

RESPONSE TO AUDIT ISSUES

APR1400 Topical Reports

Korea Electric Power Corporation / Korea Hydro & Nuclear Power Co., LTD

Docket No. PROJ0782

Review Section	TR Realistic Evaluation Methodology for LBLOCA of the APR1400
Application Section	Topical Report: APR1400-F-A-TR-12004 Realistic Evaluation Methodology for Large-Break LOCA of the APR1400
Issue Date	08/13/2015

Audit Issues No. 27-I

NUREG/CR-5429, Section 2.2.2 discusses issues related to model nodalization. Address the following issues regarding nodalization of the APR1400:

- I. Discuss the differences in the nodalization of the upper guide support structure region between the RELAP5 nodalizations shown in Figure 4-1 of the topical report, and Figure 17 in Appendix B. Identify, with justification, the nodalization that will be used for licensing calculations.

Response

Nodalization of Figure 4-1 in the topical report will be used for licensing calculations.

Figure 17 in Appendix B is used only to study sensitivities for code modifications. Nodalization of Figure 17 in Appendix B was used during developing phase of the CAREM.

However, it is reasonable to use same nodalization for all sensitivity study. Therefore, revision of topical report will be included re-calculation results of sensitivity study using same nodalization of APR1400.

Impact on DCD

There is no impact on the DCD.

Impact on PRA

There is no impact on the PRA.

Impact on Technical Specifications

There is no impact on the Technical Specifications.

Impact on Technical/Topical/Environmental Report

Topical report will be revised as discussed above.

There is no impact on Technical or Environmental Report.

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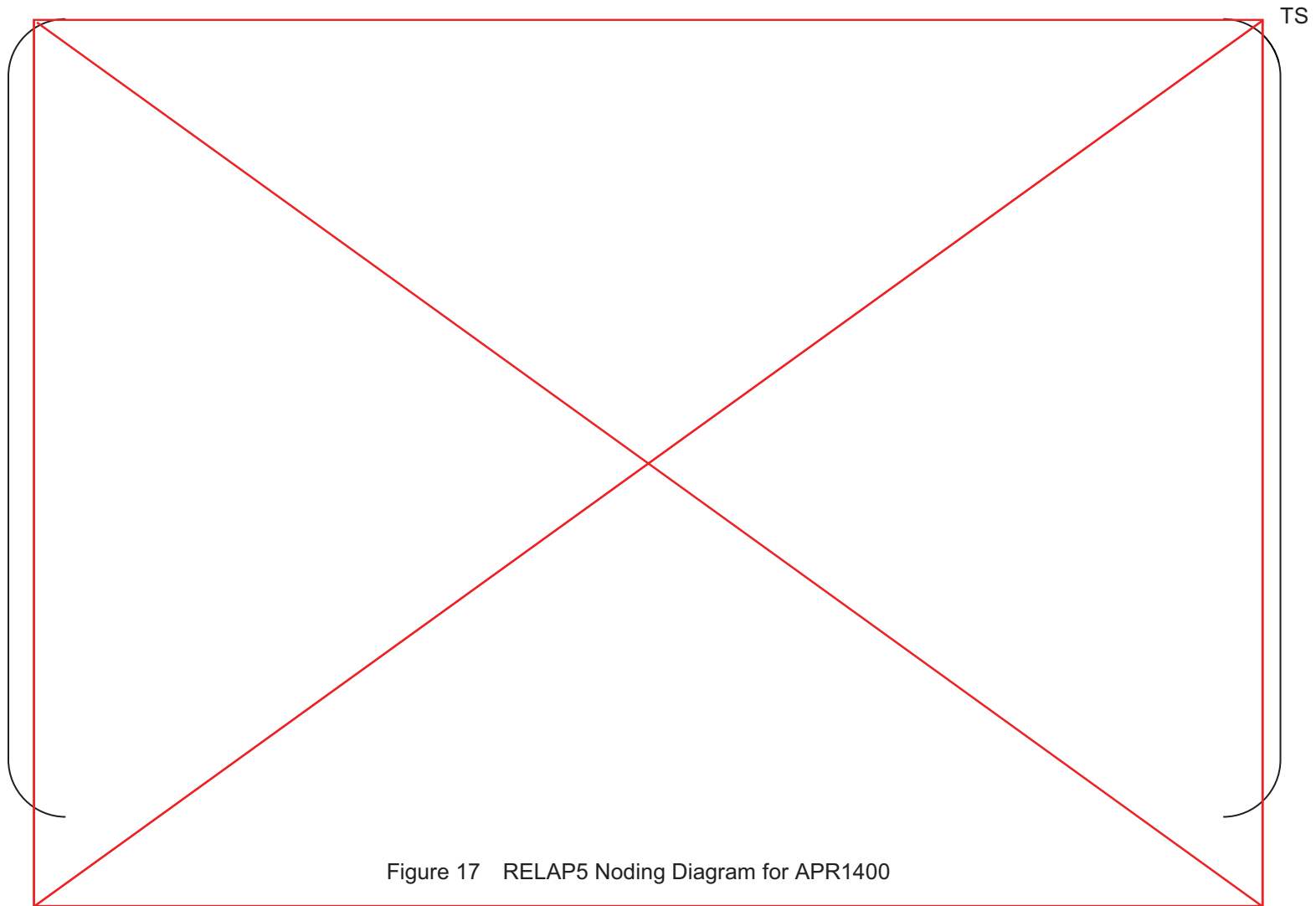


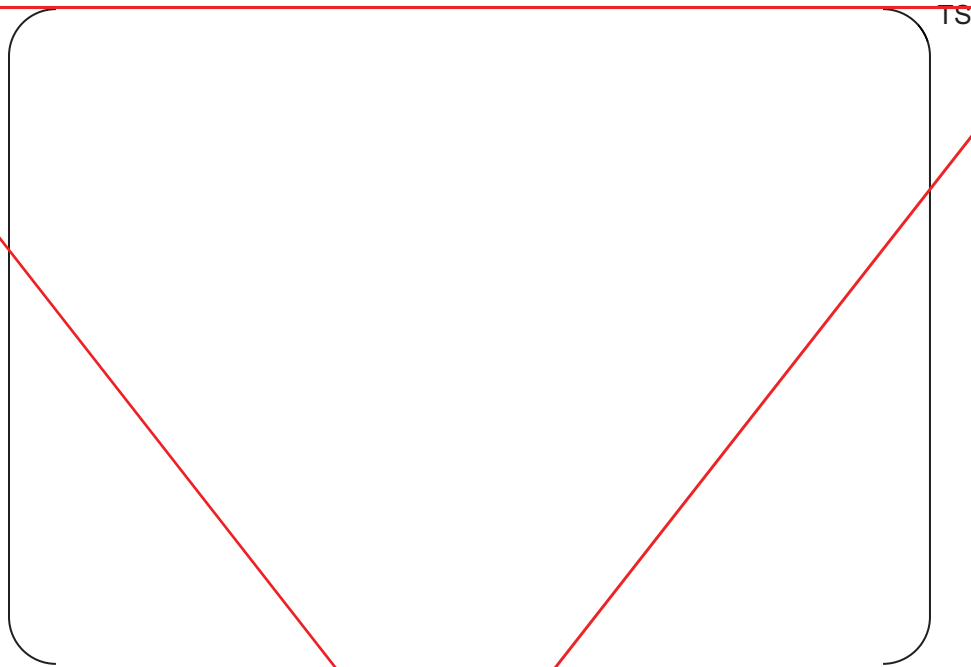
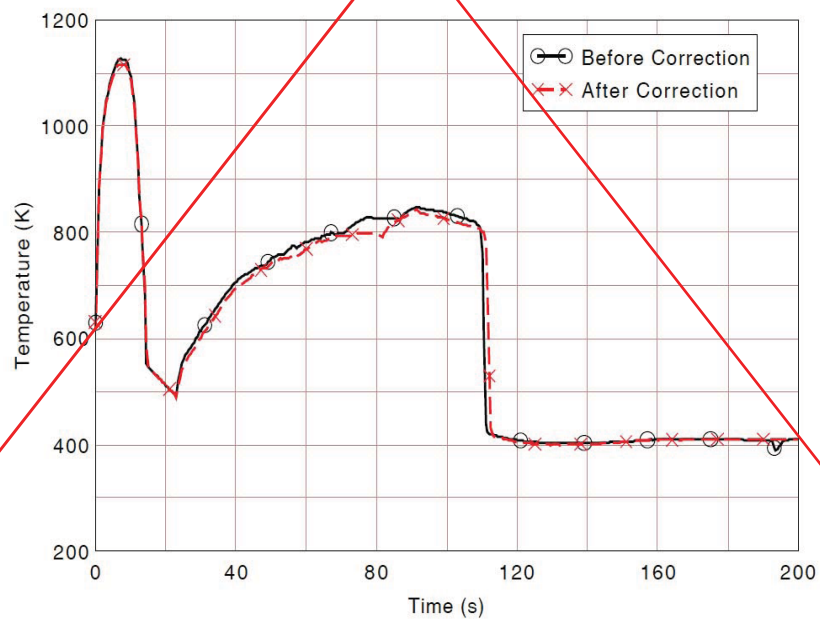
Figure 17 RELAP5 Noding Diagram for APR1400

A

TS

Figure 17 RELAP5 Noding Diagram for APR1400

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Figure 18 Comparison of []^{TS}Figure 19 Effect of the []^{TS}

B

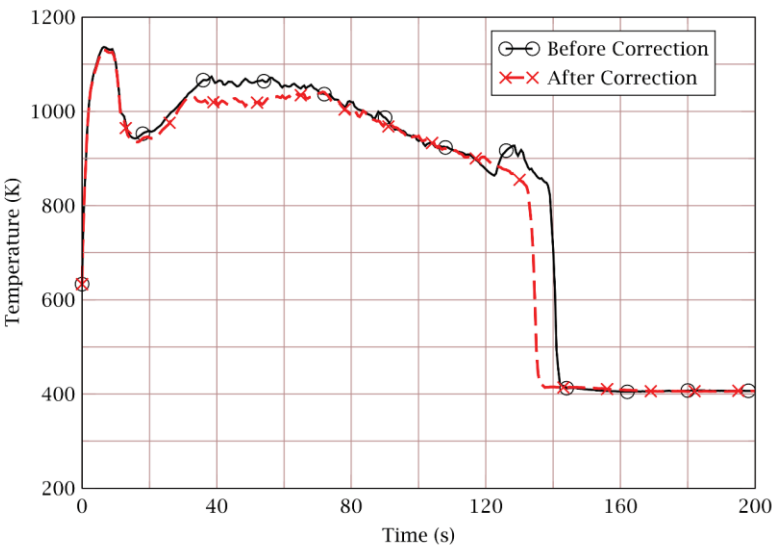
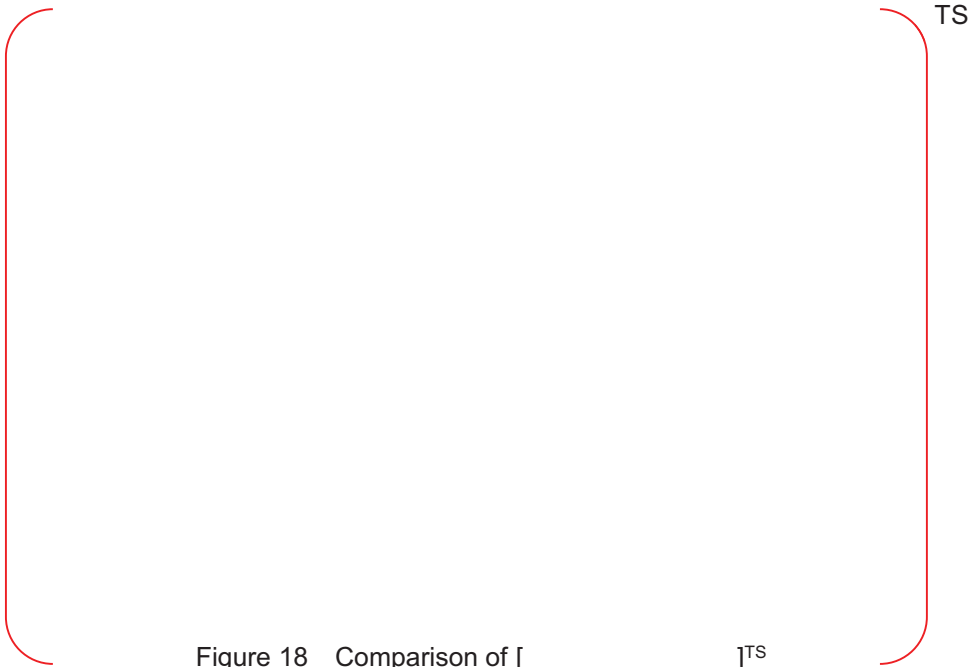
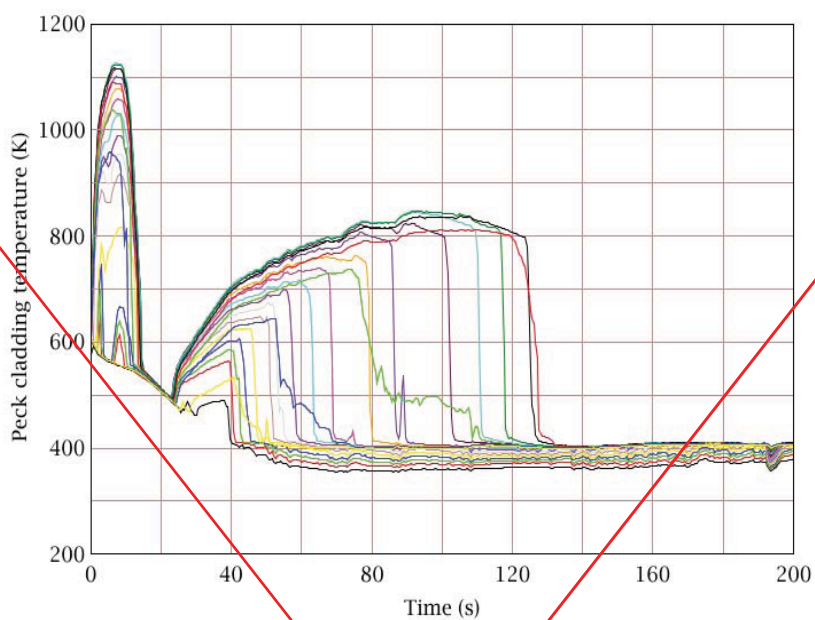
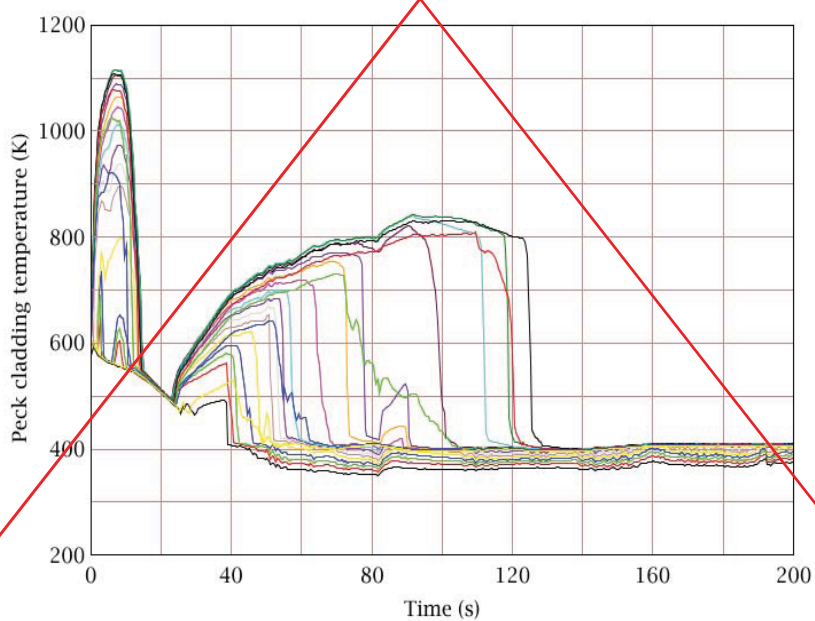
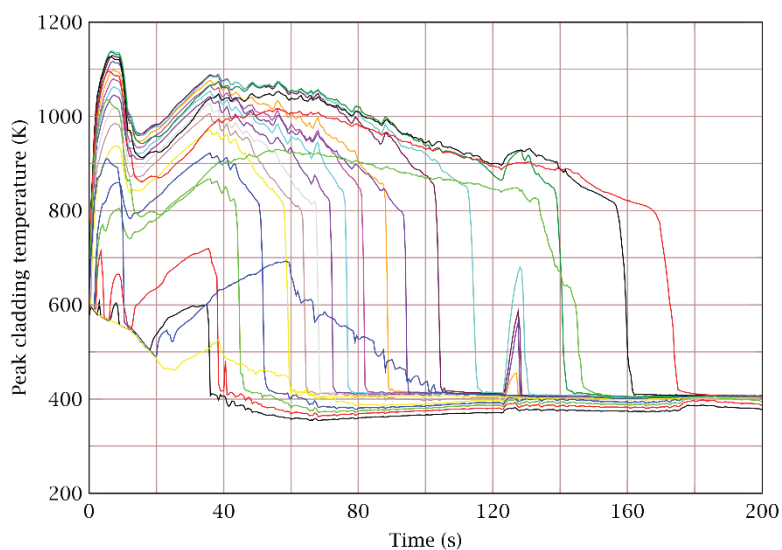
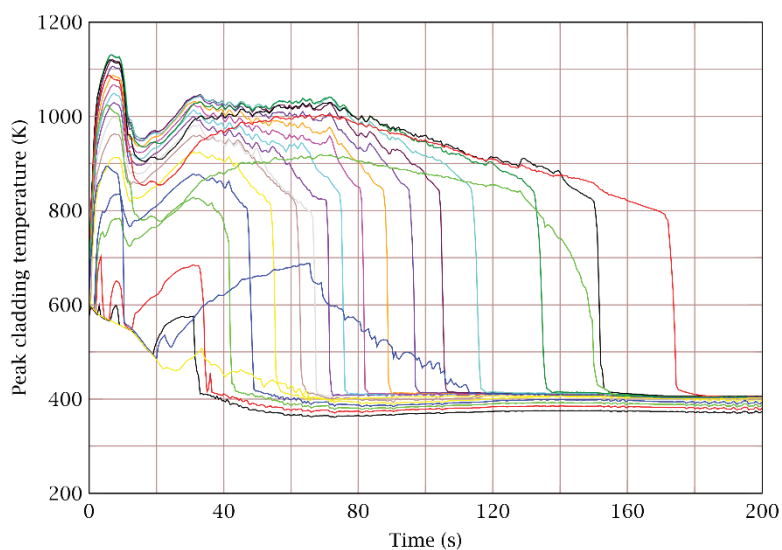


Figure 19 Effect of the []^{TS}

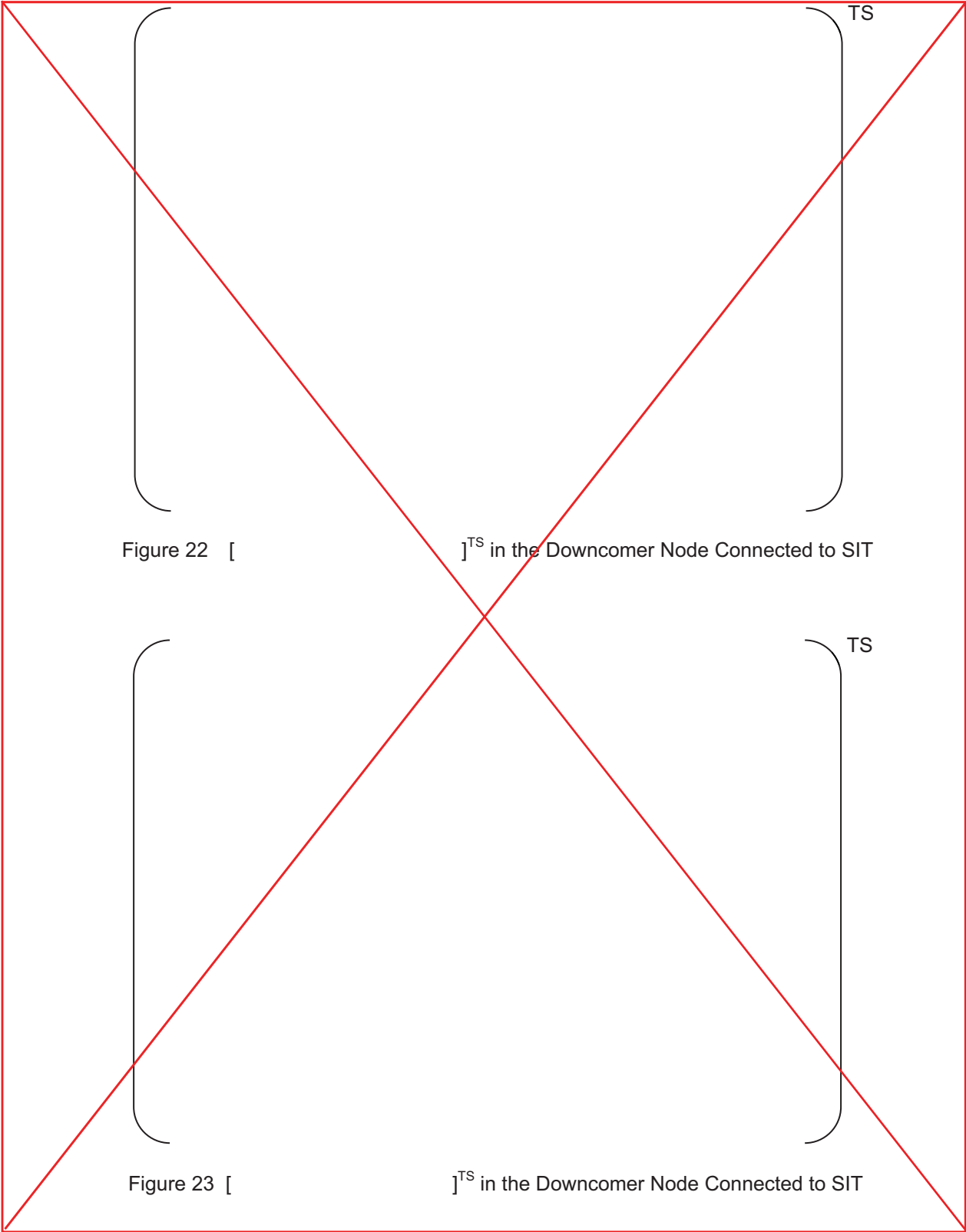
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Figure 20 Cladding Temperatures at []^{TS} Axial Nodes of the Hottest Rod; Before ModificationFigure 21 Cladding Temperatures at []^{TS} Axial Nodes of the Hottest Rod; After Modification

C

Figure 20 Cladding Temperatures at []^{TS} Axial Nodes of the Hottest Rod; Before ModificationFigure 21 Cladding Temperatures at []^{TS} Axial Nodes of the Hottest Rod; After Modification

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D



Figure 22 []^{TS} in the Surge-line of SIT-FD



Figure 23 []^{TS} in the Surge-line of SIT-FD

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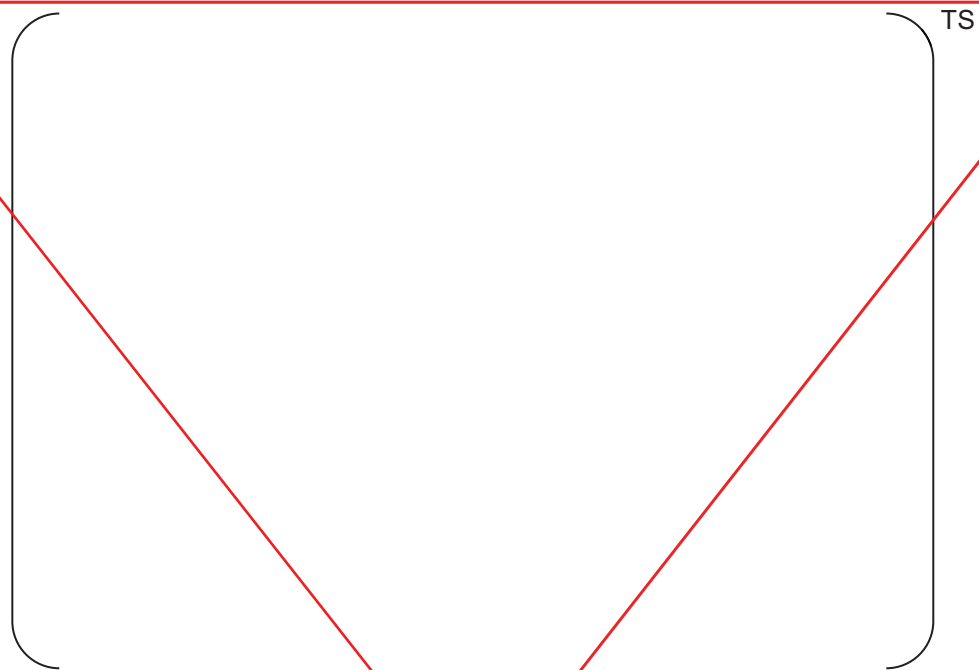
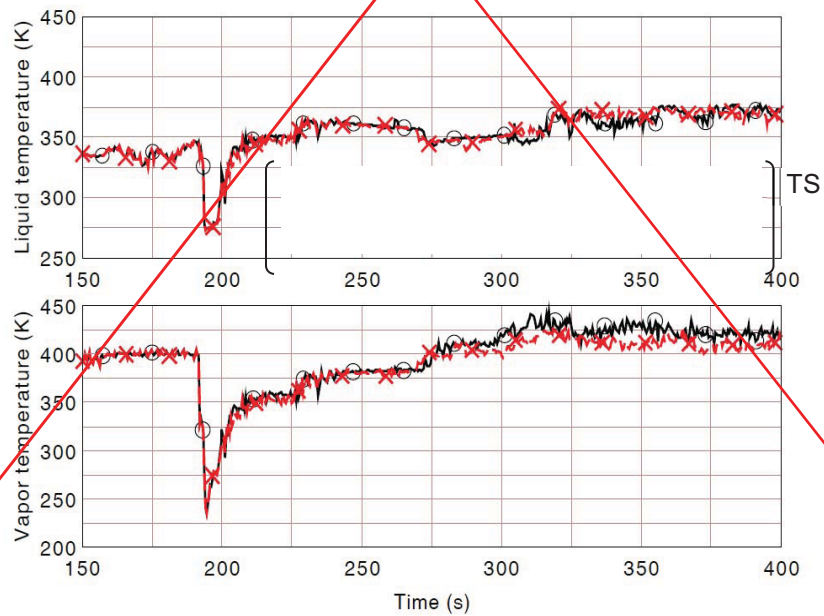
Figure 24 []^{TS} in an Upper Downcomer Node

Figure 25 Liquid and Vapor Temperatures in an Upper Downcomer Node

E

TS

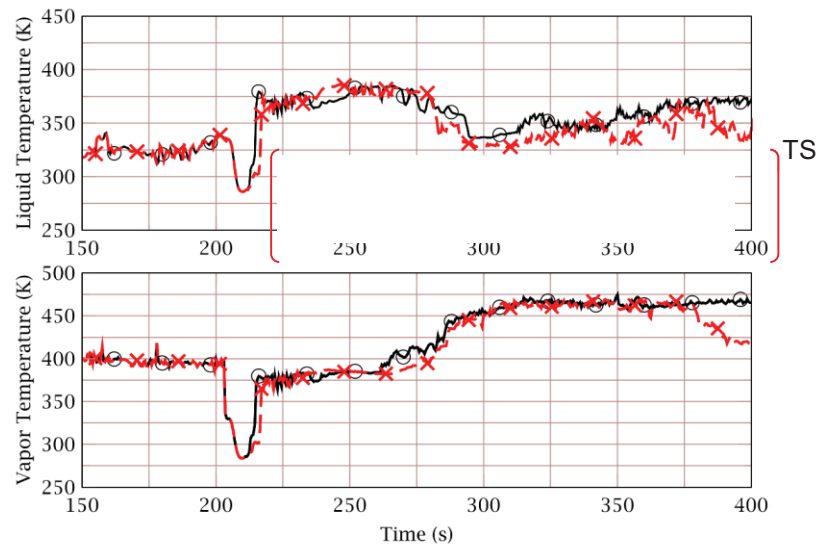
Figure 24 []^{TS} in an Upper Downcomer Node

Figure 25 Liquid and Vapor Temperatures in an Upper Downcomer Node

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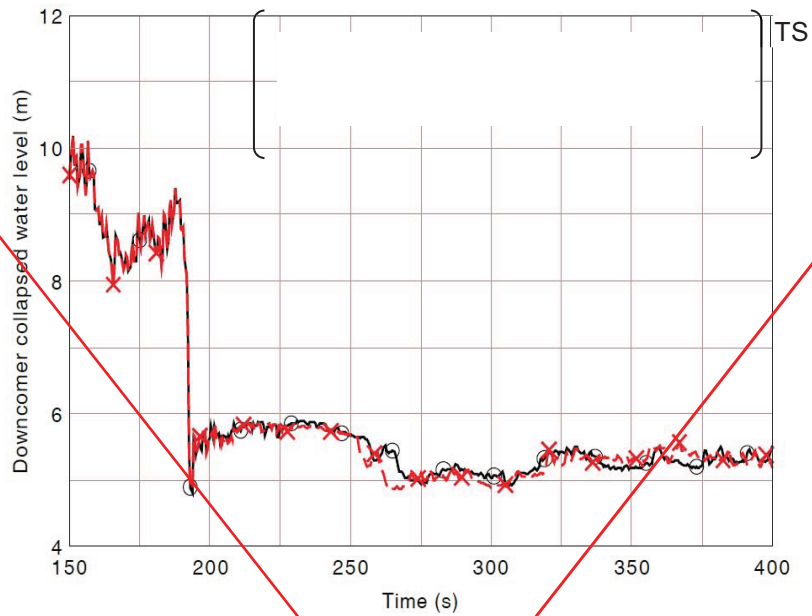


Figure 26 Collapsed Water Level in the Downcomer

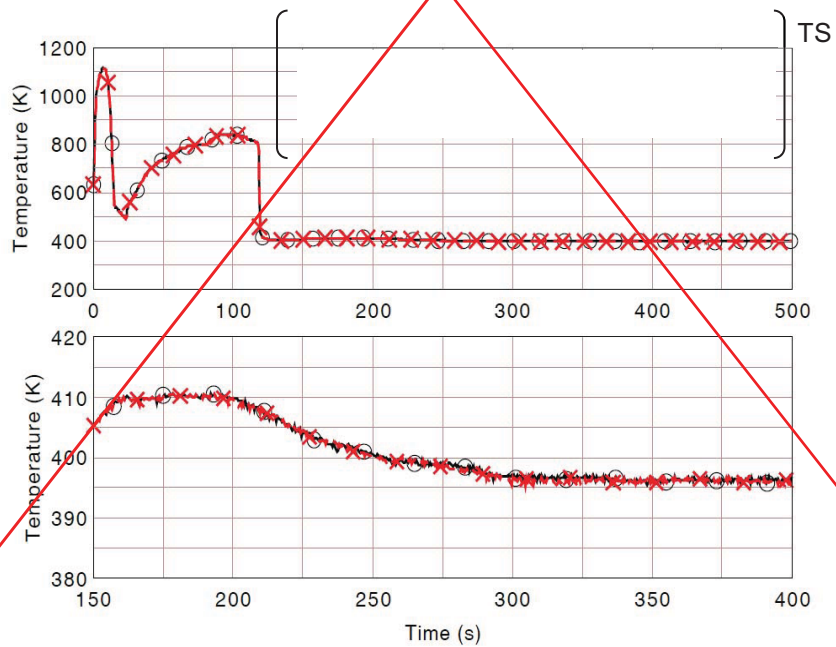


Figure 27 Comparison of the Cladding Temperature of the Hottest Rod

F

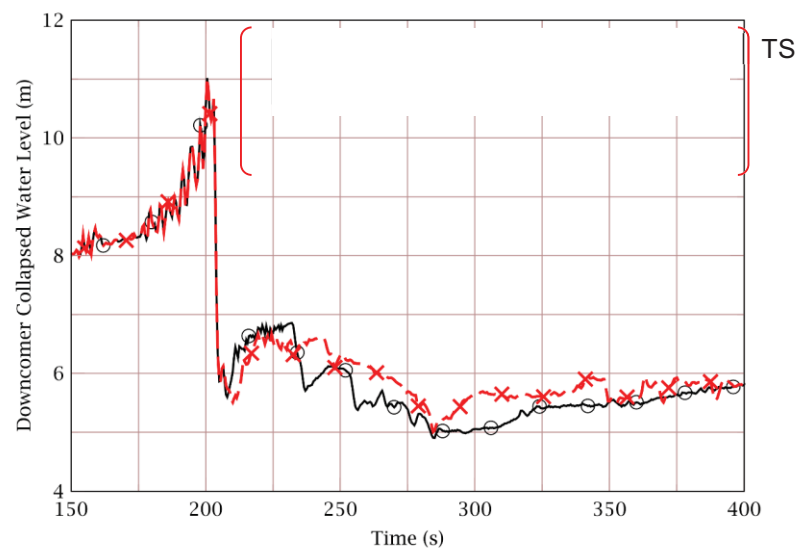


Figure 26 Collapsed Water Level in the Downcomer

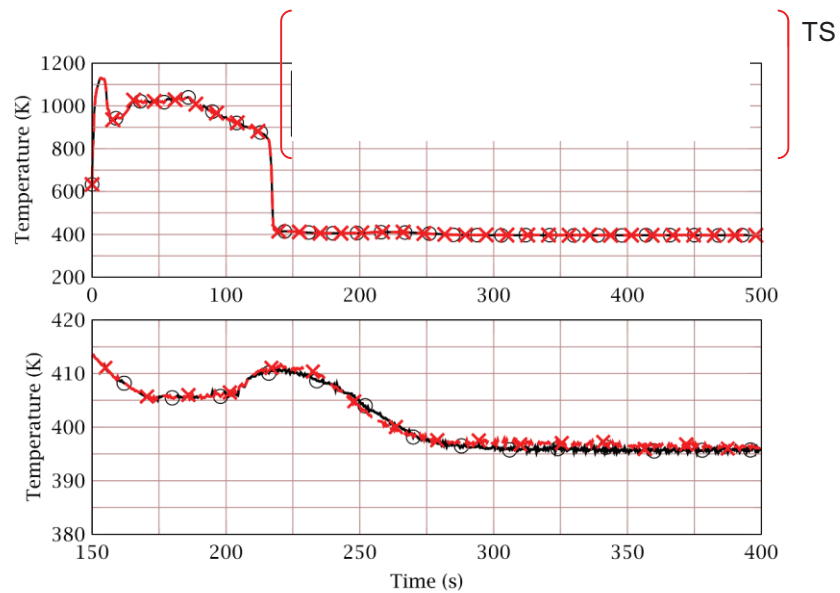


Figure 27 Comparison of the Cladding Temperature of the Hottest Rod