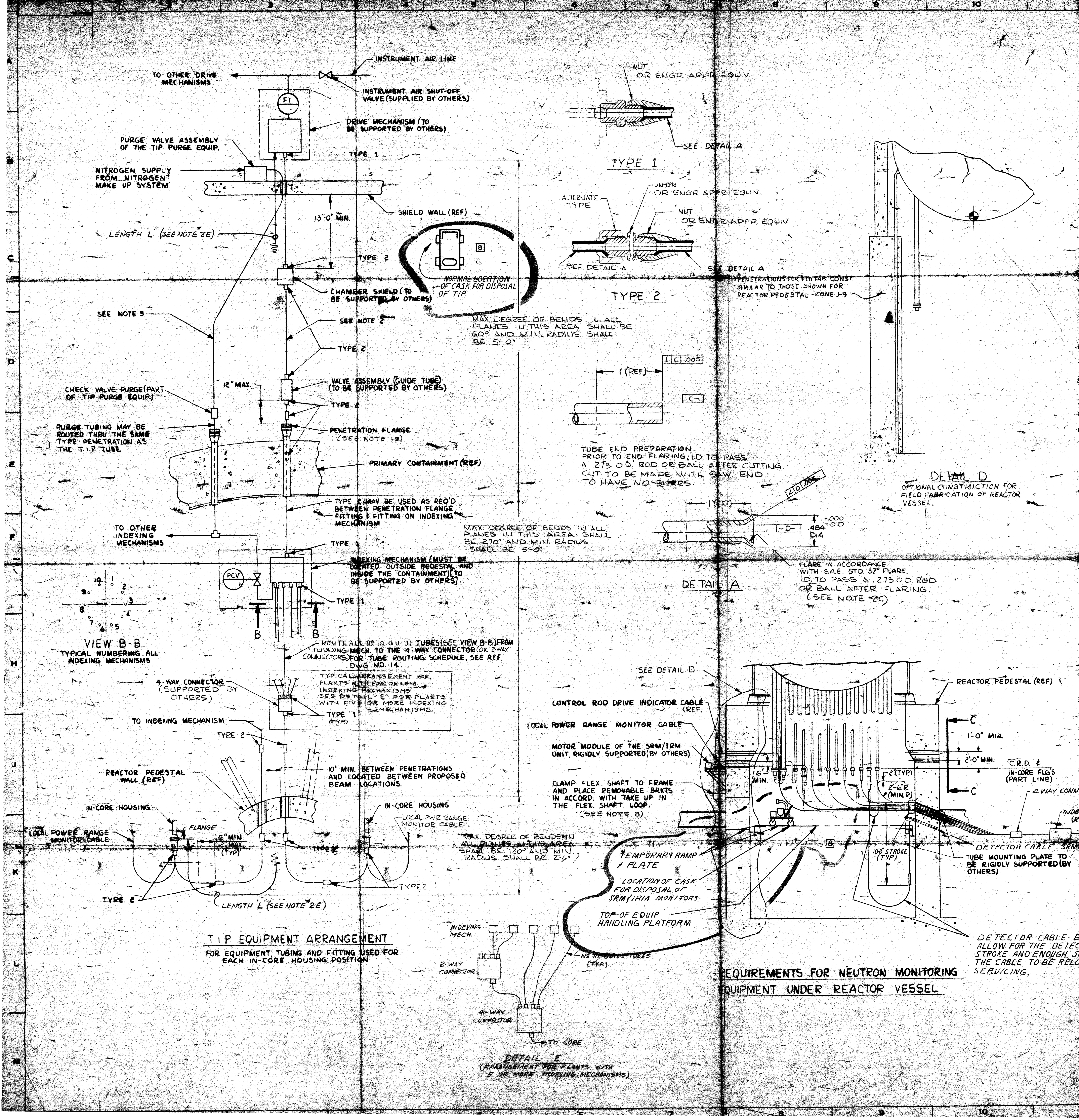
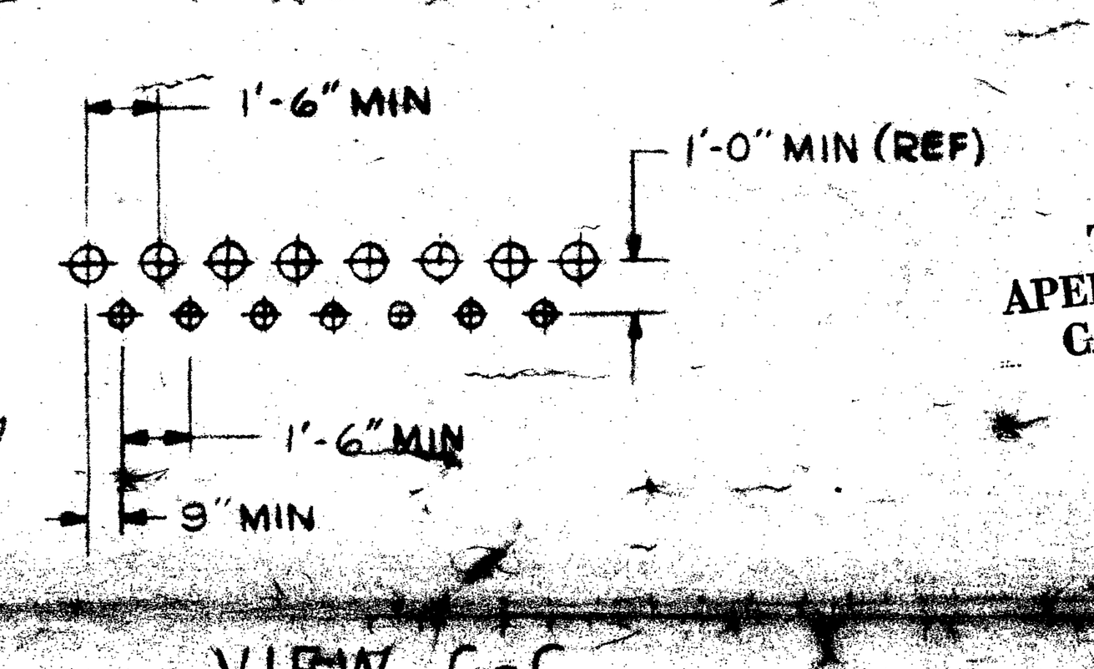
NEUTRON MONITORING SYSTEM ARRANGEMENT

FIRST MADE FOR NEUTRON MON. SYSTEM

FCF: C51-2010





NOTES:

1. TUBE UNIONS MAY BE LOCATED AS REQUIRED BETWEEN REACTOR PEDESTAL WALL AND DRYWELL PENETRATION.
2. THE NUMBER OF T.I.P. GUIDE TUBE BENDS SHALL BE HELD TO A MINIMUM.
   A. THE TOTAL DEGREES OF BENDS SHALL NOT EXCEED 450° FOR INDIVIDUAL DEGREE REQUIREMENTS SEE ZONES D5, H5 & K5.
   B. BENDS MUST BE SMOOTH AND MADE WITH A FIXTURE, BENDS MUST BE UNIFORM, NOT A SERIES OF SMALLER BENDS, AND FREE OF INTERNAL DEFORMATIONS.
   C. TUBE FLARES TO BE FORMED WITH PROPER FLARING TOOLS AND CAREFULLY ASSEMBLED INTO FITTINGS FOR GOOD ALIGNMENT (SEE DETAIL A). TEST ALL JOINTS WITH UNION ATTACHED WITH .273 +.000/-.001 DIA ROD, 3" LG, FOR PROPER CLEARANCE AND ALIGNMENT.
   D. CORRECT FIT OF ALL ATTACHMENTS SHALL BE CHECKED BY INSERTING 18 FT DUMMY TIP (SERVICING TOOLS) AND ASSURING SMOOTH MOVEMENT.
   E. MAXIMUM 'L' LENGTH OF T.I.P RUN FROM IN-CORE HOUSING FLANGE TO DRIVE MECHANISM TO BE 140'-0" ACTUAL LENGTH TO BE SPECIFIED BY A.E.
   F. THE T.I.P. GUIDE TUBES SHALL BE SUPPORTED AT 5'-0" MAXIMUM INTERVALS.
3. CHAMBER SHIELDS TO BE FILLED WITH 1/8 MAXIMUM DIAMETER FREE FLOWING CORRODING LEAD SHOT.
4. SIGNAL CABLE CONDUIT AND POWER CABLE CONDUIT SHALL BE SEPARATED BY A MIN OF 12".
5. THE FOLLOWING EQUIPMENT WILL BE SUPPLIED AS PART OF THE NEUTRON MONITORING EQUIP: T.I.P. (TRAVERSING DET.), DUMMY T.I.P. (TRAVERSING DET.), DRIVE MECHANISM, INDEXING MECHANISM, PENETRATION FLANGE, 4WAY CONNECTION, CHAMBER SHIELD, VALVE ASM. (GUIDE TUBE), SRM/IRM DRIVE UNIT, POWER RANGE NEUTRON MONITOR INST., DISPOSAL CASK, GUIDE TUBES (T.I.P.), ALL TUBE FITTING CONNECTIONS AS SHOWN AND T.I.P. PURGE EQUIP.
6. ALL TUBING AND FITTINGS ARE TO BE SHIPPED TO FIELD FOR MODIFICATION AND INSTALLATION.
7. ALL TUBE RUNS, FROM PENETRATION FLANGE TO VALVE ASSEMBLY, TO BE TESTED AND BE BUBBLE TIGHT AT 80 PSIG INTERNAL AIR PRESSURE.
8. SUPPORT FLEXIBLE SHAFT AT 4'-0" MAX. INTERVALS TO PREVENT CASING ROTATION. CARE MUST BE TAKEN TO PREVENT JAMMING THE INNER SHAFT. THE MIN. BEND RADIUS SHALL BE 9".
9. ALL GAS AND AIR LINES SUPPLIED BY OTHERS FOR 100 PSI SERVICE.
10. PENETRATION SHALL BE LOCATED SO THAT THEY WILL NOT INTERFERE WITH THE CRD REMOVAL AND EQUIPMENT PLATFORM.
11. THE PREFERRED METHOD OF ROUTING AND GROUPING THE POWER RANGE MONITOR CABLES WOULD BE TO GROUP THEM IN THE SAME MANNER AS THEY ARE ASSIGNED TO AVERAGE POWER RANGE MONITOR (APRM) CHANNELS AS INDICATED IN TABLE 1A AND TABLE 1B OF THE REFERENCE 14 DRAWING. CABLE BUNDLES WOULD THEN BE ROUTED SEPARATELY IN CONDUIT TO THE APPROPRIATE PRIMARY CONTAINMENT PENETRATION.
12. PENETRATION THROUGH PRIMARY CONTAINMENT AND PEDESTAL SHOULD BE ALIGNED TO PROVIDE THE STRAIGHEST POSSIBLE ROUTING FOR THE T.I.P. GUIDE TUBES.
13. T.I.P. EQUIPMENT SHOULD BE ARRANGED TO MINIMIZE BENDS AND OBTAIN THE BEST FUNCTIONAL LAYOUT.
14. MECHANICAL PROTECTION FOR T.I.P. GUIDE TUBING SHALL BE PROVIDED BY OTHERS TO PREVENT DAMAGE DURING MAINTENANCE AND OPERATION.

REFERENCE DRAWINGS:	MPL ITEMS
1. DRIVE MECHANISM	C51 J001
2. CHAMBER SHIELD	C51 J005
3. T.I.P. PURGE EQUIP.	C51 J009
4. PENETRATION FLANGE	C51 J003
5. INDEXING MECHANISM	C51 J002
6. 4-WAY CONNECTION	C51 J006
7. VALVE ASM (GUIDE TUBE)	C51 J004
8. SRM/IRM DRIVE UNIT	B11/B13 D192
9. T.I.P. (TRAVERSING DETECTOR)	C51 N003
10. DUMMY T.I.P. (TRAVERSING DETECTOR)	C51 J010
11. GUIDE TUBES	C51 J008
12. POWER RANGE NEUTRON MONITOR INST.	C51 K605
13. DISPOSAL CASK	C51 E001
14. I.E.D. NEUTRON MONITORING SYSTEM	C51 1010
15. 2-WAY CONNECTION	C51 J007
16. POWER RANGE DETECTOR	B11/B13 D193
17. P.R.M. INSTALL. HARDWARE	B11/B13 D194

C51-1

OCT 10 1972

DISTRIBUTION

REGULATORY DOCKET FILE COPY

DUANE ARNOLD

MPL # C51-2010

FOR INFORMATION ONLY

BECHTEL CORP. SAN FRANCISCO

7884-APED-C51-1-2

NE-24006

NE-30463

NE-25060

NE 38838

NE-28170

APED SAN JOSE

731E675