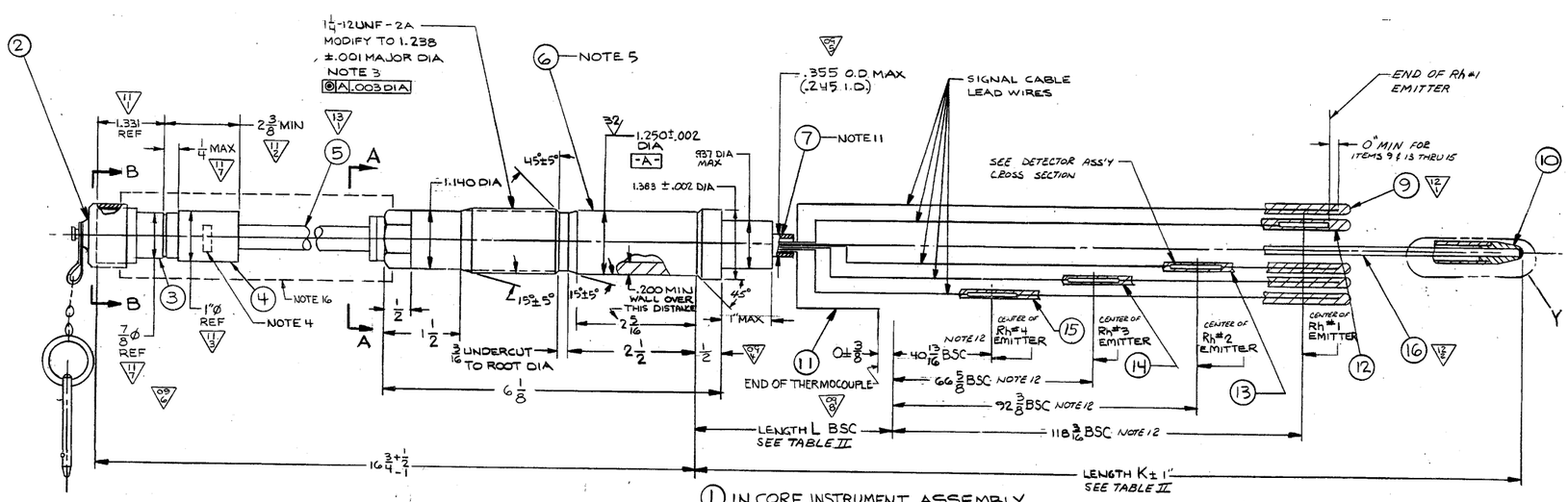
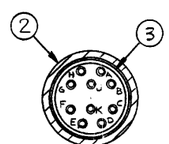


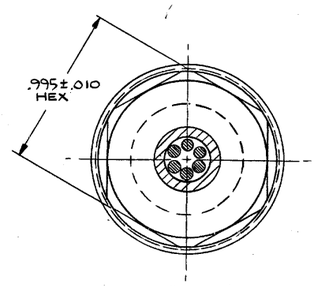
① IN CORE INSTRUMENT ASSEMBLY
SCALE 1/1

BILL OF MATERIALS — QUANTITIES ARE FOR									
GROUP NO. & QUANTITY						ITEM NO.	NAME	PIECE NO.	MATERIAL	REMARKS
6	5	4	3	2	1					
					X	1	IN-CORE INSTRUMENT ASSY	E-23866-165-012-1		
					1	2	DUST CAP	D-STD-165-024-1		
					1	3	RECEPTACLE	E-23866-165-012-3		NOTE 14
					1	4	RECEPTACLE ADAPTER, RIGID	-4	300 SERIES SST	
					1	5	RIGID TUBE	-5	300 SERIES SST	
					1	6	SEAL PLUG	-6	NOTE 10	
					1	7	HOUSING	-7	NOTE 10	TREATED TYPE 18 CAPTIVATED OR EQUIV. NOTE 10
					1	9	BACKGROUND DETECTOR ASSY	E-23866-165-012-9		NOTE 6
					1	10	BULLET NOSE TIP	-10	NOTE 10	
					1	11	OUTLET THERMOCOUPLE	-11		
					1	12	RHODIUM DETECTOR (Rh-1) ASSY	-12		
					1	13	RHODIUM DETECTOR (Rh-2) ASSY	-13		
					1	14	RHODIUM DETECTOR (Rh-3) ASSY	-14		
					1	15	RHODIUM DETECTOR (Rh-4) ASSY	-15		
					1	16	CENTRAL MEMBER	-16	304 OR 347 SST	NOTES 10 & 17

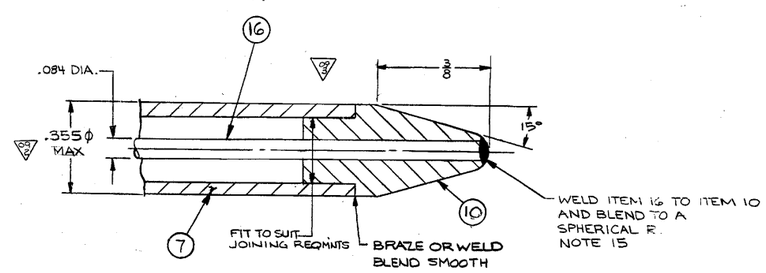
TABLE I	
PIN	CONNECT TO
A	ITEM 9 (BACKGROUND)
B	ITEM 12 (Rh #1)
C	ITEM 13 (Rh #2)
D	ITEM 14 (Rh #3)
E	ITEM 15 (Rh #4)
F	ITEM 11 (CHROMEL)
G	ITEM 11 (ALUMEL)
H	SHELL COMMON
J	SPARE
K	SPARE



SECTION B-B
SHOWING PIN IDENTITY
SEE TABLE I
SCALE: 2/1

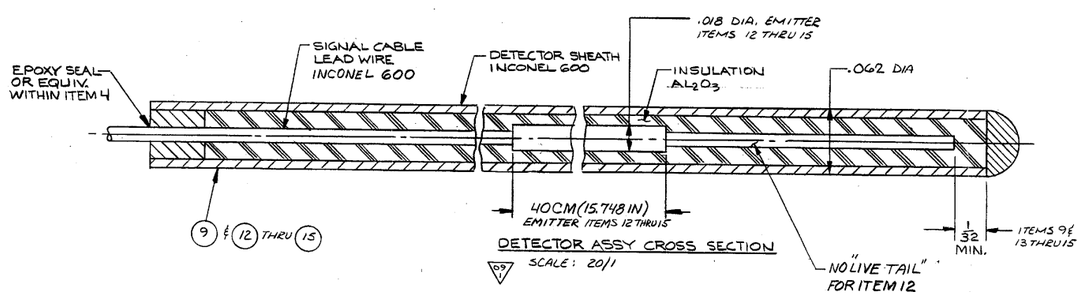


SECTION A-A
SCALE: NONE



DETAIL Y
SCALE: 4/1

TABLE II					
INDIVIDUAL IDENT NO. IN-CORE INSTRUMENT ASSY	LENGTH K	LENGTH L	CORE COORDINATE LOCATION	FLANGE NO.	OPPD TAG #
E-23866-165-012-1	42 0⅜	283 13/16	J-7	5	RC-70-1
-2	43 3⅝	297 ⅛	G-9	3	RC-70-2
-3	42 0 5/16	283 3/4	J-11	3	RC-70-3
-4	43 6⅛	299 5/8	L-9	2	RC-70-4
-5	43 5⅜	298 7/8	N-11	2	RC-70-5
-6	42 4 7/16	287 7/8	P-9	1	RC-70-6
-7	44 5 7/16	309 1/16	S-9	6	RC-70-7
-8	41 0⅝	274 1/16	N-4	6	RC-70-8
-9	40 2 7/16	265 13/16	J-4	6	RC-70-9
-10	39 3 1/16	256 9/16	G-3	5	RC-70-10
-11	41 0 11/16	274 3/16	E-4	5	RC-70-11
-12	43 6 13/16	300 7/16	C-4	4	RC-70-12
-13	39 5	258½	C-7	4	RC-70-13
-14	45 0 3/8	313 7/8	B-9	5	RC-70-14
-15	41 7⅜	281 5/16	D-9	4	RC-70-15
-16	44 6 3/16	309 11/16	E-11	3	RC-70-16
-17	41 1 13/16	275 7/16	E-14	3	RC-70-17
-18	40 1½	265	G-15	2	RC-70-18
-19	40 1⅝	265 1/8	J-14	2	RC-70-19
-20	41 0⅛	273 5/8	N-14	2	RC-70-20
-21	43 4⅜	297 7/8	R-14	1	RC-70-21
-22	40 3¾	267 1/4	S-3	1	RC-70-22
-23	43 8 1/4	301 3/4	T-8	6	RC-70-23
-24	39 3⅜	256 7/8	S-13	1	RC-70-24
-25	41 0 3/16	273 11/16	B-15	3	RC-70-25
-26	39 2 11/16	256 3/16	B-13	4	RC-70-26
-27	42 8 11/16	292 1/8	A-6	5	RC-70-27
-28	44 1 1/16	304 9/16	L-7	6	RC-70-28



DETECTOR ASSY CROSS SECTION
SCALE: 20/1

17. MATERIAL FOR ITEM 16 SHALL BE IN THE FULLY ANNEALED CONDITION.

16. THE ASSY FROM ITEM 3 TO 6 SHALL BE HERMETIC. USING CENPS APPROVED SEAL WELD AND/OR BRAZE PROCEDURES.

15. SURFACES AND JOINTS OF ITEM 10 SHALL BE SMOOTH AND FREE FROM SHARP EDGES. POLISH TO 32/ OR BETTER

14 - ITEM 3: LITTON NO. CIRO:HW-16A-10P-TC.

12 - THE ACTUAL CENTER OF THE EMITTERS OF ITEMS 12 THRU 15 MUST FALL WITHIN 3/8 OF LOCATIONS DEFINED BY DIMENSIONS NOTED "BASIC"

11 - THE WRAPPING OF ITEM 7 MAY HAVE A SLOPING EDGE AND A SHARPER EDGE. THE SLOPING EDGE SHALL FACE ITEM 10.

10 - ITEMS 6, 7, 10 & 16 MUST MEET REQMTS AS NOTED ON DWG NO. D-STD-165-026 IN ADDITION TO THE REQ'MTS OF THE REFERENCED SPEC.

9 - DIMENSIONING & TOLERANCING PER USASI Y14.5 1966.

6 - CORE OF ITEM 9 CONSISTS OF FULL LENGTH INCONEL 600 SIGNAL CABLE LEAD WIRE (NO EMITTER IN ASSY) ASSY O.D. .062.

5 - UNLESS OTHERWISE NOTED, ALL DIAMETERS OF ITEM 6 SHALL BE ◉ A .005 DIA

4 - ELECTROETCH ASSEMBLIES WITH INDIVIDUAL IDENTITY NO., DWG REV., CORE COORDINATE LOCATION NO., FLANGE NO., PURCHASE ORDER NO., AND VENDOR NAME & SERIAL NO. 1/8 HIGH EXCEPT THAT THE CORE COORDINATE NO.'S ARE TO BE 1/4 HIGH IN TWO PLACES 180° APART

3 - CHROME PLATE THREADS ON ITEM 6 PER QQ-C-320a CLASS 2B .0002-.0008 THICK. ALL DIMENSIONS APPLY AFTER PLATING.

2 - PRODUCT TO BE IN ACCORDANCE WITH CENPS SPEC NO. 00000-FEA-6106.

E-23866-165-012
15

REV.	DESCRIPTION	BY & DATE	CHK. & DATE	ENG. APVD	PROJ. APVD
15	1. NOTE 14 REVISED PART NO PER REV REQ NO. 96-323				

ALL ITEMS DEPICTED ON THIS DRAWING ARE WITHIN LICENSE RENEWAL SCOPE.

DWG. REF'S.
1. DWG. E-23866-165-010 FOR FLANGE ASSEMBLY.
2. DWG. E-15381-165-054 FOR CABLING DIAGRAM.

EA-FC-00-134 DF 12/01

REV.	DESCRIPTION	BY & DATE	CHK. & DATE	ENG. APVD	PROJ. APVD
14	1. NOTE 14 REVISED PART NO PER REV REQ NO. 96-263				

REV.	DESCRIPTION	BY & DATE	CHK. & DATE	ENG. APVD	PROJ. APVD
13	1-ZONE G3: REV. ITEM 9 [2-ZONE F3 & BM: ADDED ITEM 16] 3-ZONE D4: REVISED DETAIL Y [4-DELETED NOTE 13, REV NOTE 10 & ADDED NOTE 17] PER REV REQ 96-198				
12	1-ZONE G7: REVISED ITEM 5 2-BM: REVISED ITEM 5 3-REVISED NOTE 14 PER REV REQ 96-235				
11	1-ZONE H8; DIM WAS .874 2-ZONE H7; DIM WAS 2⅞ MIN 3-ZONE G7; DIM WAS 1.050 Ø MAX 4-BM; REVISED ITEMS 4 & 5 AND DELETED ITEM 16 5-REVISED NOTE 14 AND ADDED NOTE 16 & CALLOUT 6-CHANGED VERIFICATION STATUS: COMPLETE LABEL FROM QAM 101 TO QPM 101 7-ZONES G7 & G8; ADDED DIM. PER REV REQ 96-057				
09	5. ZONE H5, DIM WAS .350 O.D. MAX & .250 I.D. NOM [G-ZONE G8; WAS .875 REF] 7. B/M ITEM 10, IN MAT. ADDED OR 304LSS [8-ZONE F8, WAS ⅜] REV PER 78-201-171				
10	1-REDESIGNED PER REV. REQ. NO 100022-06 & 100022-10				
09	1-REDESIGNED & REDRAWN [2-ADDED QA STATUS LABEL] PER REV REQ 78-201-72 3.-DWG STATUS WAS "CERTIFIED FOR CONSTRUCTION" PER REV REQ # 78-201-120				
08	1. ZONE C4; ADDED NOTE [2. ZONE E5, DIM WAS .350 DIA] 3. DETAIL "Y", ITEM 10, DELETED DIM'S [4. ZONE E6; ADDED ½ DIM]				

FORT CALHOUN STATION	PRODUCTION ENGINEERING DIVISION
REV. SH. ------	APVD EN 8/11/00
FILE 49789	REV Ø

VERIFICATION STATUS: COMPLETE
THE DESIGN INFORMATION CONTAINED IN THIS DOCUMENT HAS BEEN VERIFIED TO BE CORRECT BY MEANS OF DESIGN REVIEW.

UNLESS OTHERWISE SPECIFIED
DIMENSIONING & TOLERANCING PER ANSI Y14.5-1973
DIMENSIONS APPLY AT 68°F (20°C)
DO NOT SCALE DRAWING

DIMENSIONS	UNDER 6	6 - 18	OVER 18
DECIMAL	± .005	± .005	± .010
FRACTION	± 1/64	± 1/32	± 1/16

BREAK CORNERS 1/64 APPROX. R OR CHAMF — FILLETS 1/64 TO 1/32 R
FINISH (√) AA125 MICRO IN.
ANGLES ± 0° - 30' CHAM ± 5°

POWER SYSTEMS
COMBUSTION ENGINEERING, INC.
NUCLEAR POWER SYSTEMS

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CUSTOMER: OMAHA PUBLIC POWER DIST. FORT CALHOUN UNIT NO. 1

DRAWN BY		7-2-82
CHECKER		7-21-82
APPROVALS		2-17-82

TITLE: IN-CORE INSTRUMENT ASSEMBLY

NEXT ASSY | SUPERSEDES | JOB NO. | COMPONENT CODE | SCALE: AS NOTED | DWG. NO. E-23866-165-012 | 15 | SHEET OF | REV.

FOR INFORMATION ONLY

NOTE: THIS PRINT IS TO BE USED FOR THE FCS LICENSE RENEWAL PROJECT ONLY. IT MAY NOT REFLECT THE MOST CURRENT REVISION OF THIS DRAWING.