11/29/99

1. Description of SFP
2. Picture of SFP
3. <u>Initiation (needed for release timing)</u>

Conservatism in the adiabatic heatup calculation ... compare it w/ SFUEL results.

4. <u>Propagation (needed for release timing and magnitude)</u>

Need figure showing decay heat in each assembly in spent fuel pool

5. How does initiation + propagation compare with a reactor core.

B/32

SFP Description:

BWR - in reactor building
- bottom of pool at same elevation as the upper portion of reactor vessel.

PWR - in auxiliary building
- bottom of pool is at grade for some
surface of pool is at grade for others

SFP

10.4" cell-to-cell pitch PWR

5" orifice at bottom of cell.

6.255" cell-to-cell pitch BWR

4" orifice at bottom of cell = 102 mm

orifice = opening for fluid to pass

BWR reactor rod pitch = 16.2 mm

8×8 square array

outer dimension of assy 139 mm.

$$139\ mm \times \frac{1\ cm}{10\ mm} \cdot \frac{1''}{2.54\ cm} = 5.47\ inches$$

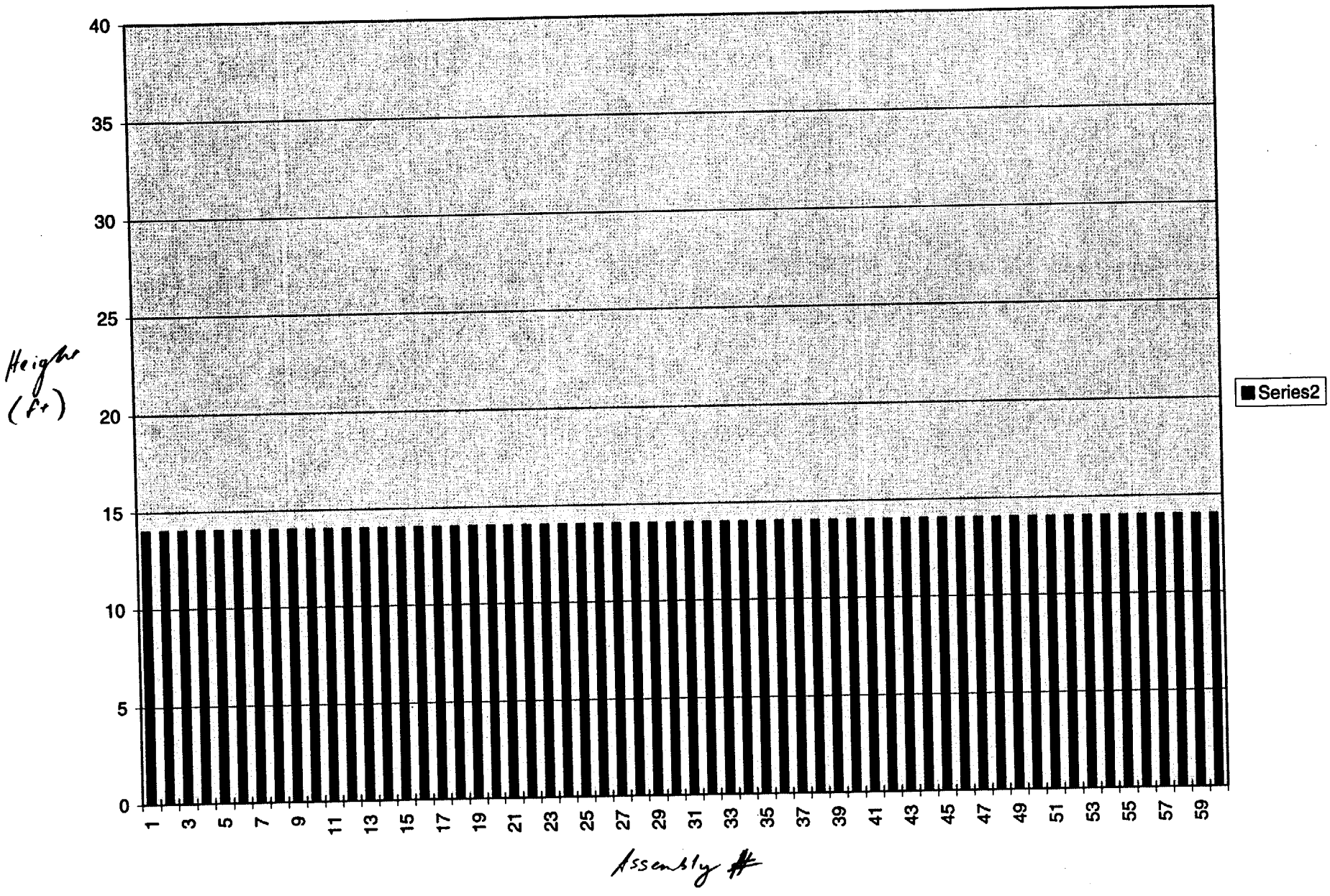
$$\begin{array}{r} 6.26 \\ 5.47\ inches \\ \hline .8\ inches \end{array}$$

$\simeq$

$6.25'' \times 60 = 375'' = 31.25$ ft

$$\frac{3300\ assemblies/SFP}{764\ assemblies/core} = 4.3\ \frac{cores}{SFP}$$

Chart1


40
35
30
25
20
15
10
5
0
Height (ft)
1
3
5
7
9
11
13
15
17
19
21
23
25
27
29
31
33
35
37
39
41
43
45
47
49
51
53
55
57
59
Assembly #
Series2

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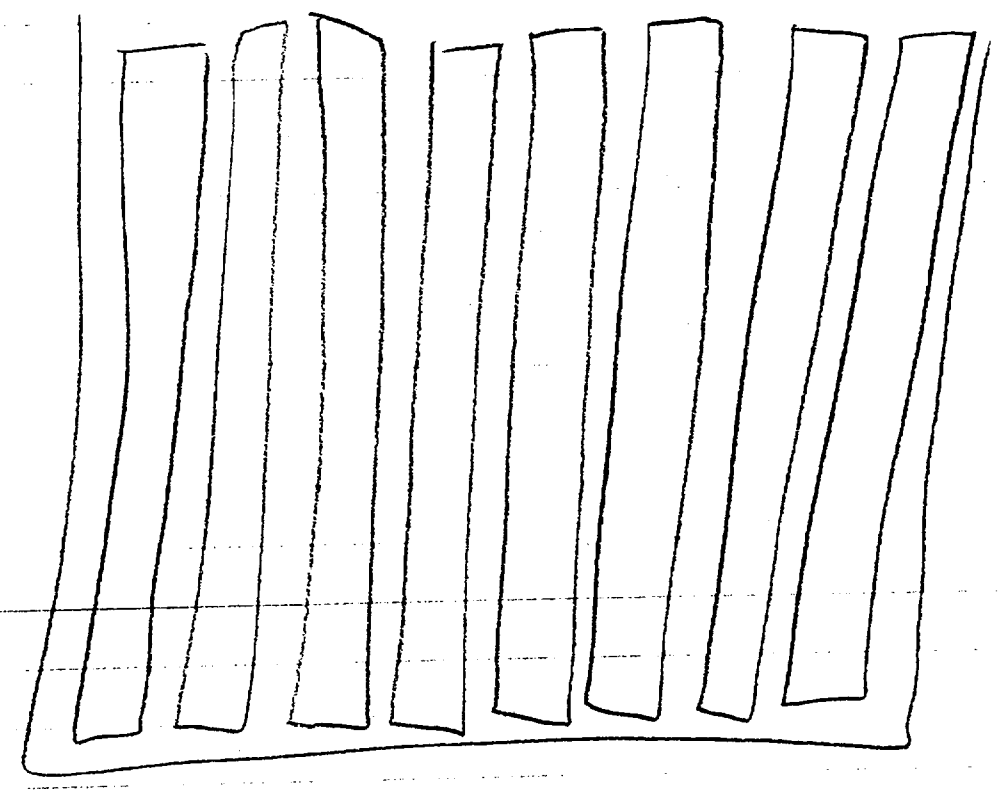
Time to heat up to FP release
see Fig 2.2-2

Heatup of fuel rod
fuel assembly - 30 days of decay
fuel assembly - 1 year of decay

Potential to spread from fuel assy recently removed to old fuel assy:

Critical decay time PWR { 23 months, 9 months, 17 months
BWR - 6 months, 7 months

High burnup fuel 36 - 60 months