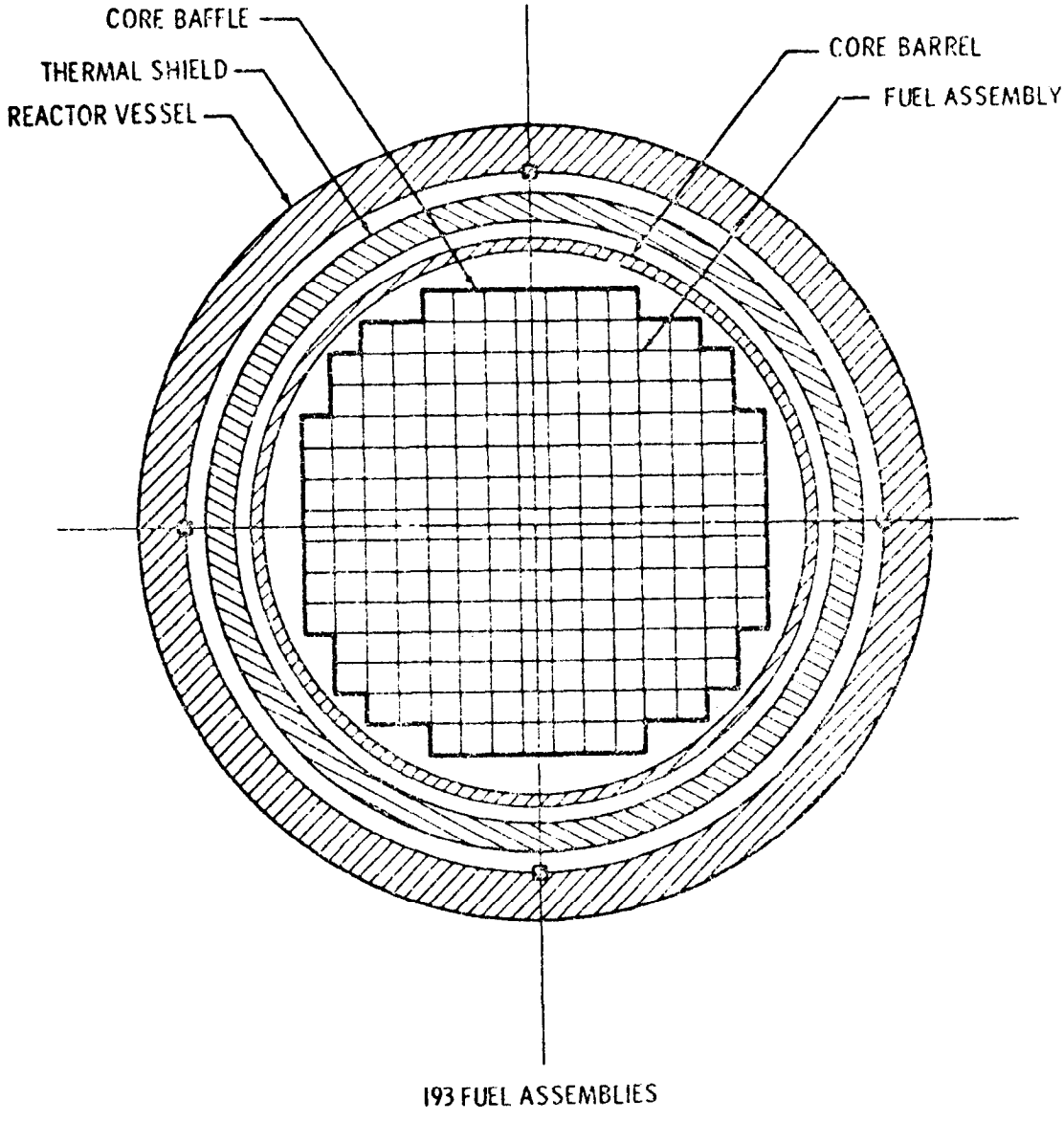
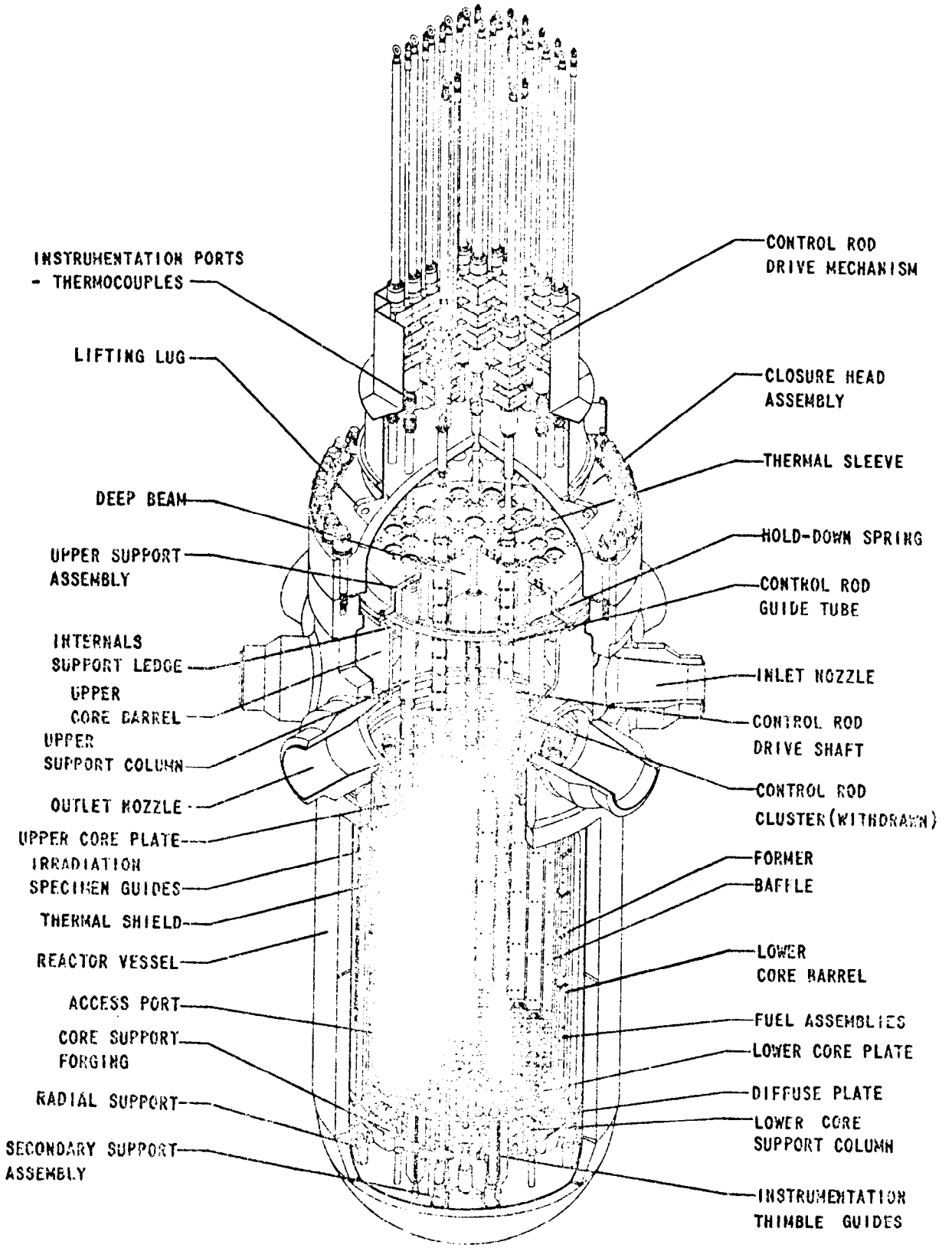


CORE CROSS SECTION

Figure 3.2.1-1

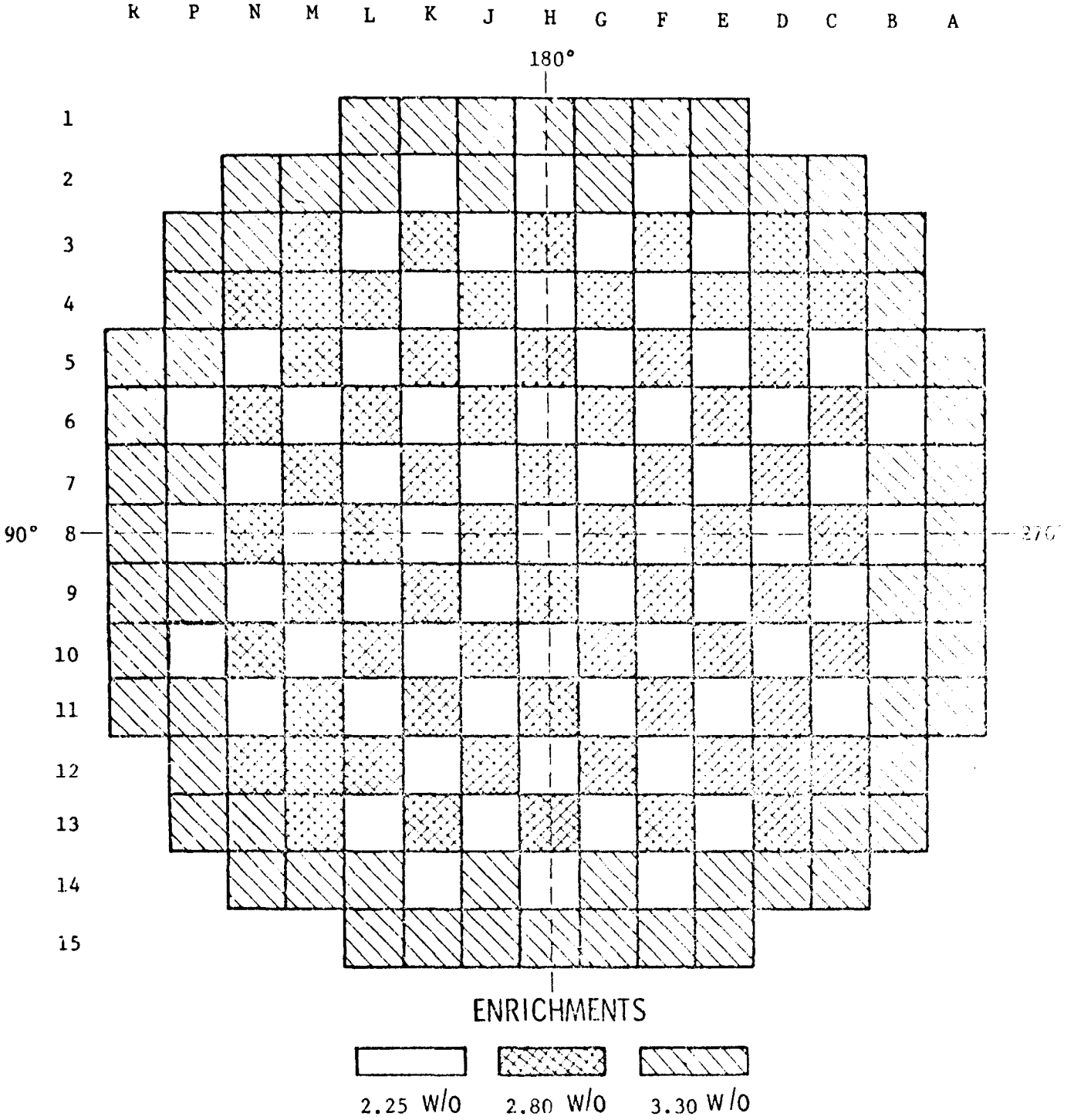
July, 1982



Reactor Vessel and Internals

Figure 3.2.1-2

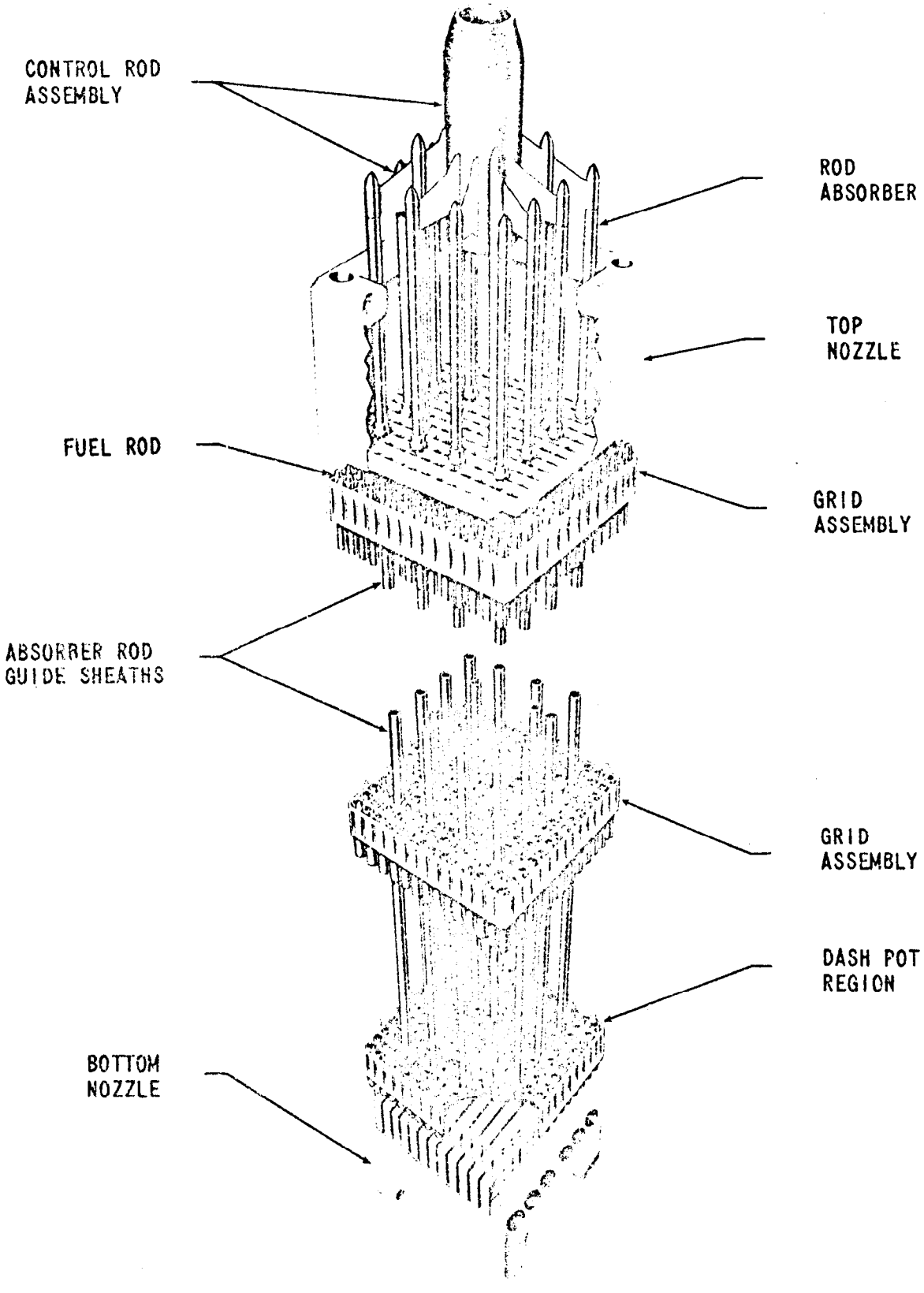
July, 1982



FUEL LOADING ARRANGEMENT

Figure 3.2.1-3

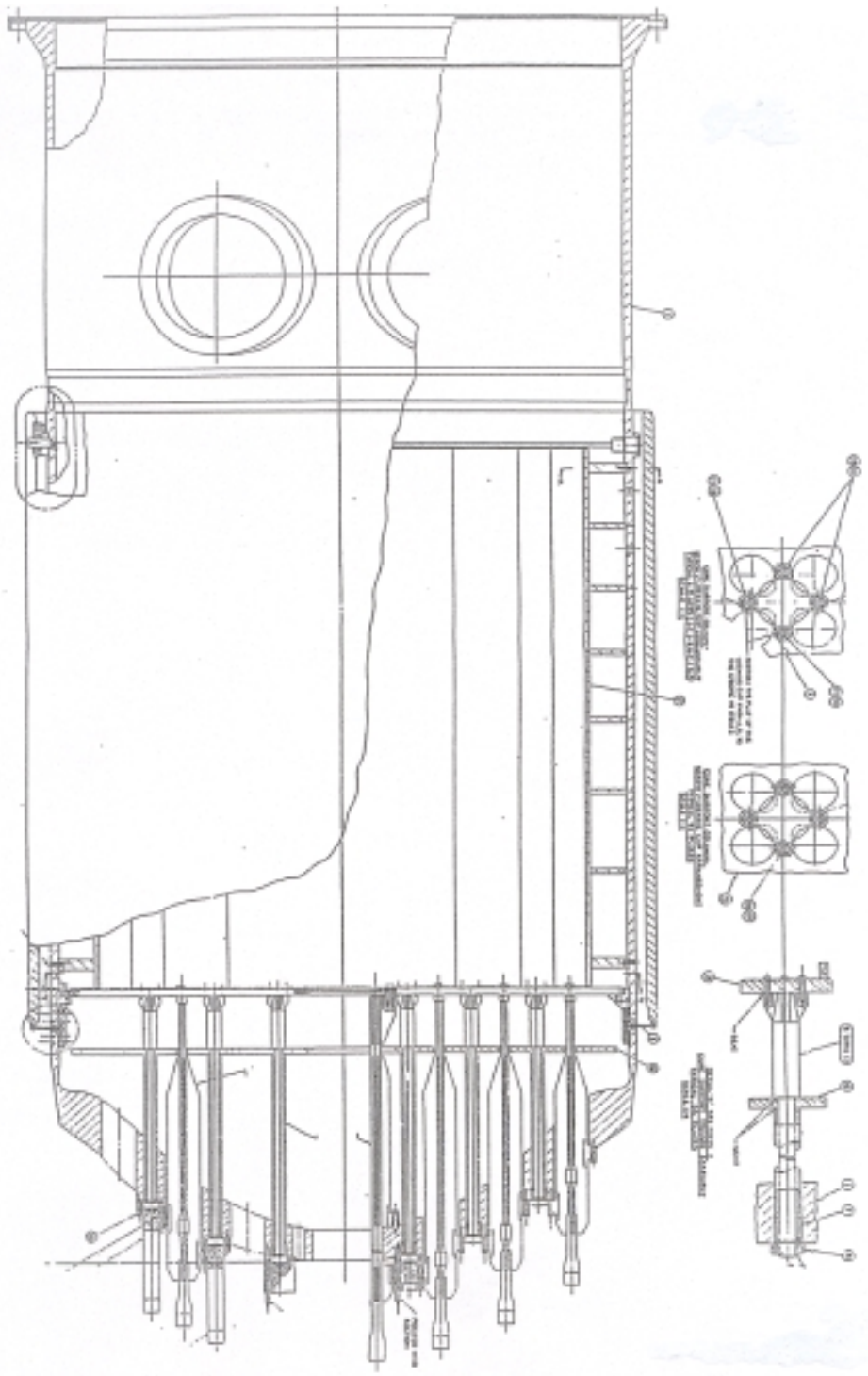
July, 1982



TYPICAL ROD CLUSTER CONTROL ASSEMBLY

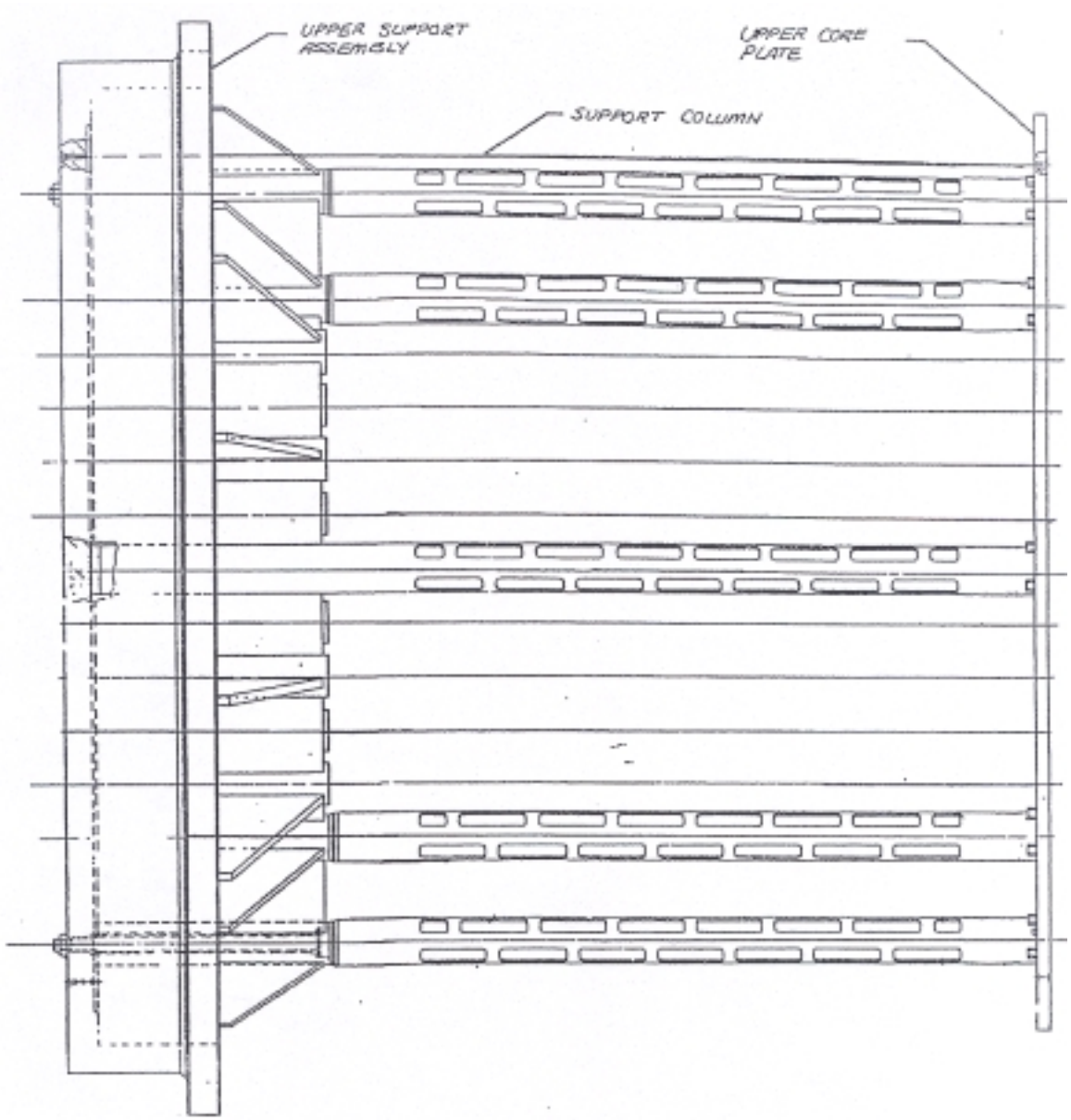
Figure 3.2.1-4

July, 1982



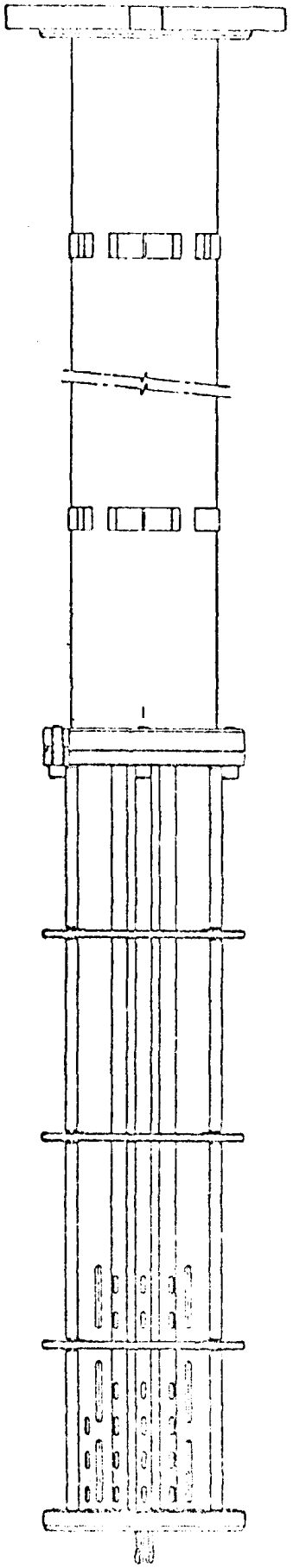
Revision: **19.1**	Change Description**: UCR-1727**

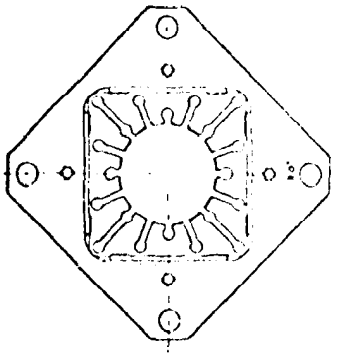
AMERICAN ELECTRIC POWER COOK NUCLEAR PLANT NUCLEAR GENERATION GROUP BRIDGMAN, MICHIGAN	Title: **D. C. Cook Unit 1 Core Barrel Assembly**	
	UFSAR Figure: **3.2.1-5**	Sheet 1 of 1



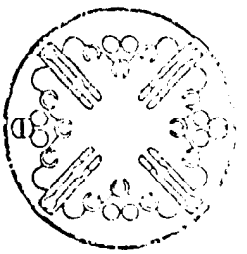
Revision: **19.1**	Change Description**: UCR-1727**

AMERICAN ELECTRIC POWER COOK NUCLEAR PLANT NUCLEAR GENERATION GROUP BRIDGMAN, MICHIGAN	Title: **Upper Core Support Structure**	
	UFSAR Figure: **3.2.1-6**	Sheet 1 of 1





TOP VIEW



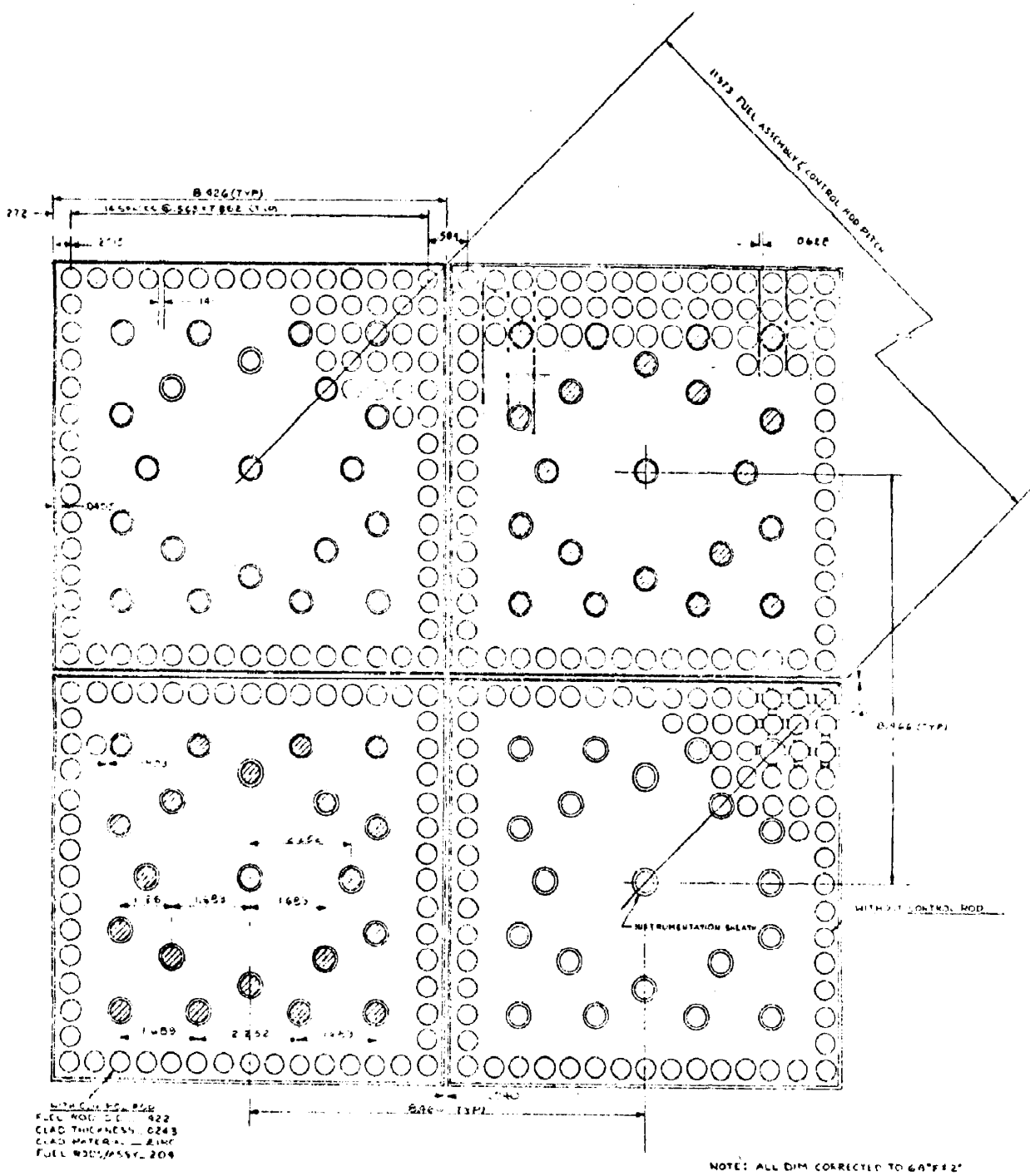
BOTTOM VIEW

July, 1982

03042

GUIDE TUBE ASSE[illegible]

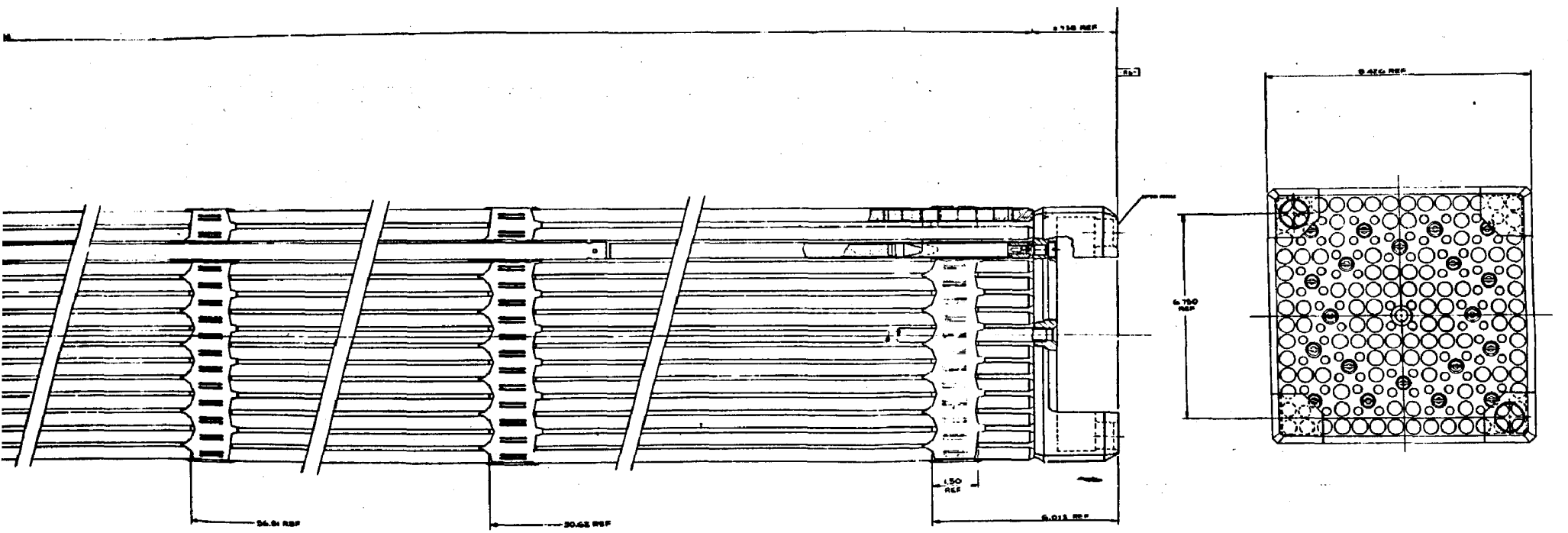
Figure 3.2.1-7



July, 1982

FUEL ASSEMBLY AND CONTROL CLUSTER CROSS SECTION

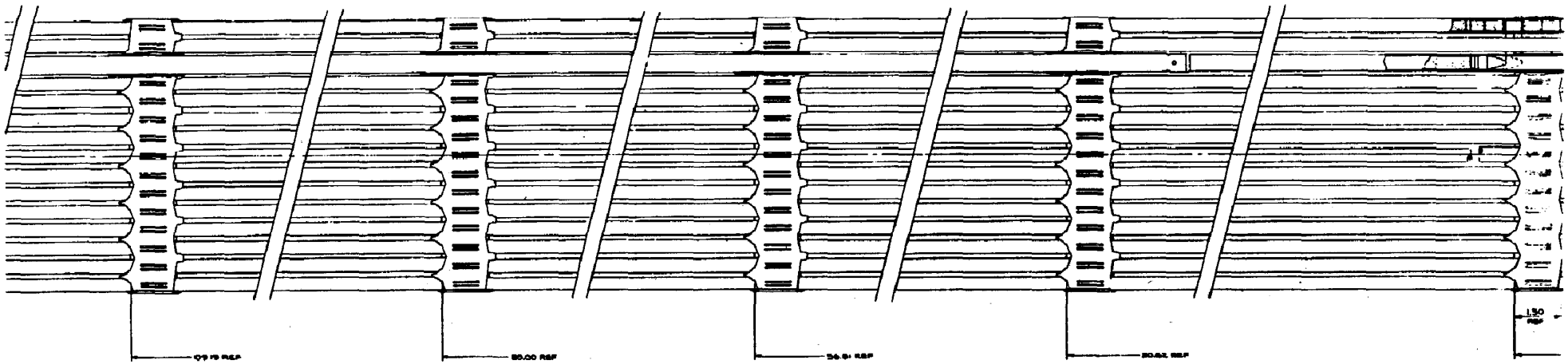
Figure 3.2.1-8

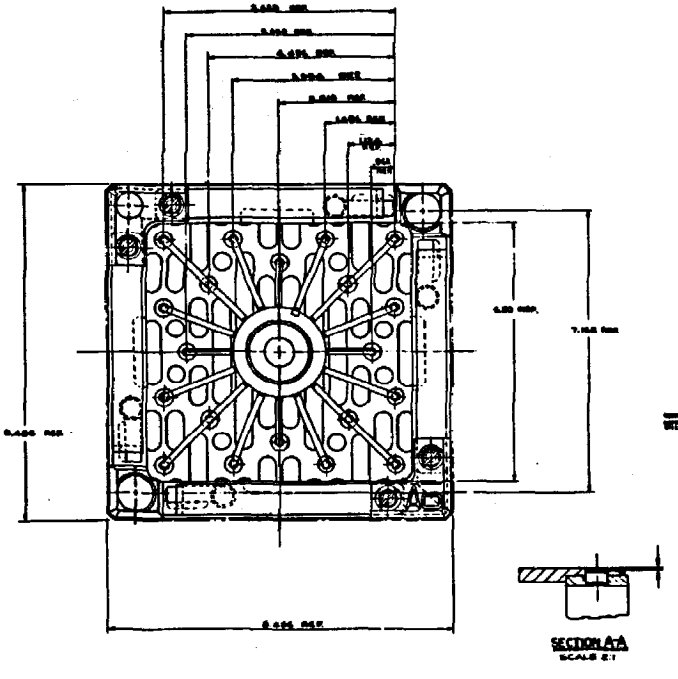


FUEL ASSEMBLY OUTLINE

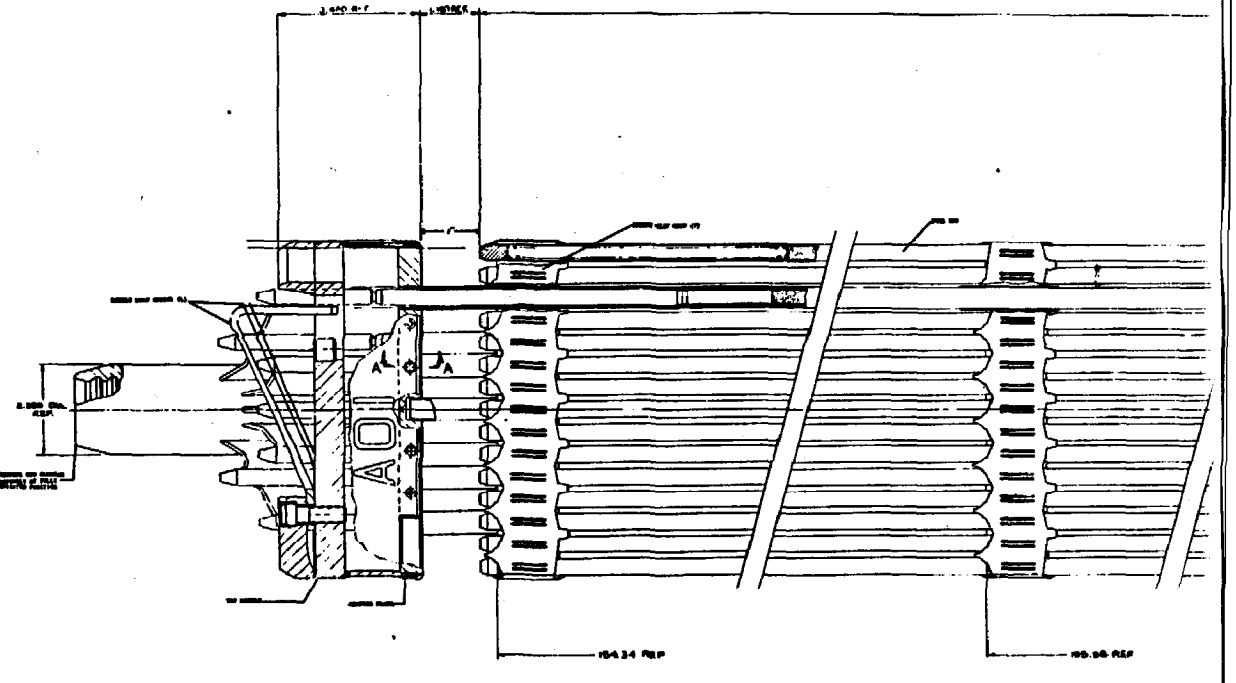
Figure 3.2.1-9

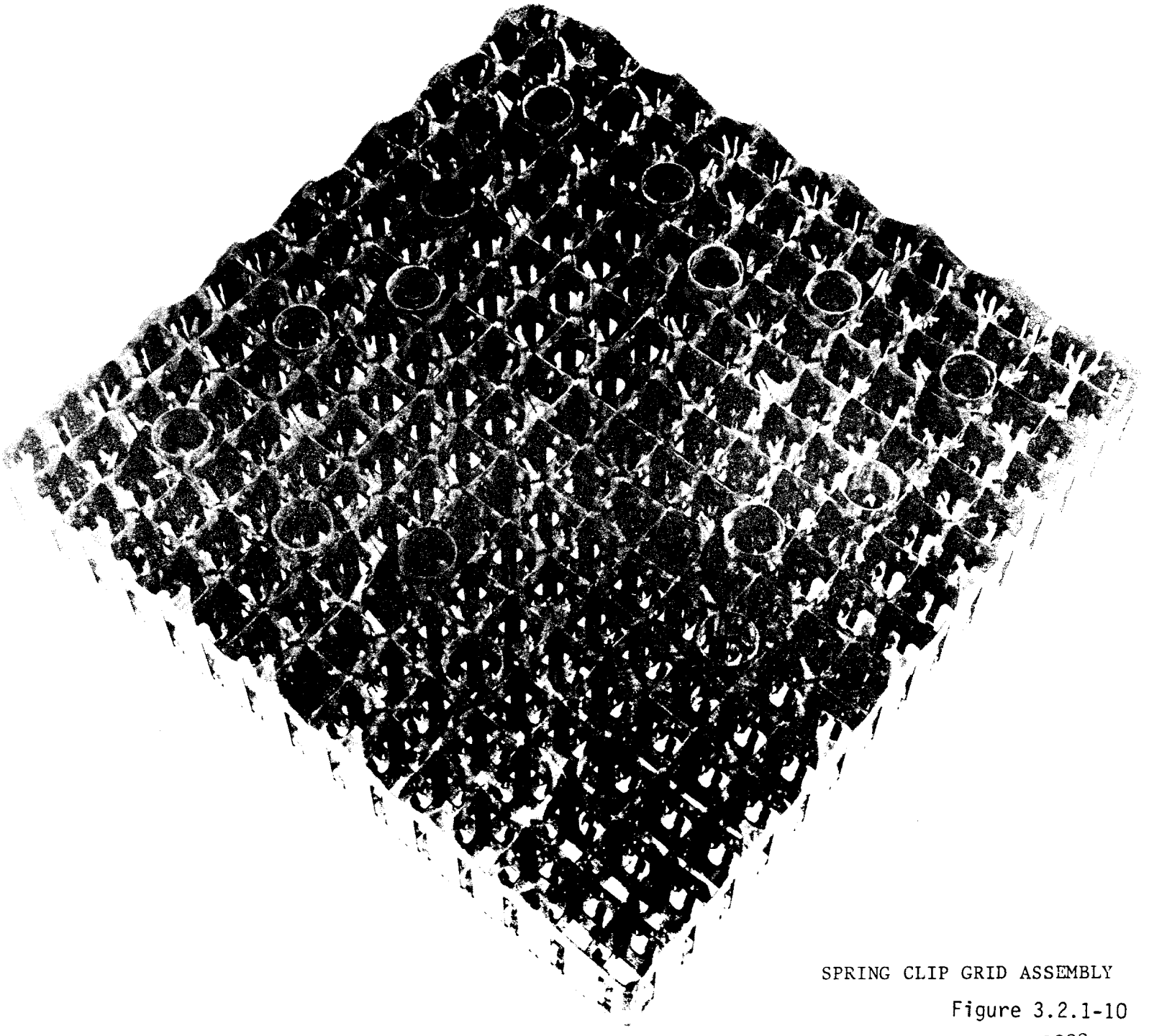
July 1982





SECTION A-A
SCALE 2:1

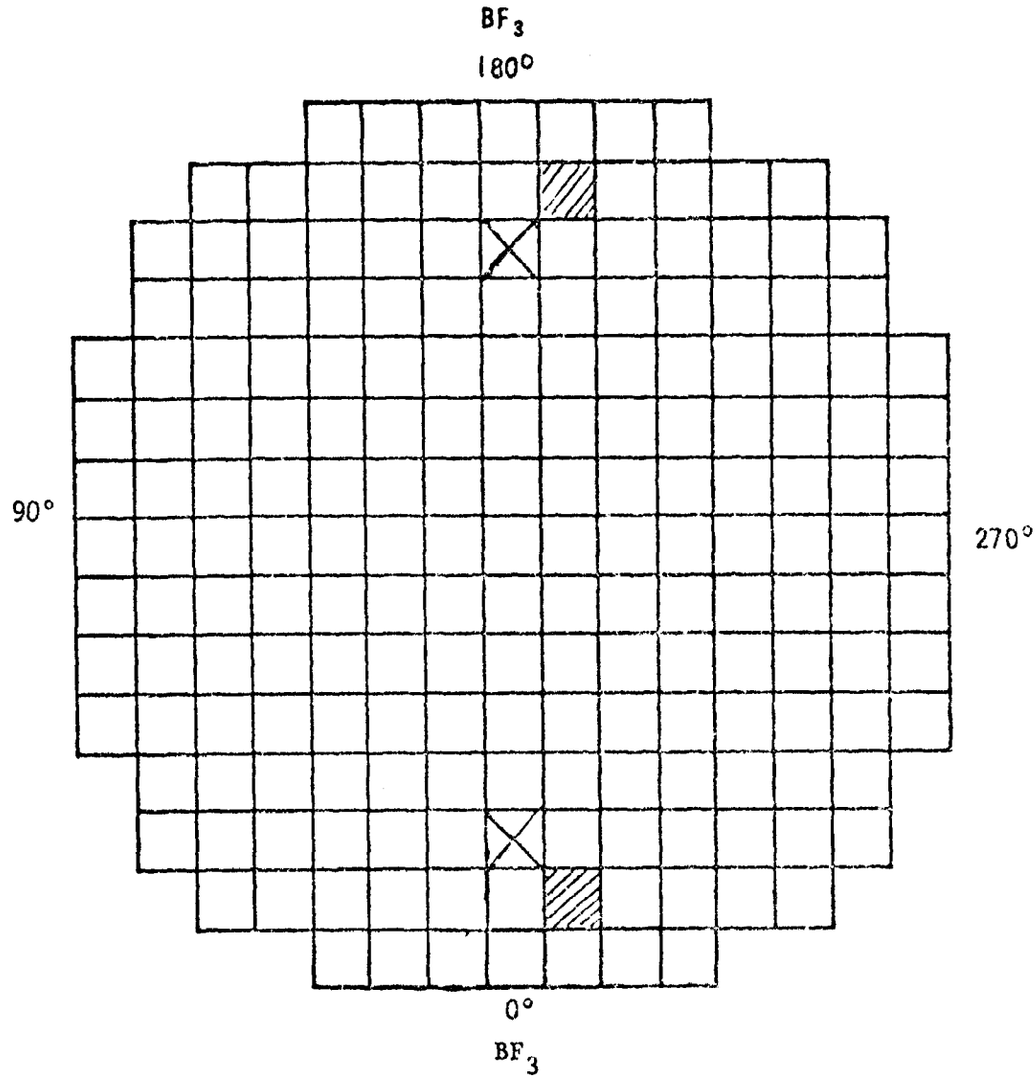




SPRING CLIP GRID ASSEMBLY

Figure 3.2.1-10

July, 1982



Burnable Poison (12)
Secondary Source (4)

Burnable Poison (19)
Primary Source (1)

NEUTRON SOURCE LOCATIONS

Figure 3.2.1-11

July, 1982

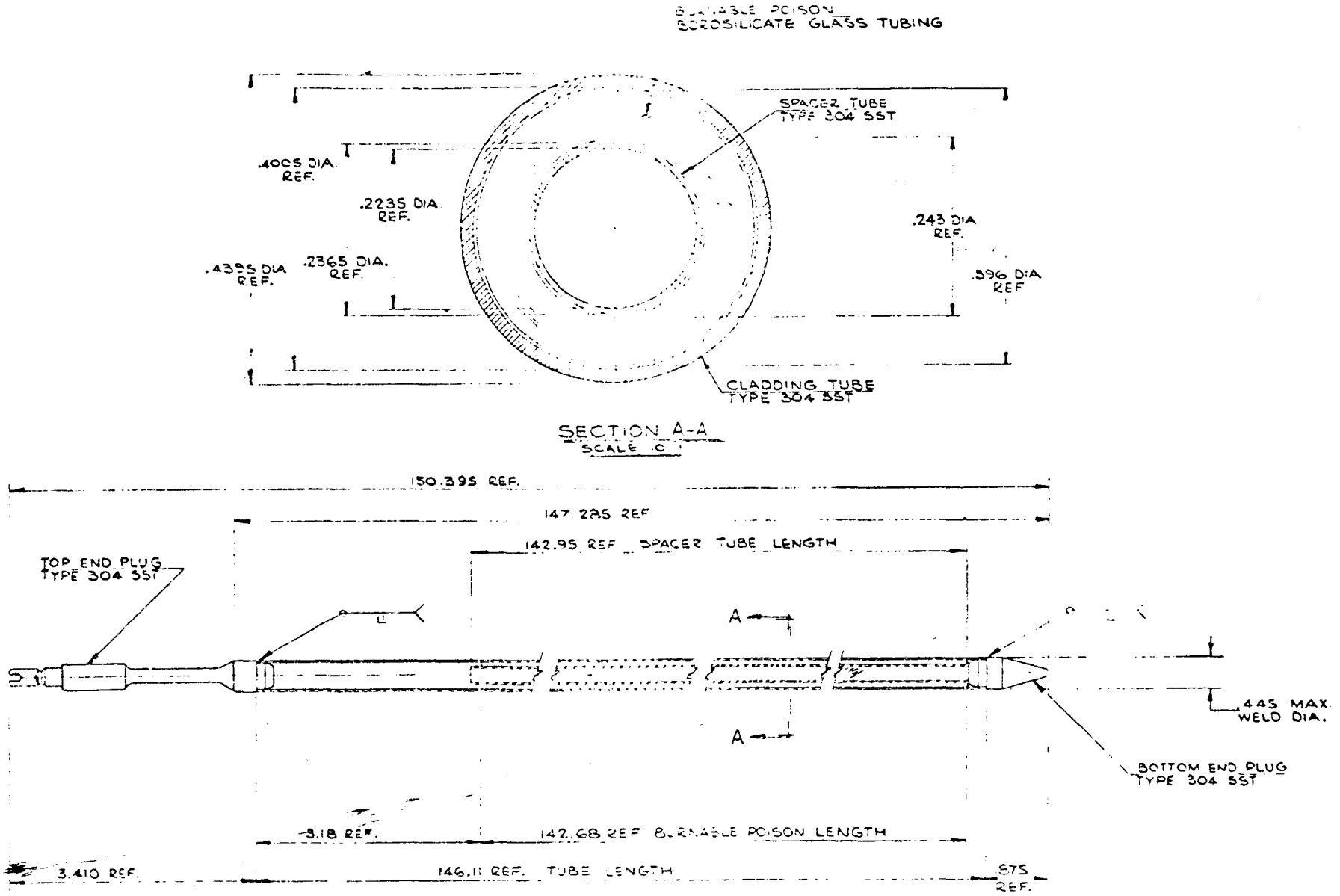
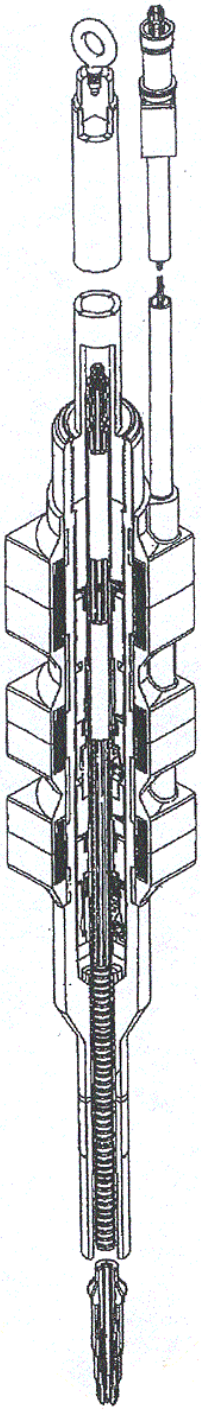


Figure 3.2.1-12

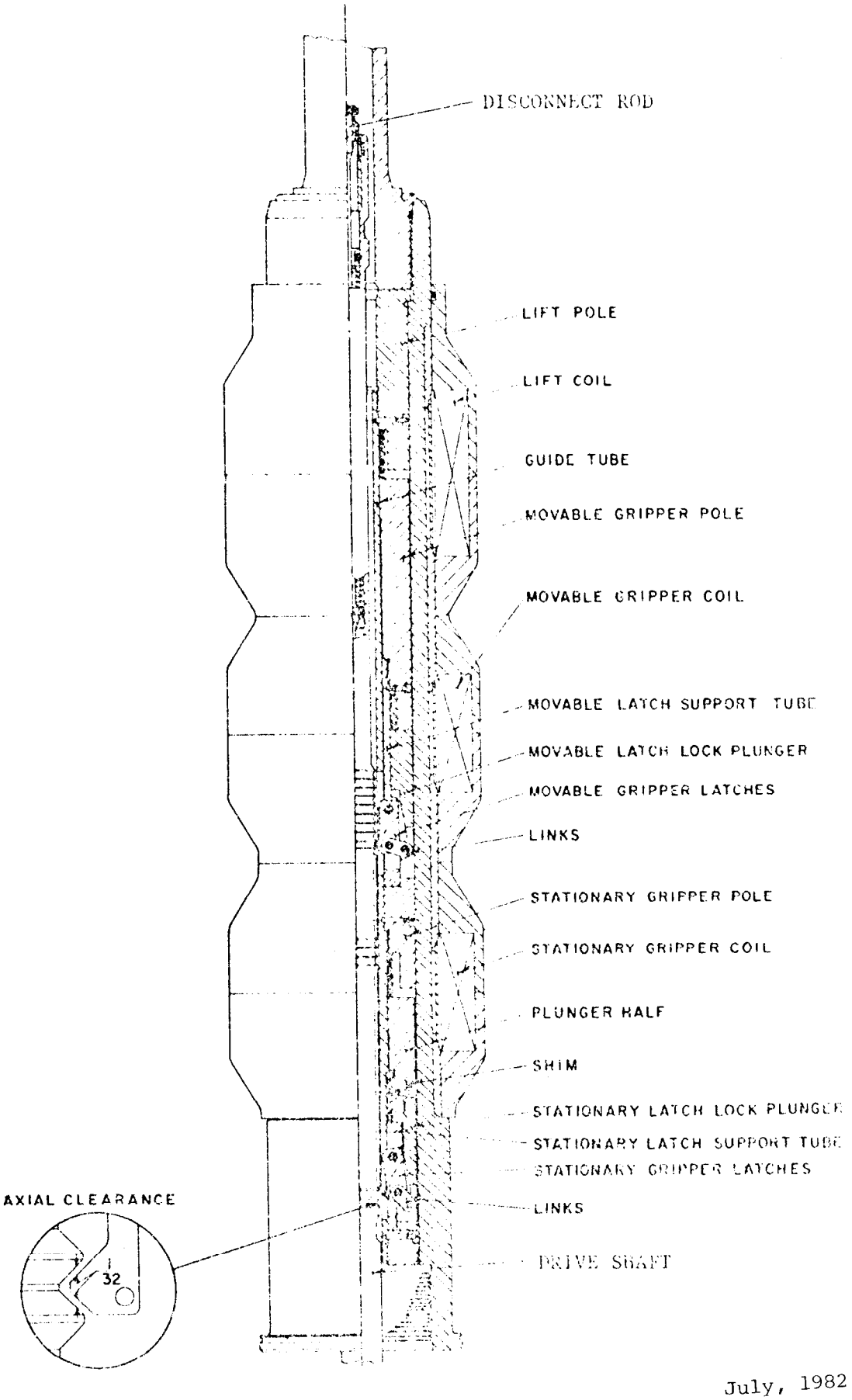
July, 1982

Burnable Poison



Revision: **21**	Change Description: **UCR-1812, Rev. 1**	**UNIT 1**

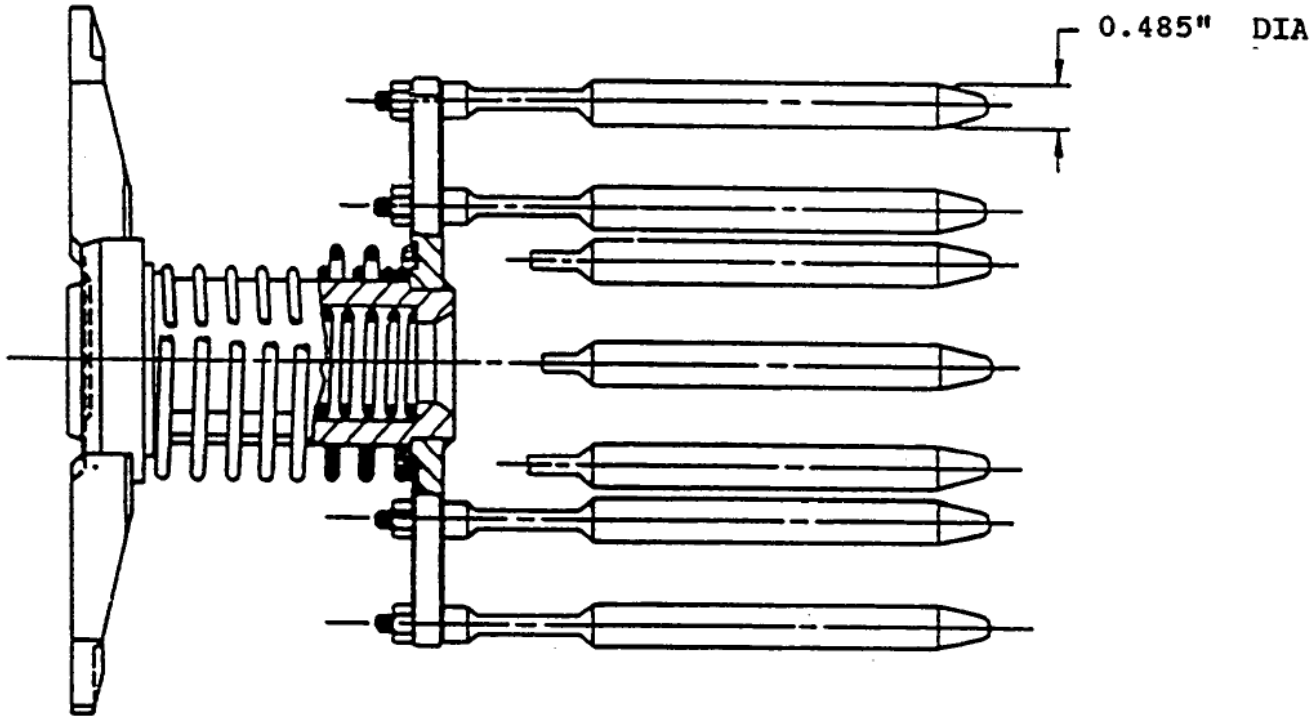
AMERICAN ELECTRIC POWER COOK NUCLEAR PLANT NUCLEAR GENERATION GROUP BRIDGMAN, MICHIGAN	Title: **Control Rod Drive Mechanism Assembly**	
	UFSAR Figure: **3.2.1-13**	Sheet 1 of 1



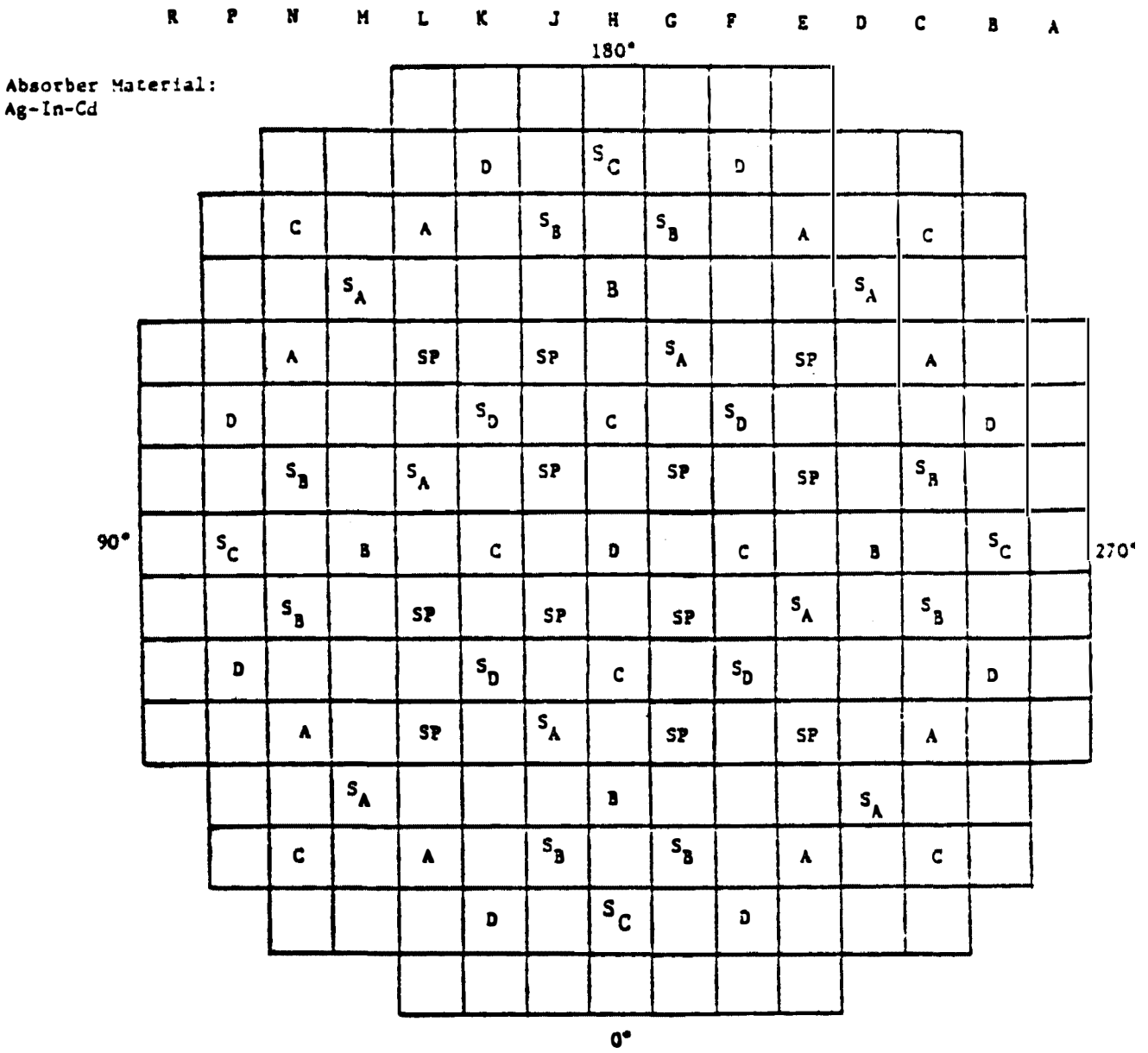
July, 1982

CONTROL ROD DRIVE MECHANISM SCHEMATIC

Figure 3.2.1-14



Unit 1 Figure 3.2.1-15 Thimble Plug Assembly July 1996



Bank	Number of Rod Clusters
S_A	8
S_B	8
S_C	4
S_D	4
A	8
B	4
C	8
D	9
PL	0
SP (spare rod locations)	12

CONTROL ROD PATTERN
(UNIT 1)

83

83

July, 1982

FIGURE 3.3.1-1

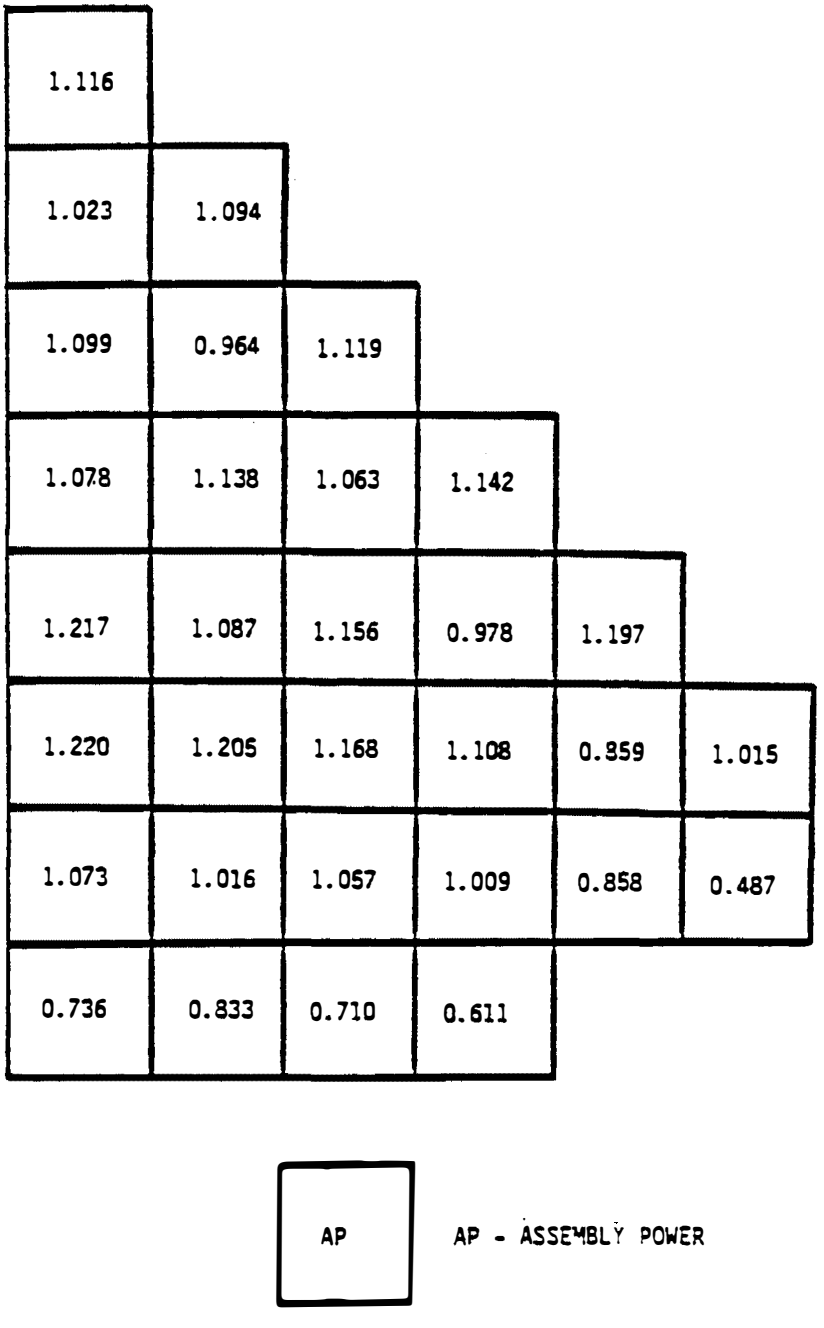


Figure 3.3.1-2 CYCLE 1 ASSEMBLYWISE POWER (BOL)

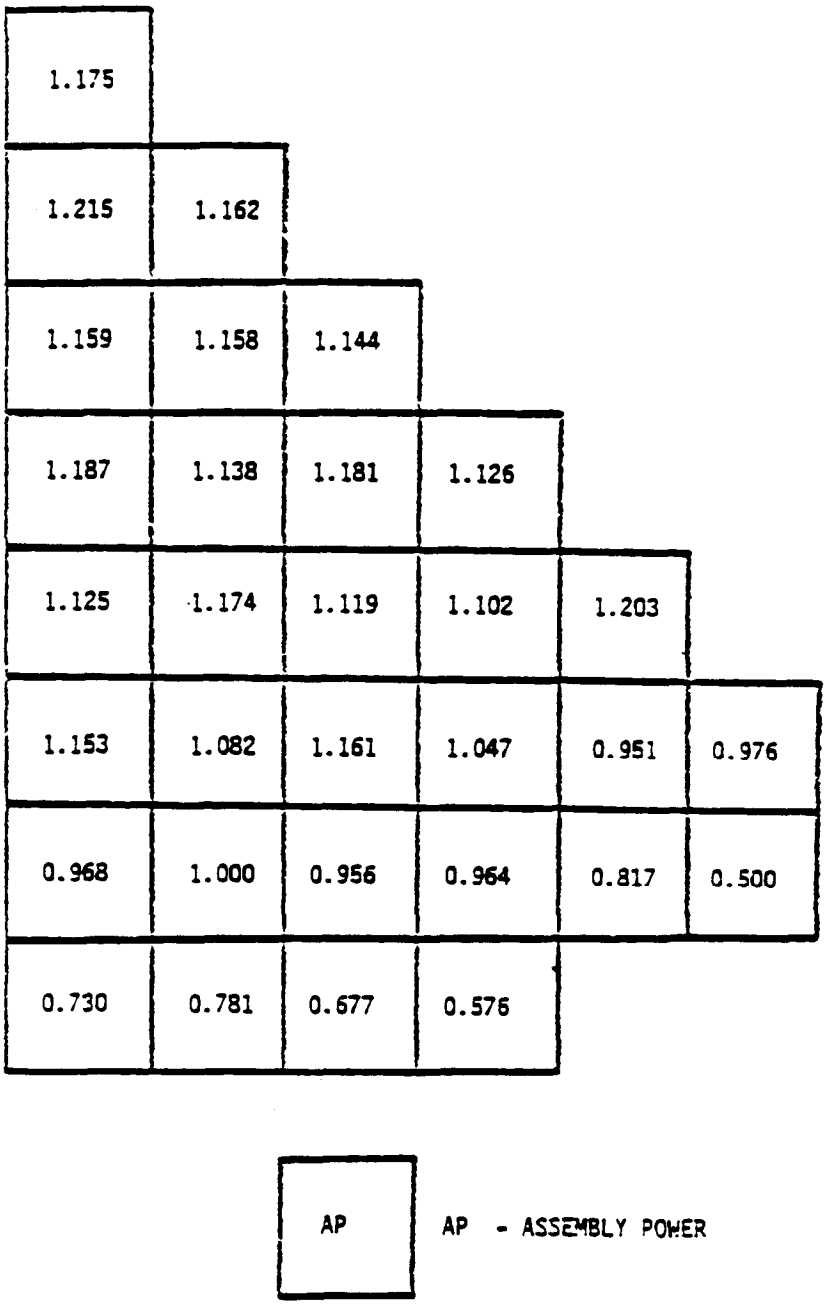


Figure 3.3.1- 3 CYCLE 1 ASSEMBLYWISE POWER (MOL) July, 1984

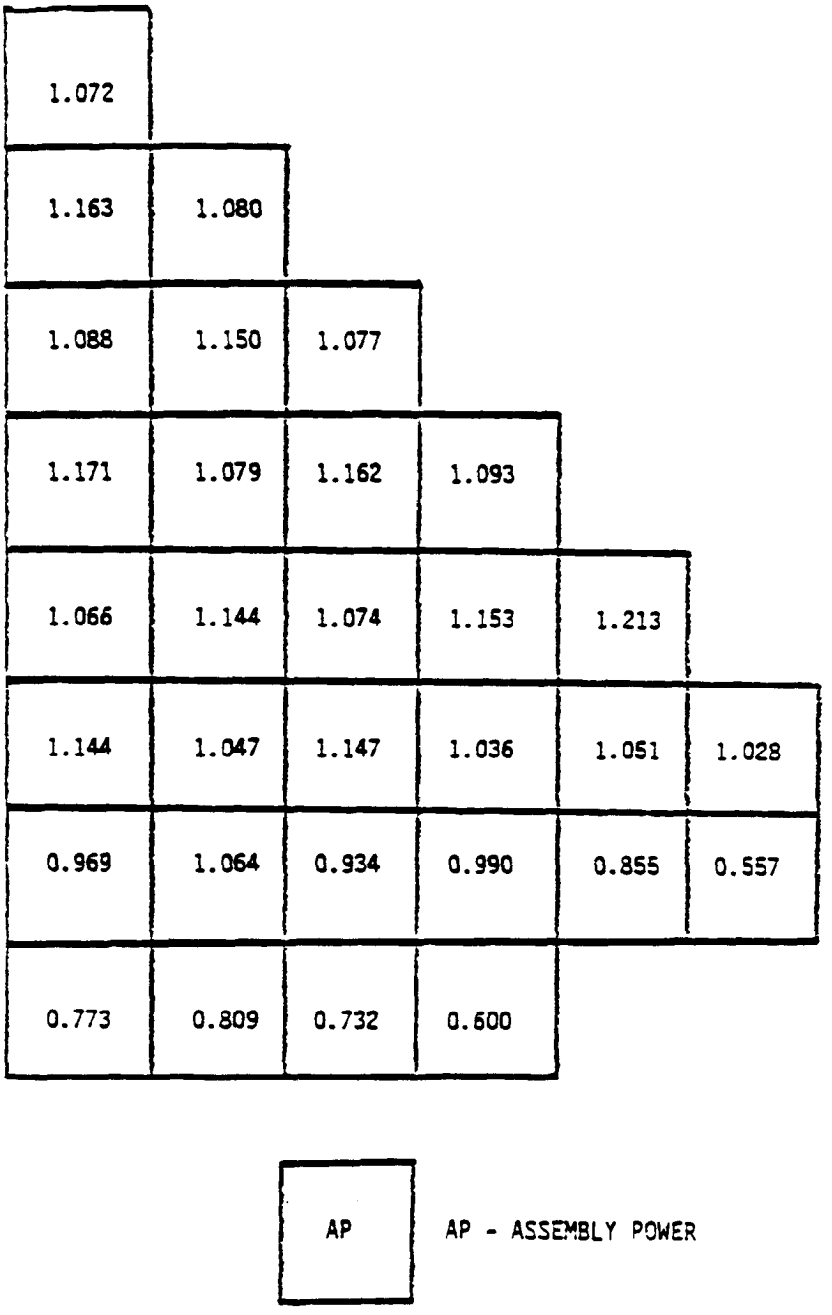
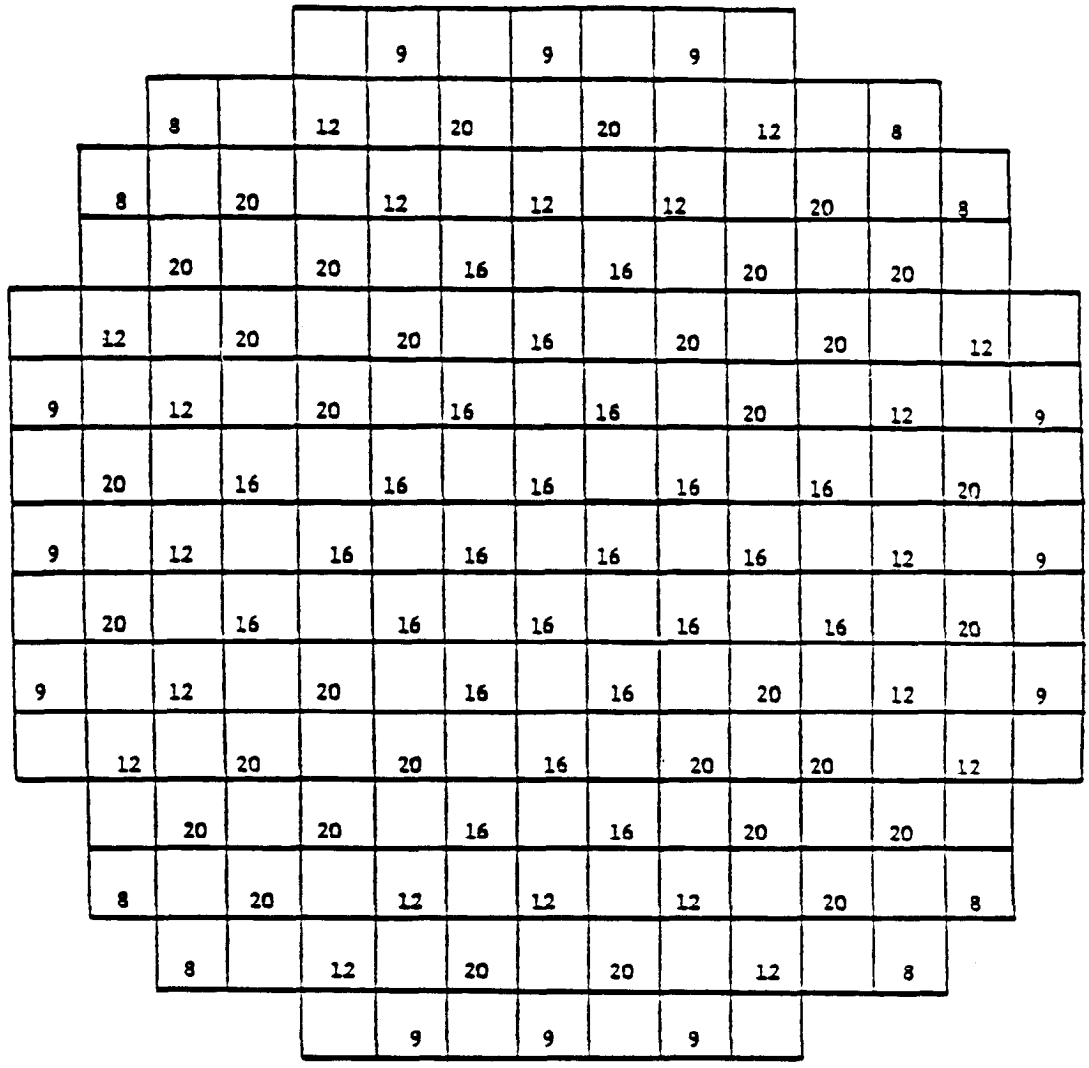
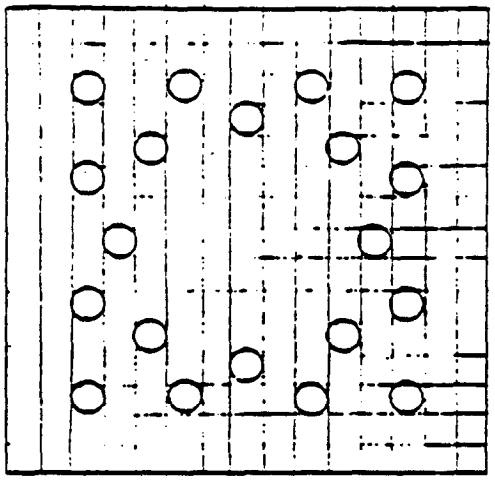


Figure 3.3.1-4 CYCLE 1 ASSEMBLYWISE POWER (EOL)

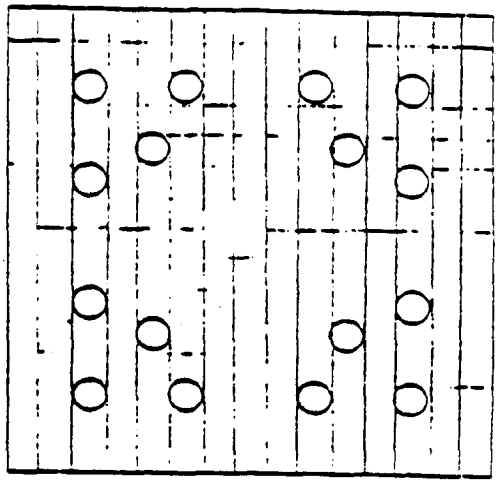


Distribution of Burnable Poison Rods -
Number of B. P. Rods per Assembly
(1436 total)
Unit 1, Cycle 1

Figure 3.3.1-11
July, 1984

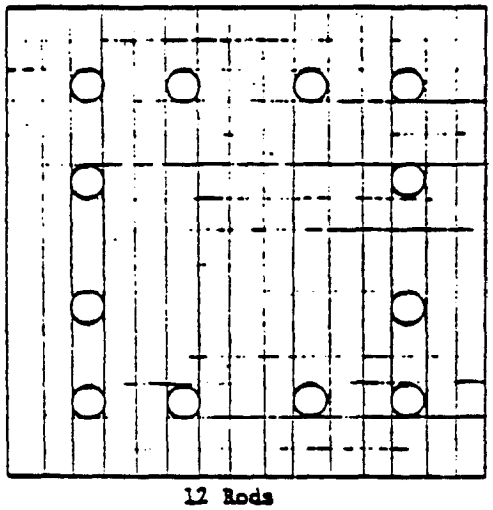


20 Rods

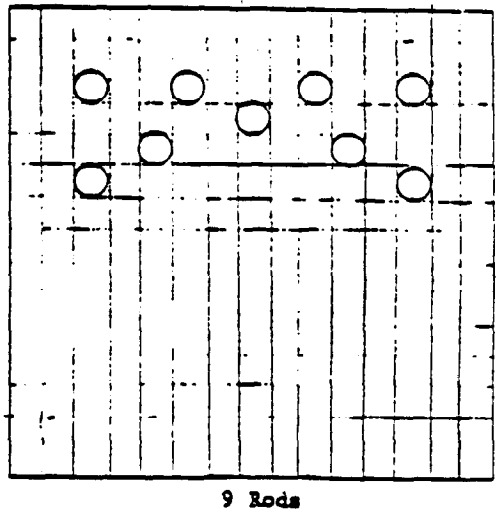


16 Rods

Core Center

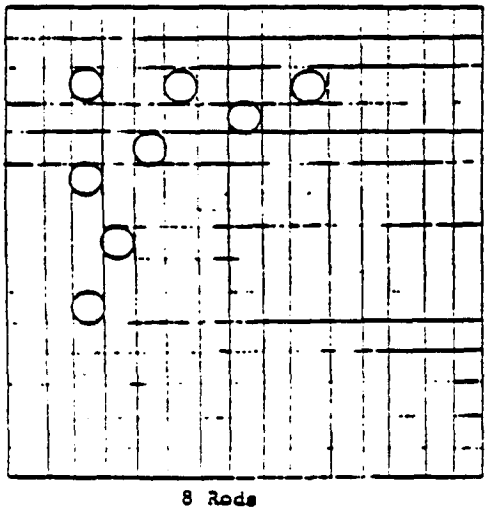


12 Rods



9 Rods

Core Center



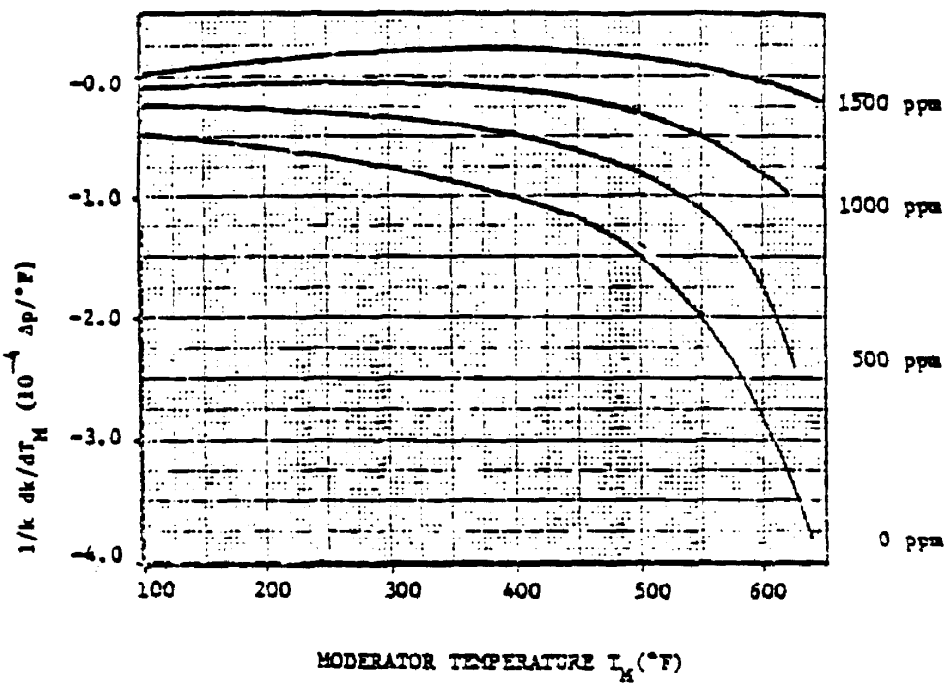
8 Rods

Arrangement of Burnable Poison Rods Within an Assembly

Unit 1, Cycle 1

Figure 3.3.1-12

July, 1984

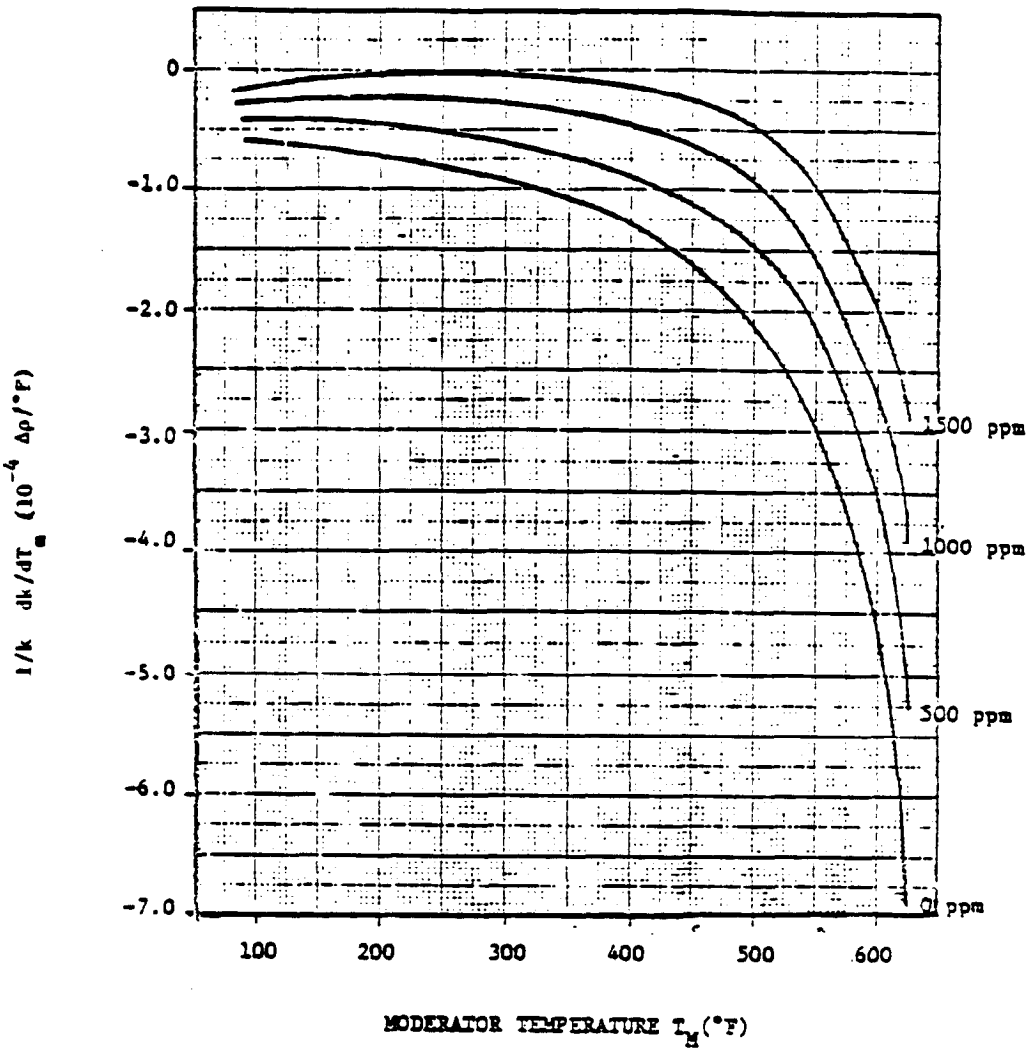


MODERATOR TEMPERATURE COEFFICIENT VS. MODERATOR TEMPERATURE

BOL, NO CONTROL RODS INSERTED

Figure 3.3.1- 13

July, 1984

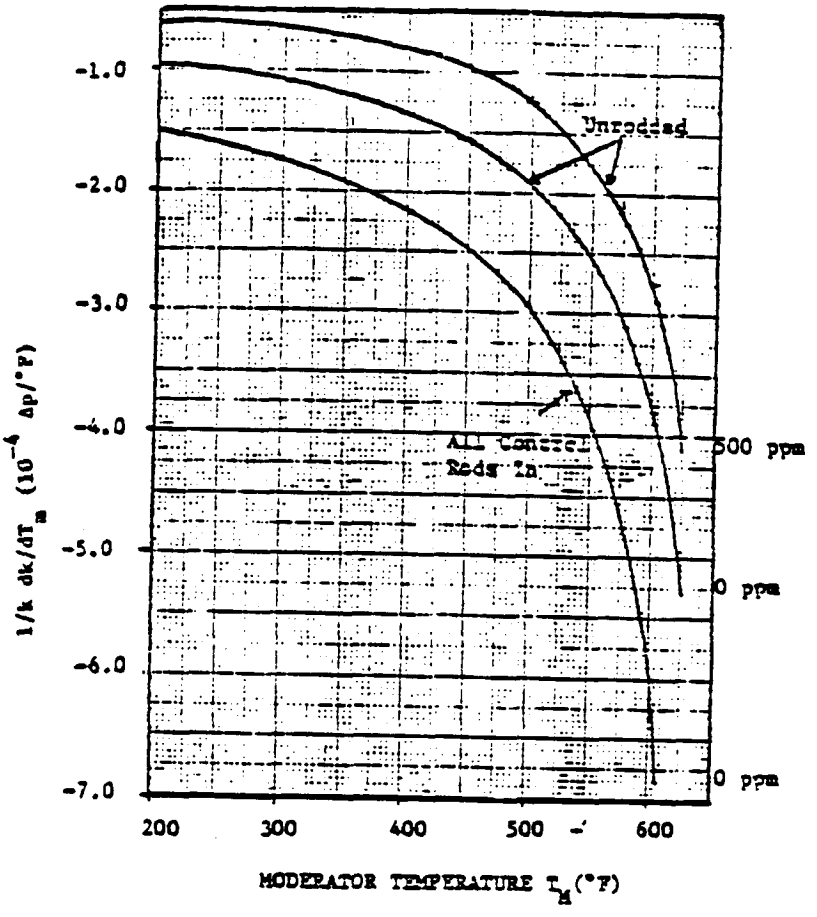


MODERATOR TEMPERATURE COEFFICIENT
VS. MODERATOR TEMPERATURE

BOL, ALL CONTROL RODS INSERTED

Figure 3.3.1-14

July, 1984



MODERATOR TEMPERATURE COEFFICIENT
VS. MODERATOR TEMPERATURE

EOL

Figure 3.3.1-15

Doppler Coefficient vs. Resonance Effective Temperature

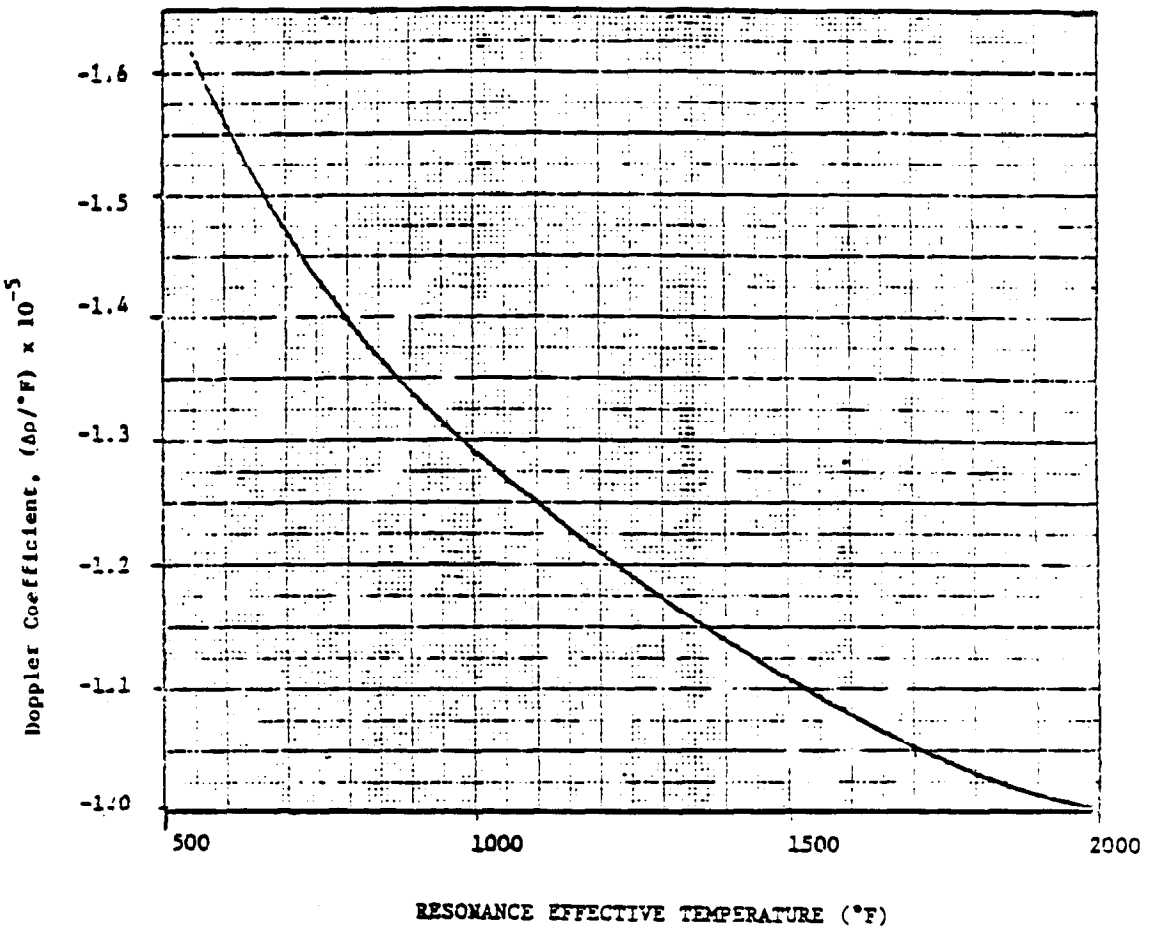


Figure 3.3.1- 16

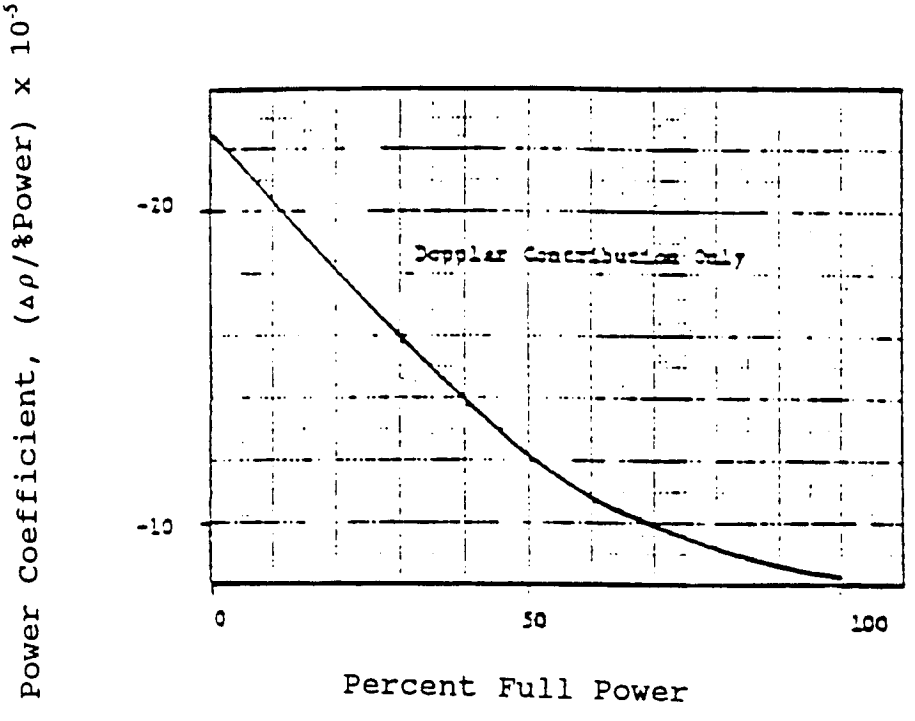
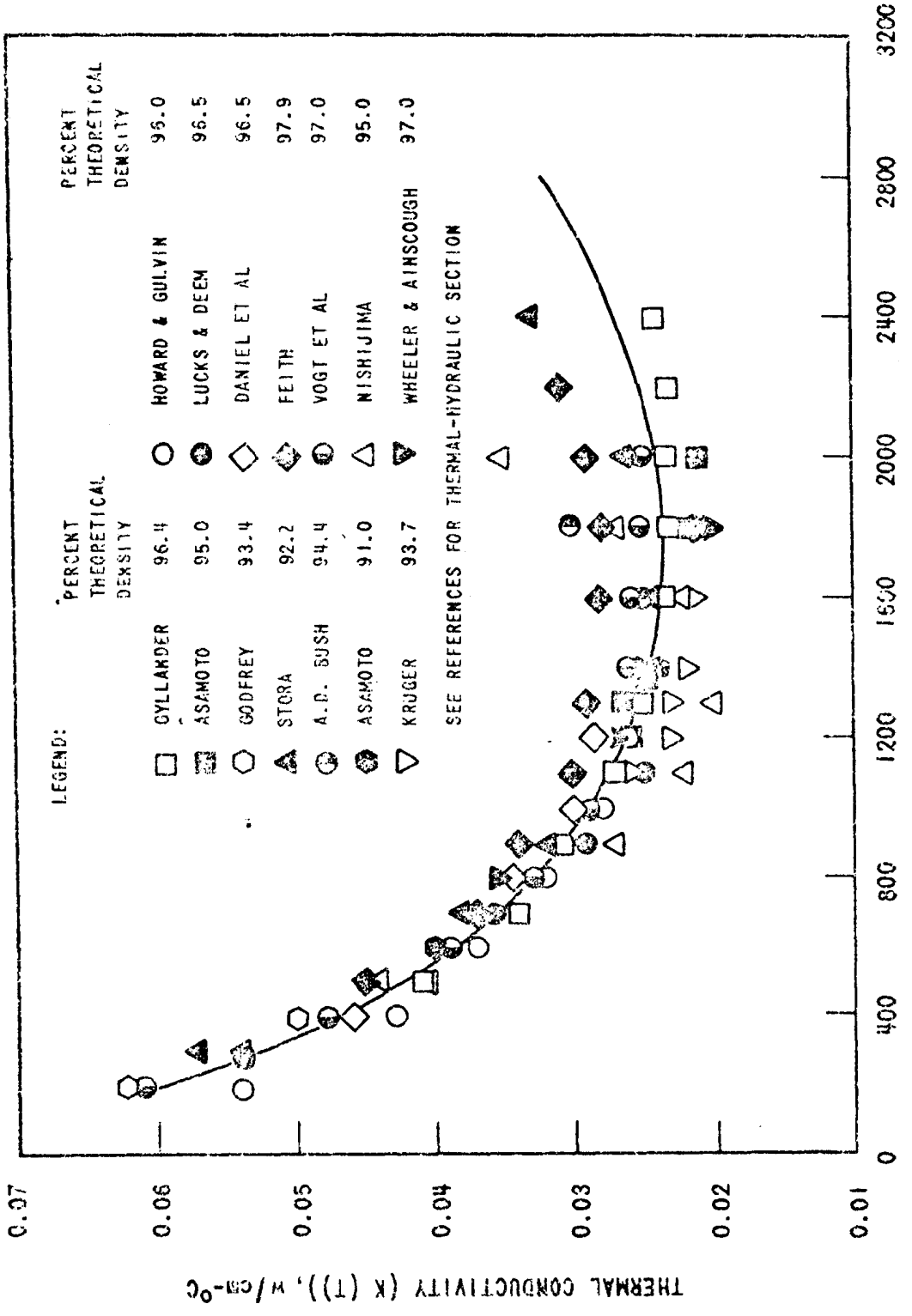


Figure 3.3.1-17: Doppler Contributions to the Power Coefficient vs. Power Level

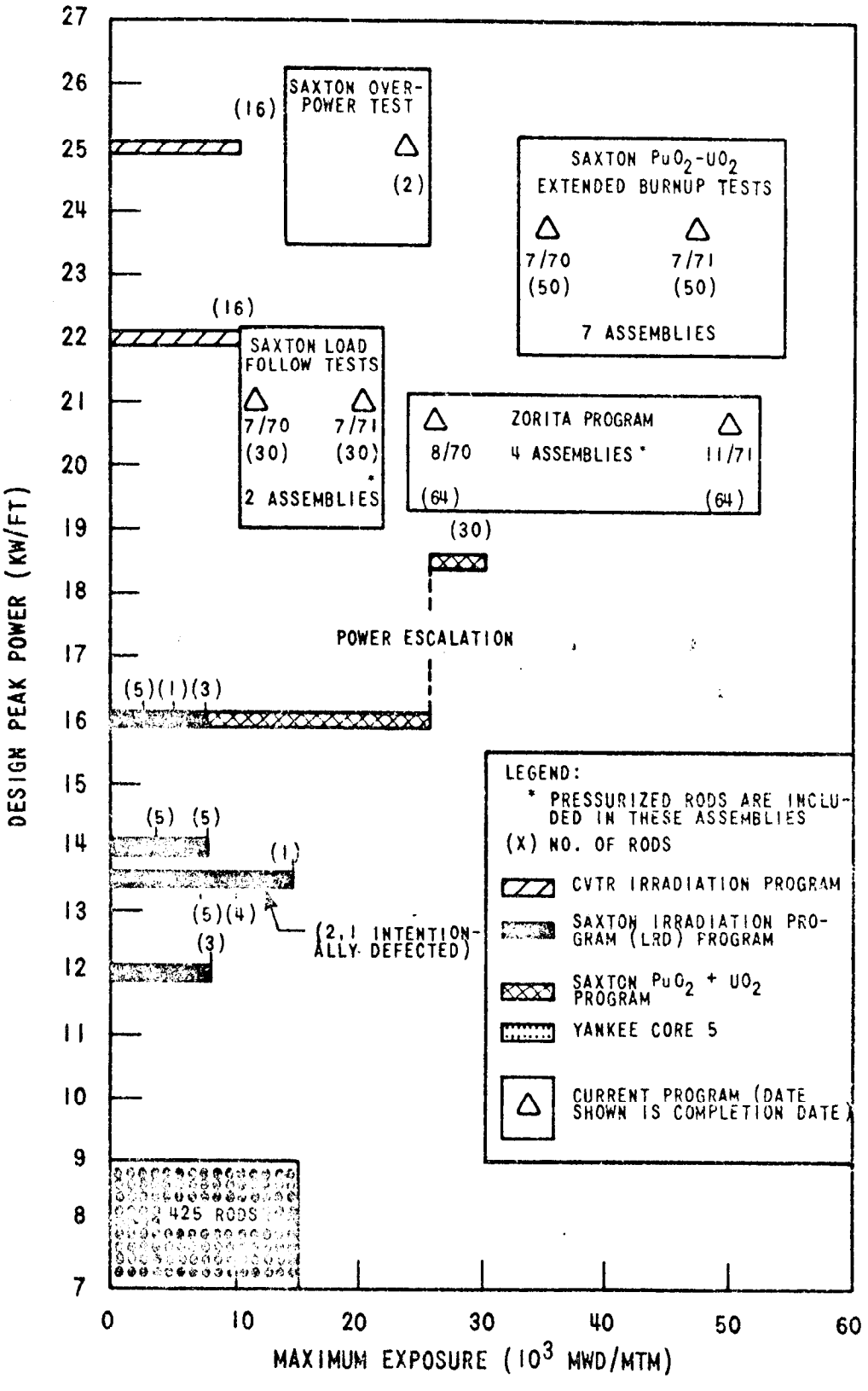
July, 1992

UNIT 1



Thermal Conductivity of UO_2 (Data Corrected to 95 Percent Theoretical Density)

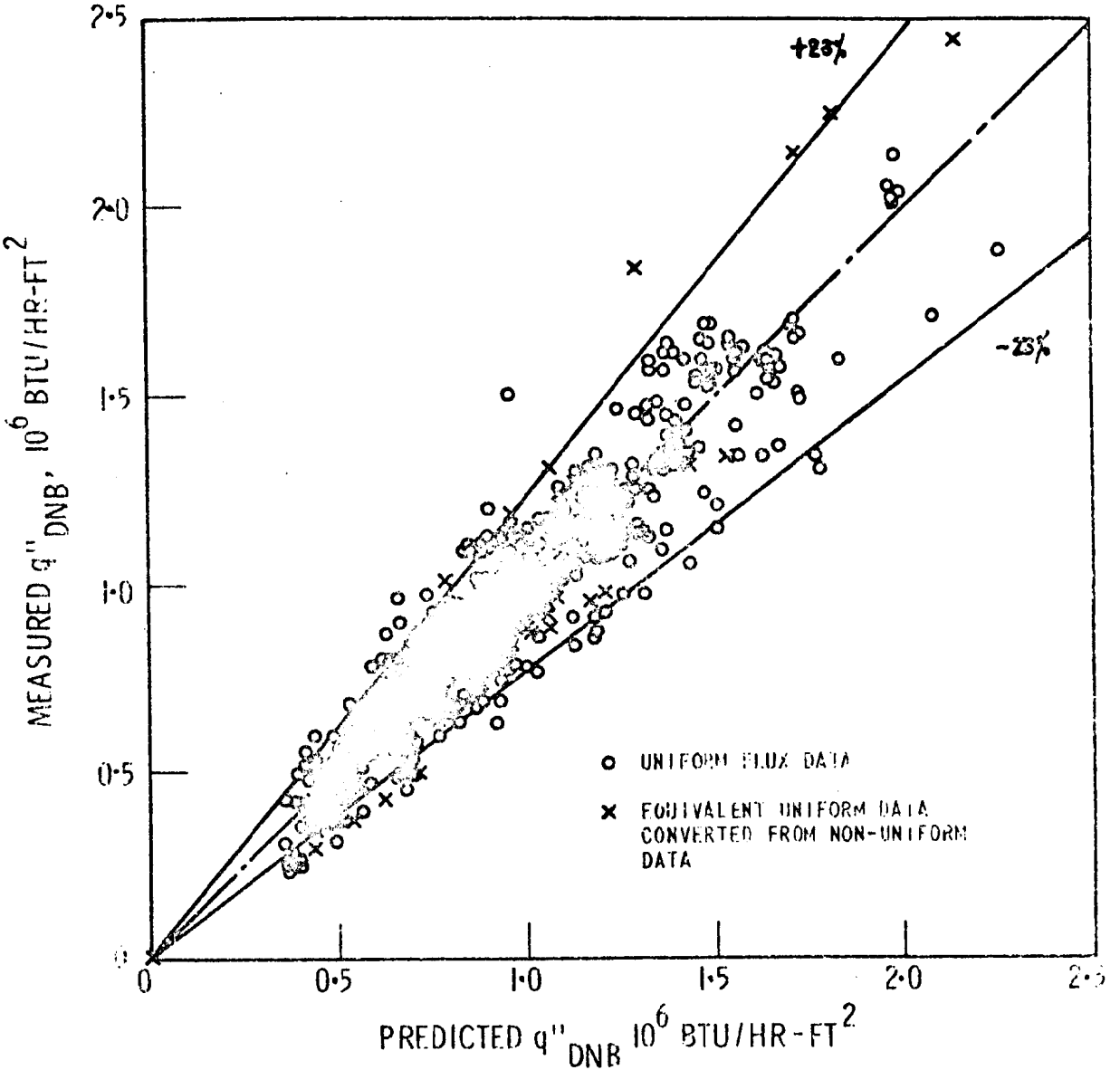
Figure 3.4.1-1



High Power Fuel Rod Experimental Program

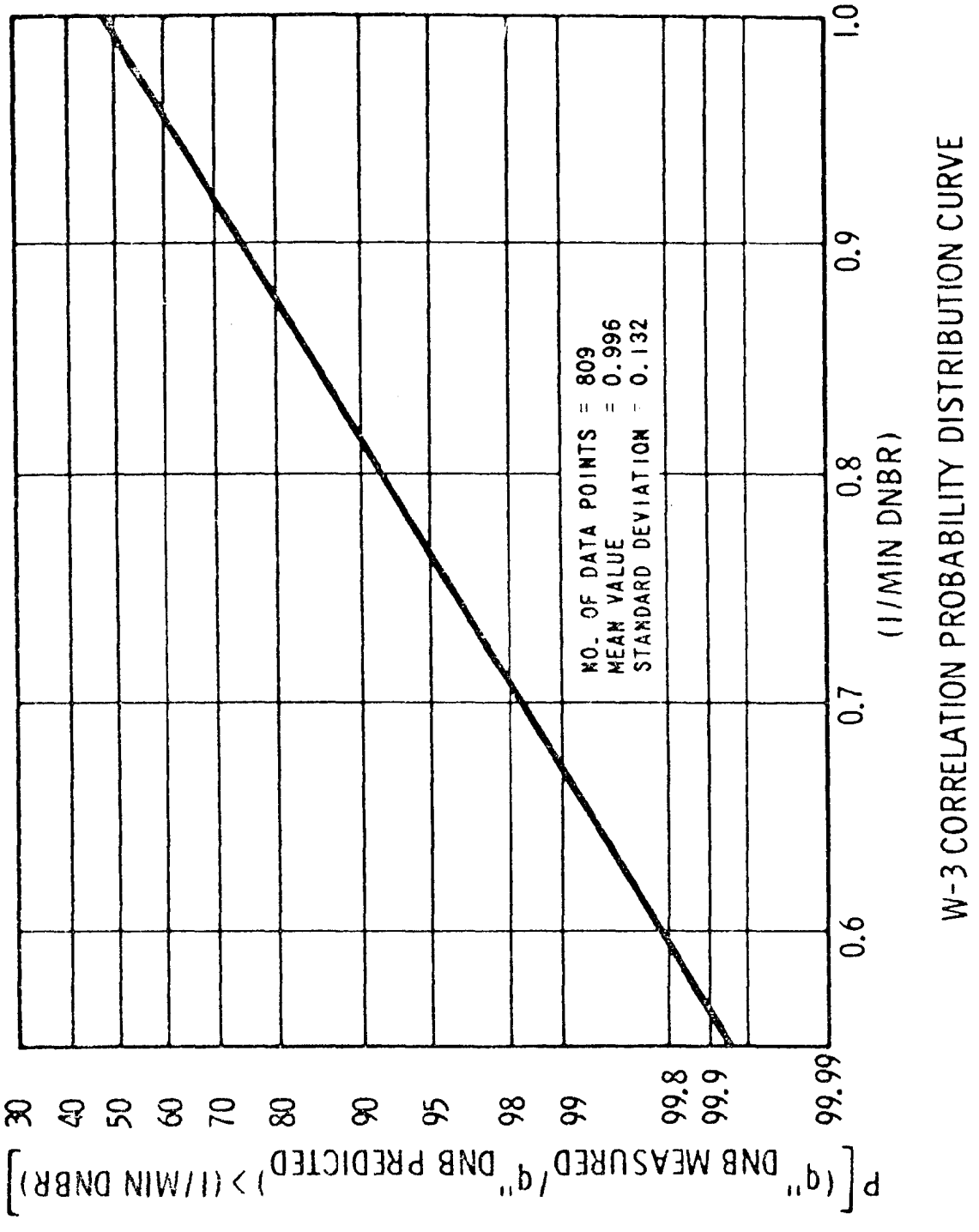
Figure 3.4.1-2

July, 1982



COMPARISON OF W-3 PREDICTION AND UNIFORM FLUX DATA

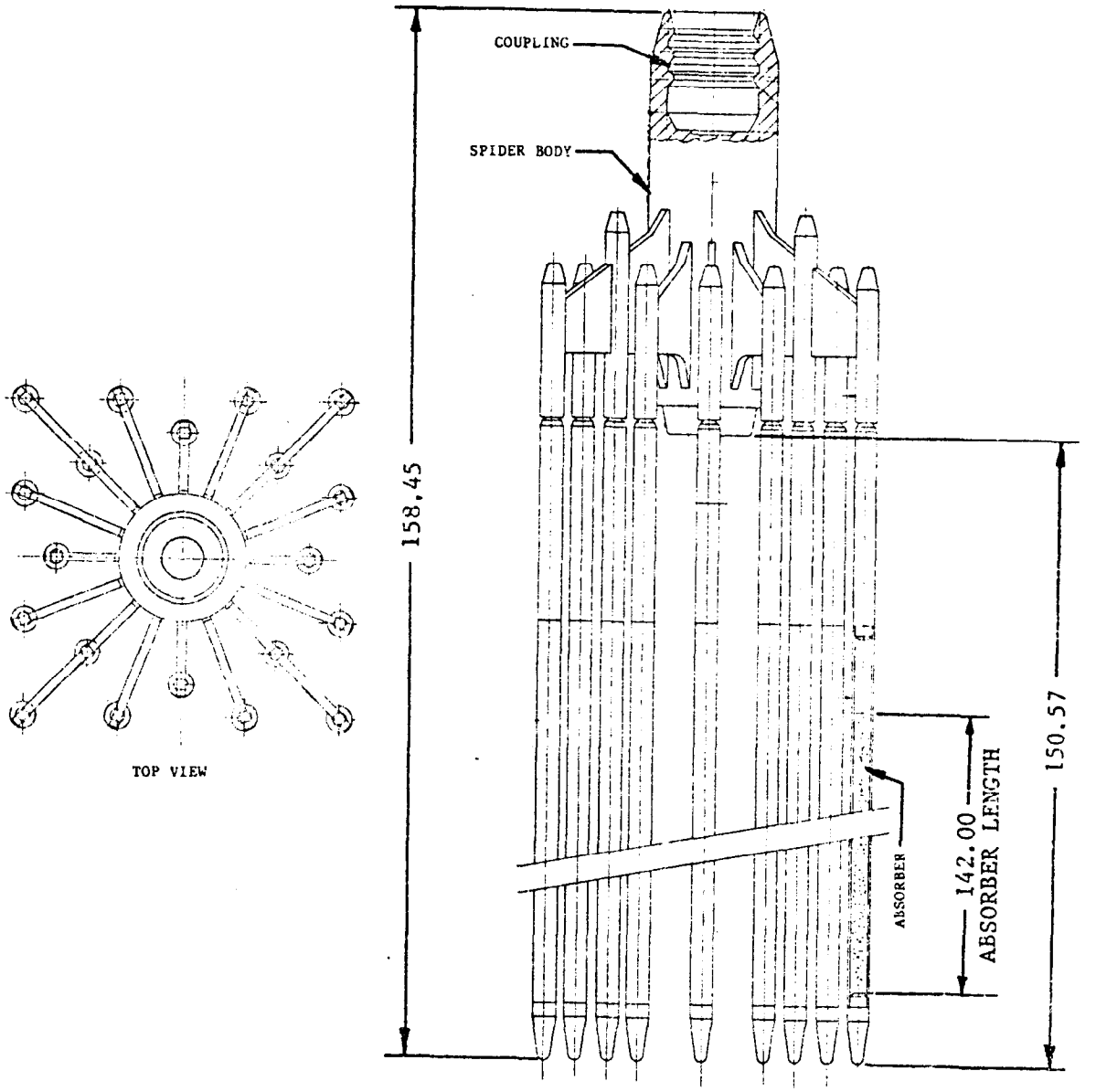
Figure 3.4.1-3
July, 1982



W-3 CORRELATION PROBABILITY DISTRIBUTION CURVE

Figure 3.4.1-4

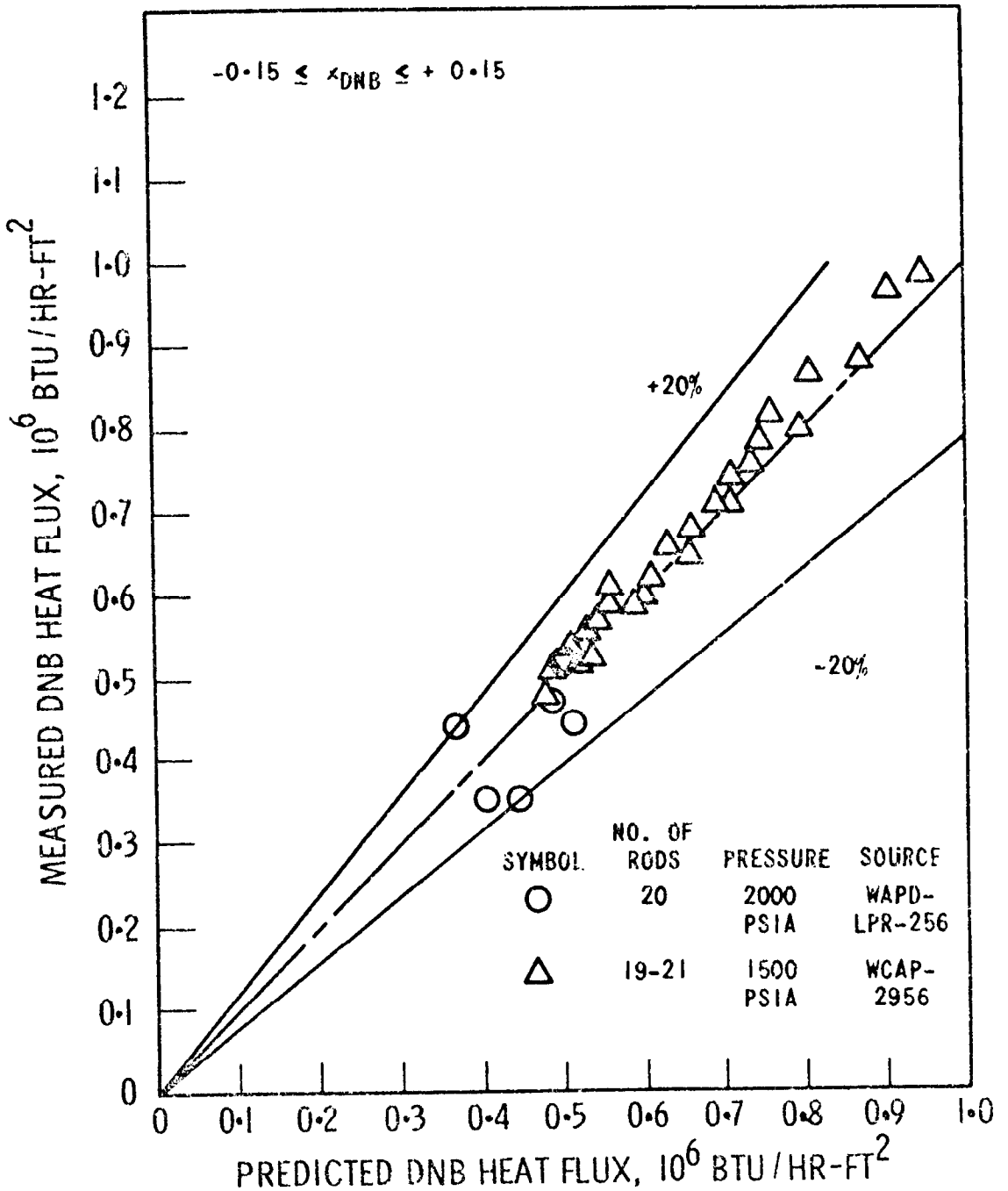
July, 1982



ROD CONTROL CLUSTER ASSEMBLY OUTLINE

Figure 3.4.1-4a

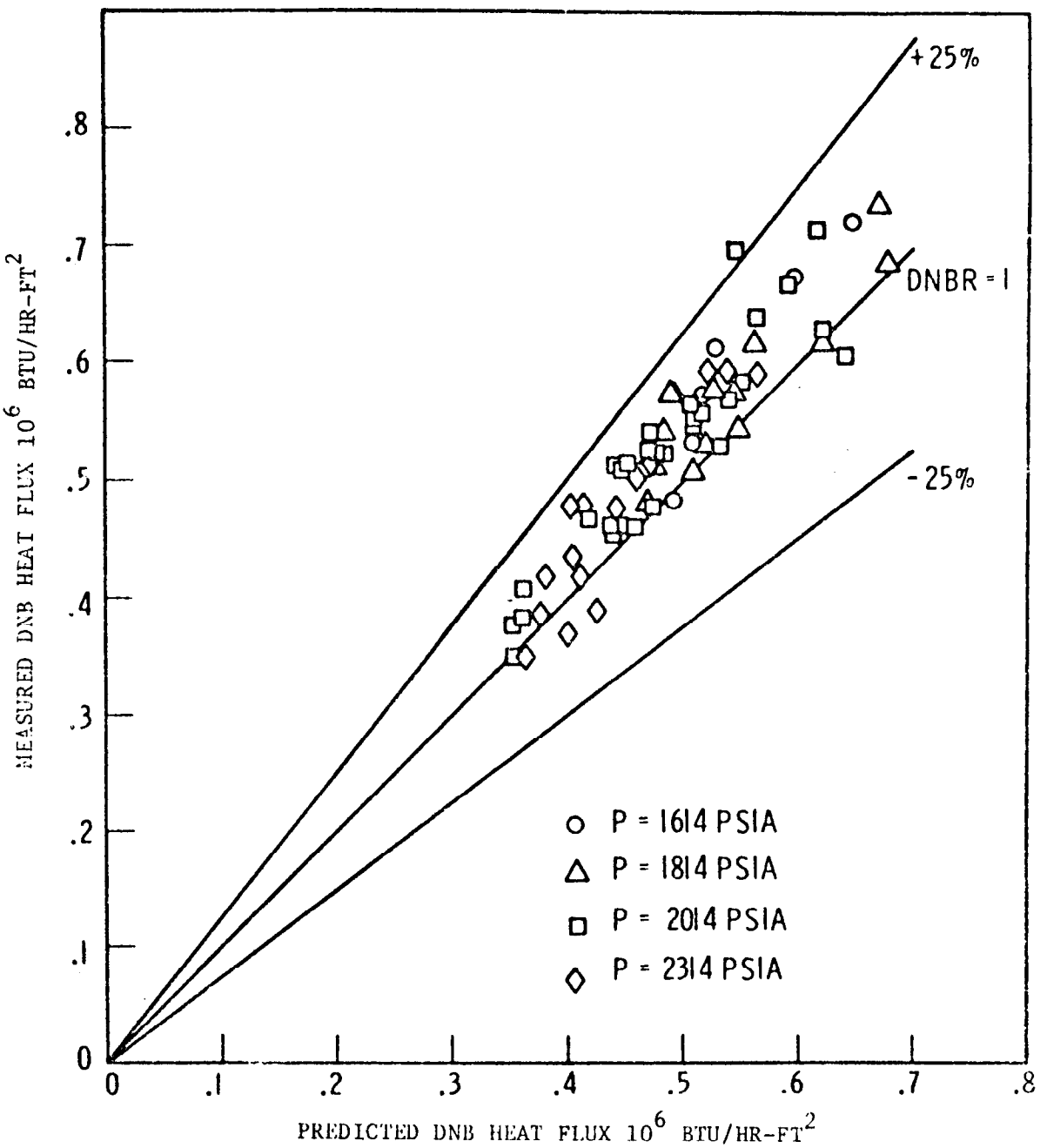
July, 1982



COMPARISON OF W-3 CORRELATION WITH ROD BUNDLE DNB DATA
(SIMPLE GRID WITHOUT MIXING VANE)

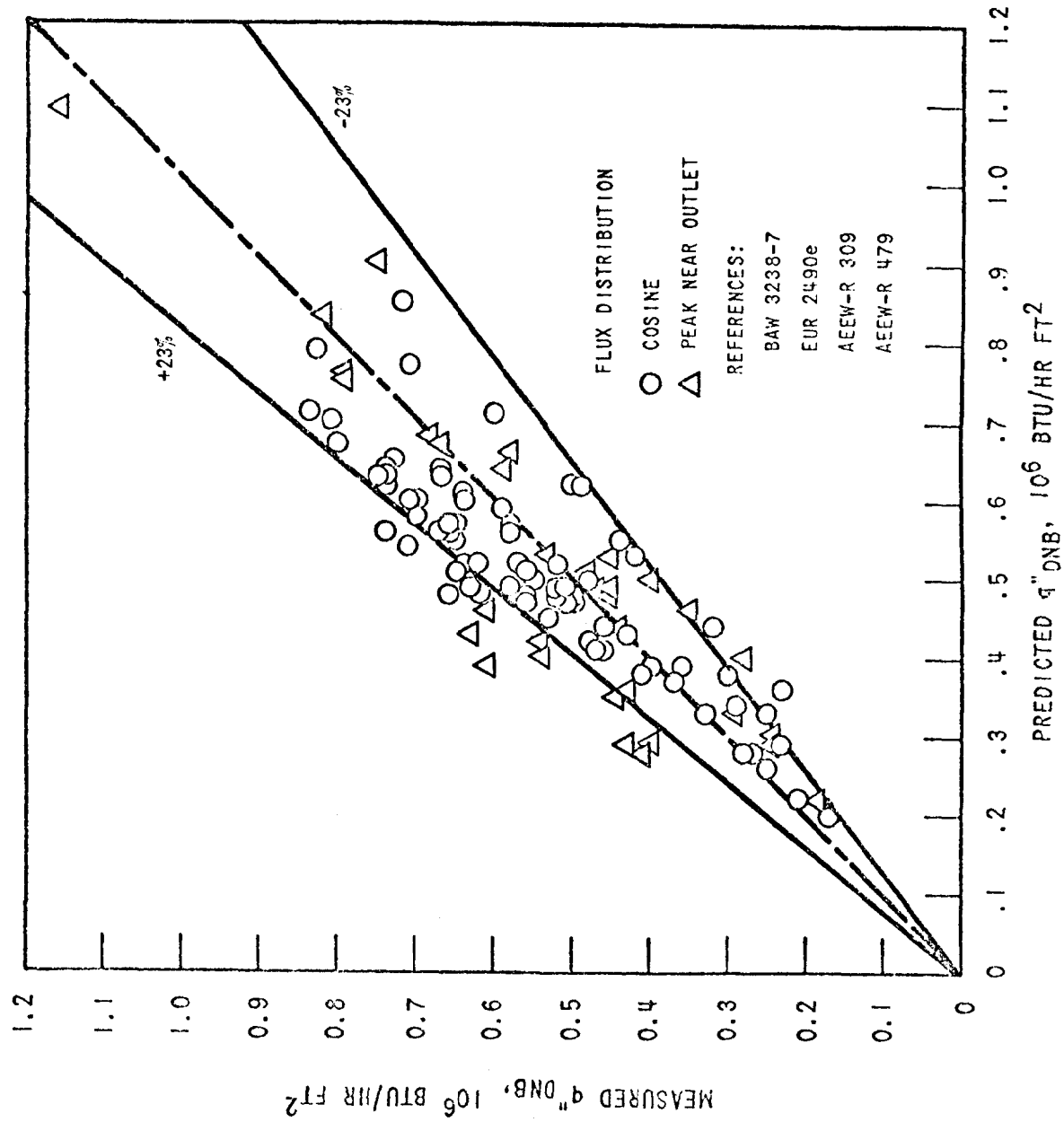
Figure 3.4.1-5

July, 1982



COMPARISON OF W-3 CORRELATION WITH ROD BUNDLE DNB DATA
(SIMPLE GRID WITH MIXING VANE)

Figure 3.4.1-6
July, 1982



COMPARISON OF NON-UNIFORM DNB DATA WITH W-3 PREDICTIONS

Figure 3.4.1-7

July, 1982

COMPARISON OF W-3 PREDICTION WITH MEASURED DNB LOCATION

Figure 3.4.1-8

July, 1982

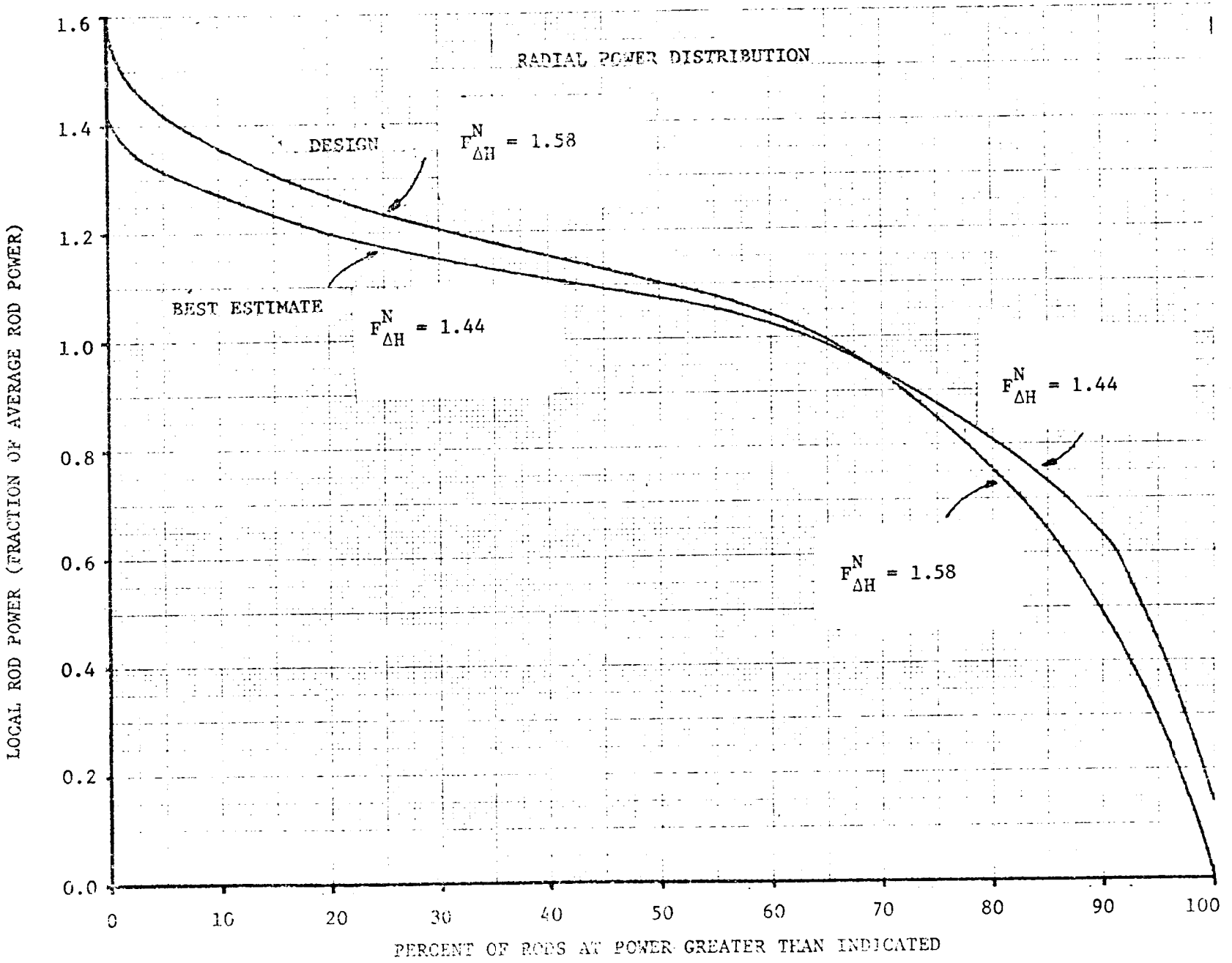
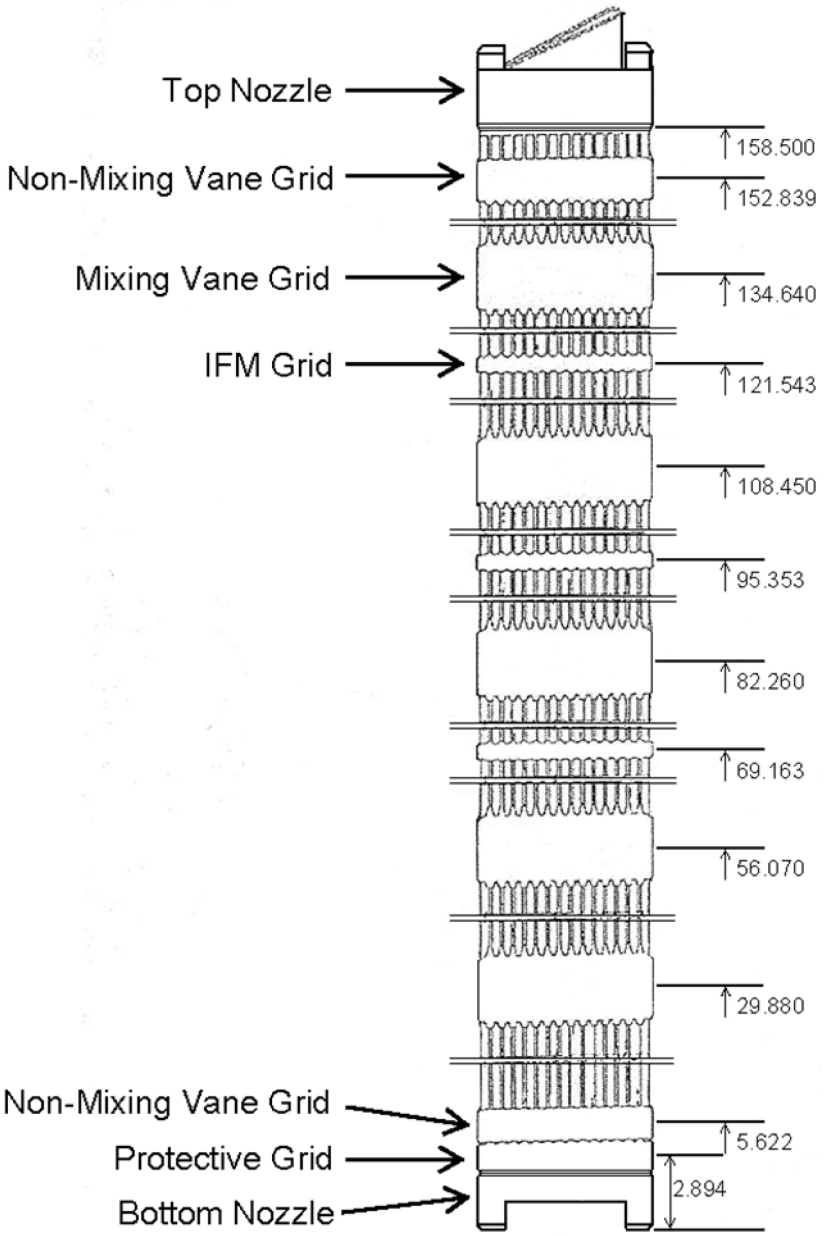


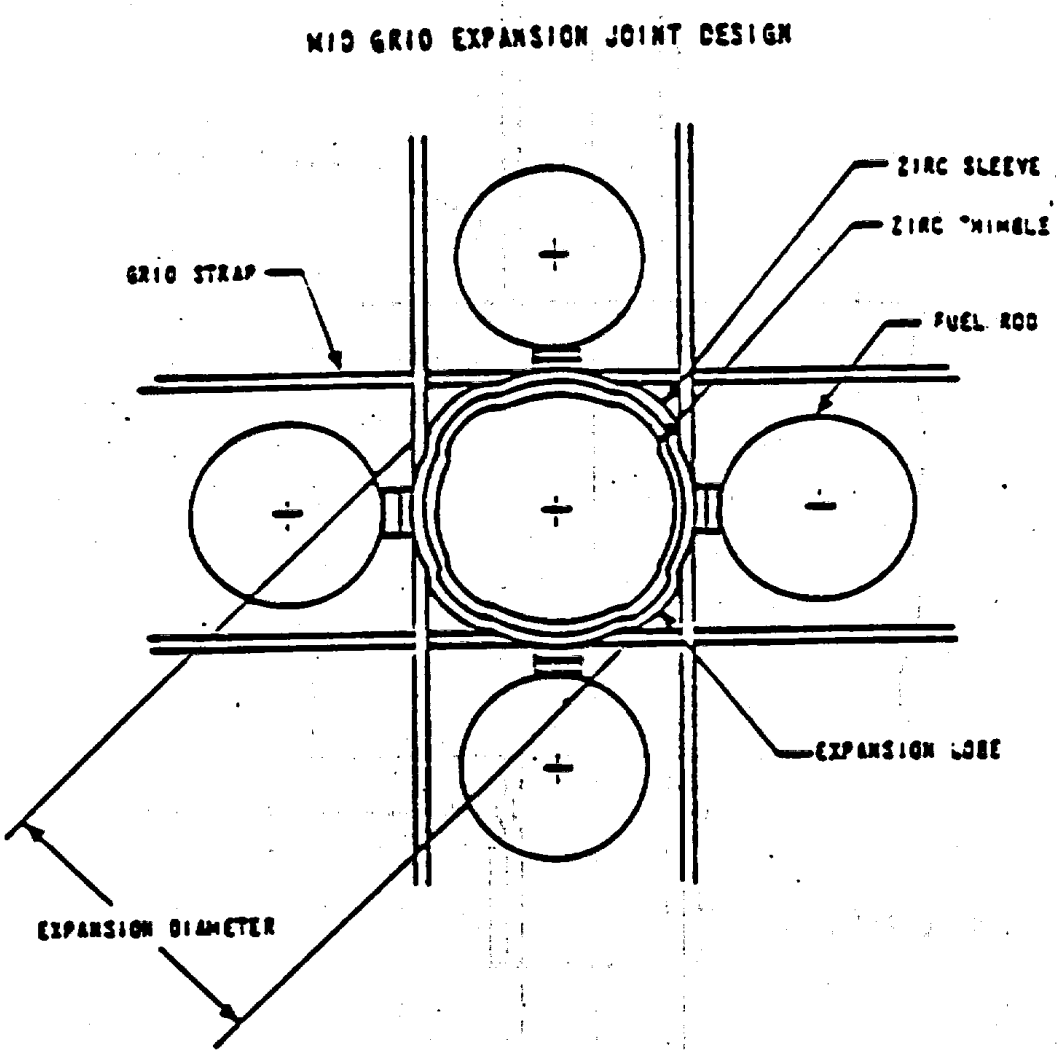
Figure 3.4.1-9

July, 1982



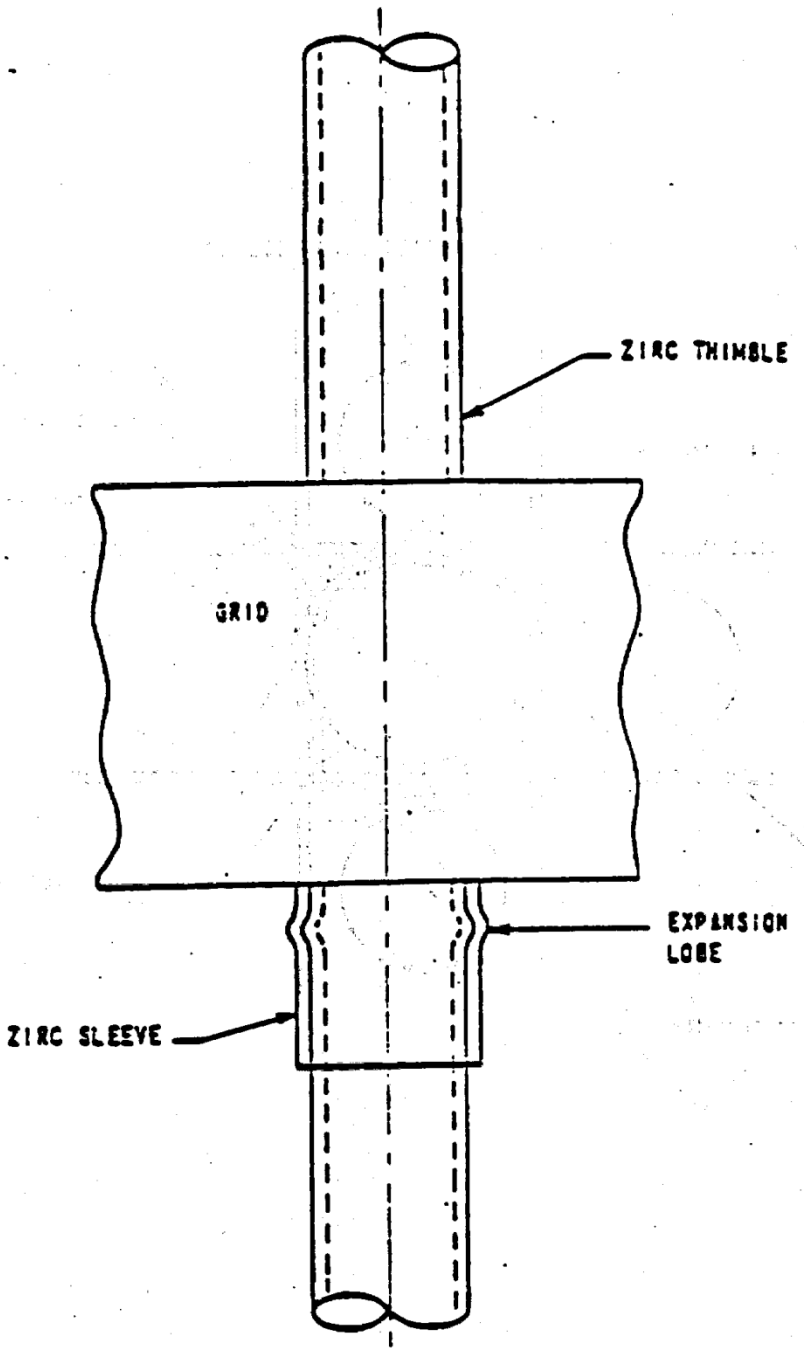
15 x 15 Upgrade

UFSAR Figure: **3.5.1-1**	Change Description: **UCR-2042, Rev. 0**
Title: **Schematic of Westinghouse 15 x 15 Upgrade Fuel**	Unit: **1** Last Revised: Revision 25.0



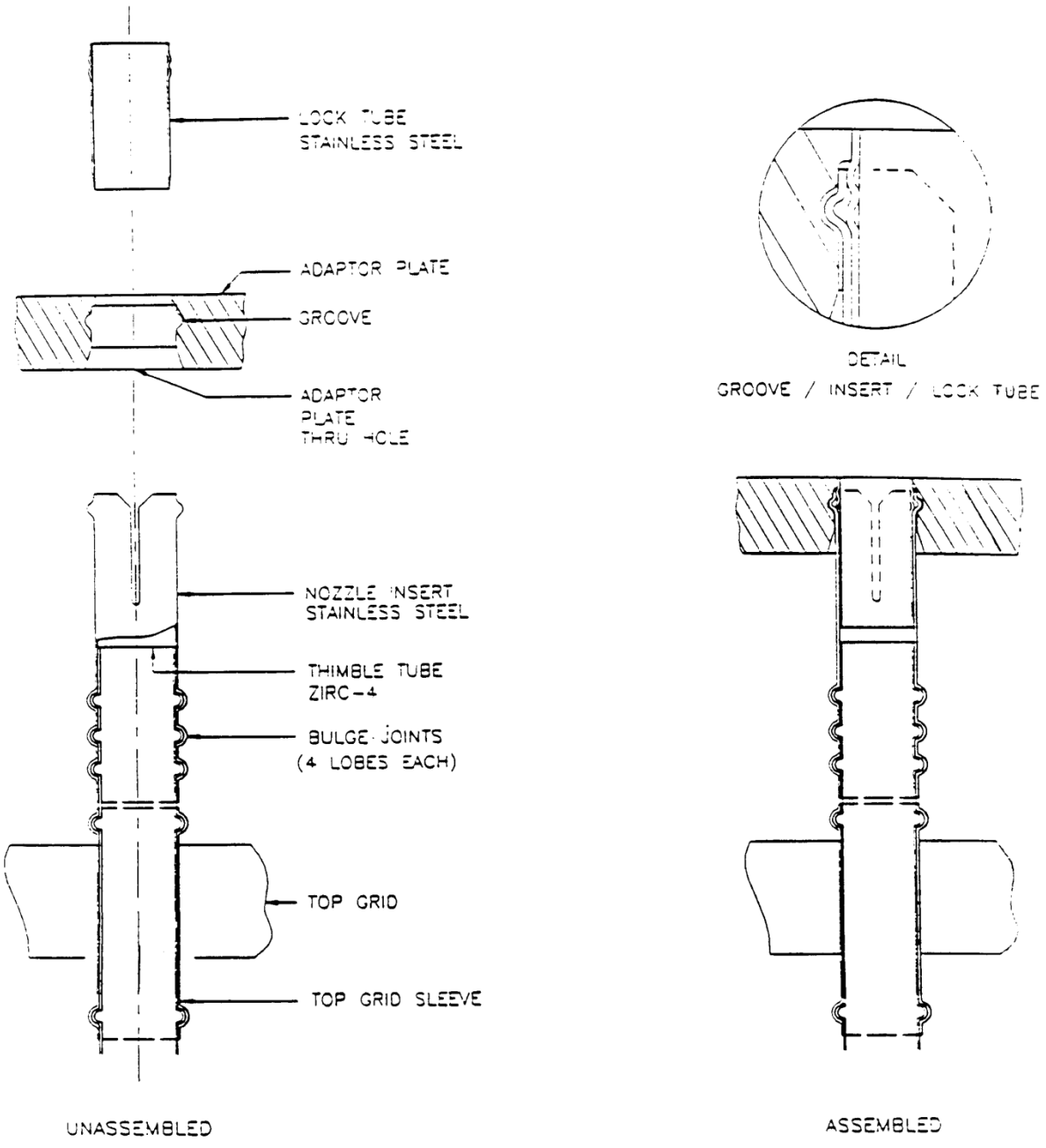
Revision: **24.0**	Change Description: **UCR-1990, Rev. 0**

AMERICAN ELECTRIC POWER COOK NUCLAR PLANT NUCLEAR GENERATION GROUP BRIDGMAN, MICHIGAN	Title: **Plan View of Mid Grid to Guide Thimble Joint (Bottom View)**	
	UFSAR Figure: **3.5.1-2**	Sheet 1 of 1



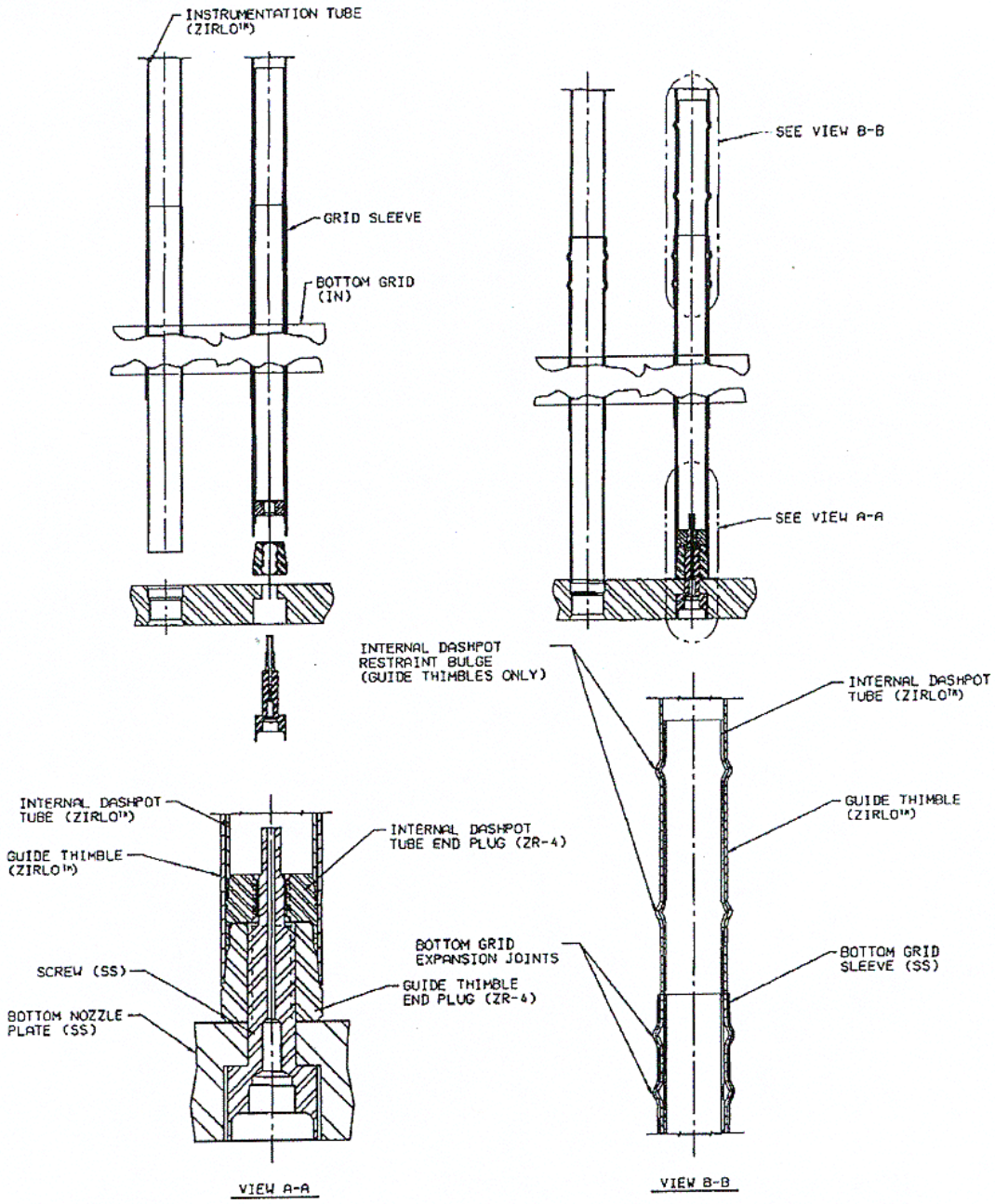
Revision: **24.0**	Change Description: **UCR-1990, Rev. 0**

AMERICAN ELECTRIC POWER COOK NUCLAR PLANT NUCLEAR GENERATION GROUP BRIDGMAN, MICHIGAN	Title: **Elevation View of Mid-Grid to Guide Thimble Joint**	
	UFSAR Figure: **3.5.1-3**	Sheet 1 of 1



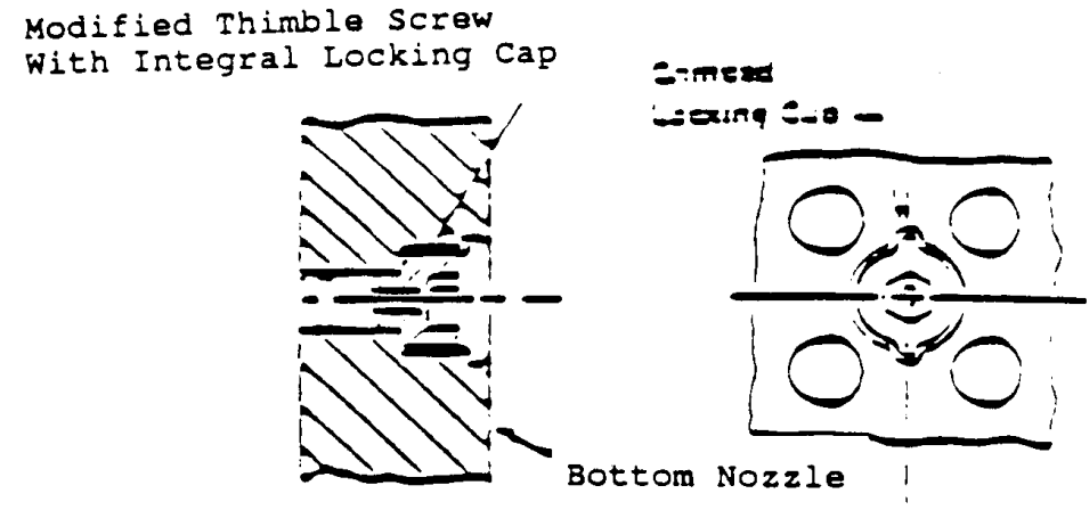
Revision: **24.0**	Change Description: **UCR-1990, Rev. 0**

AMERICAN ELECTRIC POWER COOK NUCLAR PLANT NUCLEAR GENERATION GROUP BRIDGMAN, MICHIGAN	Title: **Top Grid to Guide Thimble and Removable Top Nozzle Attachment**	
	UFSAR Figure: **3.5.1-4**	Sheet 1 of 1



Revision: **24.0**	Change Description: **UCR-1990, Rev. 0**

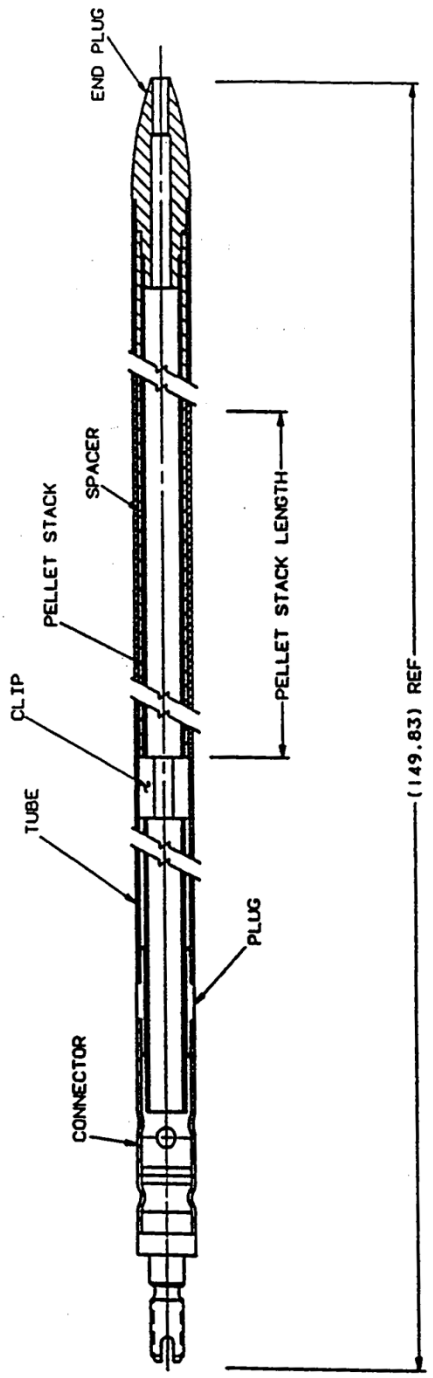
AMERICAN ELECTRIC POWER COOK NUCLAR PLANT NUCLEAR GENERATION GROUP BRIDGMAN, MICHIGAN	Title: **Upgrade Fuel Design Guide Thimble to Bottom Grid and Nozzle Joint**	
	UFSAR Figure: **3.5.1-5**	Sheet 1 of 1



Reconstitutible Bottom Nozzle Design

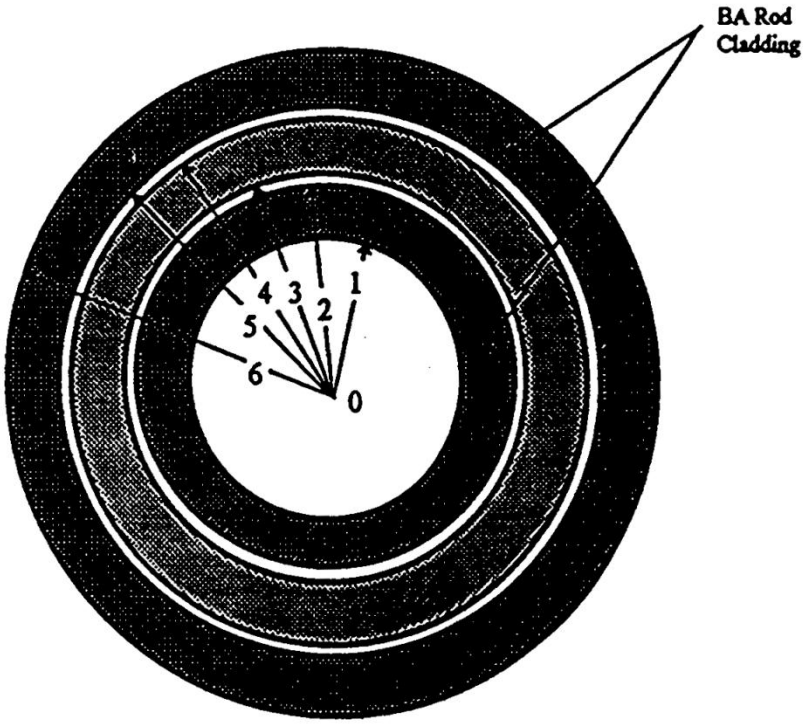
Revision: **24.0**	Change Description: **UCR-1990, Rev. 0**

AMERICAN ELECTRIC POWER COOK NUCLAR PLANT NUCLEAR GENERATION GROUP BRIDGMAN, MICHIGAN	Title: **Bottom Nozzle to Thimble Tube Connection**	
	UFSAR Figure: **3.5.1-6**	Sheet 1 of 1



Revision: **24.0**	Change Description: **UCR-1990, Rev. 0**

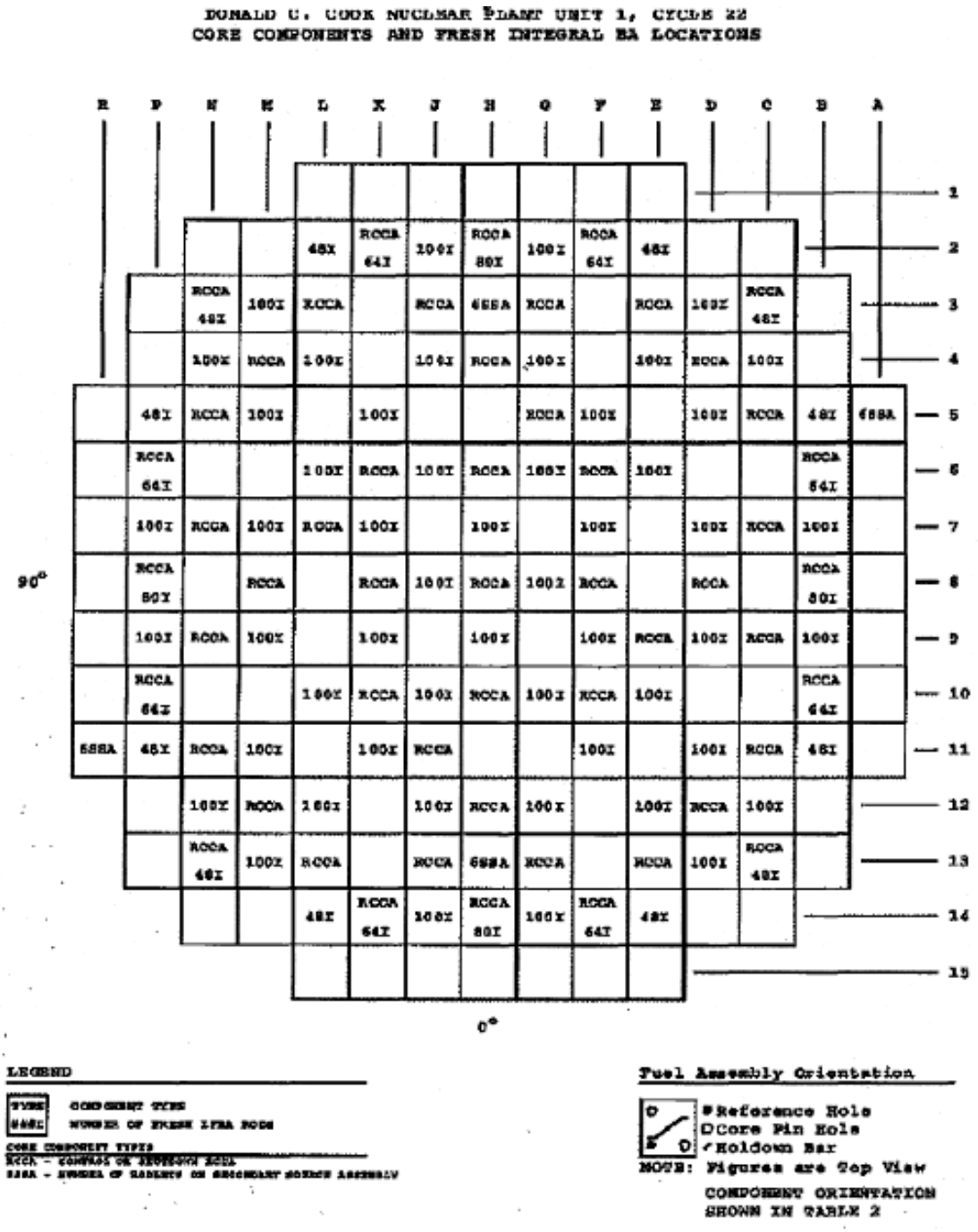
AMERICAN ELECTRIC POWER COOK NUCLAR PLANT NUCLEAR GENERATION GROUP BRIDGMAN, MICHIGAN	Title: **Wet Annular Burnable Absorber Rod**	
	UFSAR Figure: **3.5.1-7**	Sheet 1 of 1



Zone Number	Previous Design BA	WABA Design
0 - 1	Air	Water
1 - 2	Stainless Steel	Zircalloy
2 - 3	Air	Helium
3 - 4	Borosilicate Glass	Al_2O_3-B_4C
4 - 5	Air	Helium
5 - 6	Stainless Steel	Zircalloy

Revision: **24.0**	Change Description: **UCR-1990, Rev. 0**

AMERICAN ELECTRIC POWER COOK NUCLAR PLANT NUCLEAR GENERATION GROUP BRIDGMAN, MICHIGAN	Title: **Comparison of Borosilicate Glass Absorber Rod with WABA Rod**	
	UFSAR Figure: **3.5.1-8**	Sheet 1 of 1

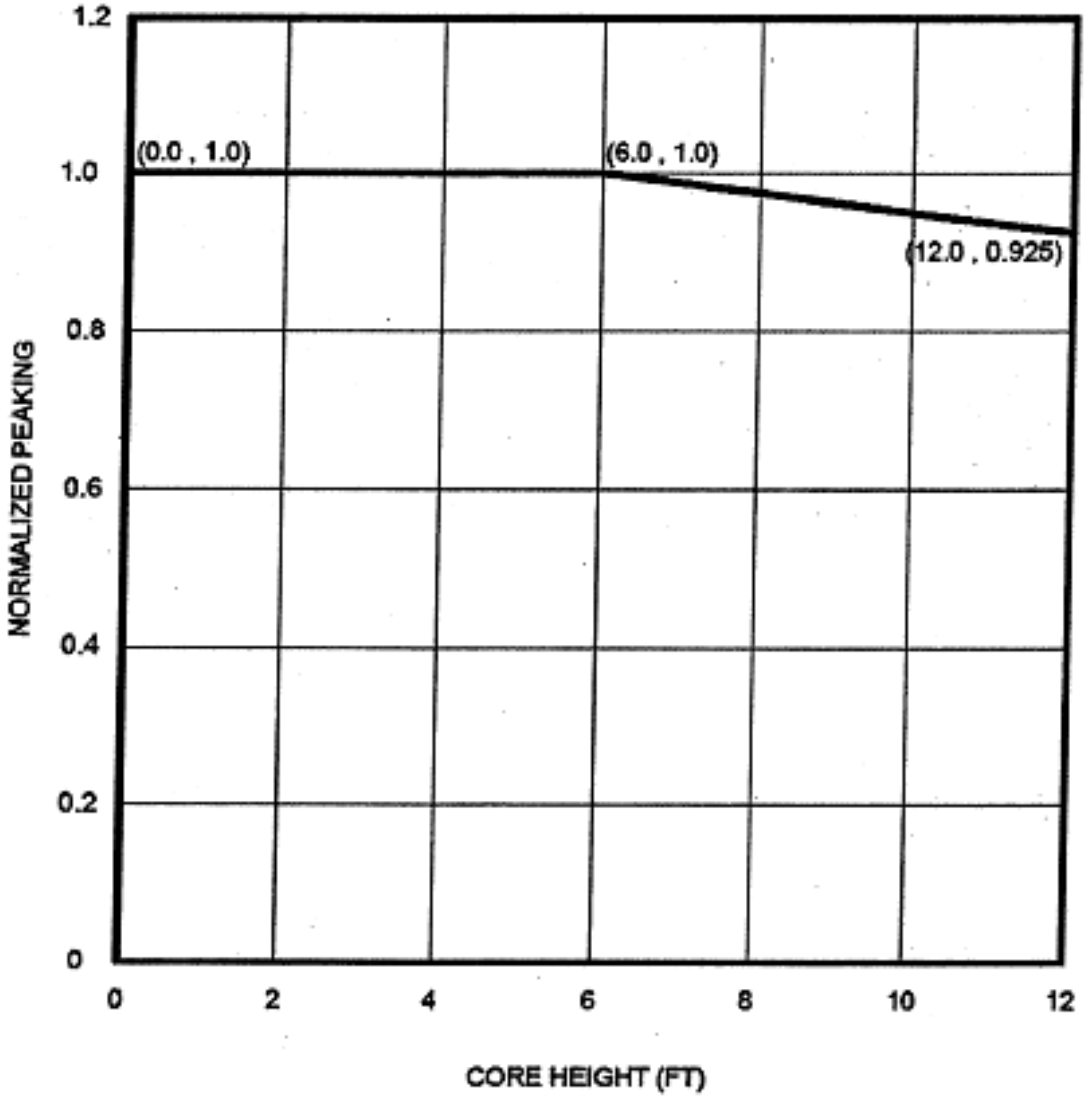


Revision: **24.0**	Change Description: **UCR-1990, Rev. 0**

AMERICAN ELECTRIC POWER COOK NUCLAR PLANT NUCLEAR GENERATION GROUP BRIDGMAN, MICHIGAN	Title: **Example Core Loading Pattern**	
	UFSAR Figure: **3.5.2-1**	Sheet 1 of 1

Cook Nuclear Plant Unit 1 Cycle 22

K(Z) – NORMALIZED $F_Q(Z)$ AS A FUNCTION OF CORE HEIGHT



Revision: **24.0**	Change Description: **UCR-1990, Rev. 0**

AMERICAN ELECTRIC POWER COOK NUCLAR PLANT NUCLEAR GENERATION GROUP BRIDGMAN, MICHIGAN	Title: **K(Z) – Normalized Fq(Z) as a Function of Core Height**	
	UFSAR Figure: **3.5.2-2**	Sheet 1 of 1

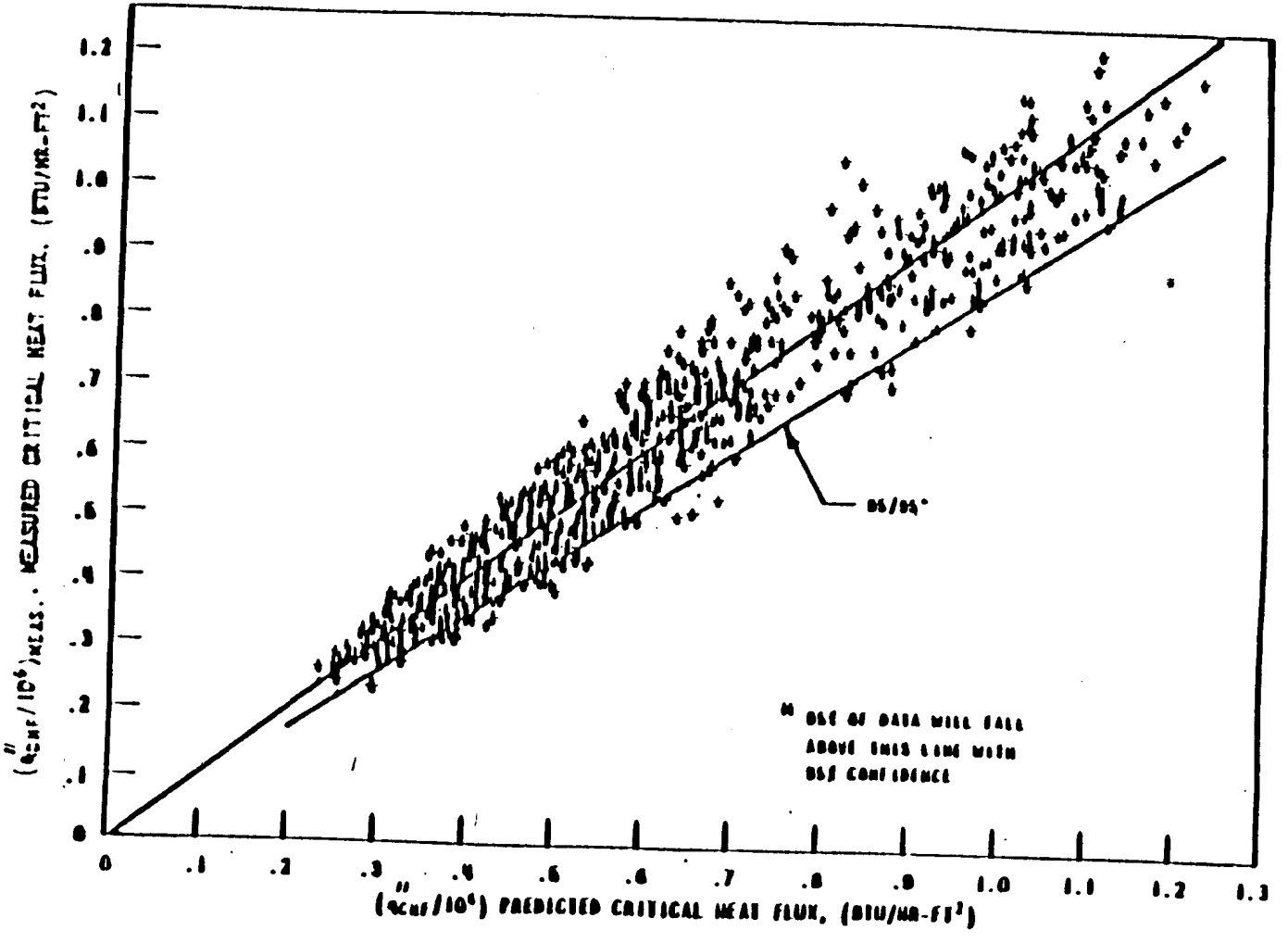


FIGURE 3.5.3-1 Measured versus Predicted Critical Heat Flux - WRB-1 Correlation

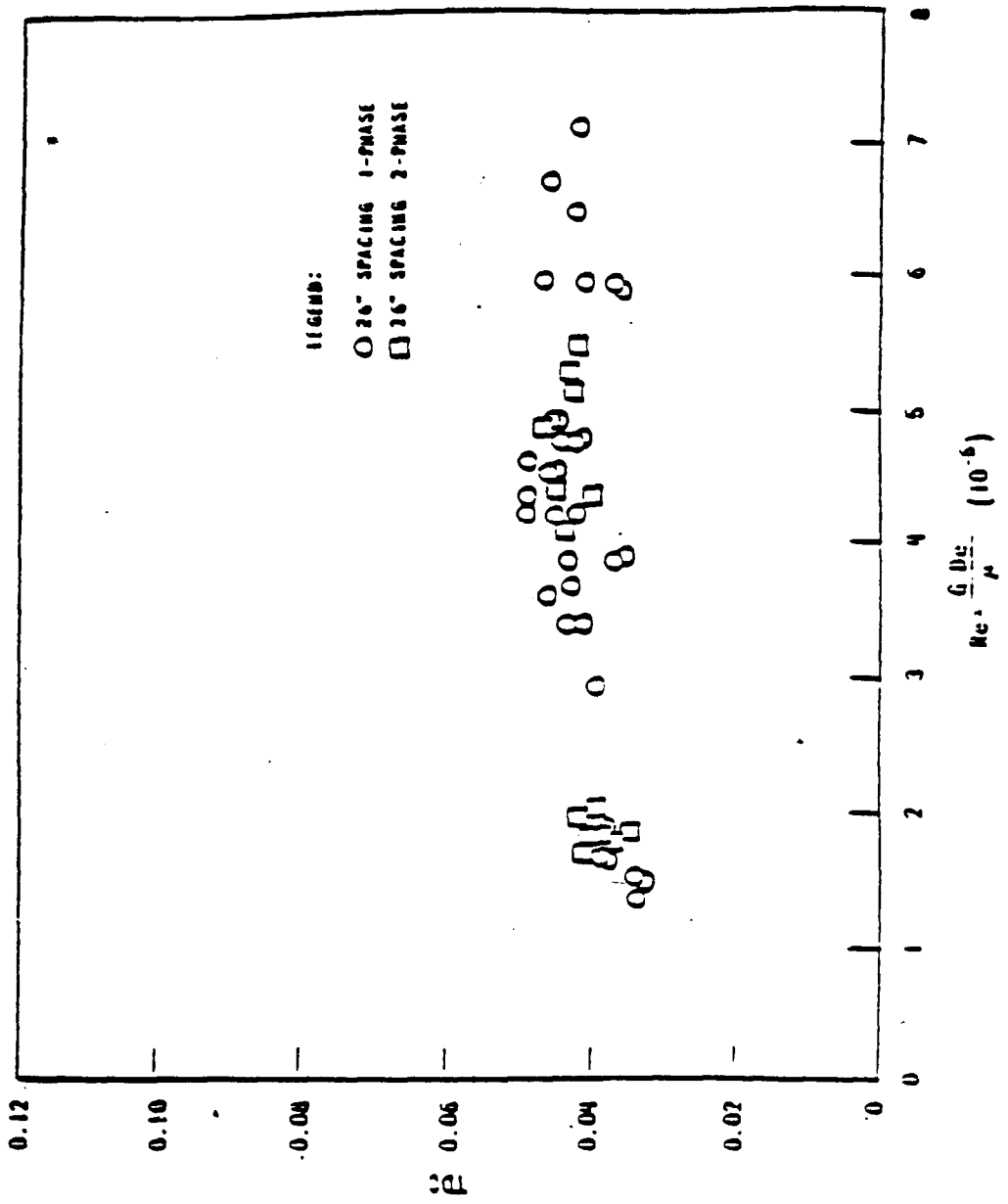


FIGURE 3.5.3-2

TDC versus Reynolds Number for 26" Grid Spacing