

---

## 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-m**

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

- m. Differences are noted in the nodalization of the vessel between the APR1400 plant shown in Figure 4-1 of the topical report and the ATLAS facility shown in Figure 3-3 of Appendix E. These differences include the nodalization of the downcomer, lower plenum, upper plenum and the upper plenum to dome connection. Explain the reasons for the noted differences.

**Response**

m)

Major nodalization differences between APR1400 and ATLAS test facility are found in three parts: lower downcomer to lower plenum, lower plenum and upper plenum.

Lower Downcomer to Lower Plenum

Nodalization difference between APR1400 and ATLAS test is caused by geometric differences. Downcomer of APR1400 is separated by flow skirt from the lower plenum and lower head space below the bottom of downcomer exists as shown in Figure 1. On the other hand, [

Consequently, nodalization follow physical geometry of the component, thereby nodalization of [ ]<sup>TS</sup> that of the APR1400.

Lower Plenum

As described in previous paragraph, nodalization difference is caused by geometric difference.

Upper Plenum

[

] <sup>TS</sup> However, since ATLAS tests assessed in Appendix E were designed to investigate thermal hydraulic behavior during reflood period, [

] <sup>TS</sup>

TS

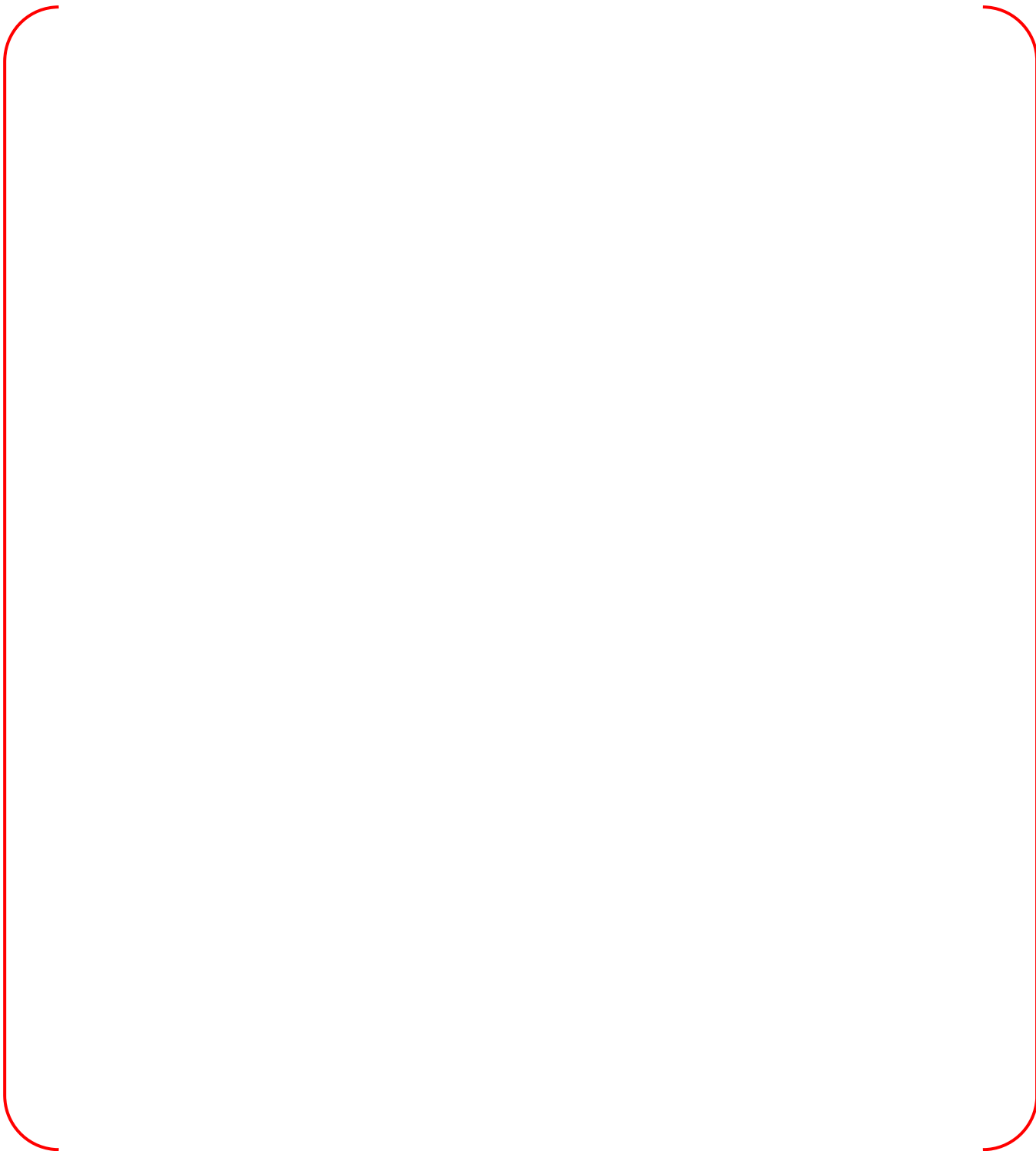


Figure 1. Drawing of Downcomer to Lower Plenum for APR1400 [1]



Figure 2. Schematic Diagram of Reactor Vessel in the ATLAS Test Facility

Reference

- [1] Drawings, "Reactor Vessel: Flow Baffle," 1-110-H-175-017C, Doosan Heavy industries & Construction, December 2011.

---

### **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**

There is no impact on any Technical, Topical, or Environmental Report.