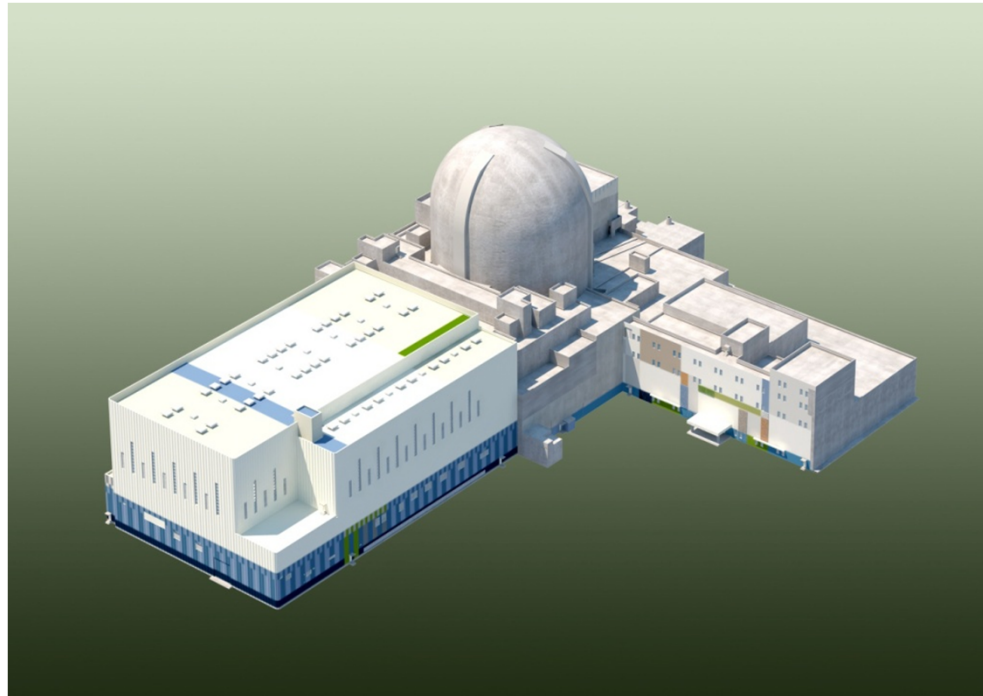


TCD Penalty



KEPCO/KHNP
November 17, 2016

Contents

- TCD Penalty (Halden Data)
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TCD Penalty (Halden Data)

- New penalty is line established to bound the value of measured minus predicted centerline Temp.
- The FATES3B prediction with new penalty bounds the Halden Data with 96.2% (more than 1,000 data points) up to 65GWD/MTU.

TS

TCD Penalty (Power)

- The measured minus predicted data from low to high power density (kw/ft).
- The predicted data were applied with new penalty.

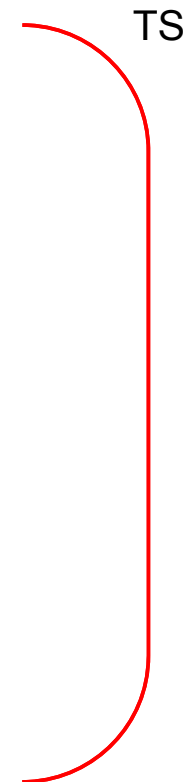
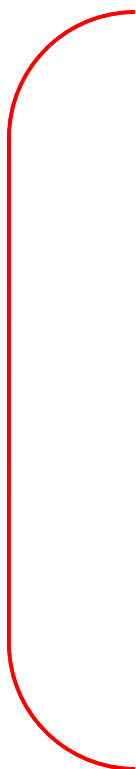
TS

TCD Penalty (Cen. Temp.)

- The predicted centerline temp. with new penalty bounds the measured centerline temp. from low to high temp.

Interface Data (RFO)

- Original Radial Power Fall-off curve in PLUS7 Topical Report is still used to generate the interface data by FATES3B code.



Interface Data (Cent. Temp.)

- Centerline Temp. is increased with addition of new penalty.

TS

Interface Data (Gap conductance)

- CESEC-III Gap conductance generated by FATES3B code.



Following works

- Submitted responses for RAI 5-7954 should be re-submitted to reflect new penalty.
- PLUS7 fuel topical report (APR1400-F-M-TR-13001) should be modified to reflect the new penalty-affected evaluation.

Supplemental

- $(T_m - T_{cool}) / (T_p - T_{cool})$ value vs. Burnup

TS

Supplemental

TS

Public Meeting

Supplemental

- From 0 GWD/MTU to 10 GWD/MTU



T_m : Measured Centerline Temp.
 T_p : Predicted Centerline Temp.
 T_{cool} : Coolant Temp. (240°C) in Halden

Supplemental

- From 10 GWD/MTU to 20 GWD/MTU



T_m : Measured Centerline Temp.
 T_p : Predicted Centerline Temp.
 T_{cool} : Coolant Temp. (240°C) in Halden

Supplemental

- From 20 GWD/MTU to 30 GWD/MTU



T_m : Measured Centerline Temp.
 T_p : Predicted Centerline Temp.
 T_{cool} : Coolant Temp. (240°C) in Halden

Supplemental

- From 30 GWD/MTU to 40 GWD/MTU



T_m : Measured Centerline Temp.
 T_p : Predicted Centerline Temp.
 T_{cool} : Coolant Temp. (240°C) in Halden

Supplemental

- From 40 GWD/MTU to 50 GWD/MTU



T_m : Measured Centerline Temp.
 T_p : Predicted Centerline Temp.
 T_{cool} : Coolant Temp. (240°C) in Halden

Supplemental

- From 50 GWD/MTU to 60 GWD/MTU



T_m : Measured Centerline Temp.
 T_p : Predicted Centerline Temp.
 T_{cool} : Coolant Temp. (240°C) in Halden