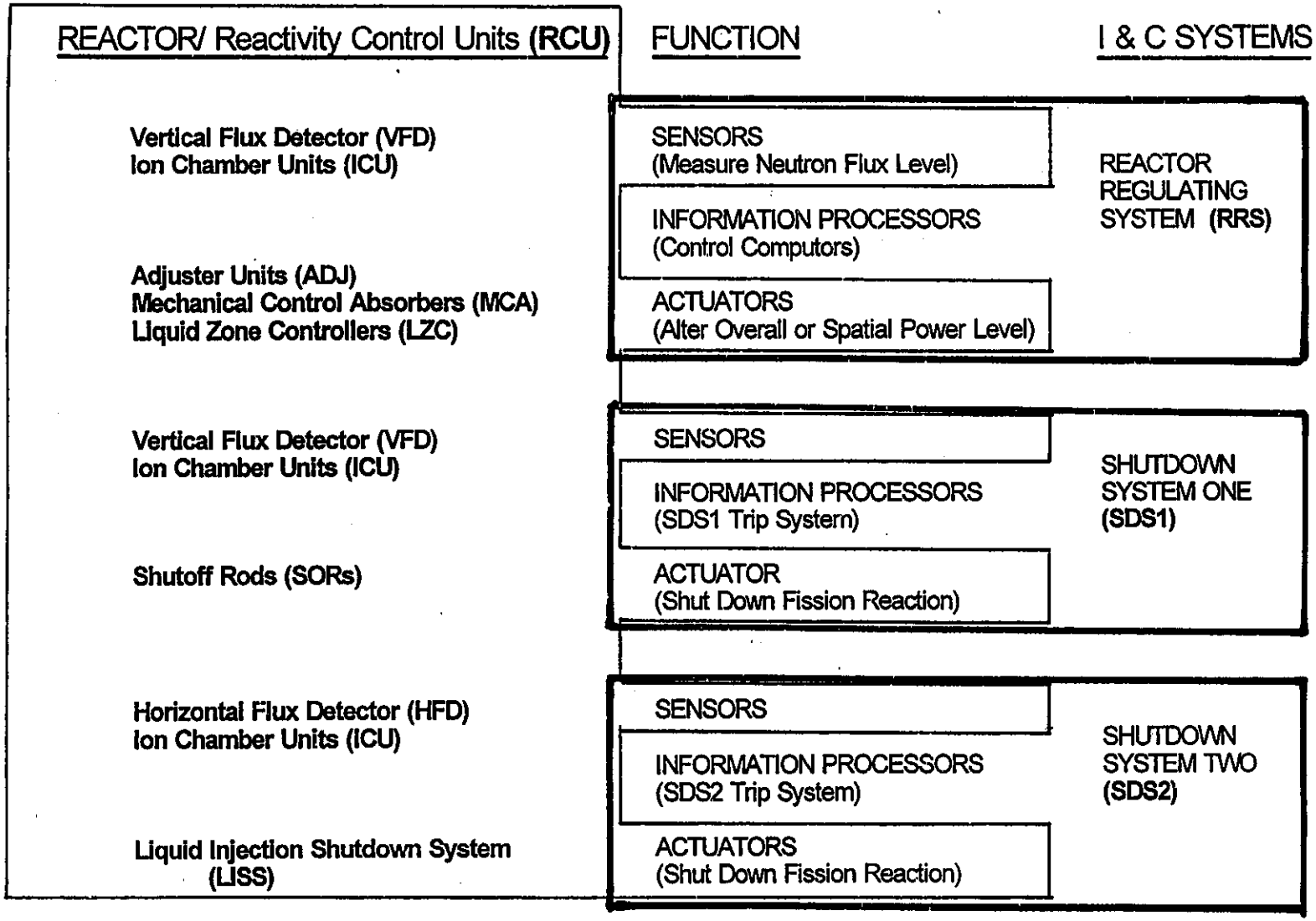
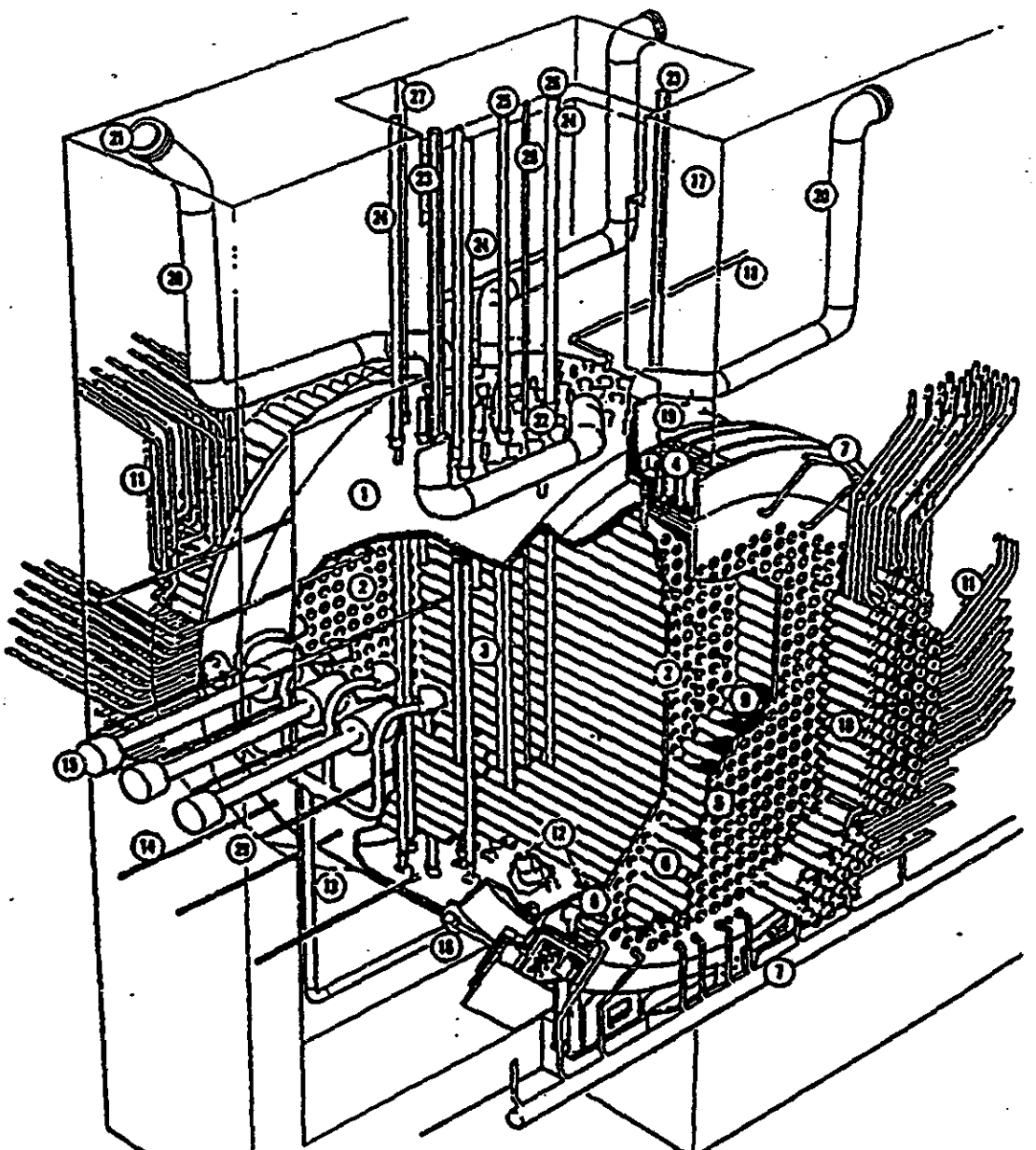


Figure 6-1 Relationships of RCU's to Shutdown and Regulating Systems



1. CALANDRIA
2. CALANDRIA - TUBESHEET
3. CALANDRIA TUBES
4. EMBEDMENT RING
5. FUELLING TUBESHEET
6. END SHIELD LATTICE TUBES
7. END SHIELD COOLING PIPES
8. INLET-OUTLET STRAINER
9. STEEL BALL SHIELDING
10. END FITTINGS
11. FEEDER PIPES
12. MODERATOR OUTLET
13. MODERATOR INLET
14. HORIZONTAL FLUX DETECTOR UNIT
15. ION CHAMBER
16. EARTHQUAKE RESTRAINT
17. CALANDRIA VAULT WALL
18. MODERATOR EXPANSION TO HEAD TANK
19. CURTAIN SHIELDING SLABS
20. PRESSURE RELIEF PIPES
21. RUPTURE DISC
22. REACTIVITY CONTROL UNIT NOZZLES
23. VIEWING PORT
24. SHUTOFF UNIT
25. ADJUSTER UNIT
26. MECHANICAL CONTROL ABSORBER UNIT
27. LIQUID ZONE CONTROL UNIT
28. VERTICAL FLUX DETECTOR UNIT
29. LIQUID INJECTION SHUTDOWN NOZZLE

Figure 6-2 Reactor Assembly

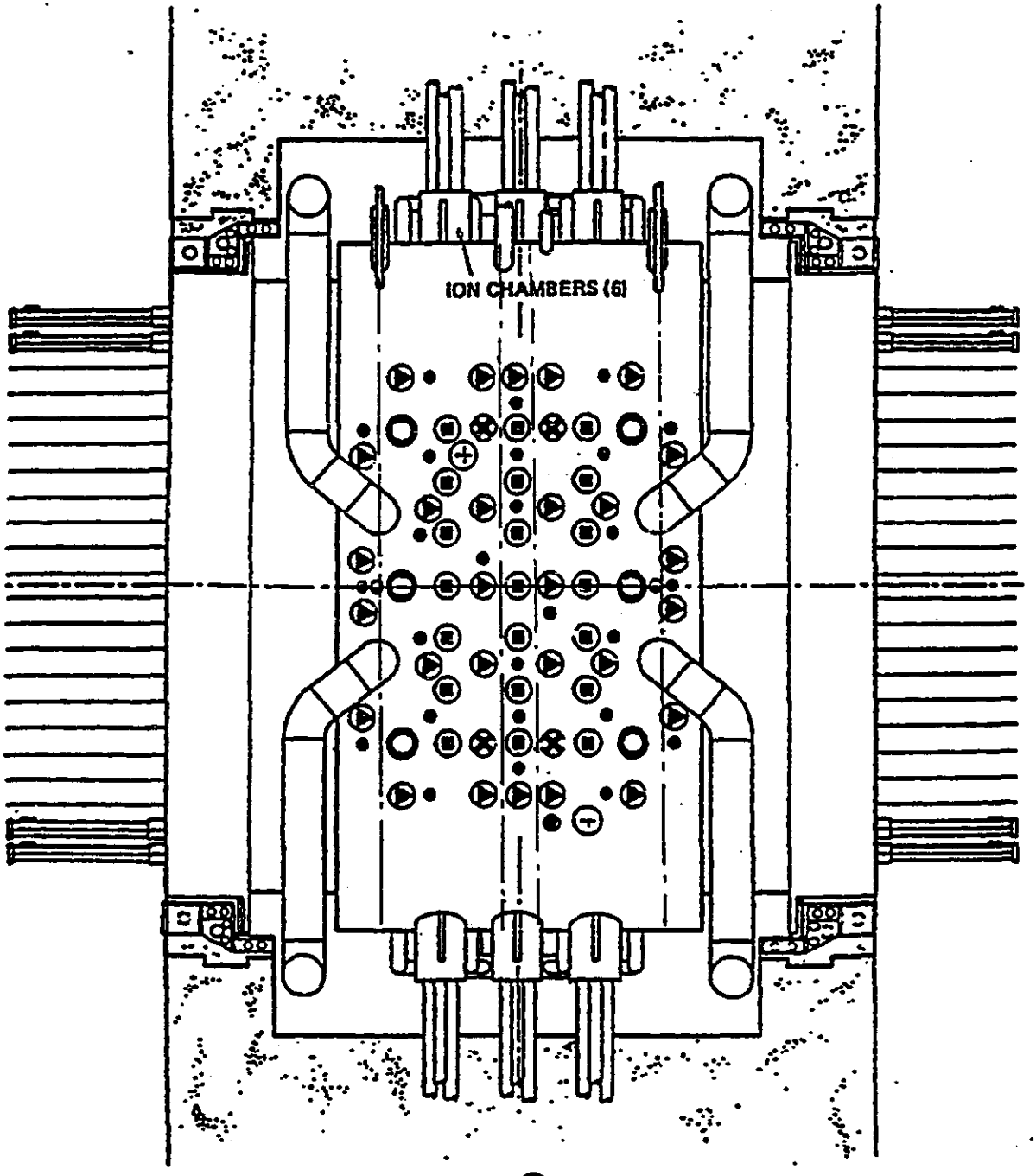


Figure 6-3 Reactor General Arrangement - Plan

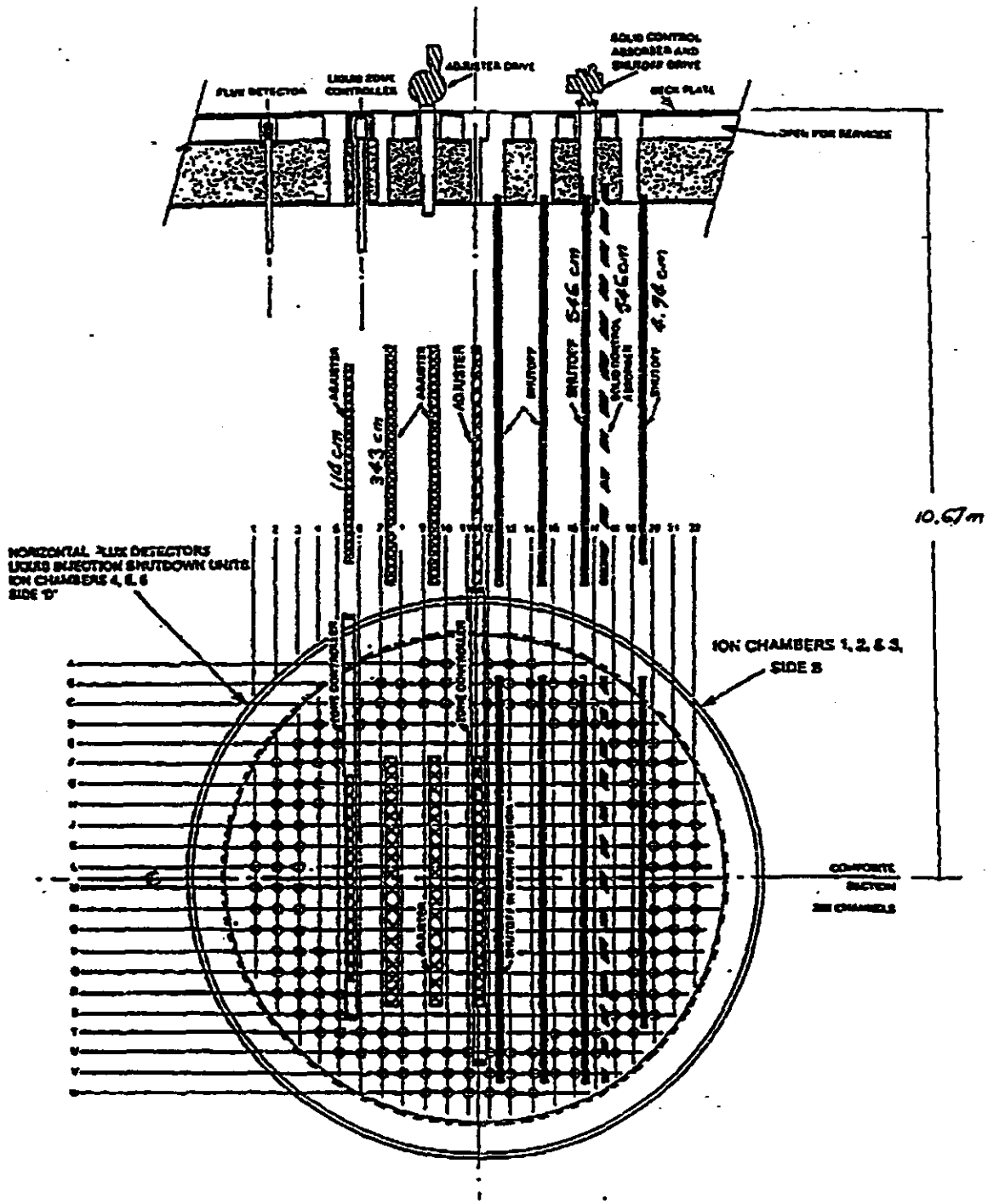


Figure 6-4 Reactivity Control Unit - Locations View on C-Face

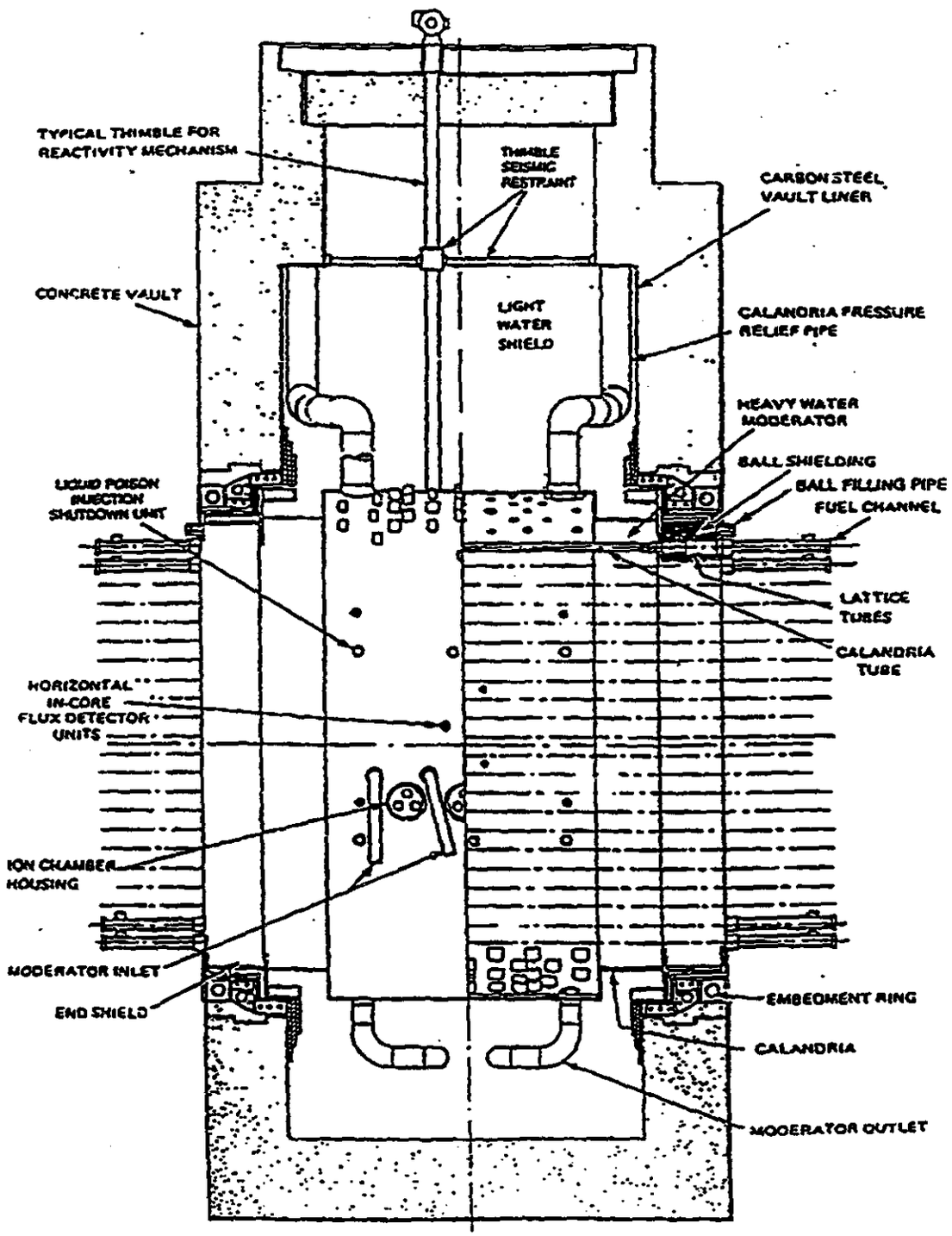


Figure 6-5 Reactor General Arrangement (Section)

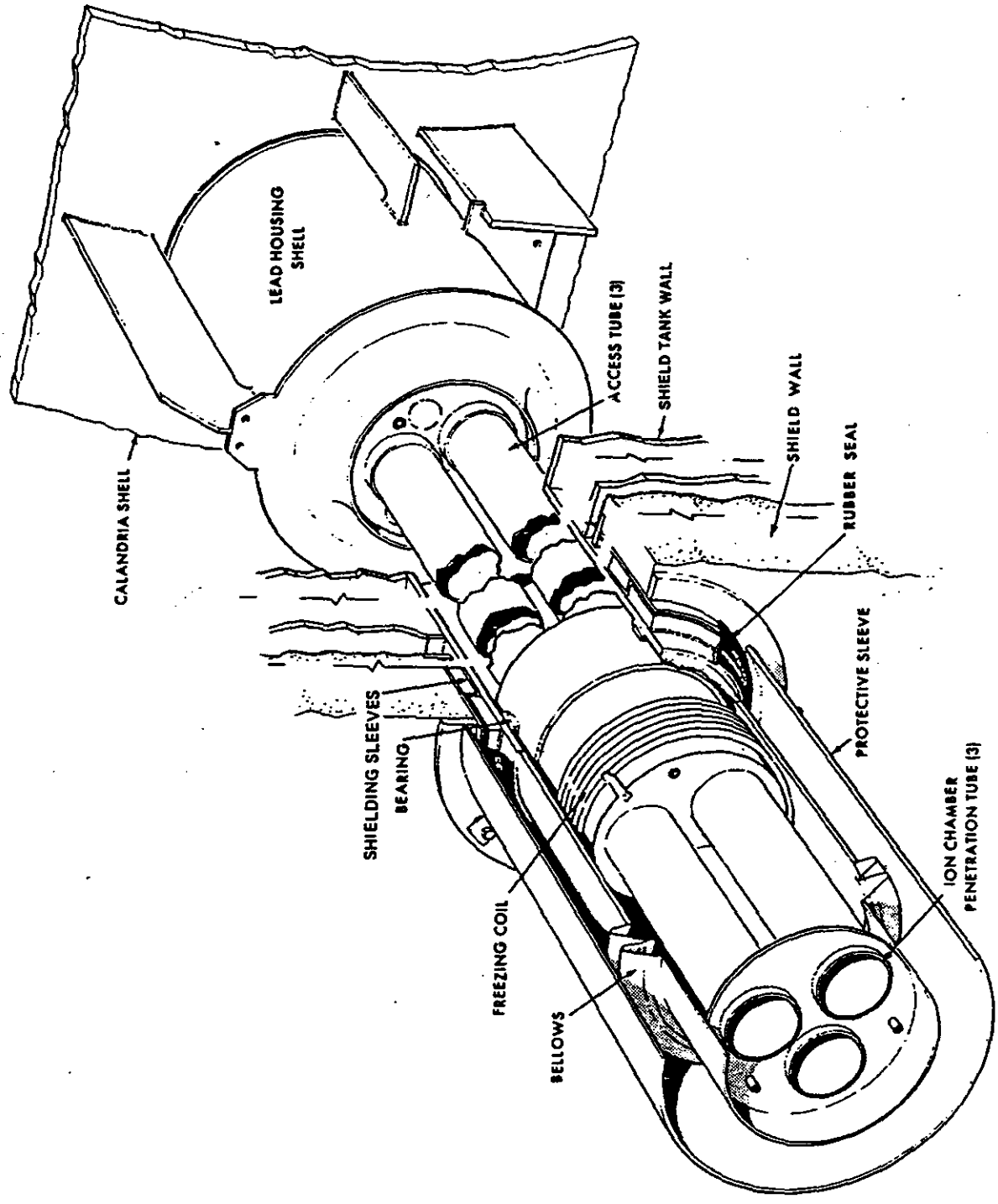


Figure 6-6 Typical Ion Chamber Arrangement

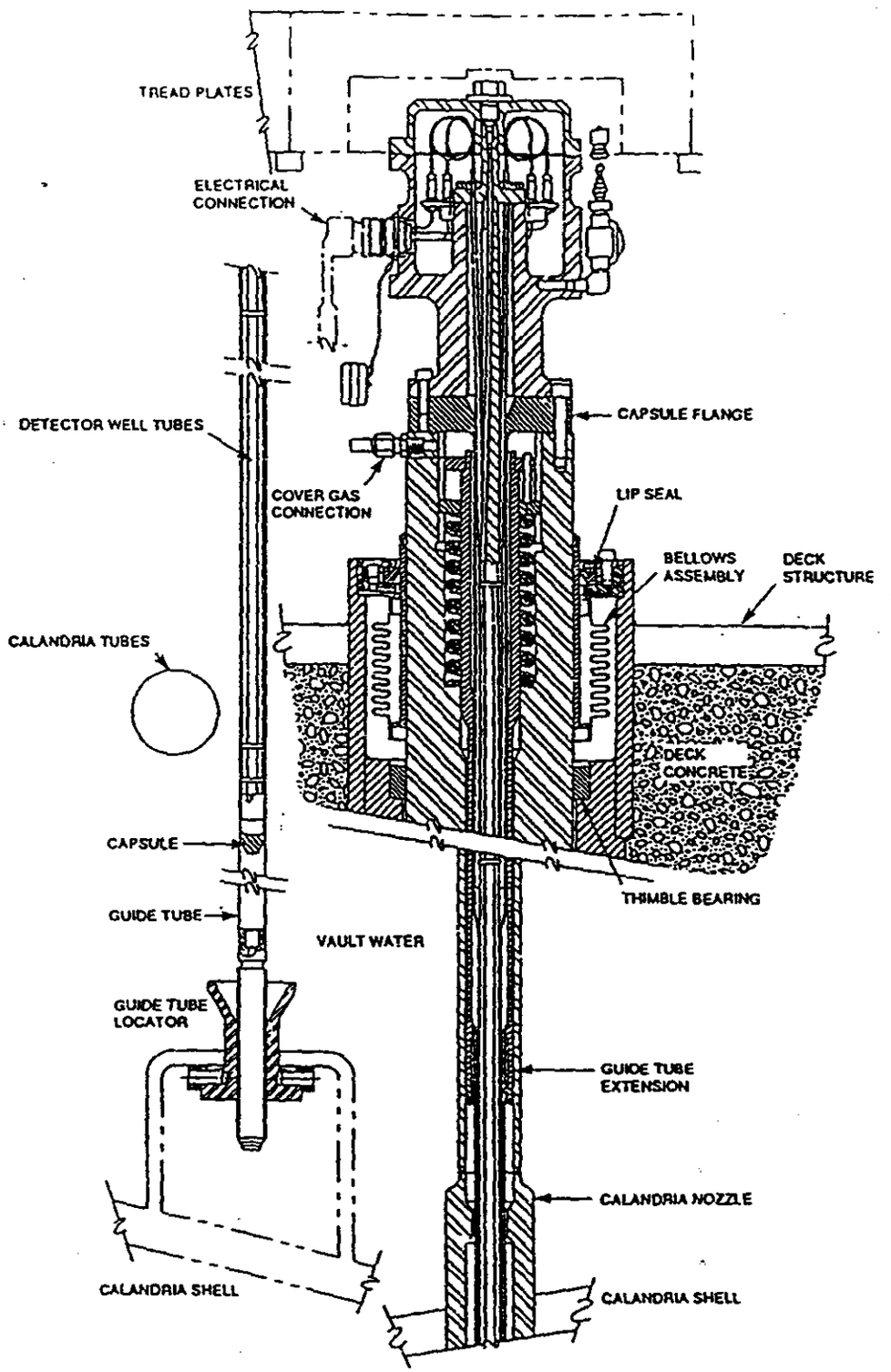


Figure 6-7 CANDU 6 Vertical Flux Detector Unit

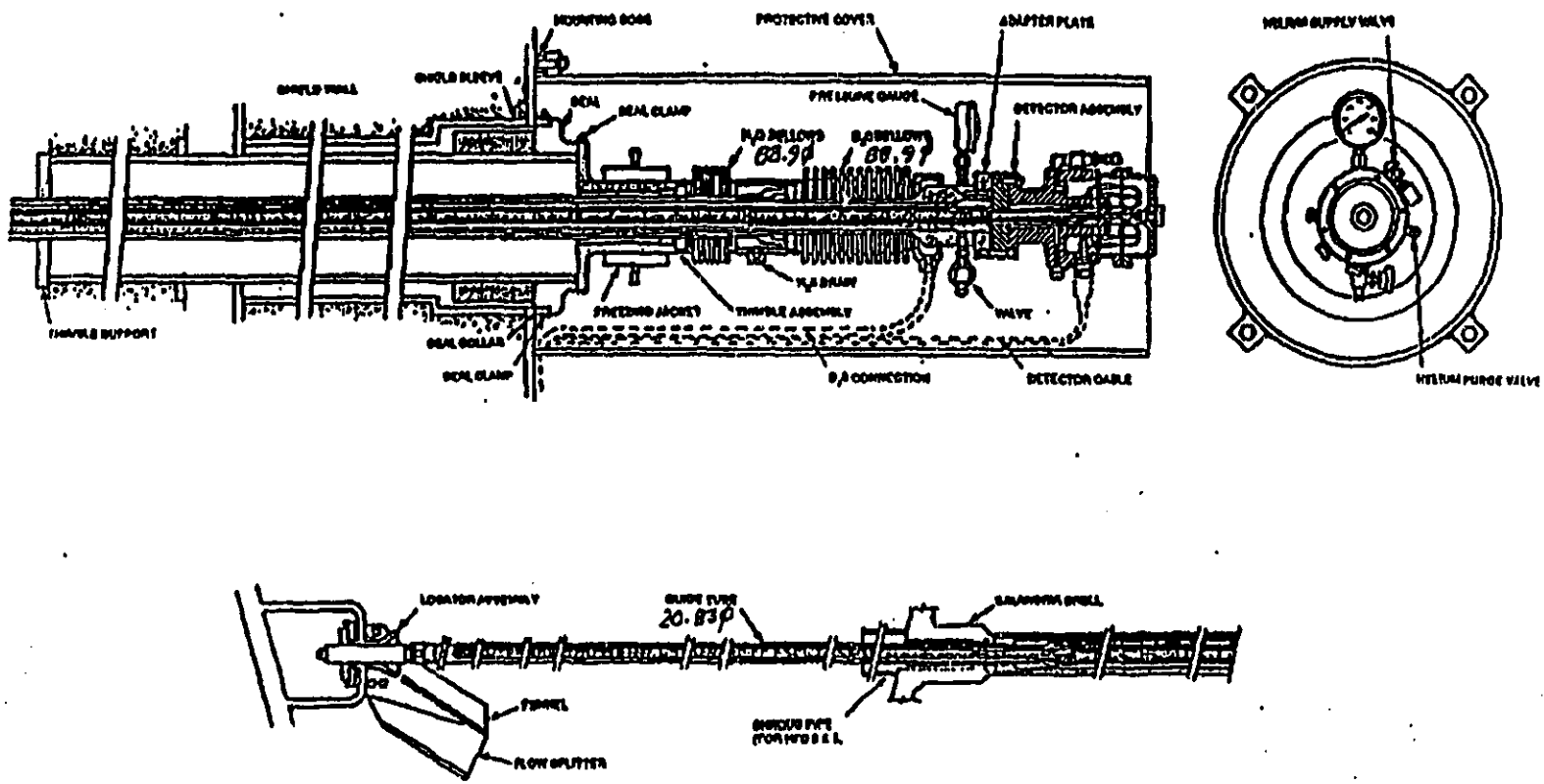
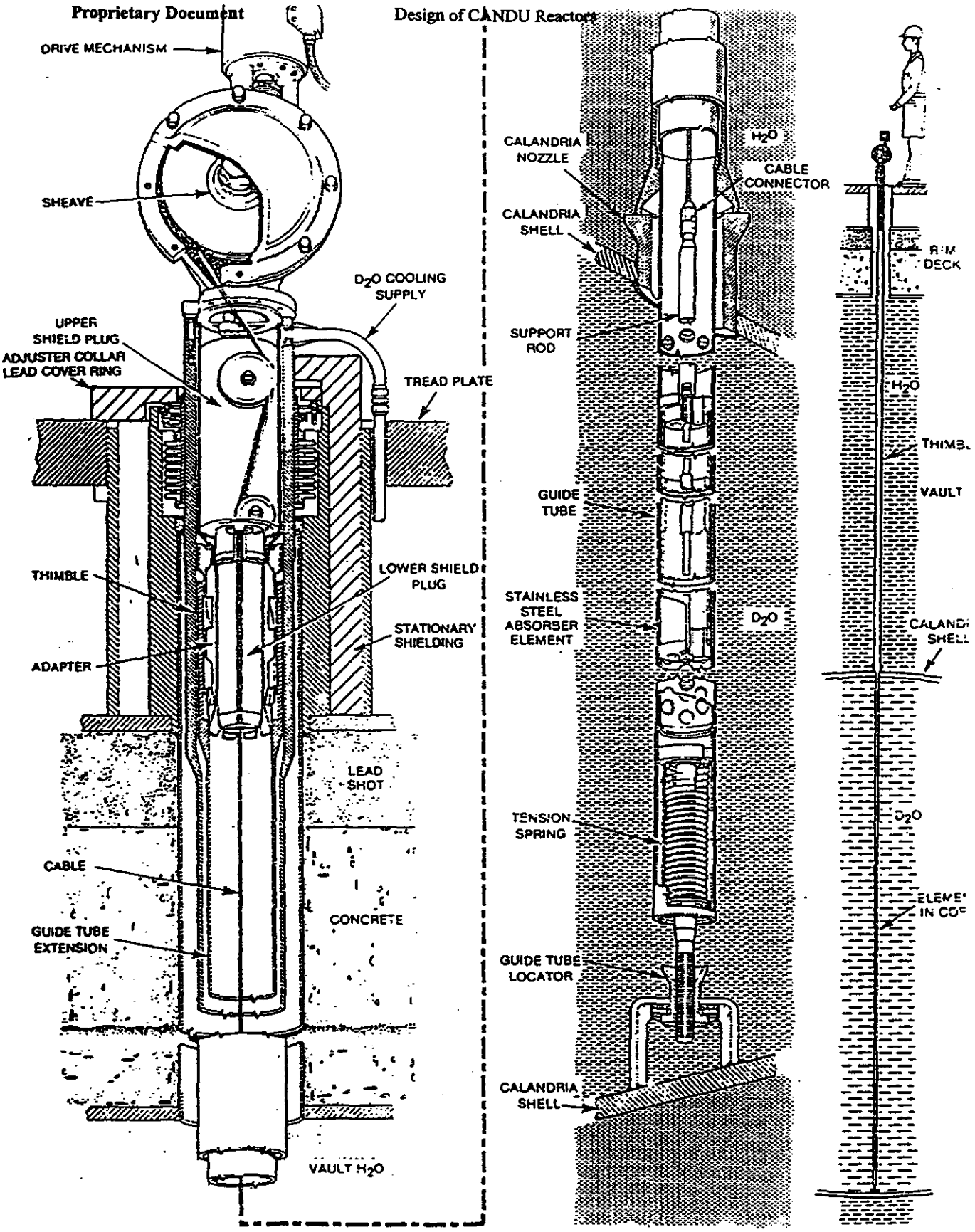


Figure 6-8 Horizontal Flux Detector Unit



Desprocf.wpd

Figure 6-9 Adjuster Unit

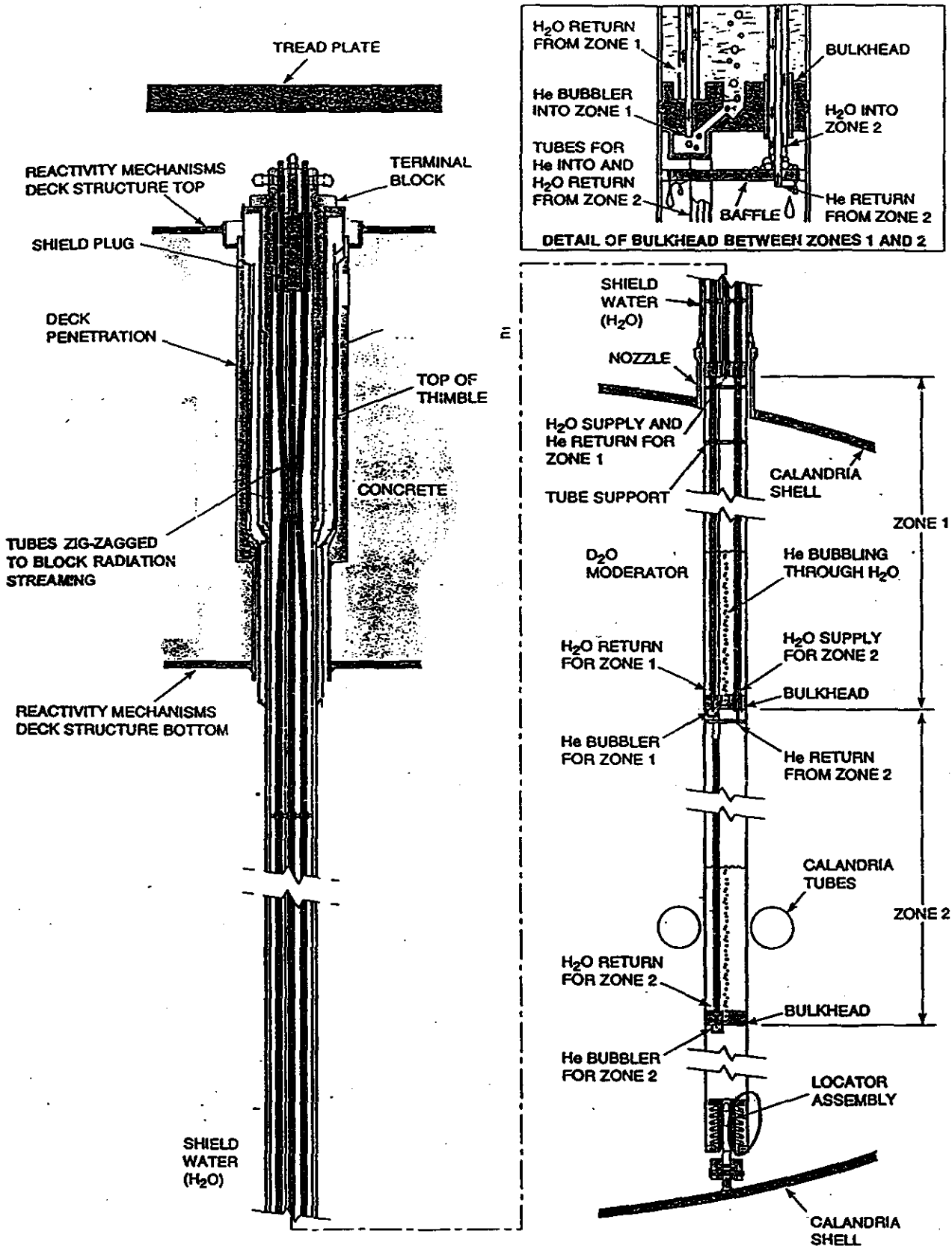
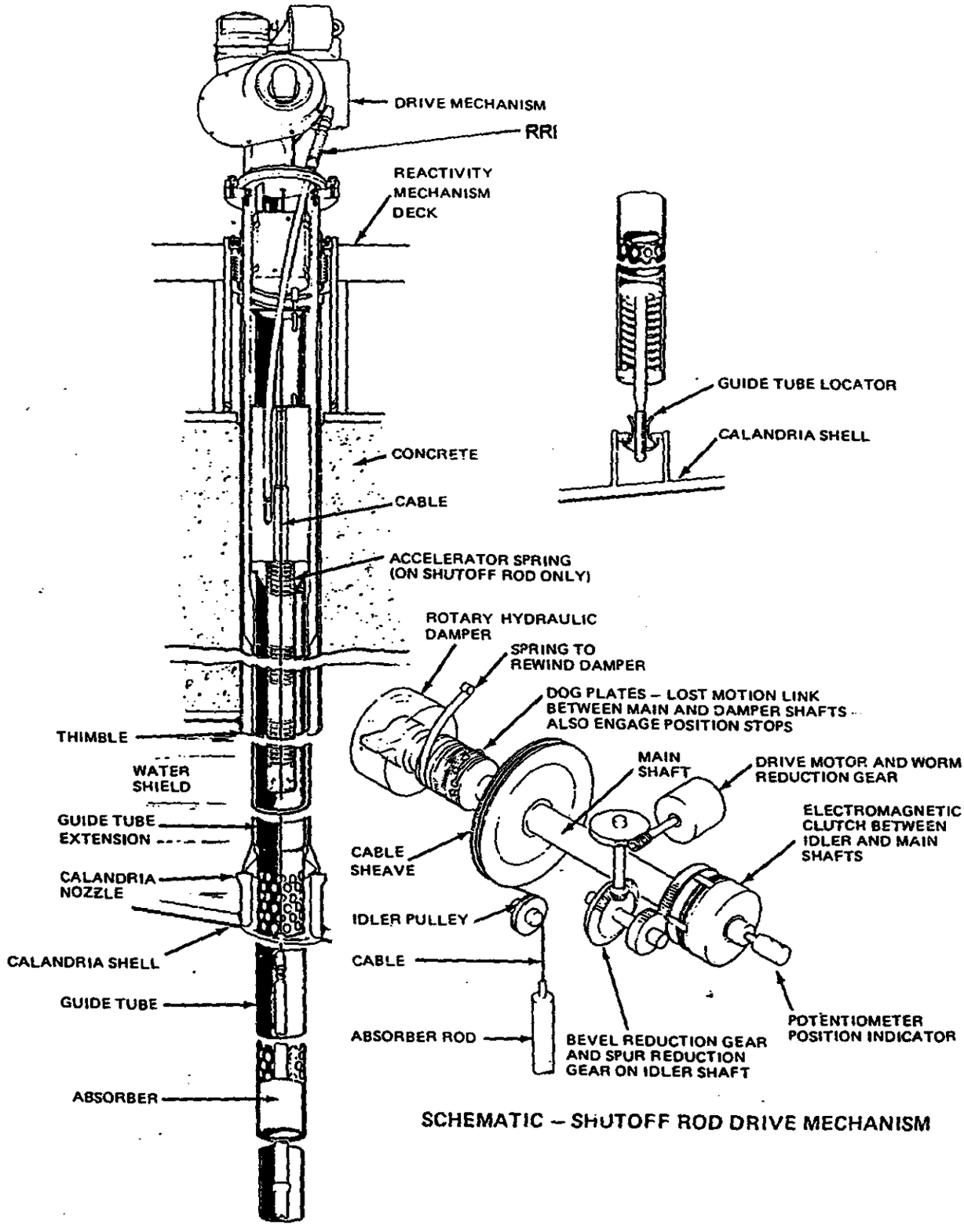


Figure 6-10 Liquid Zone Control Unit (2 Zone)



Desprocf.wpd

Figure 6-11 Shutoff and Solid Control Absorber Unit

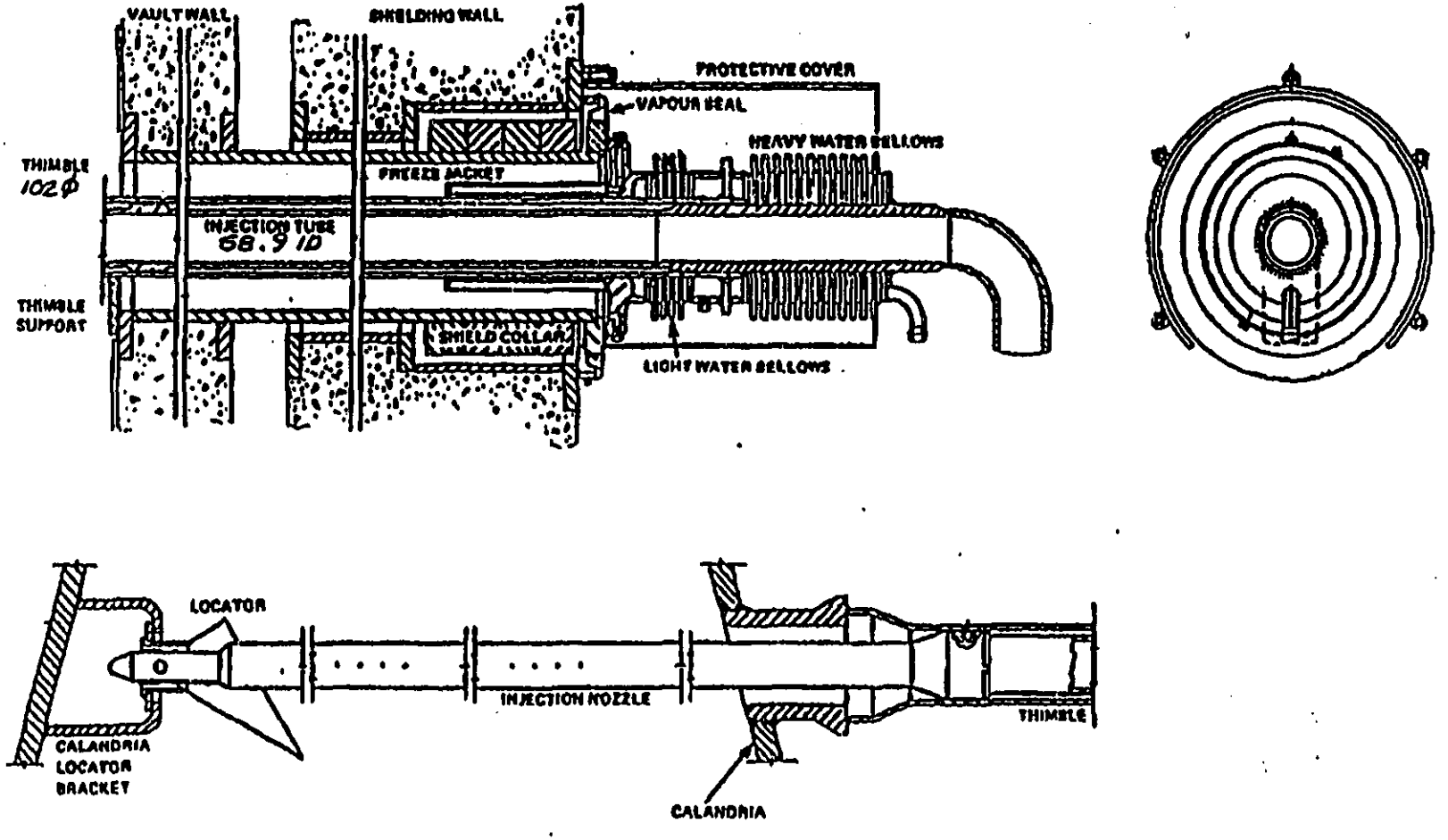
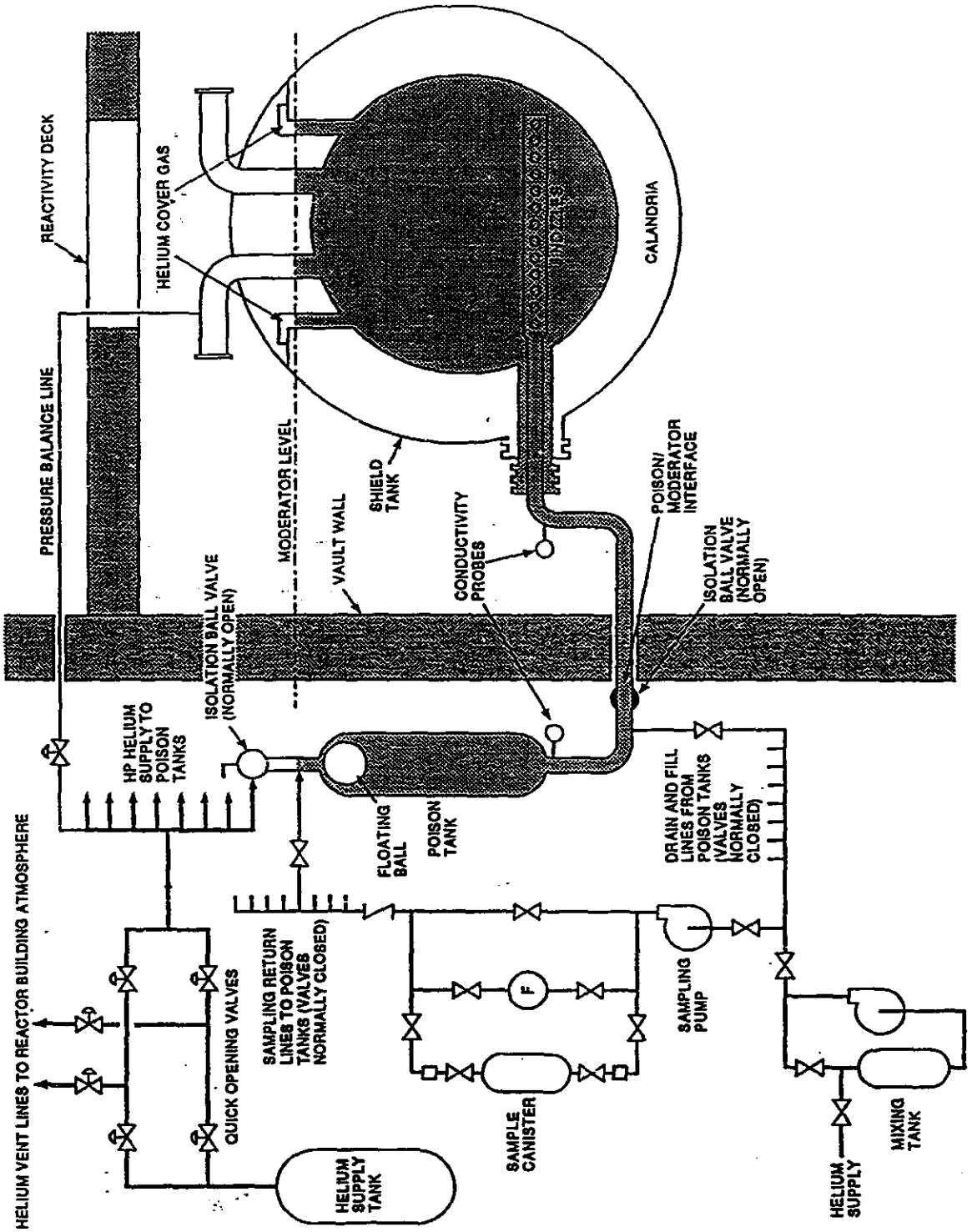


Figure 6-12 Liquid Injection Shutdown Unit



Desprocf.wpd

Figure 6-13 Shutdown System No. 2 Liquid Poison Injection System

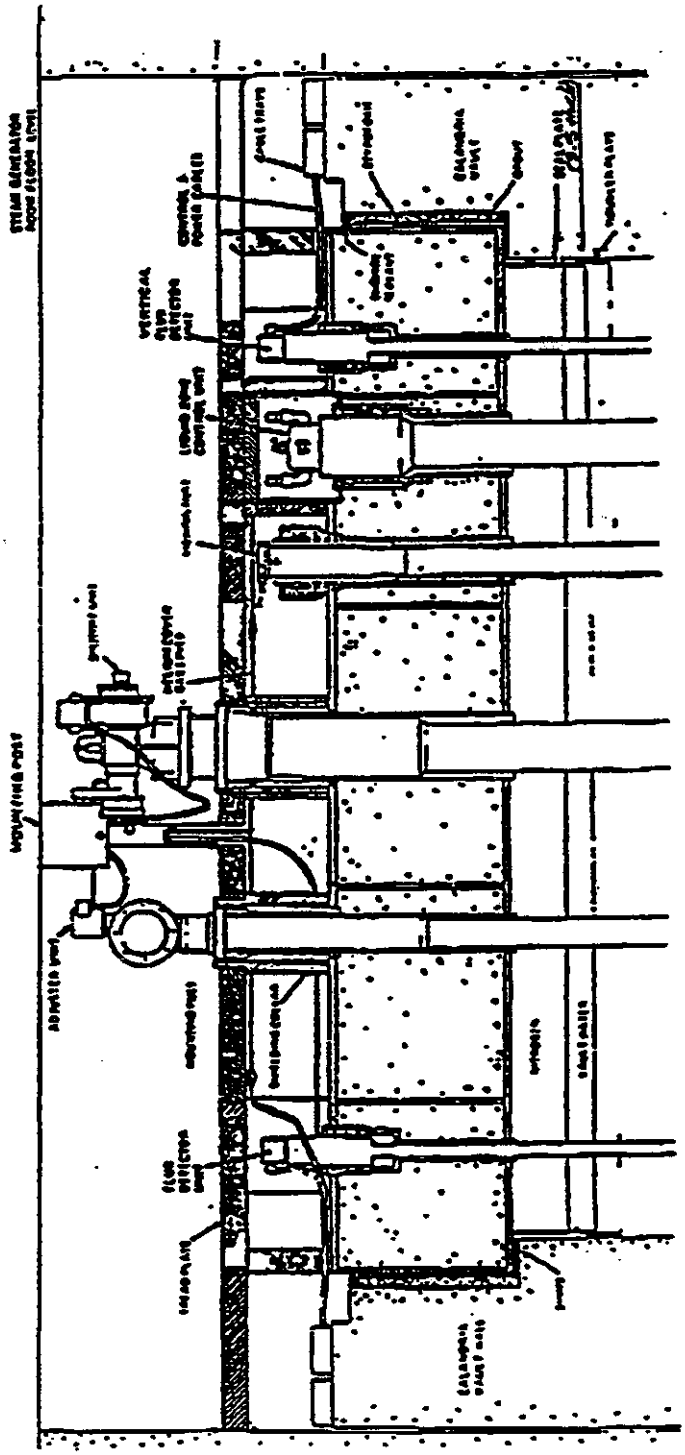


Figure 6-14 Reactivity Mechanism Deck

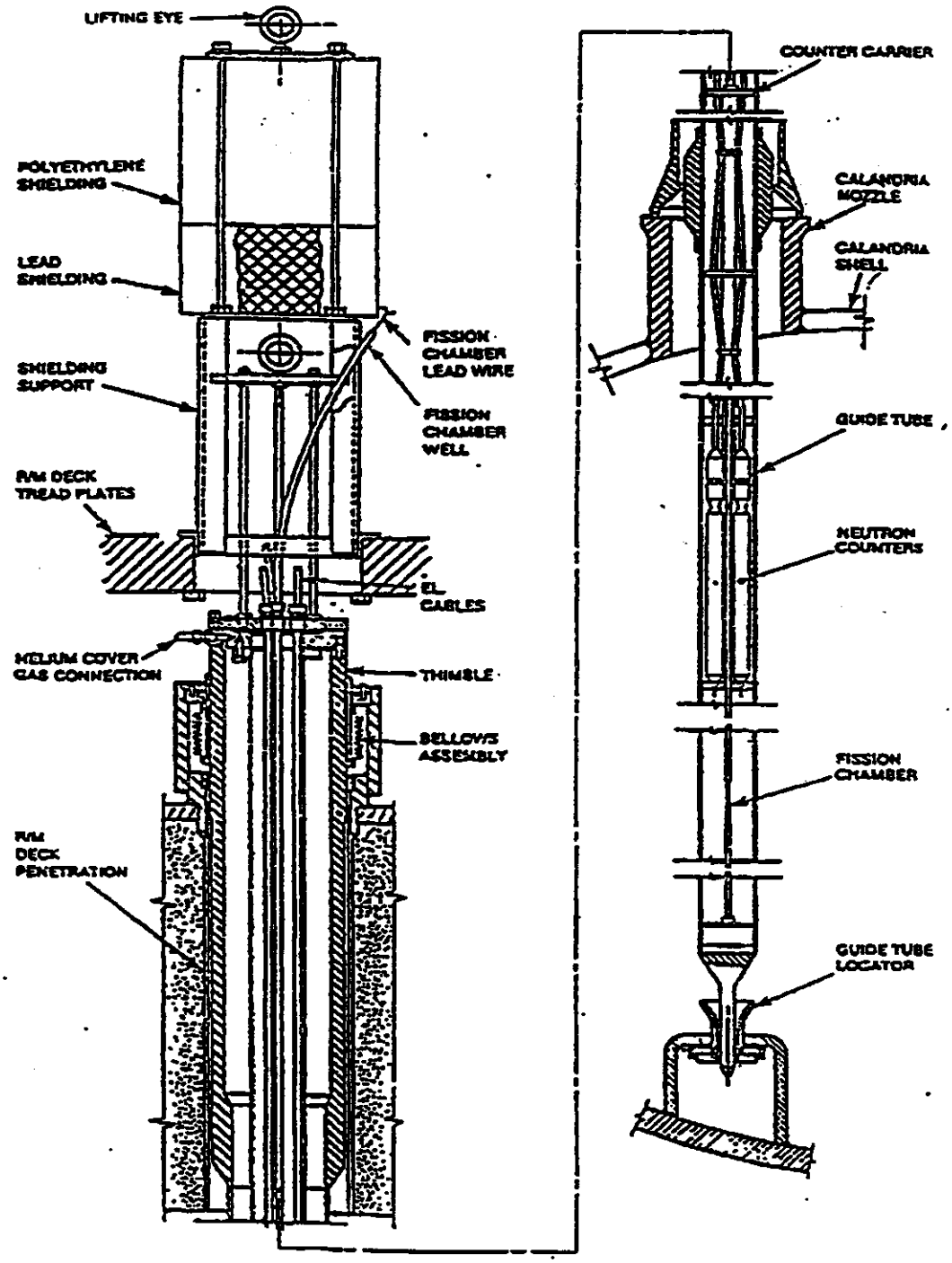
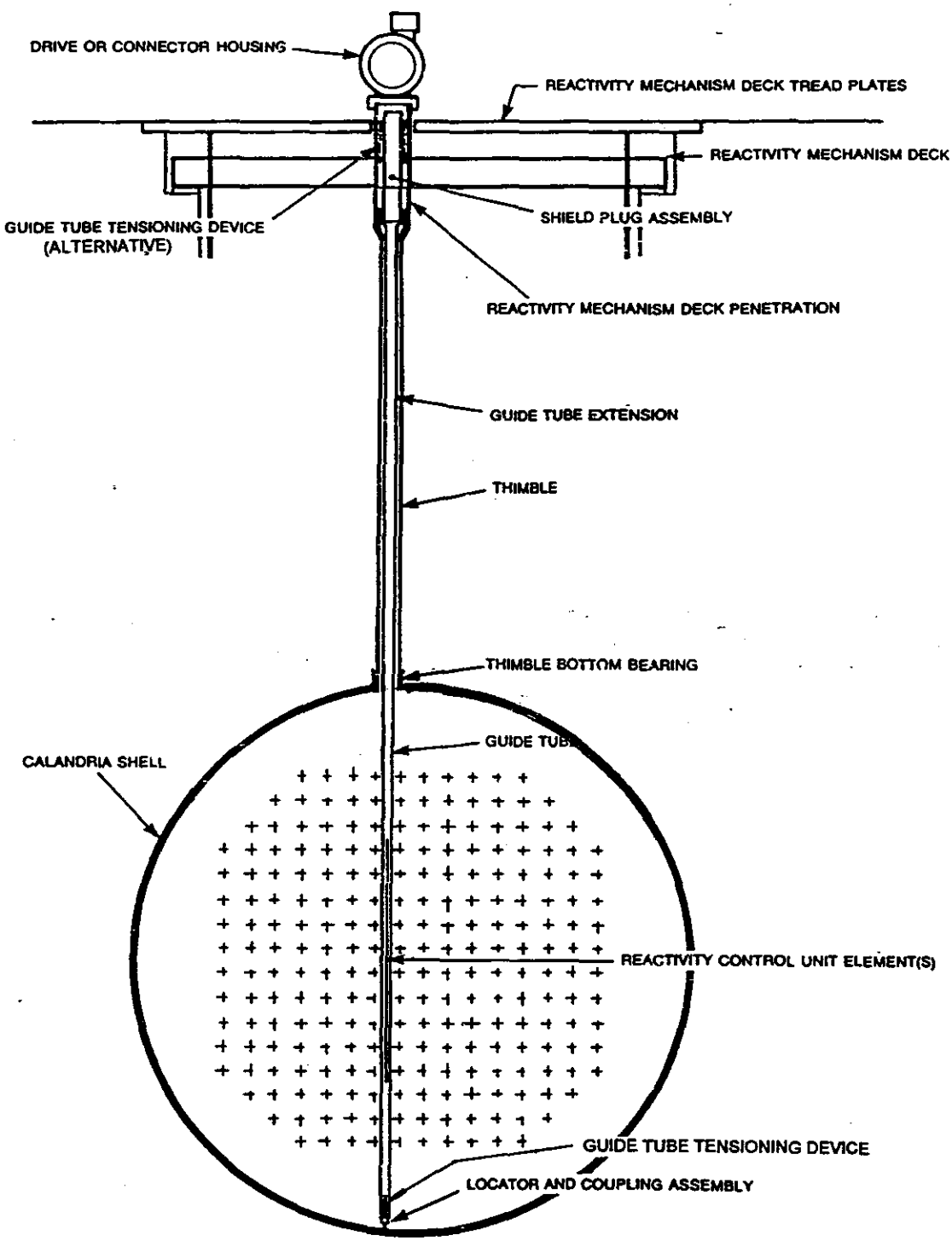
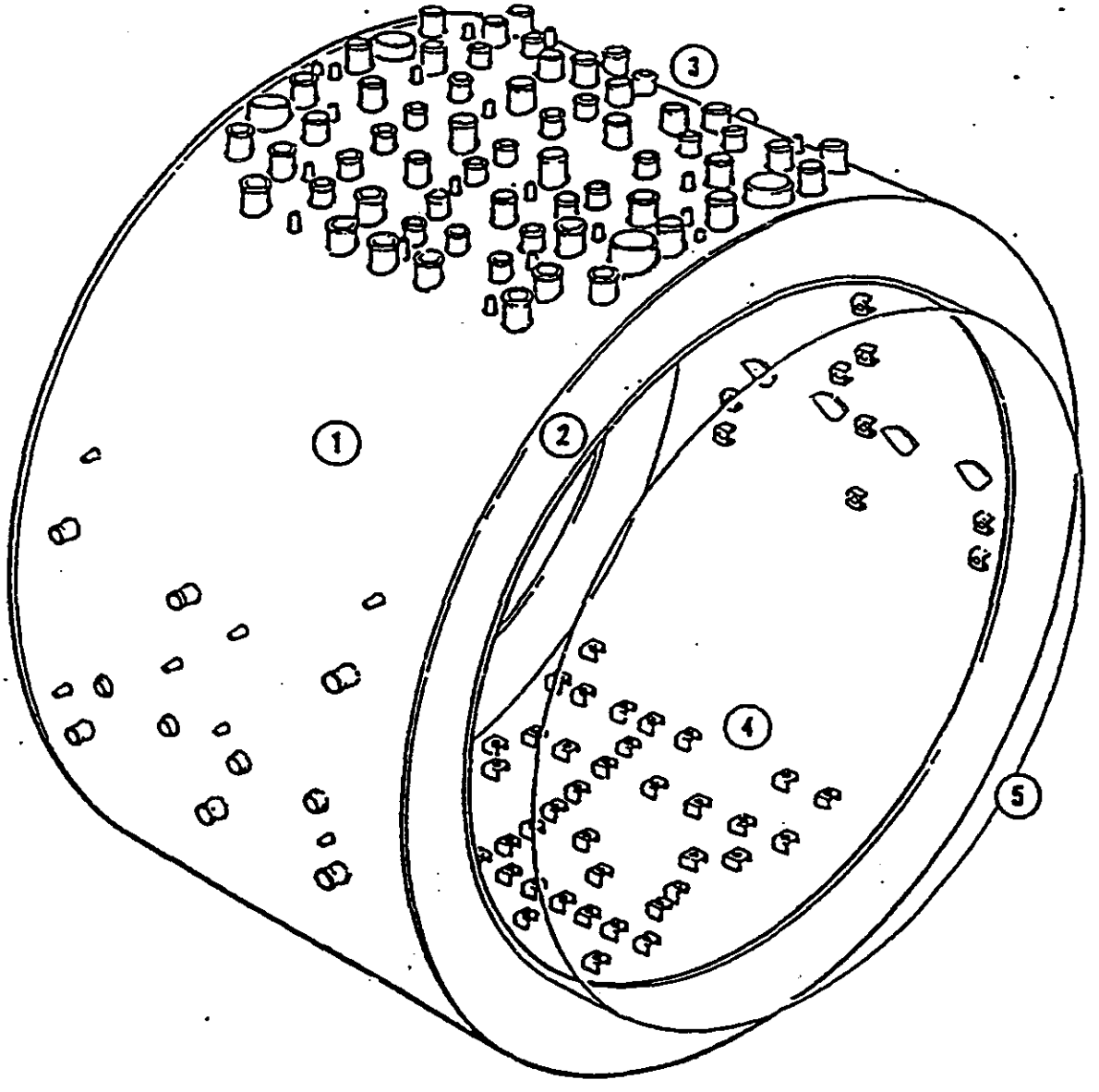


Figure 6-15 Start-up General Arrangement



Desprocf.wpd

Figure 6-16 General Configuration of Vertical Reactivity Control Units



1 MAIN SHELL
2 ANNULAR PLATE
3 NOZZLE CONNECTIONS
4 REACTIVITY CONTROL UNIT LOCATORS
5 SUB-SHELL

Desprocf.wpd

Figure 6-17 RCU Nozzles on Calandria Shell

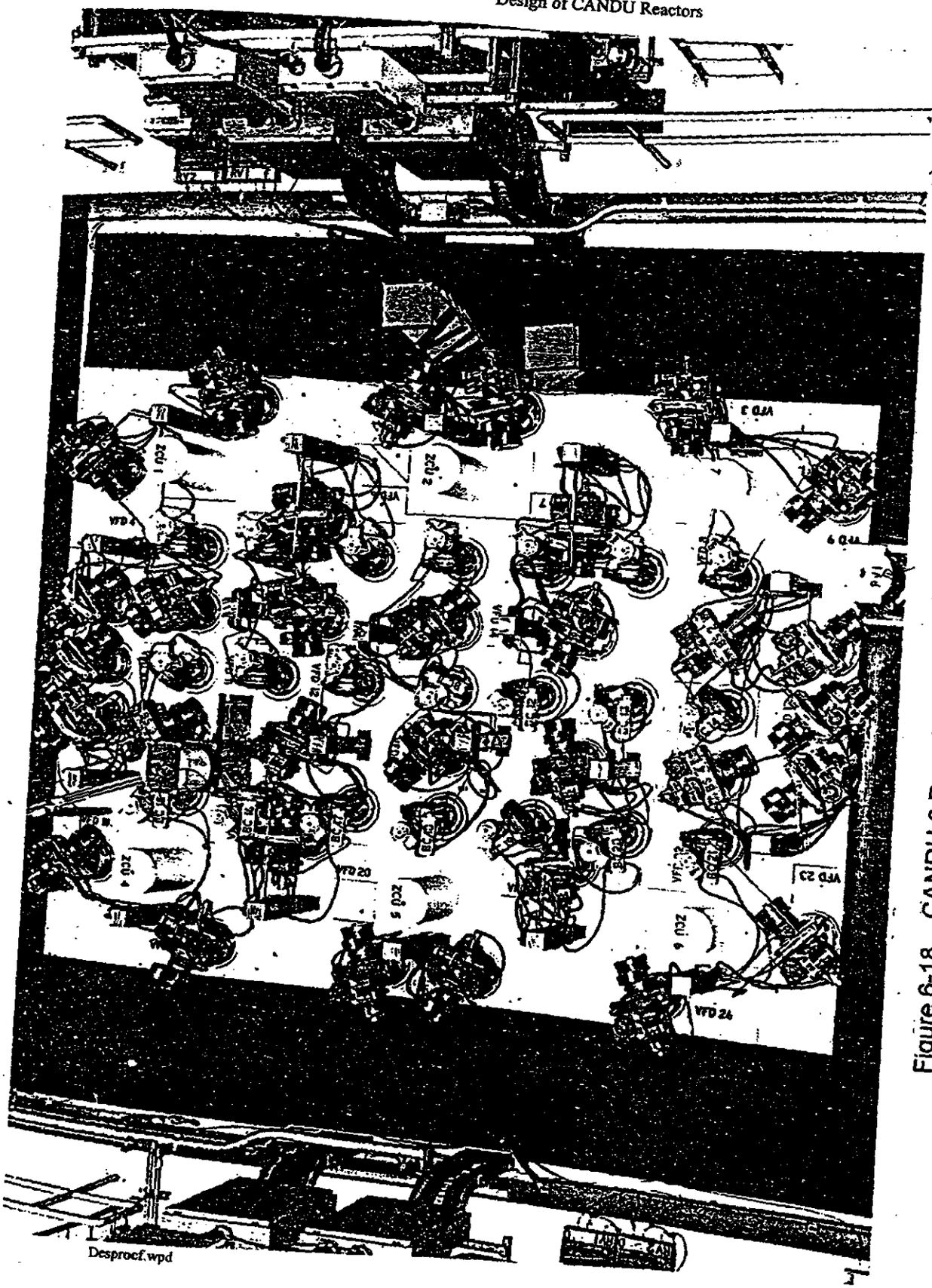
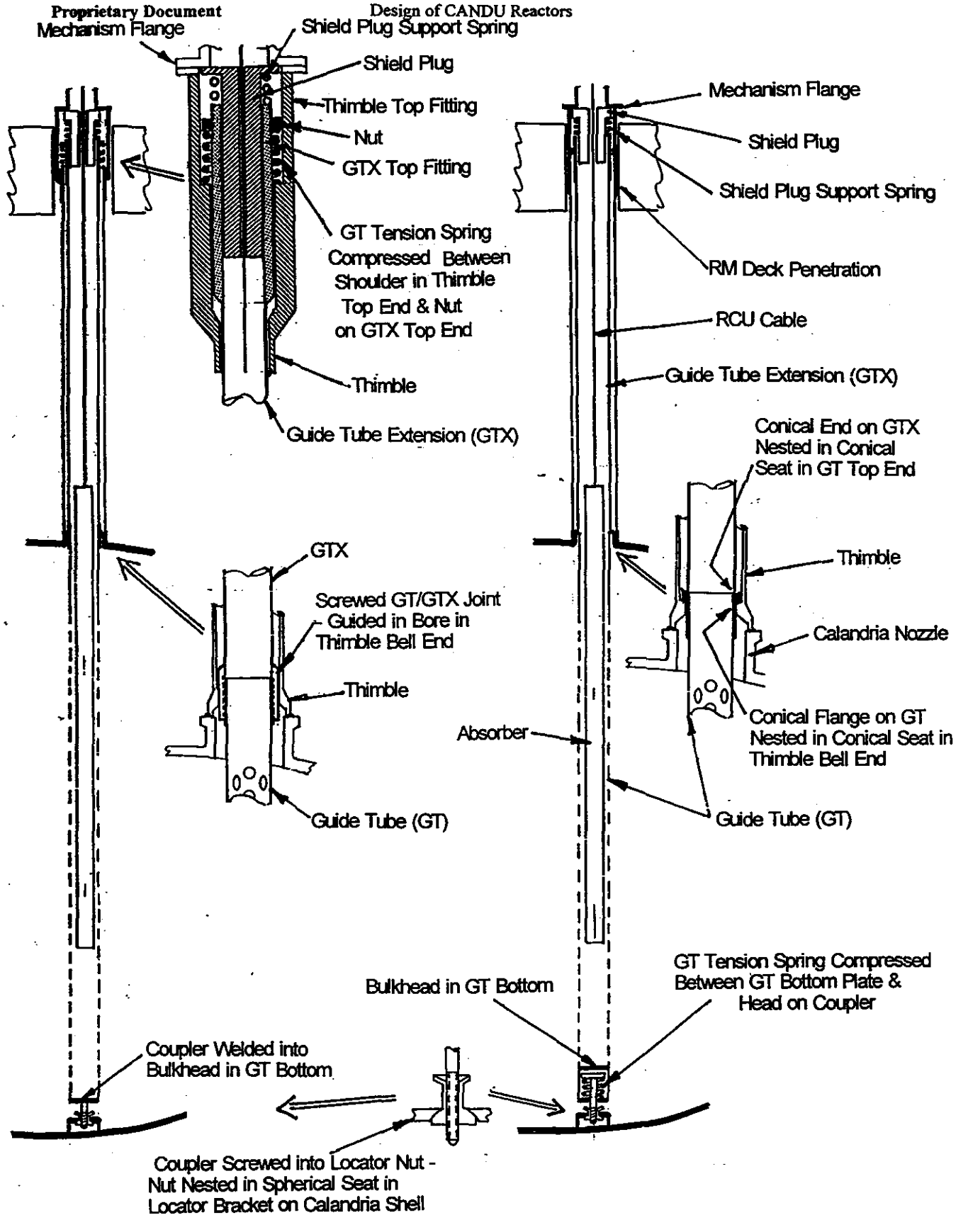


Figure 6-18 CANDU 6 Reactivity Mechanisms Deck Area



Desprocf.wpd

Figure 6-19 RCU Guide Tube Tensioning - New & Present Concepts

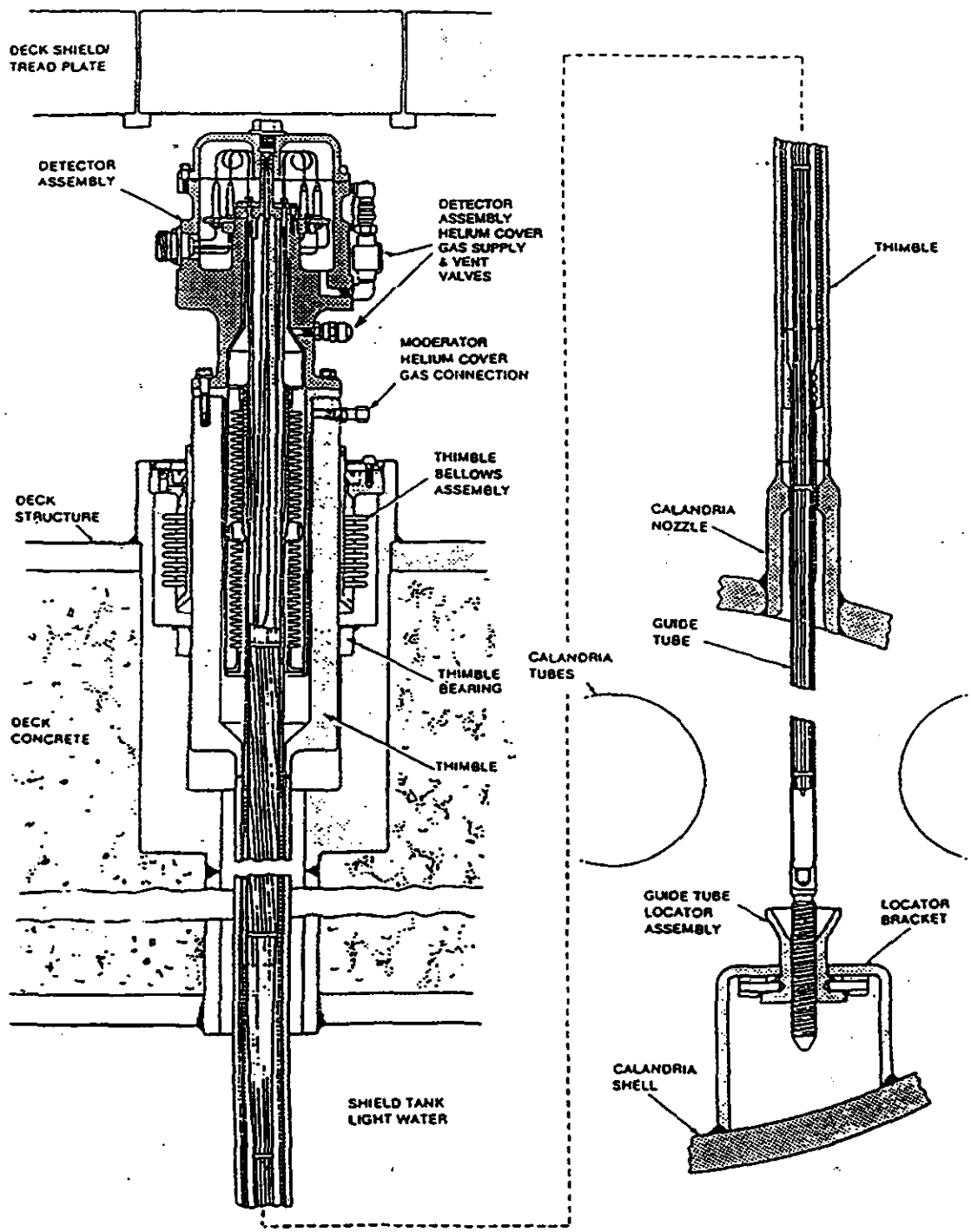


Figure 6-20 Bruce Vertical Flux Detector Unit General Arrangement

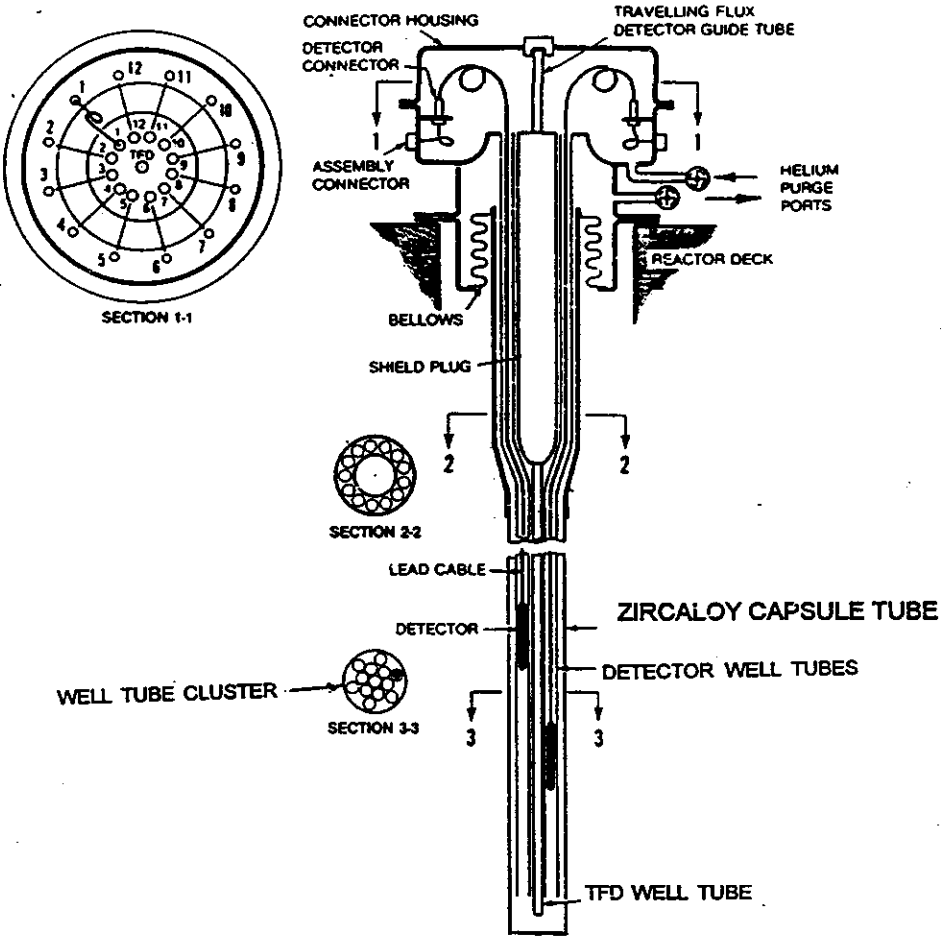
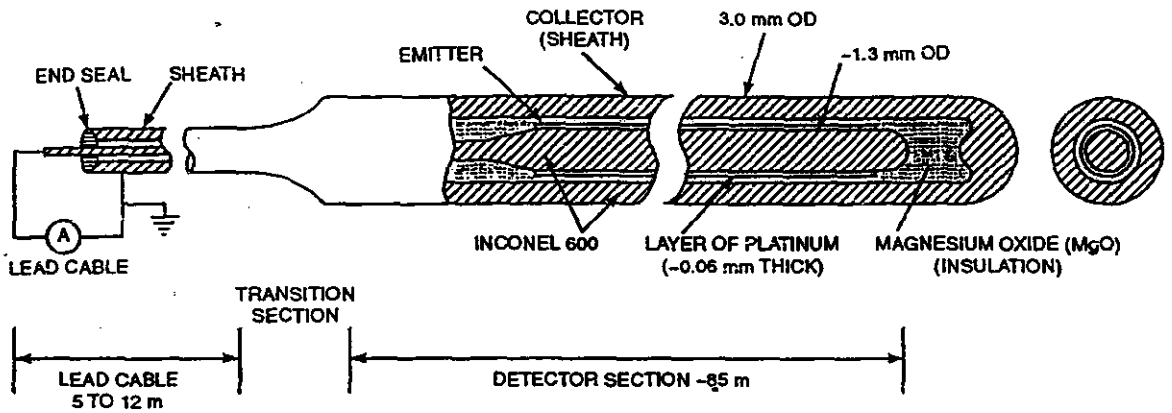


Figure 6-21 Design Concept of SIR Detector Assembly



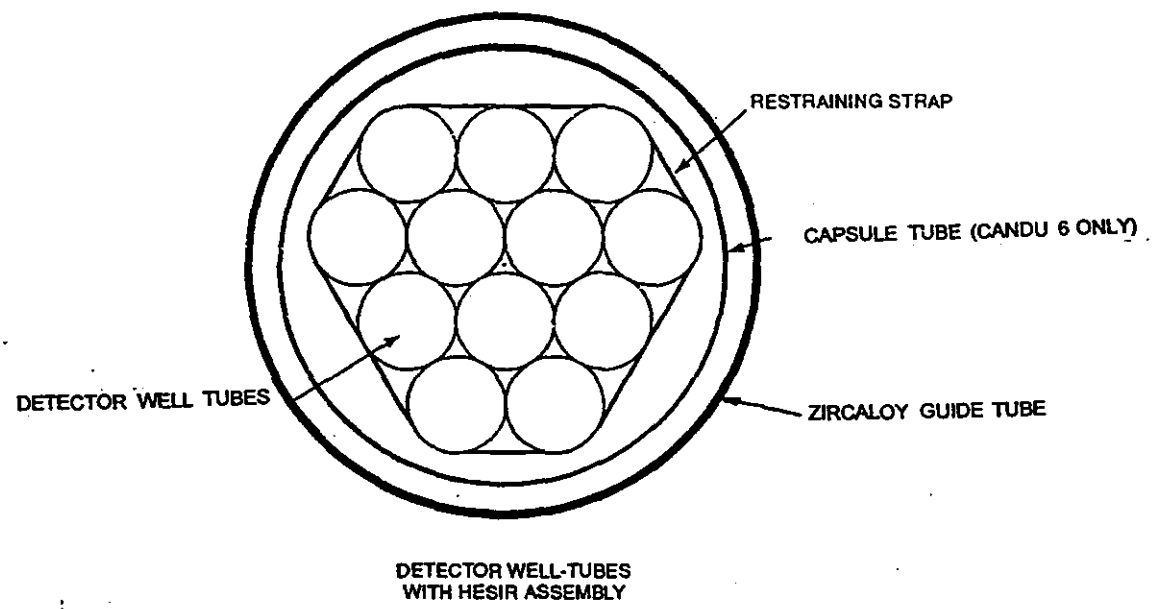


Figure 6-22 Pt-Clad SIR In-Core Flux Detector and Assembly Well-Tubes

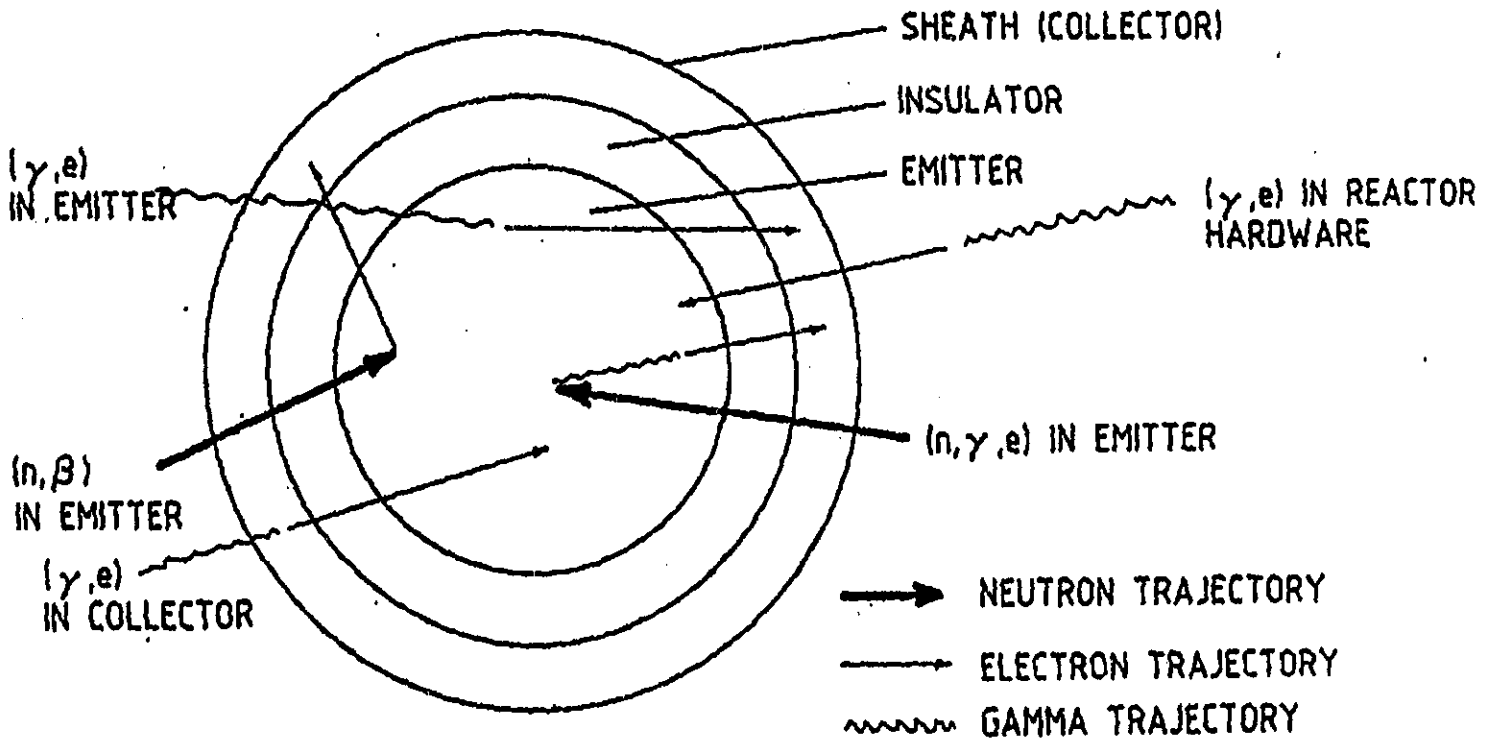


Figure 6-23 Atomic Interactions in an In-Core Flux Detector

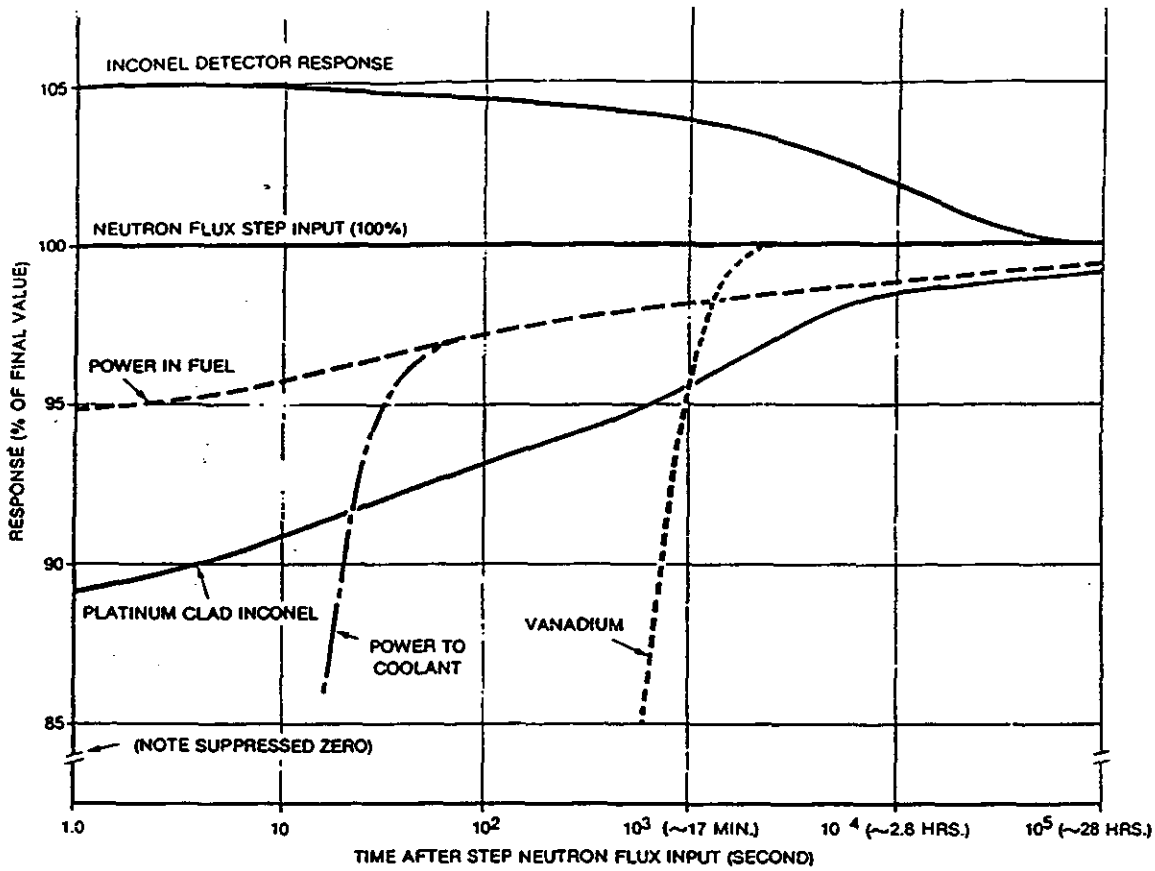


Figure 6-24 Dynamic Response of SIR Detectors

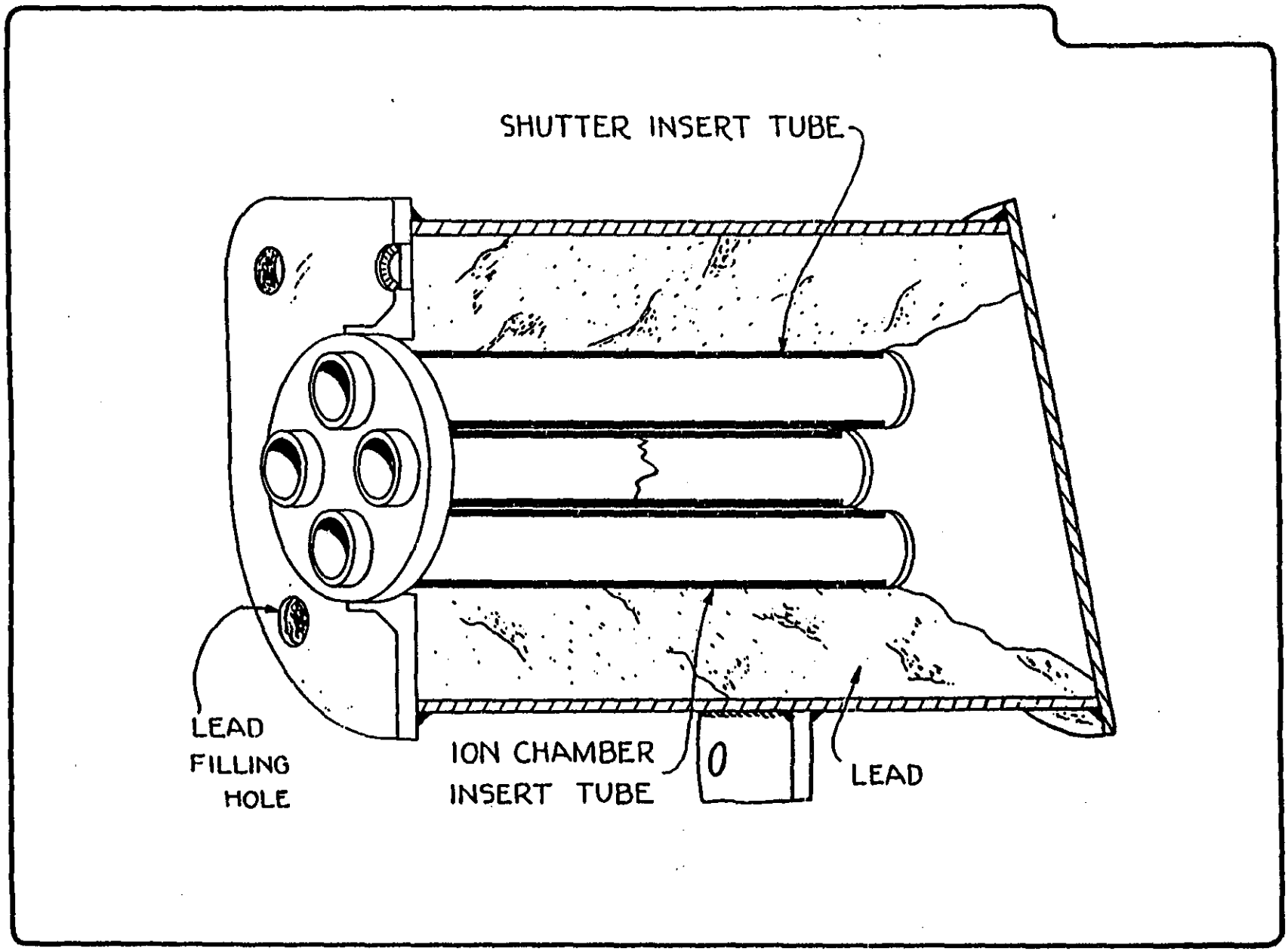


Figure 6-25 Lead Housing

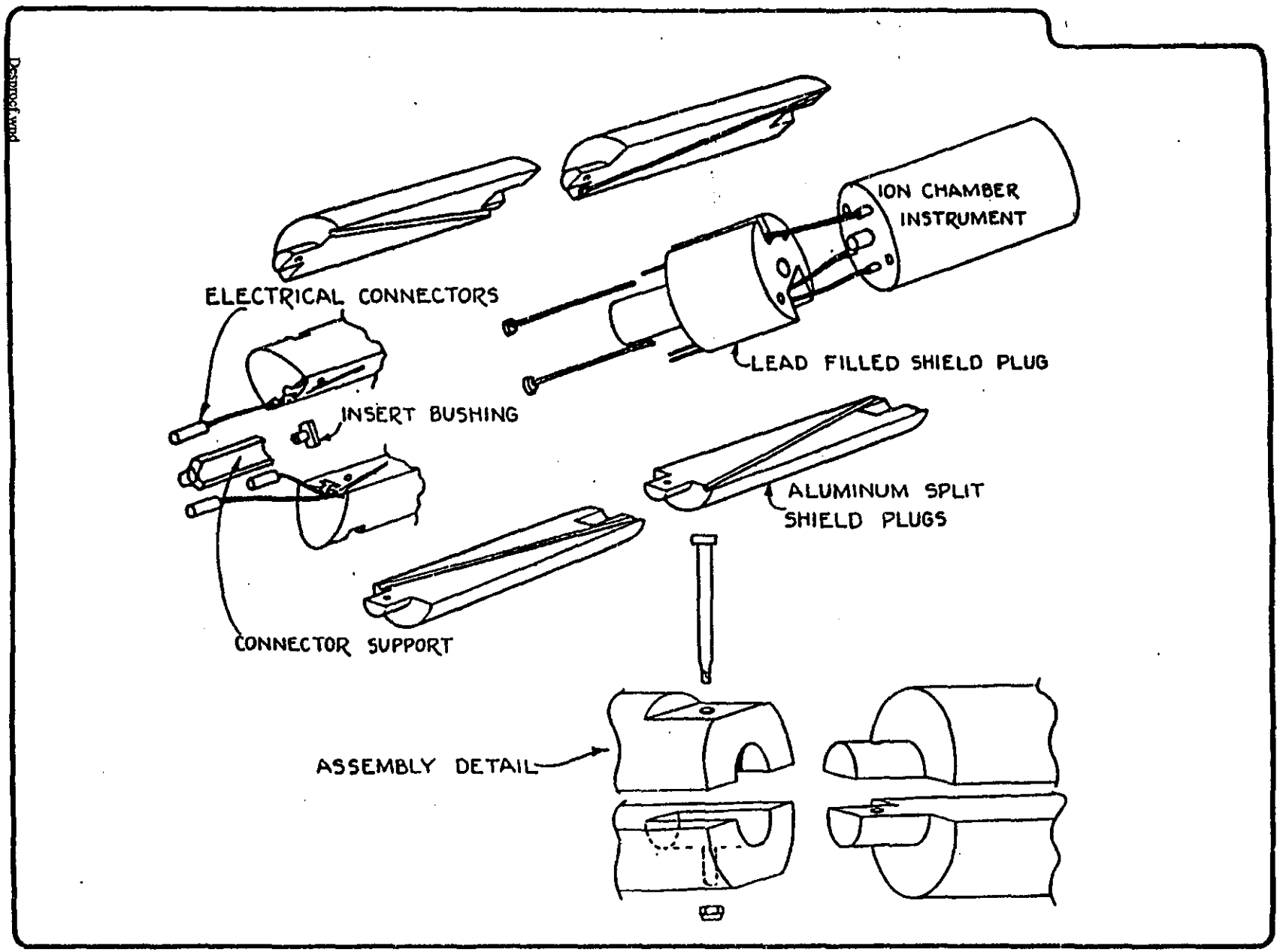


Figure 6-26 Exploded View of Ion Chamber Internal Parts

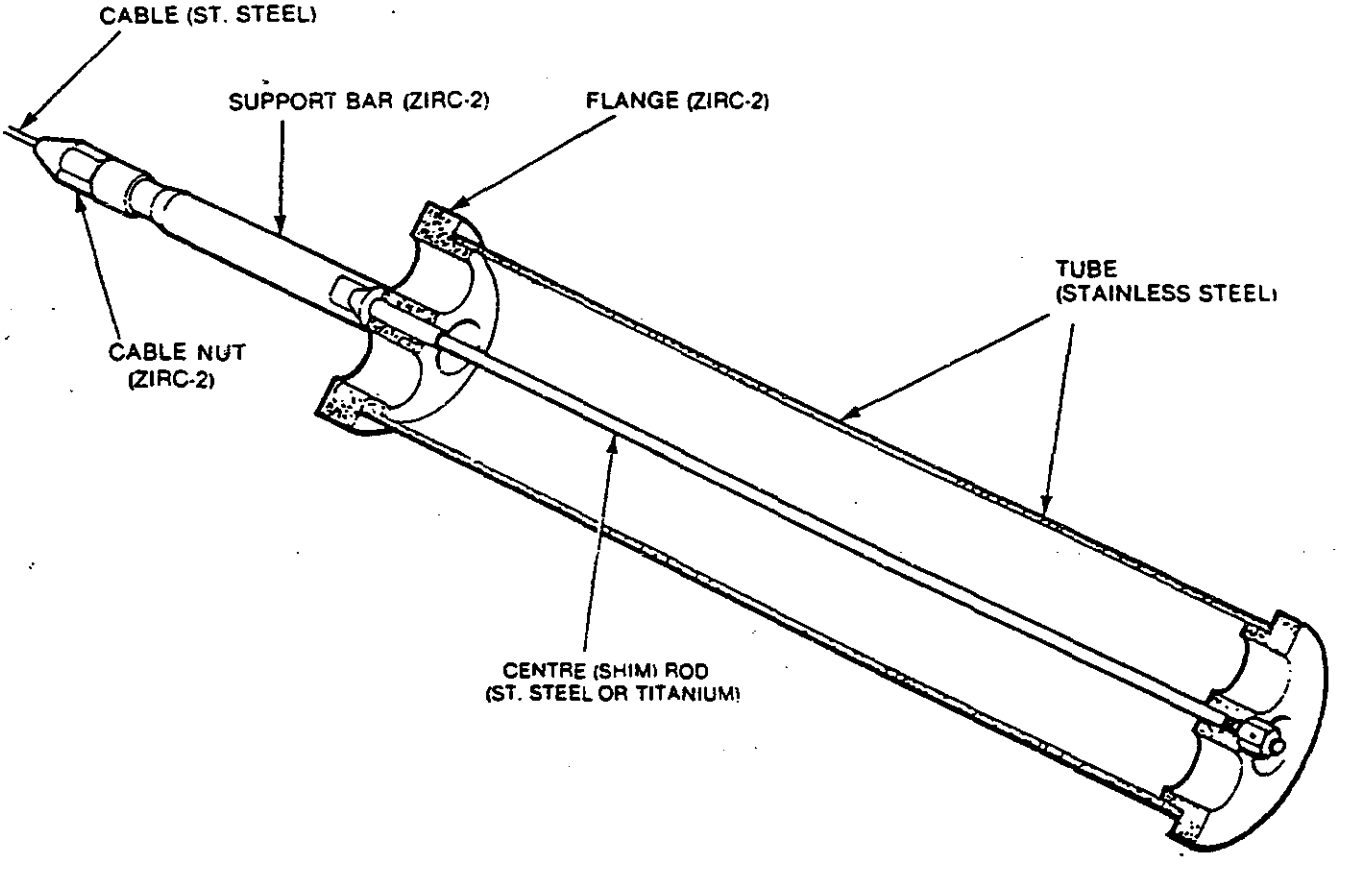


Figure 6-27 Adjuster Element

1. MAIN HOUSING
2. SHEAVE COVER
3. GEAR COVER
4. POTENTIOMETER COVER
5. MOTOR SUPPORT
6. PINION COVER
7. MAIN SHAFT
8. SHEAVE
9. SHEAVE NUT
10. SHEAVE LOCK WASHER
11. BELLOWS SEAL
12. SEAL SPACER
13. FIXED BEARING RETAINER
14. OIL CATCHER
15. SPIROID GEAR
16. SPIROID PINION
17. GEAR SHIM
18. LIMITING END PLATE
19. POSITION LIMITING PLATES
21. FELT RING
23. MOTOR
24. POTENTIOMETER DRIVE PULLEY
25. POTENTIOMETER
101. MAIN SHAFT BEARING
102. PINION BEARING
103. MAIN SHAFT BEARING
104. PINION SHAFT BEARING
106. LOCK NUT
112. SHAFT ELASTOMER SEAL
124. B-INSPECTION PLUG
124. A-OIL DRAIN PLUG
129. POTENTIOMETER DRIVE BELT
136. } IMPACT COUPLING
137. }
138. OIL RECAPTURE CHAMBER

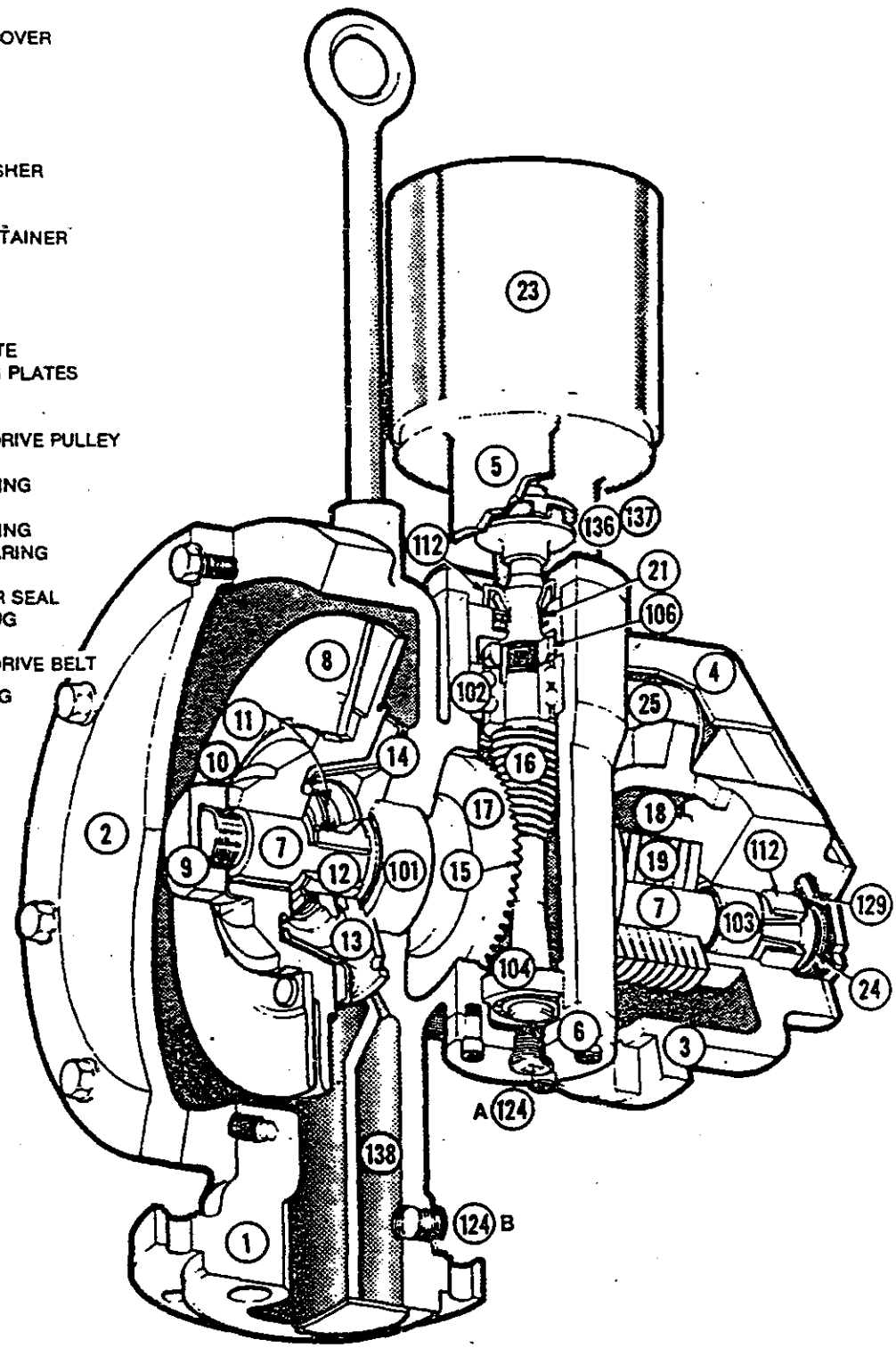


Figure 6-28 Adjuster Drive Mechanism

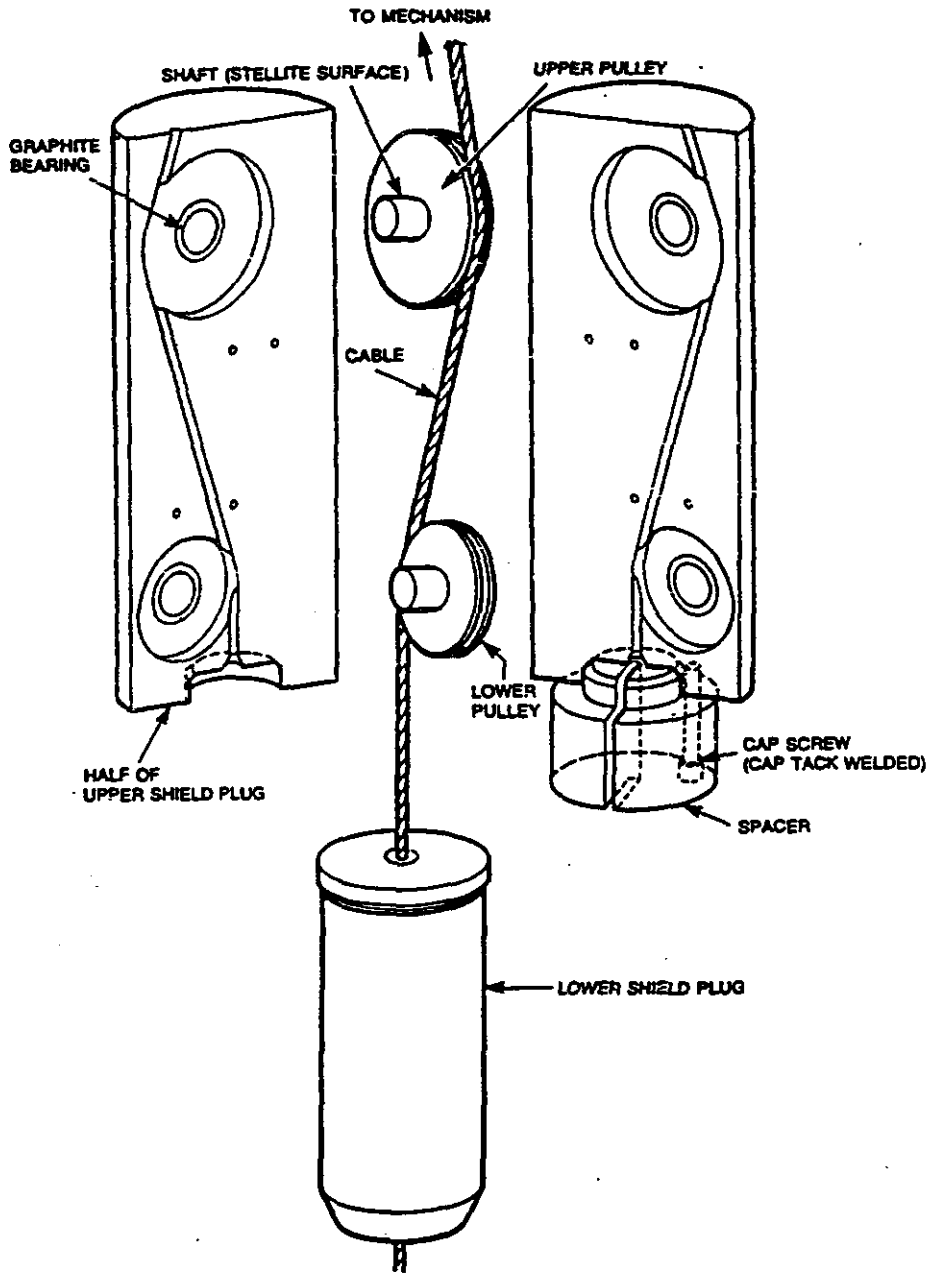


Figure 6-29 Adjuster Upper and Lower Shield Plugs

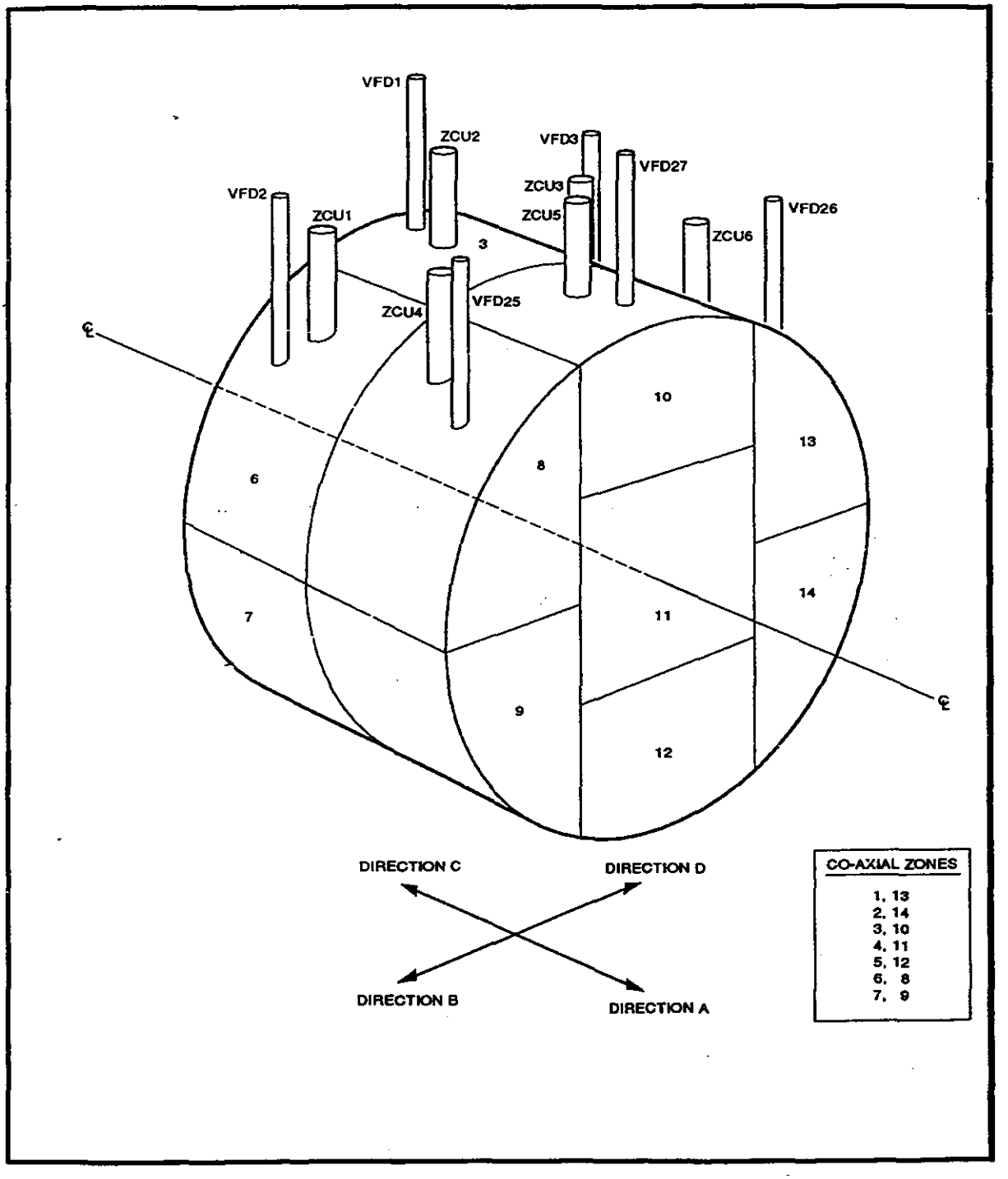


Figure 6-30 Layout of Control Zones in the Core

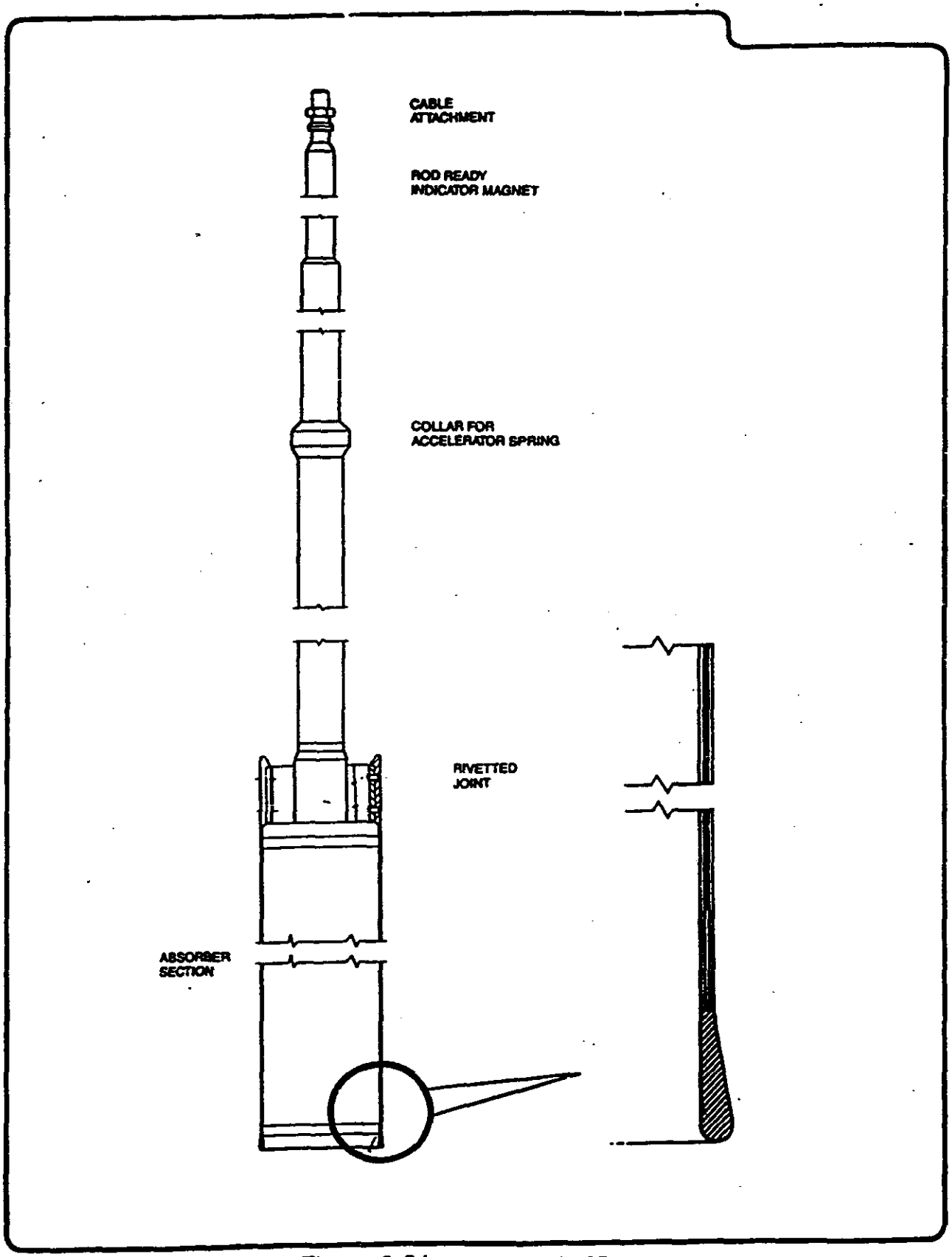
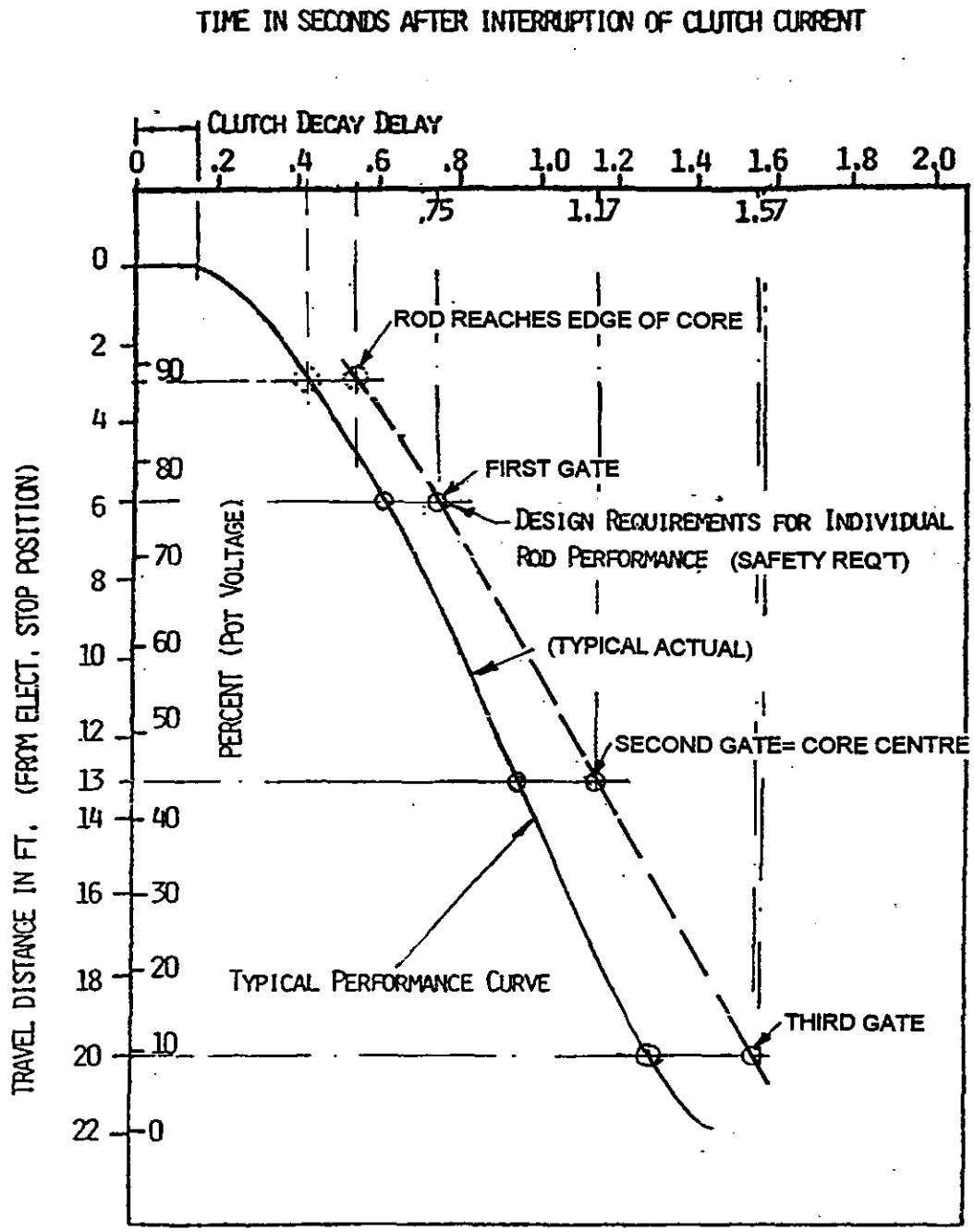


Figure 6-31 **SHUTDOWN ROD**



600 MW SHUTOFF ROD DROP CURVE
100 LB SPRING ASSIST.
93 LB ROD.

Figure 6-32 Shutoff Rod Drop Curve

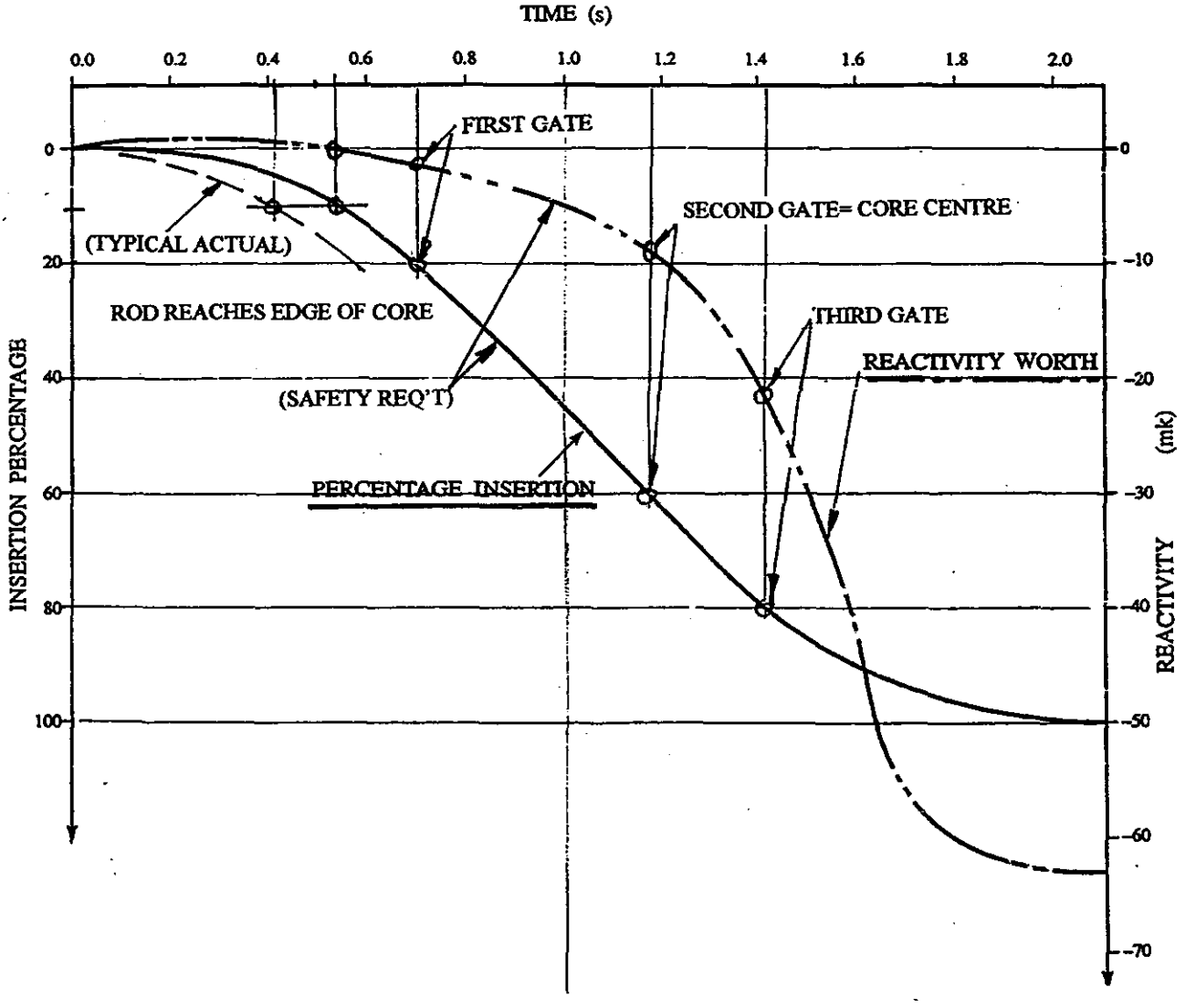


Figure 6-33 Shutoff Rod Insertion and Reactivity Worth

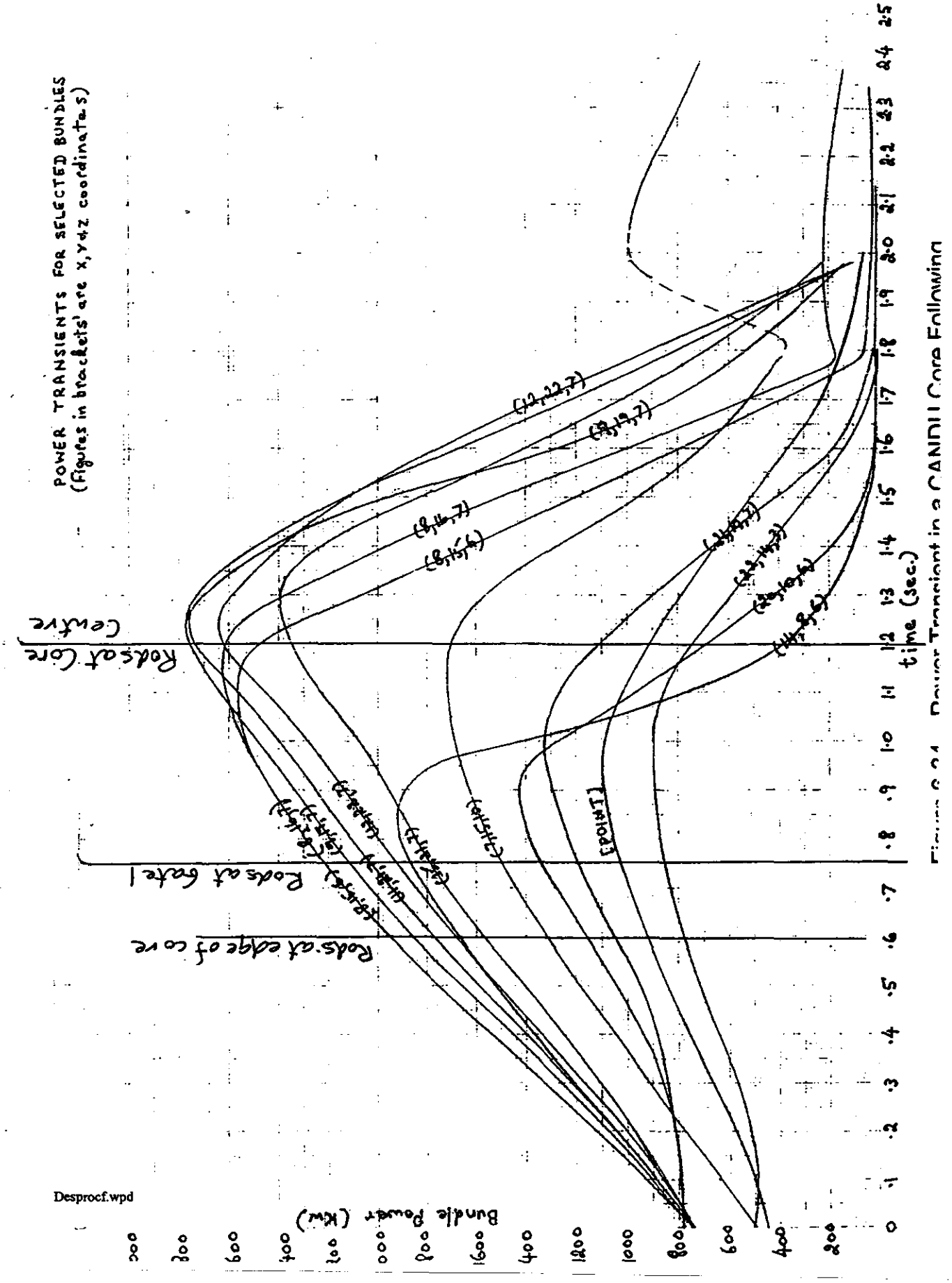


Figure 6.24 Power Transient in a CANDU Core Following

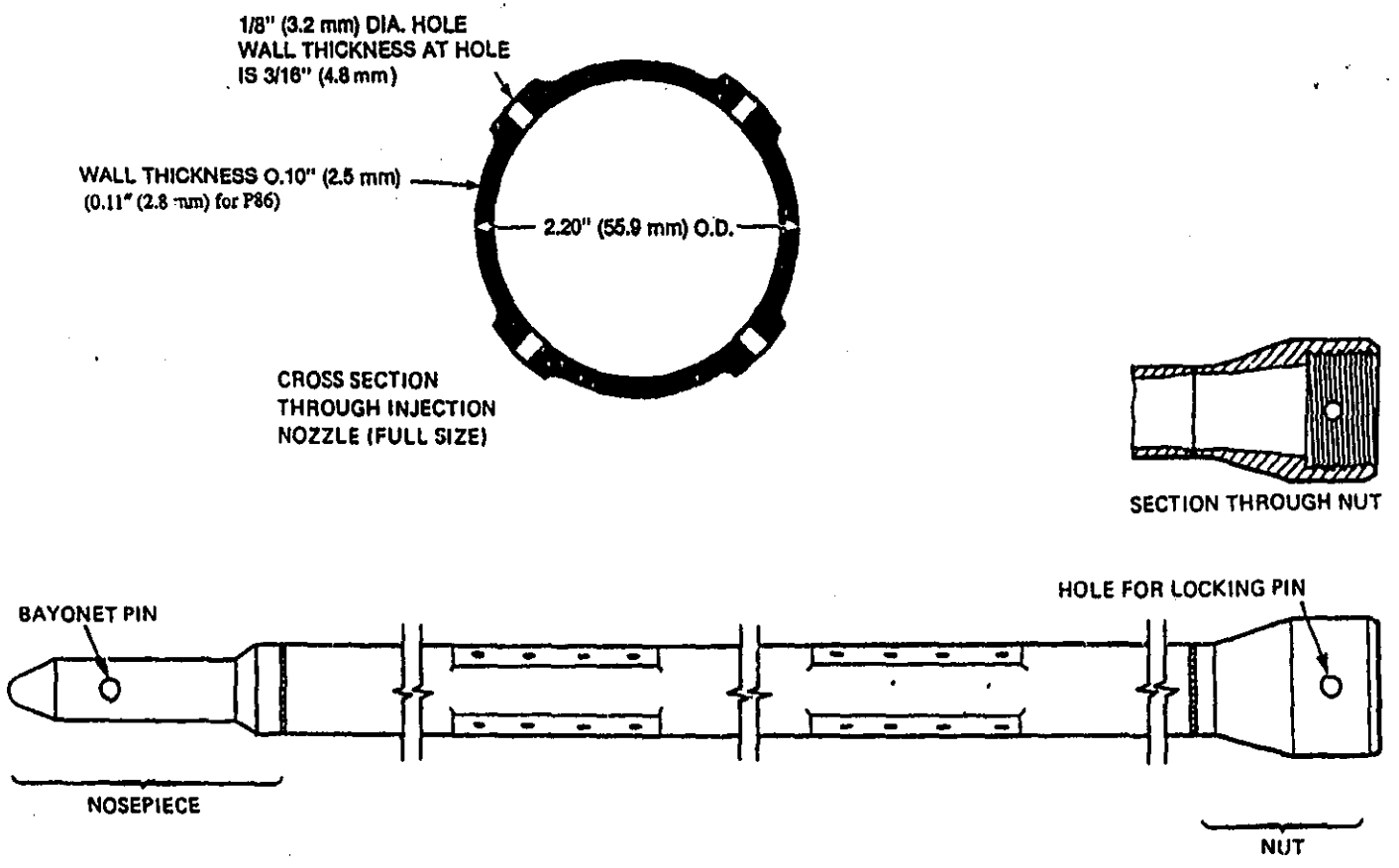
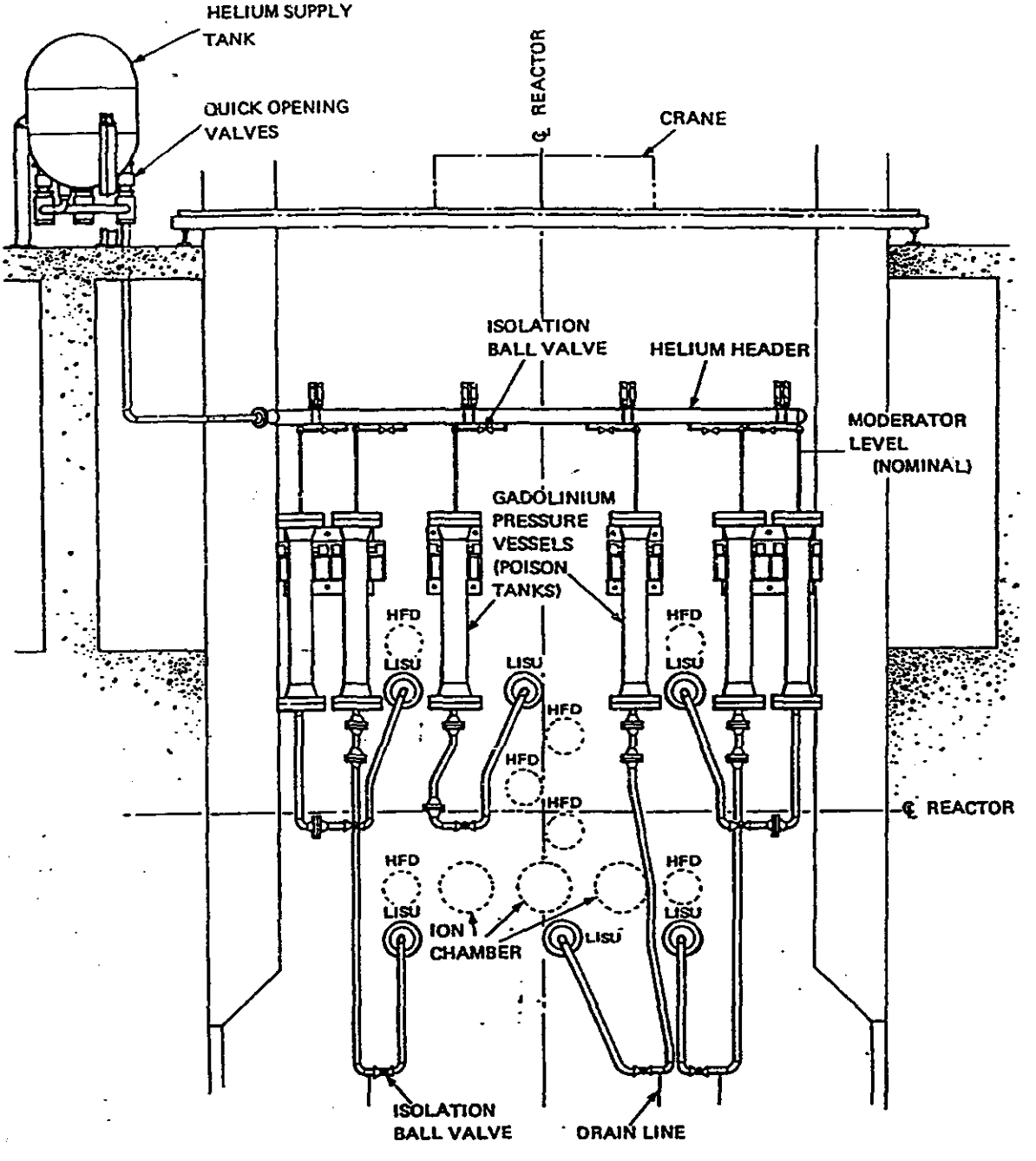


Figure 6-35 Liquid Injection Nozzle



'LISU' INDICATES LIQUID INJECTION SHUTDOWN UNITS
'HFD' INDICATES HORIZONTAL FLUX DETECTOR UNITS

Figure 6-36 Liquid Injection Shutdown System

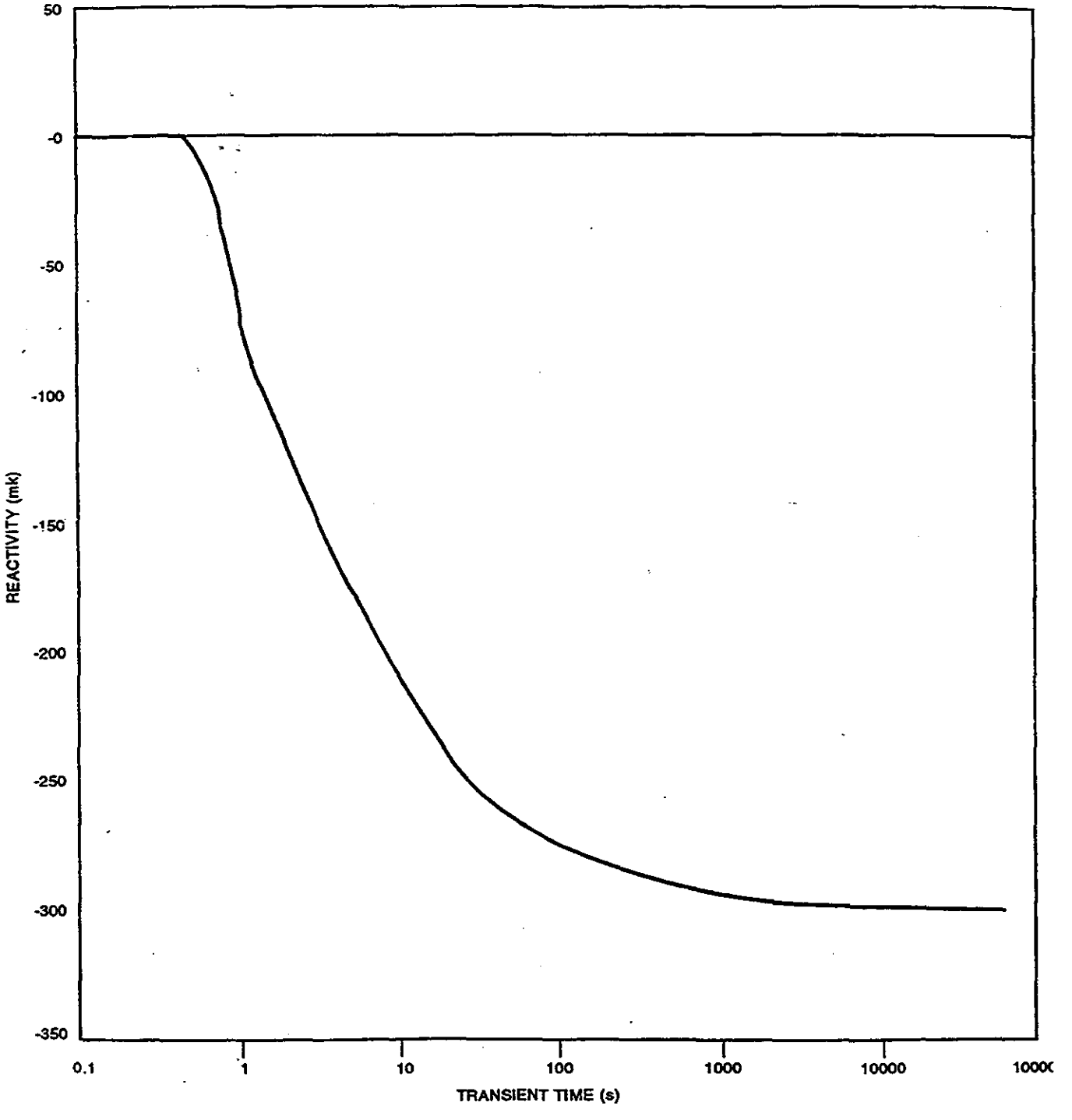


Figure 6-37 Shutdown System No. 2 Negative Reactivity Insertion Rate

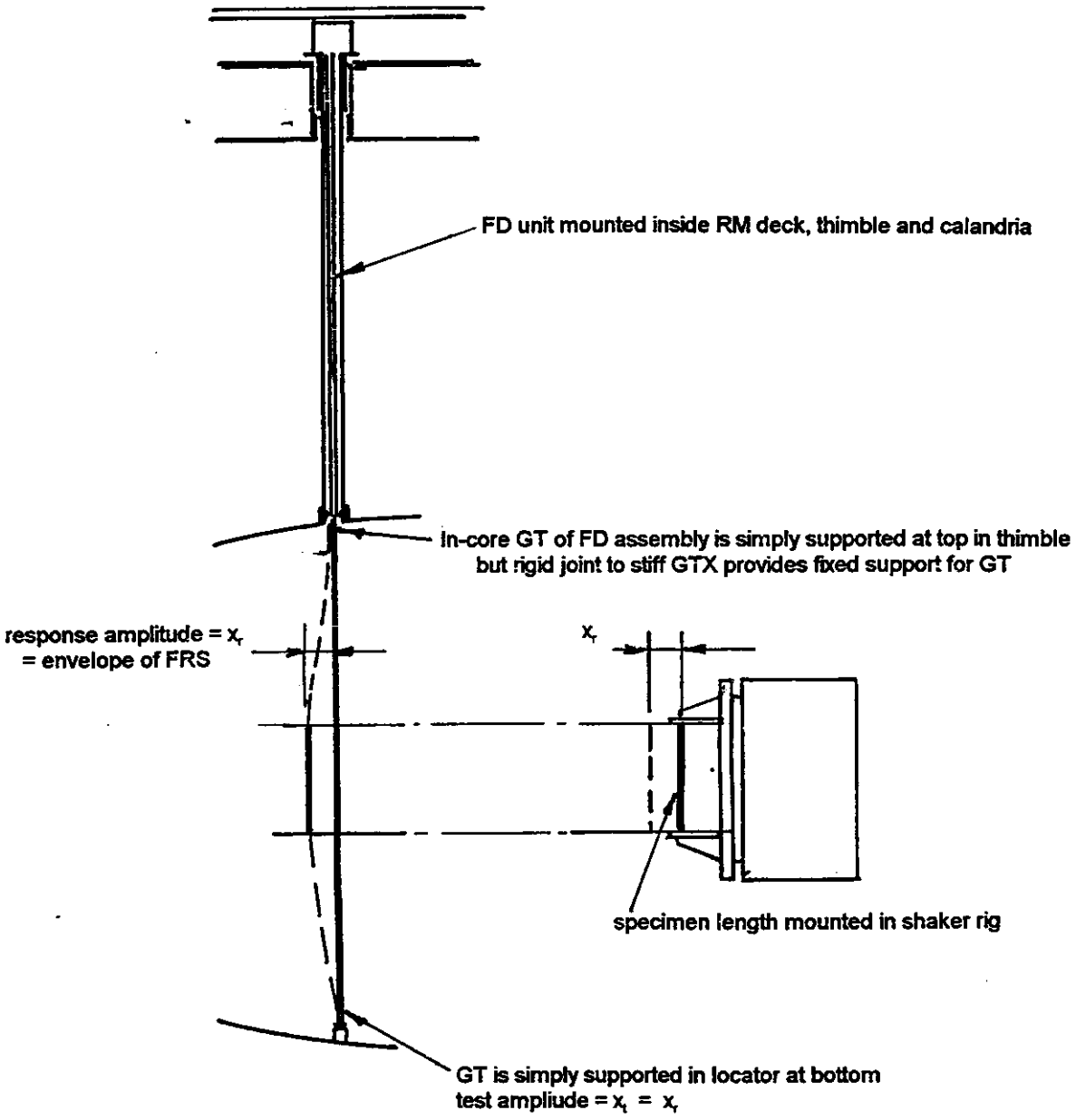
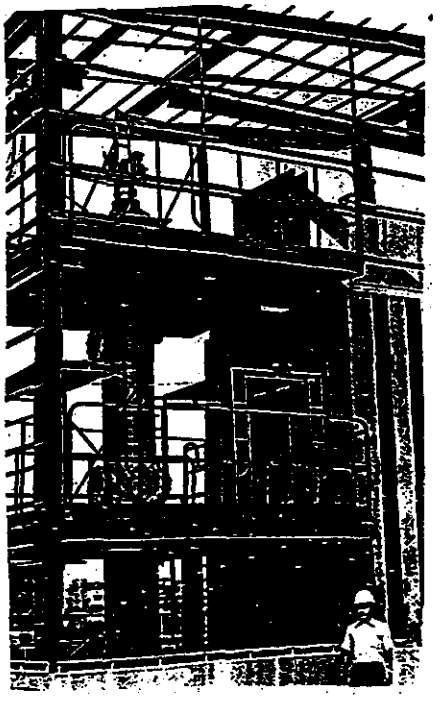
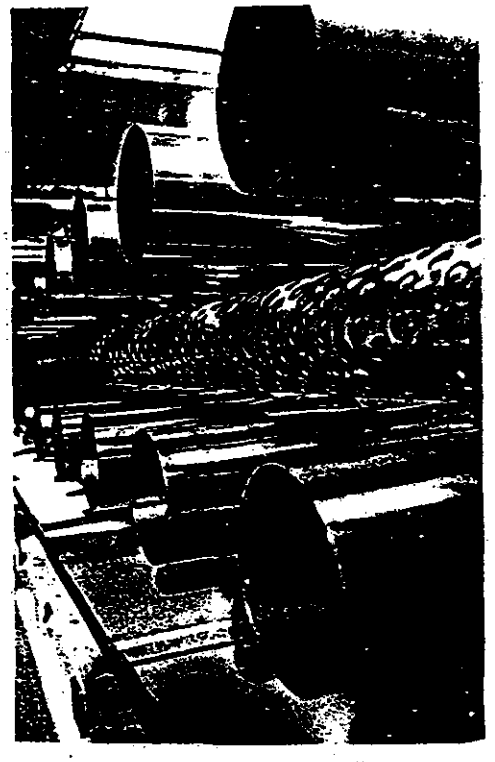


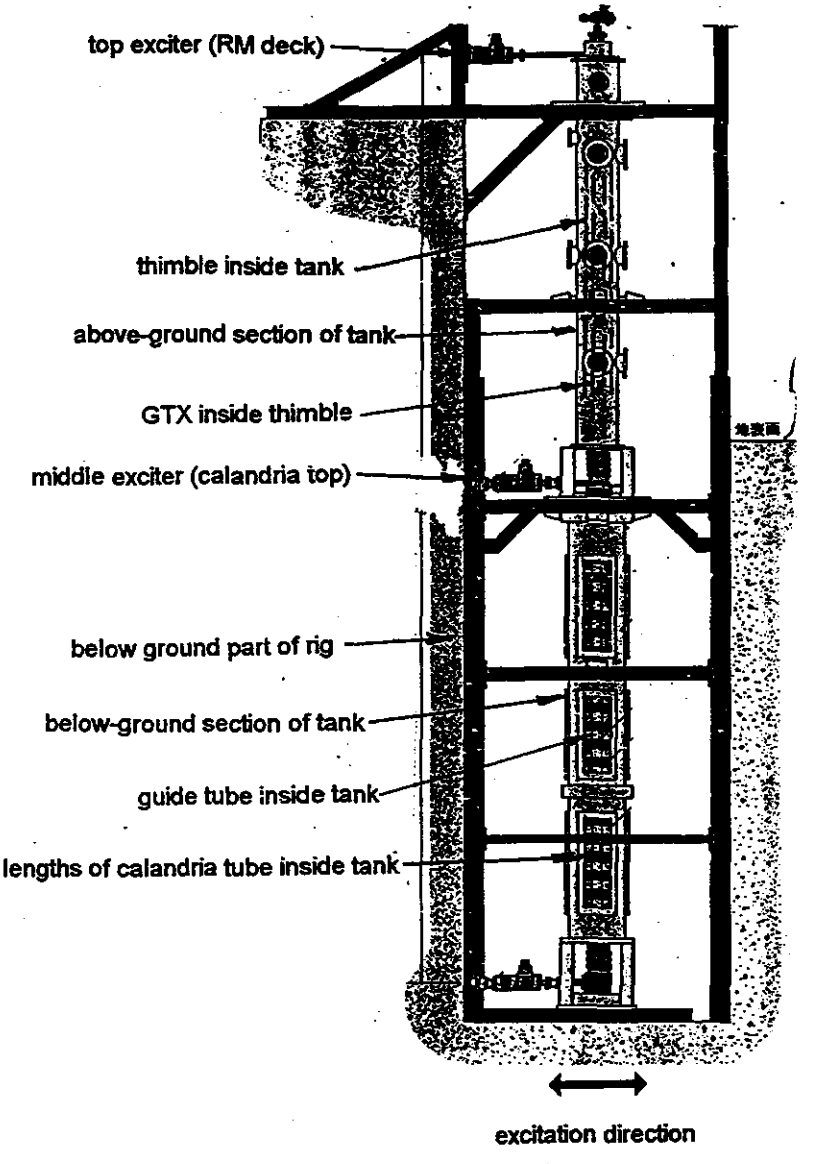
Figure 6-38 Seismic Test of a Flux Detector Unit



(b) Photograph of above-ground part of rig



(c) Guide tube between lengths of calandria tube



a) Schematic of Test Rig

Figure 6-39 Seismic Test of a Shutoff Unit

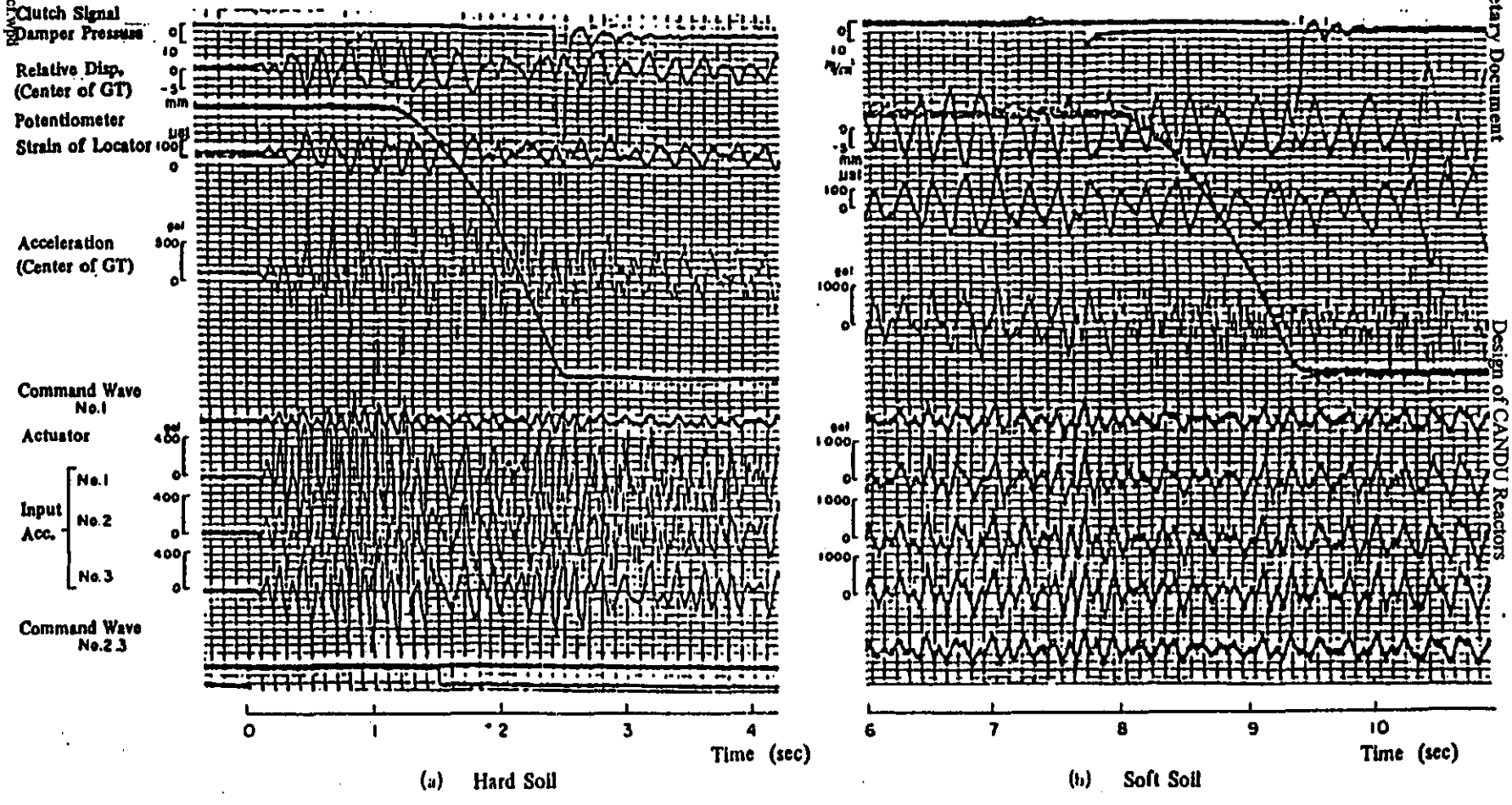


Figure 6-40 Trace Recording for SOR Seismic Test