MISSISSIPPI POWER & LIGHT COMPANY
Helping Build Mississippi
P. O. BOX 1640, JACKSON, MISSISSIPPI 39205

January 18, 1983

NUCLEAR PRODUCTION DEPARTMENT

U. S. Nuclear Regulatory Commission
Office of Nuclear Reactor Regulation
Washington, D. C. 20555

Attention: Mr. Harold R. Denton, Director

Dear Mr. Denton:

SUBJECT: Grand Gulf Nuclear Station
Units 1 and 2
Docket Nos. 50-416 and 50-417
License No. NPF-13
File 0260/15180
Reference AECM-82/626
AECM-83/012
Request for Additional Information - Protective Sleeves for LPRMs
AECM-83/32

Attached are the Mississippi Power & Light Company (MP&L) responses to NRC review questions requested by your Staff in a letter dated January 11, 1983, and conversations held with Dean Houston of your staff on January 4, 1982. This letter supplements information transmitted by the proposed change to the Operating License (PCOL-82/13) dated December 22, 1982.

If you have any further questions, please advise.

Yours truly,

L. F. Dale
Manager of Nuclear Services

8301200079 P

JOF/SHH/JDR:sap
Attachment

cc: Mr. N. L. Stampley (w/o)
Mr. R. B. McGehee (w/o)
Mr. T. B. Conner (w/o)
Mr. G. B. Taylor (w/o)

Mr. Richard C. DeYoung, Director (w/a)
Office of Inspection & Enforcement
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Mr. J. P. O'Reilly, Regional Administrator (w/a)
Office of Inspection and Enforcement
U.S. Nuclear Regulatory Commission
Region II
101 Marietta St., N.W., Suite 3100
Atlanta, Georgia 30303

B001

1. Concern

What materials are involved? Is proposed sleeve material compatible with existing material at attachment point?

Response

The protective sleeve is constructed of 304 stainless steel. Both the sleeve material and the LPRM at the point of attachment are 304 stainless steel.

2. Concern

Provide drawings which present the hardware to be installed and location of attachment points.

Response

The drawings showing the sleeve details and the LPRM at the point of attachment are listed below, and are provided as attached figures.

Figure 1. Added sleeve - 188C7584, Tube
Figire 2. Installation drawing - 188C7583, Plunger
Figure 3. Point of attachment (ASM) - 262A7418, Spring Housing
Figure 4. Point of attachment (detail) - 262A7417, Tube

3. Concern

Provide procedure for installation or summary of procedure.

Response

General Electric Field Disposition Instruction WAWD will be utilized with a controlling temporary directive for establishing and maintaining the necessary plant conditions. A summary of the work procedure is as follows:

The reactor water level will be lowered to 18 inches below the top guide. One fuel bundle adjacent to the BEI on which the work is to be performed will be removed. The BEI plunger will be depressed so that the top end of the BEI can be removed from the top guide and moved into the open space from which the fuel bundle was removed.

The protective sleeve will be installed over the plunger and seated solidly against the existing shoulder on the BEI. At this time, the tack welder is installed over the LPRM tube; four small tack welds, approximately 1/8 inch in diameter, are placed at 90° intervals between LPRM and top of sleeve modifications. Test specimens show that the four tack welds provide a minimum strength of 800 pounds.

4. Concern

Is welding involved? If so, has impact to adjacent channel boxes been evaluated (from radiant heat damage)? Has the possibility of a zircalloy fire been considered? Does this present a hazard?

Response

The sleeves are attached to the LPRM by four tack welds made by the TIG welding process. The tacks are low amperage welds as shown by the power requirements summarized below:

a. 45 amps high pulse for 0.1 seconds
b. 25 amps low pulse for 0.9 seconds
c. slope from 25 amps to 0 amps in 1 second

The power sequence is automatically controlled by a programmable power supply. The stainless steel weld fixture, designed specifically for this application, provides the weld torch alignment feature and totally encloses the LPRM in the area of the weld. With this arrangement, the zircalloy channels are not exposed to an open arc, and the heat conducted to the adjacent channels is negligible and without hazard.

5. Concern

Will fuel movement be involved and to what extent?

Response

Forty-four (44) fuel bundles will be removed and stored in the in-containment storage racks until the sleeve installation is complete. This is one bundle per LPRM, and the movement will be controlled by a fuel movement plan prepared by the plant reactor engineering staff.

6. Concern

Does sleeve installation prevent the withdrawal of LPRM from the bottom of the RPV?

Response

The sleeve is attached to the bottom entry incore external housing and will have no effect on withdrawal of the LPRM if required.

7. Concern

Does the installation method, whether welding or mechanical attachment, impact the pressure boundary, i.e., potential damage to TIP tube?

Response

The TIP tube pressure boundary will remain intact. The procedure for installation has been prepared to ensure the pressure boundary is not impacted. The potential for damage to the TIP tube is very remote since the TIP tube is in the center of the LPRM tube.

8. Concern

Has the installation procedure been checked out by a GE mock up, etc? What testing has GE or MP&I conducted to insure that the installation method will be permanent and successful?

Response

The welding procedure and fixture have been thoroughly tested at General Electric - San Jose. Mock up pieces were welded together and pull tested to failure. The test showed the equipment performed with consistency and the parts could withstand loads greater than 800 pounds. This is far in excess of any loads acting on the sleeve. The test report and weld qualification records are contained in the General Electric design record file.

9. Concern

Does the installation procedure include a radiological assessment of radiation levels in the work area (prior to personnel initial entry into the top guide area)?

Response

The temporary directive for controlling plant conditions during the LPRM sleeve replacement will be reviewed by the plant ALARA committee prior to implementation. Similarly, all work will follow existing plant procedures for radiological work and will be controlled using a Radiation Work Permit.

10. Concern

What steps will be taken to prevent the falling of debris into the core and vessel area?

Response

A tight fitting seal will be placed over the LPRM tube and provide a positive boundary for containing any debris. In addition, precautions will be taken to control all tools used in the vessel and limit loose parts and other items brought into the work area.

11. Concern

What training is planned for the maintenance personnel to accomplish this one time activity?

Response

Personnel involved in the sleeve installation will be qualified by performing the actual evolution on first a full scale mock up and then by actually installing a sleeve on a spare LPRM tube prior to any in- vessel work.

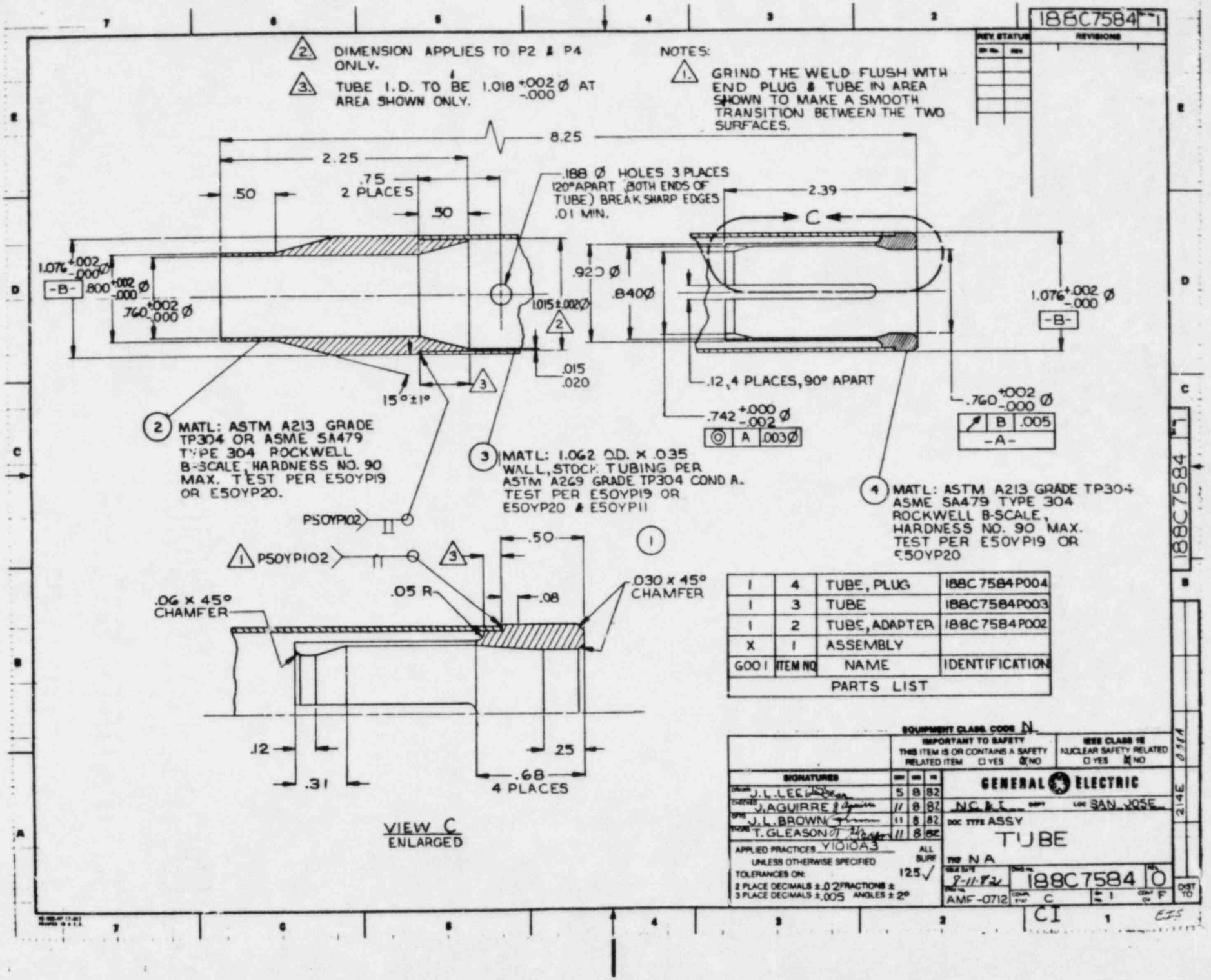


Figure 1
Attachment 1

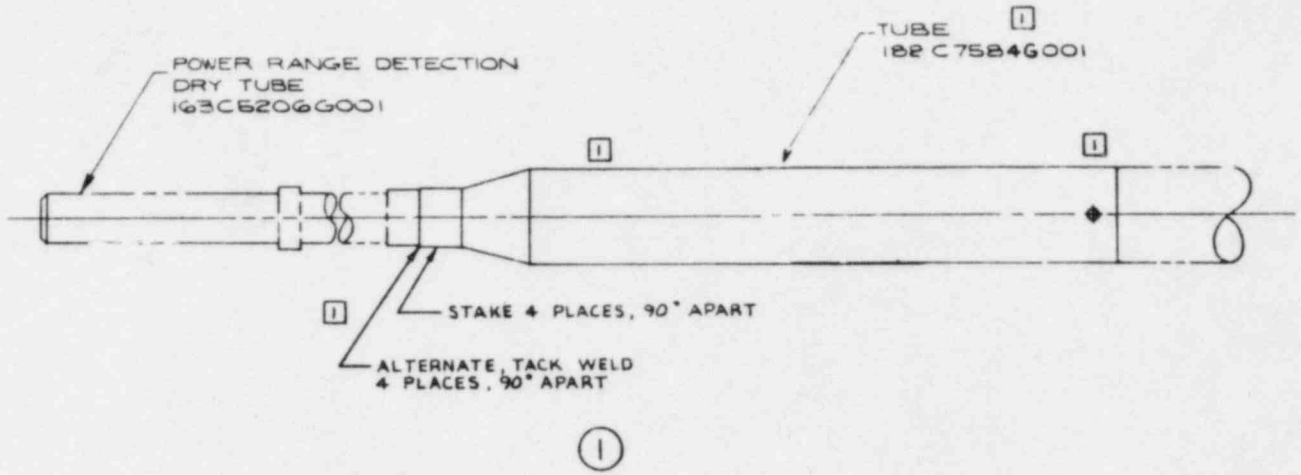


Figure 2
Attachment 1

188C7583 P1

REV STATUS		REVISIONS		
		1	E ALEMAN	

NJ35084
CHK BY K REDDICK
ENGR F. SEDLAR

188C7583 P1

188C7583

EQUIPMENT CLASS CODE N

	IMPORTANT TO SAFETY: THIS ITEM IS OR CONTAINS A SAFETY RELATED ITEM ☐ YES ☒ NO	10CFR CLASS 1E: NUCLEAR SAFETY RELATED ☐ YES ☒ NO

SIGNATURE			
D. PHAM	30	7	82
J. L. AGUIRRE	30	7	82
J. L. BROWN	30	7	82
F. SEDLAR	30	7	82

APPLIED PRACTICES
UNLESS OTHERWISE SPECIFIED
TOLERANCES ON:
2 PLACE DECIMALS ± FRACTIONS ±
3 PLACE DECIMALS ± ANGLES ±
ALL SURF ✓

GENERAL ELECTRIC
NC & I DEPT SAN JOSE
DOC TYPE INSTALLATION
PLUNGER
ENG NA
AMP-0708
188C7583 REV 1
CODE/STAT C
SHT 1 CONT OF F

038A 001A 007A (214E)

DIST TO

>0045705 1

CI

EIS

188C7583 P1

GENERAL ELECTRIC

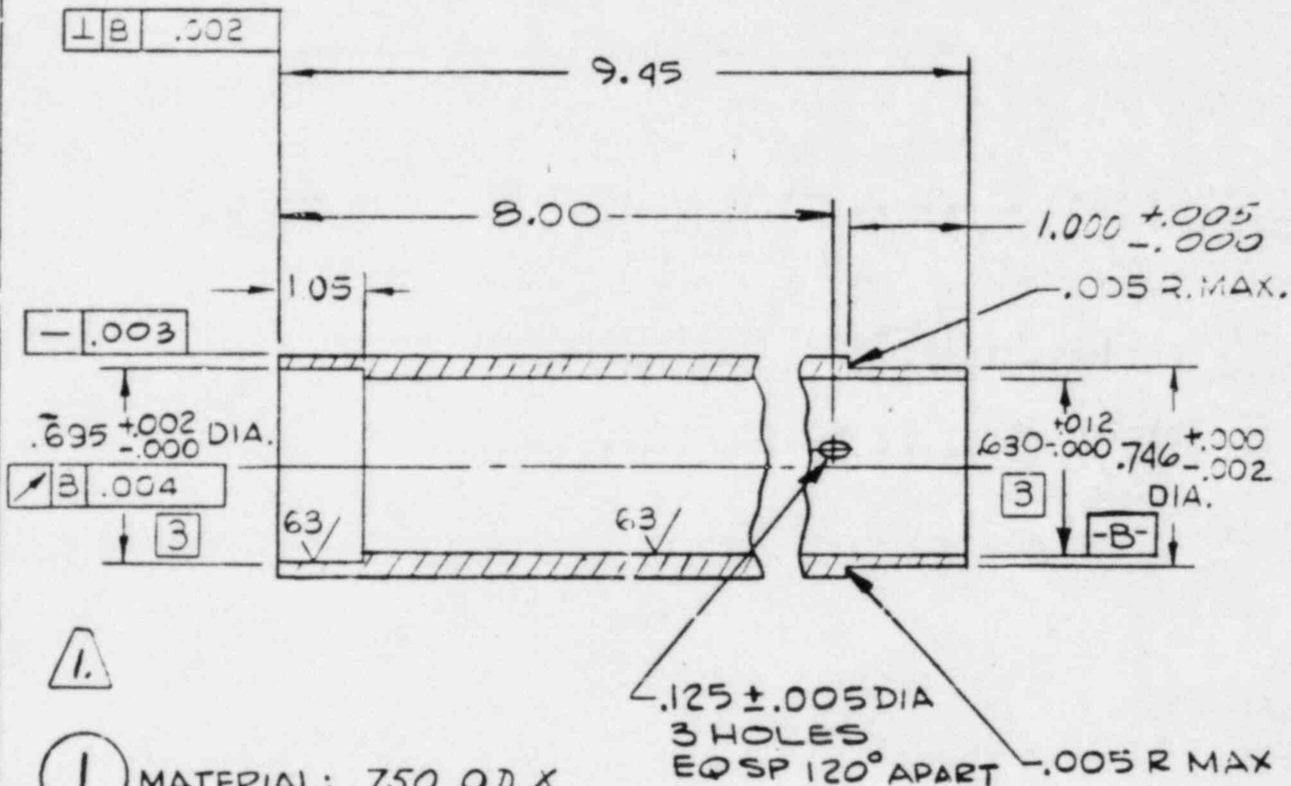
262A7417	CONT ON SHEET	SH NO

REV 7+2 3

262A7417 CONT ON SHEET SH NO.

TITLE **TUBE**

FIRST MADE FOR N/A



(1) MATERIAL: .750 O.D. X .065 WALL PER [3] B50YP13B1-G, B50YP17A1-G OR B50YP17B-G

NOTES:

1. DATUM FOR PERPENDICULARITY & RUNOUT EXTENDS FOR A LENGTH OF 4.00 FROM .695 DIA. C'BORE END.

UNLESS OTHERWISE SPECIFIED USE	APPLIED PRACTICES	SURFACES	TOLERANCES ON MACHINED DIMENSIONS FRACTIONS	DECIMALS	ANGLES
	167A2400	125/	±	±.03	± 5°

REVISIONS C — PRINTS TO: 0578, 212A

3	D Neves 2-19-80 D NEVES	RRS RRS	2	R Noll 4-7-78	KKL RRS
NJ16197 CHK BY: J.L. AGUIRRE J.L. Aguirre			NJ0036A GREEN CHK J Green		

0	AMC 1471	
1	D WOOD 7/20/77 D. Wood	URG RPJ
NE86135, CHK J Green J GREEN		

MADE BY J. GREEN 18 DEC 74 — ISSUED J. GREEN 8-4-76 — APPROVALS 4/15/76 — NED DIV OR DEPT — SAN JOSE LOCATION — 262A7417 CONT ON SHEET SH NO.

PRINTED IN U.S.A. CHKD R. Suggs JUL 29, 76 R. SUGGS — C1 — EIS

Figure 3
Attachment 1

GENERAL ELECTRIC

262A7418	CONT ON SHEET	SH NO.

REV O

262A7418

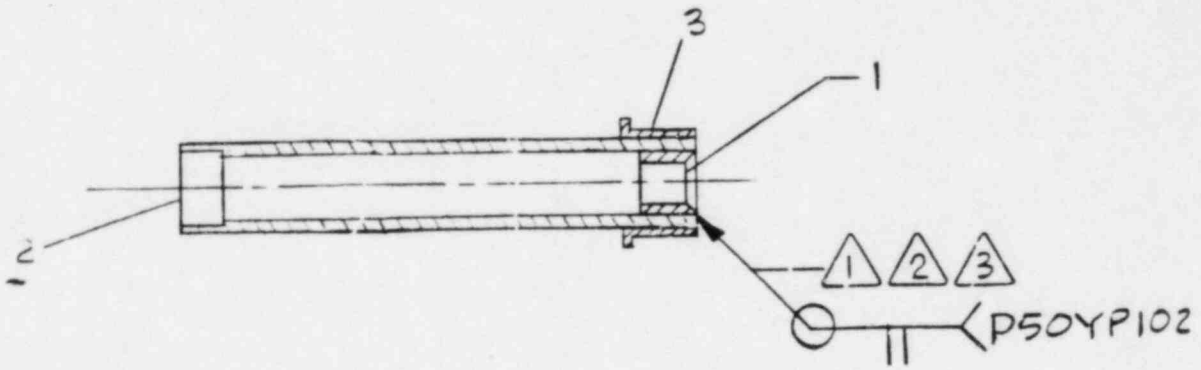
CONT ON SHEET SH NO

TITLE ASSY

SPRING HOUSING

FIRST MADE FOR BOTTOM ENTRY - PWR RANGE DETECTOR

PL ISSUED FCF: 198B6028



NOTES:

1. ITEM 1 TO WITHSTAND 50 LBS. OF LOAD IN LONGITUDINAL DIRECTION AFTER WELDING.
2. MACHINE O.D. OF ITEM 1 TO A .001 TO .003 DIAMETRAL CLEARANCE WITH ITEM 2.
3. POSITION ITEM 1 AND 3 FLUSH (±.010) WITH END OF ITEM 2.

UNLESS OTHERWISE SPECIFIED USE	APPLIED PRACTICES	SURFACES	TOLERANCES ON MACHINED DIMENSIONS: FRACTIONS ±	DECIMALS ±	ANGLES ±
	167.12400	√			

REVISIONS		C	PRINTS TO
0	AMC 1471		
			99
			30

MADE BY J. GREEN 9 JAN 75	APPROVALS 4/15/76	NED	DIV OR DEPT	262A7418
ISSUED J. GREEN 8-4-76	18 Layout 18 Layout	SAN JOSE	LOCATION	CONT ON SHEET / SH NO
CHKD R Suggs JUL 29, 76 R. SUGGS		C1		EDS

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Figure 4
Attachment 1