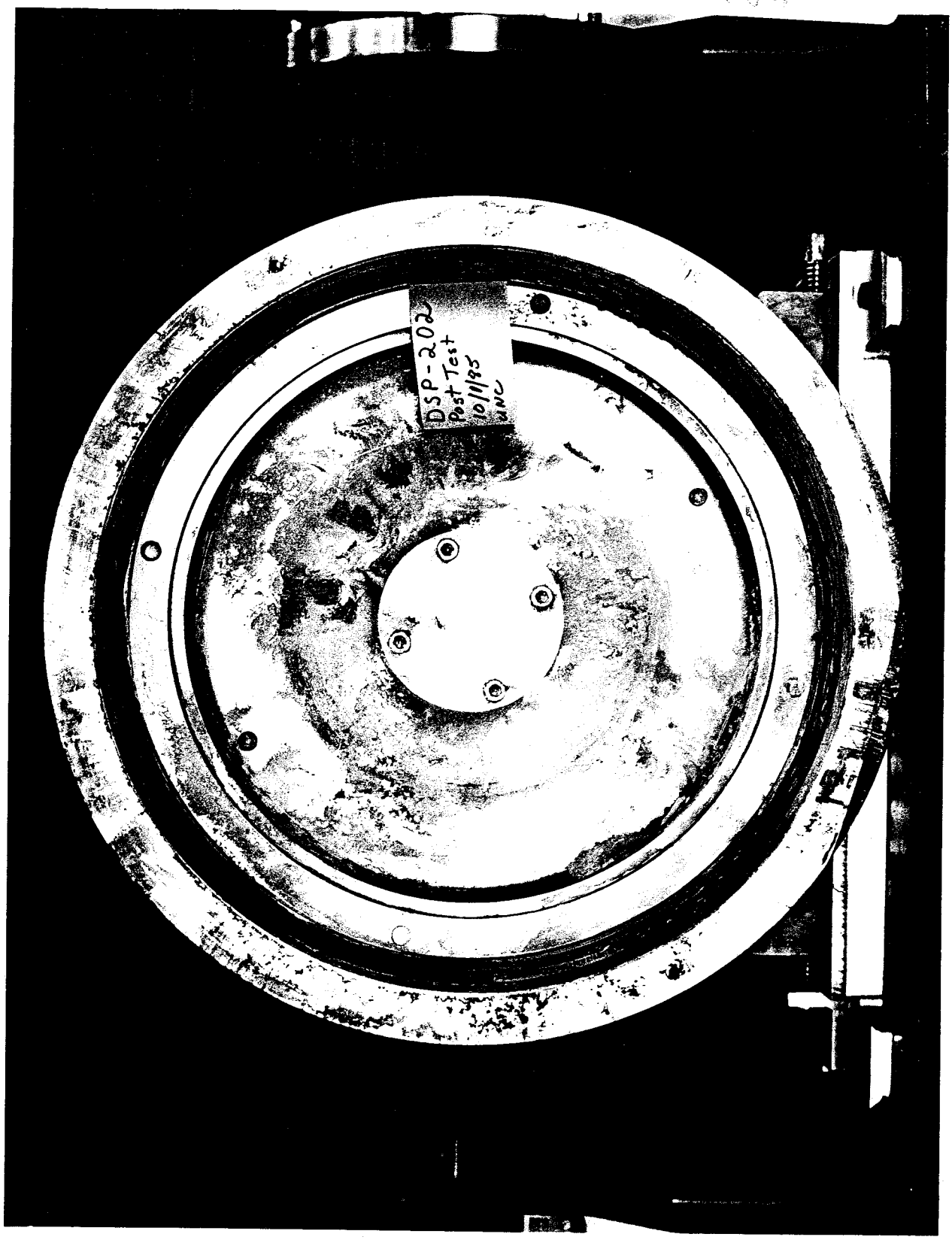
RS8182-1-108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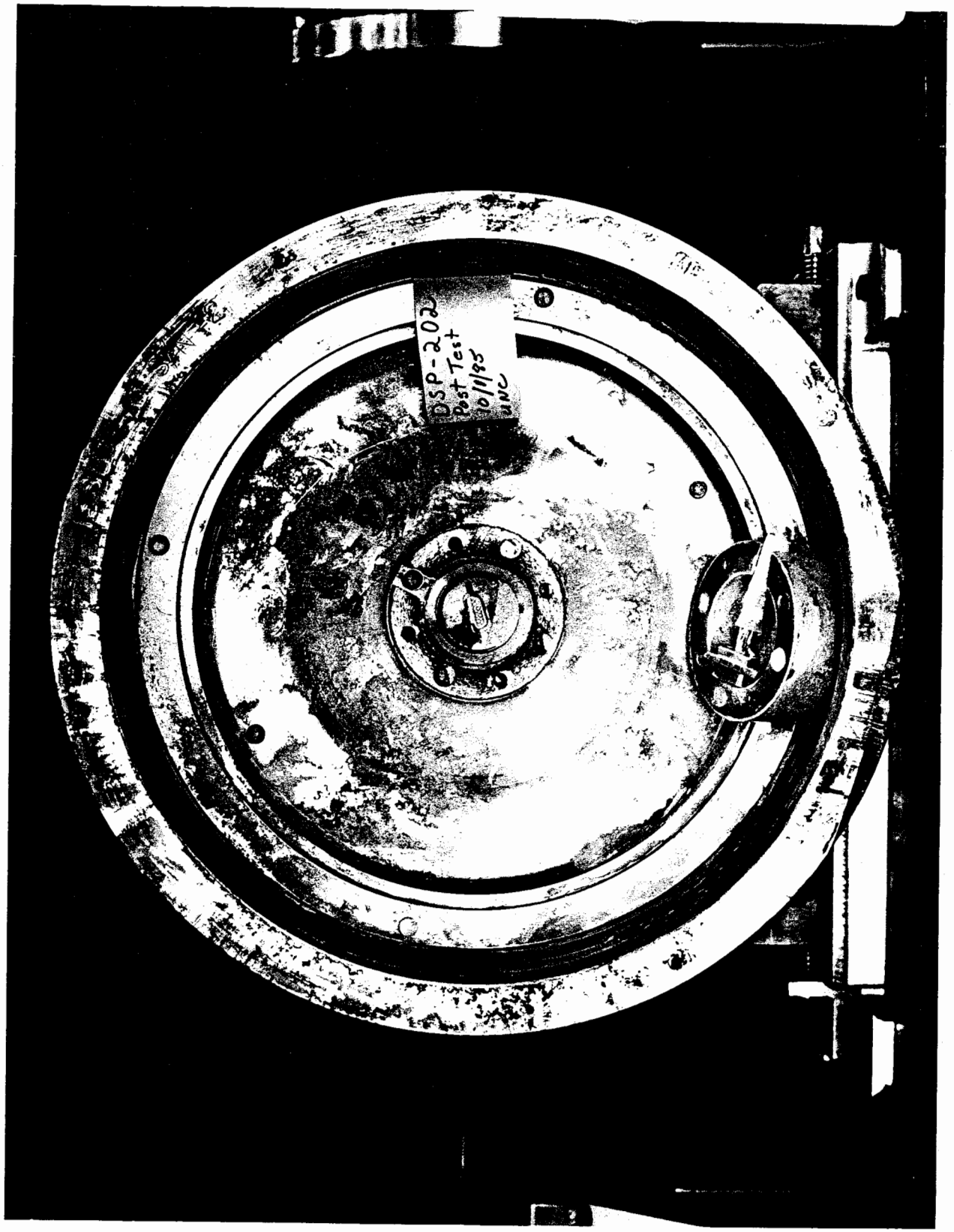
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10/1/85
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DSP-202
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10/1/85
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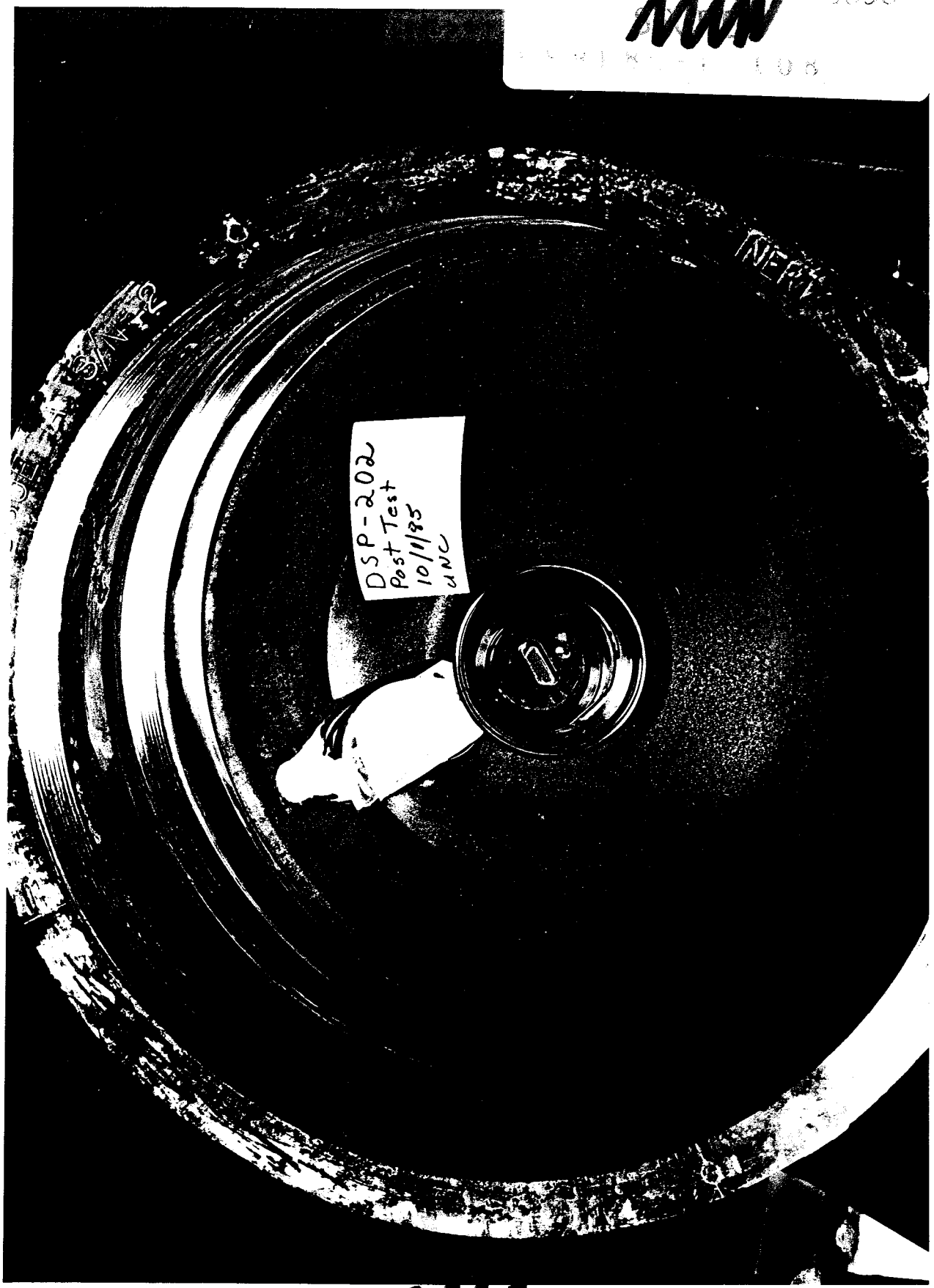

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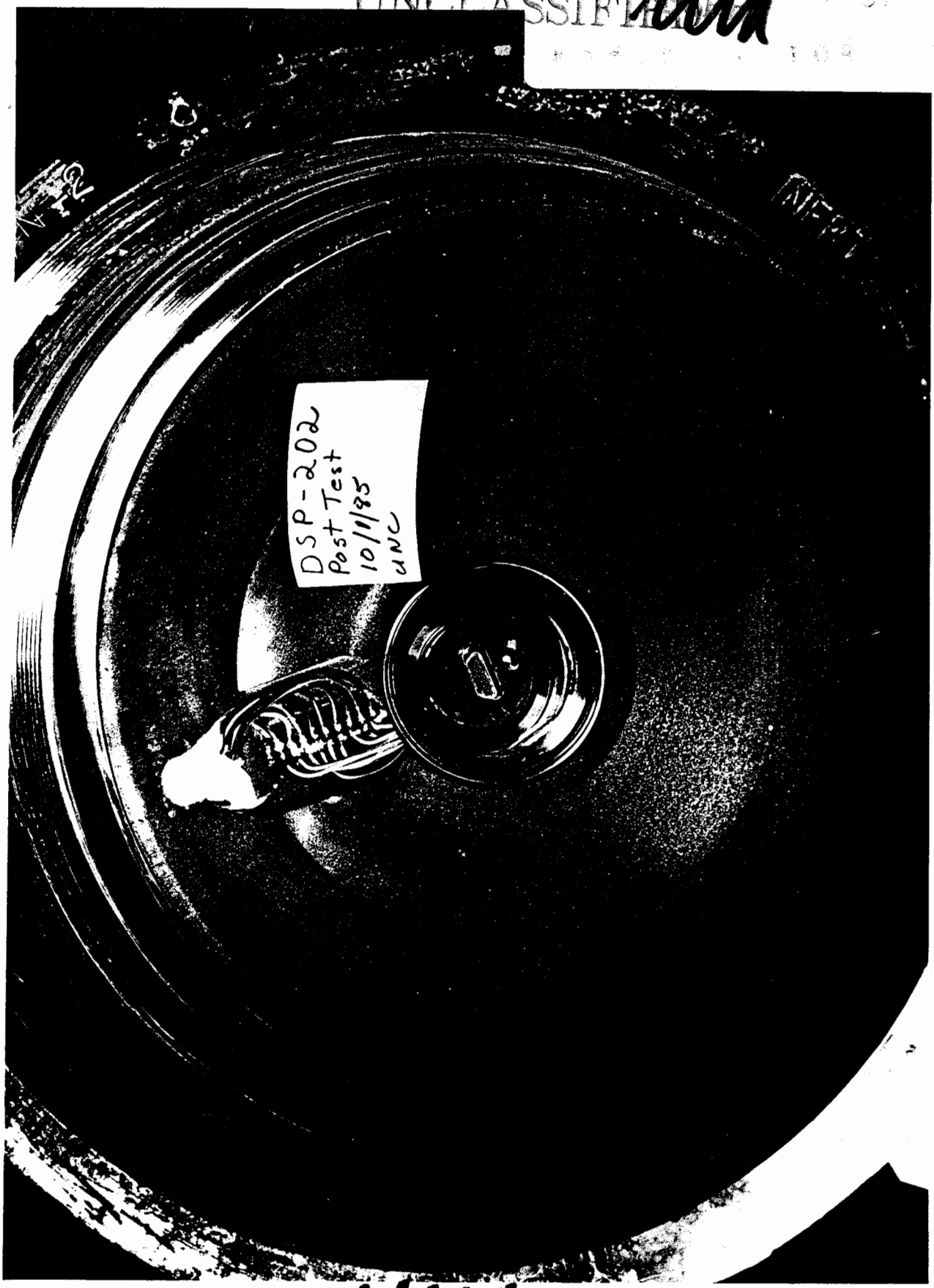

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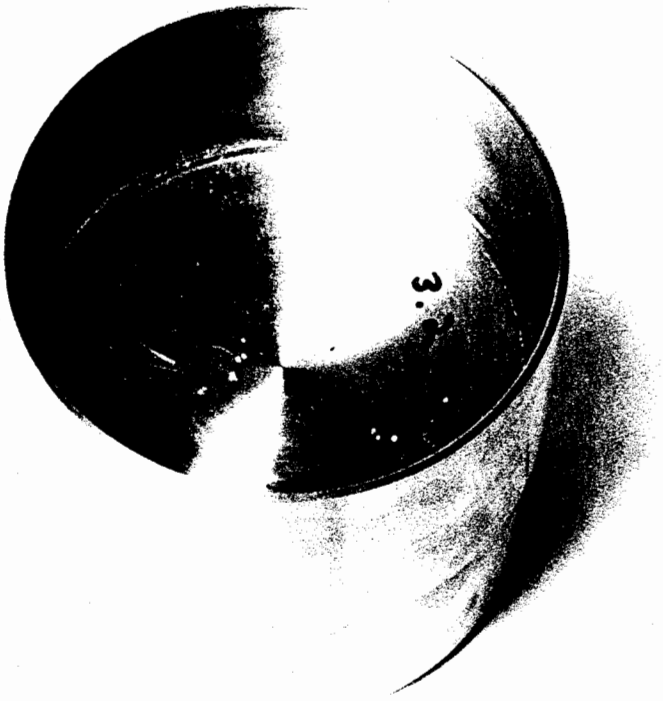

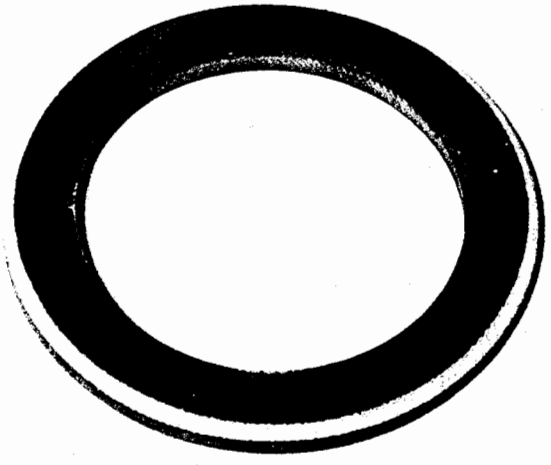

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10/18/85
UNC

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☐ Livermore, California 94550 ☐ Albuq... ...ional Laboratories ...New Mexico 87185 ☒ Other

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0064 TTR/NV

SHIP TO:

SANDIA NATIONAL LABS TOTTLE
7011 East Avenue
Livermore, CA 94550
Attn: D. A. Clarin 8152
913-TA9

RS8182-1-1 (28)

Sec. Insp. Badge No.	Page
	1 of 1

Highest Material Security Class.	Document No.	Cat.	Shipment Register No.
SRD	918549	R	06629

Date Due at Destination	Date Shipped or Handcarried	Date to be Returned	Hazardous Mat'l. Packing Instr. No.
9/30/85	9/30/85	XX No Return	

Site/Suplr. Code	Bldg.	Room	Org.	Employee No.	Originator of Form	Org.	Phone	Date Prepared
SNLL	920	128	8152		A. Green	7170a	8220	9/27/85

FROM: Site	Bldg.	Room	Org.	Requester's Name	Employee No.	Phone	Case No.	Authority for Shipment (Contract No./P.O., etc.)
SNL/TTR			7173	L. W. Lathrop	12715	8313	R724202	R.I.O.

Material Billing: ☐ Charge XX No Charge — Credit Approval — Freight Billing: ☐ Collect XX Prepaid ☐ Prepaid Bill to Consignee

Item	Sec. Class.	Quantity	Unit	Haz. Mat.	Property Tag No. And/Or MID No.	Description	Unit Value	$ Total
1	SRD	1	ea	N	------	NO HAZARDS Penetrator from DSP 202 R724202 - - - - -LAST ITEM- - - - -		

CO 11067

SWA

ARMED ESCORT REQUIRED

1 Box Ross

P...ON FOR SHIPMENT (Explain): (See e. on Back) GRAND TOTAL $ $

R.I.O. Location Change

*Indicate with (Y) or (N) (Yes or No) List Hazardous Material first.

Accounting Classifier	Property Mgmt. Representative
N/A	N/A

DOE Transportation Safeguards Div. Courier Required: ☒ No ☐ Yes If yes enter category of matter code ____ — Guard Escort Required: ☒ No ☐ Yes

Routing	B/L No.	No. of Boxes	Weight	Total Cubic Feet/Dimensions
Sm/Frt Flt	09549	1 wood box	600#	60x18x18

Authorizing Signature** 7173 Name Org. — Special Approval** Name Org. — Special Approval** Name Org. — Buyer Approval Name Org.

The listed material has been examined and the designations as to hazardous/nonhazardous material (HAZ. MAT.) are certified correct.
☐ Hazardous ☒ Nonhazardous

Receipt or Return Acknowledged — Name — E-No. Org.

Bearer's Signature — Handcarry Card Number — Packaging Engr./Svc. Clerk — Packaged by

Document No. 918549 — Cat. R — Shipment Register No. 06629

AT SNLA — Use as Packing List. To accompany the package to Shipping Org. and to Traffic Org. This copy accompanies package to destination. Give to Security Inspector on return of handcarried material to SNLA to be routed to Property Management.

AT SNLL — Shipping

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MOVEMENT COPY

1951-AE(8-82)

SHIPPER

Sandia National Laboratories

UNCLASSIFIED 065

☒ Livermore, California 94550 ☐ Albuquerque, New Mexico 87185 ☐ Other /3/

P TO:
SANDIA NATIONAL LABORATORIES
TONOPAH TEST RANGE
TONOPAH, NEVADA 89049
ATTN: A. A. MCCONNELL
FOR: PALMER NELSON, 7173

RS8182-1-108

Sec. Insp. Badge No. 2	Page
	1 of 1

Highest Material Security Class. 3	Document No.	Cat. 4	Shipment Register No. 5
SRD	812403		

Date Due at Destination 6	Date Shipped or Handcarried 7	Date to be Returned 8	Hazardous Mat'l. Packing instr. No. 9
09/23/85		☒ No Return	

te/Suplr. Code	Bldg.	Room	Org.	Employee No.	Originator of Form 11	Org.	Phone	Date Prepared 12
					KAMP	8161-1	3196	09/10/85

ROM: Site	Bldg.	Room	Org.	Requester's Name 14	Employee No.	Phone	Case No. 15	Authority for Shipment (Contract No./P.O., etc.) 16
.L	913	106A	8182	D. TIMMER		2778	1292090	G. CAIN

rial Billing ☐ Charge ☒ No Charge

Credit Approval 18

Freight Billing 19 ☐ Collect ☒ Prepaid ☐ Prepaid Bill to Consignee

m o.	Sec. Class. 21	Quantity 22	Unit 23	Haz.* Mat. 24	Property Tag No. And/Or MID No. 25	Description 26	Unit Value 27	$ Total 28
	SRD	1	EA	N	C011067	PENETRATOR UNIT, DSP202, A33679. ---LAST ITEM---		
						EXEMPT FROM MEL ACCOUNTABILITY-- MATERIAL SHIPPED TO ANOTHER SANDIA LOCATION.		
						BY DECLARATION OF D. TIMMER THE ABOVE CONTAINS NO HAZARDOUS MATERIAL AS DESIGNATED IN SLI 6950-2.		
						SHIP VIA ROSS.		

SWA
ARMED ESCORT REQUIRED

EASON FOR SHIPMENT (Explain): (See e. on Back)

GRAND TOTAL $ $ 10,0

OCATION CHANGE

*Indicate with (Y) or (N) (Yes or No)
List Hazardous Material first.

Accounting Classifier	Property Mgmt. Representative

Document No. 812403

Cat. Shipment Register No.

E Transportation Safeguards Div. Courier Required	Guard Escort Required 30
☒ No ☐ Yes *If yes enter category of matter code*	☒ No ☐ Yes

uting	B/L No. 32	No. of Boxes 33	Weight 34	Total Cubic Feet/Dimensions 35

ing Signature**	Special Approval** 37	Special Approval**	Buyer Approval 38
G DOMINGUEZ 8161-	Name Org.	Name Org.	Name Org.
	The listed material has been examined and the designations as to hazardous/nonhazardous material (HAZ. MAT.) are certified correct. 40 ☐ Hazardous ☐ Nonhazardous		Receipt or Return Acknowledged
Bearer's Signature	Packaging/Freight Clerk	Packaged by	Name E-No. Org.

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