

## **KHNPDCDRAIsPEm Resource**

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**From:** Ciocco, Jeff  
**Sent:** Monday, February 01, 2016 9:36 AM  
**To:** apr1400rai@khnp.co.kr; KHNPDCDRAIsPEm Resource; Harry (Hyun Seung) Chang; Andy Jiyong Oh; Christopher Tyree  
**Cc:** Gilmer, James; Karas, Rebecca; Steckel, James; Lee, Samuel  
**Subject:** APR1400 Design Certification Application RAI 386-8515 (15.08 - Anticipated Transients Without Scram)  
**Attachments:** APR1400 DC RAI 386 SRSB 8515.pdf

KHNP,

The attachment contains the subject request for additional information (RAI). This RAI was sent to you in draft form. Your licensing review schedule assumes technically correct and complete responses within 30 days of receipt of RAIs. However, KHNP requests, and we grant, 45 days to respond to this RAI. We may adjust the schedule accordingly.

Please submit your RAI response to the NRC Document Control Desk.

Thank you,

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**Hearing Identifier:** KHNP\_APR1400\_DCD\_RAI\_Public  
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## REQUEST FOR ADDITIONAL INFORMATION 386-8515

Issue Date: 02/01/2016  
Application Title: APR1400 Design Certification Review – 52-046  
Operating Company: Korea Hydro & Nuclear Power Co. Ltd.  
Docket No. 52-046  
Review Section: 15.08 - Anticipated Transients Without Scram  
Application Section: 15.08

### QUESTIONS

15.08-1

### REGULATORY BASIS

10CFR 50.62 requires that each pressurized water reactor must have equipment from sensor output to final actuation device, that is diverse from the reactor trip system, to automatically initiate the auxiliary (or emergency) feedwater system and initiate a turbine trip under conditions indicative of an ATWS. This equipment must be designed to perform its function in a reliable manner and be independent (from sensor output to the final actuation device) from the existing reactor trip system. For PWRs manufactured by Combustion Engineering (C-E), the design must have a diverse scram system from the sensor output to interruption of power to the control rods. This scram system must be designed to perform its function in a reliable manner and be independent from the existing reactor trip system (from sensor output to interruption of power to the control rods)

The NUREG-0800 Standard Review Plan (SRP) Section 15.8 for ATWS evaluations identifies eight acceptance criteria which are to be applied to a wide spectrum of initiating events. These criteria pertain to:

1. The ATWS rule (acceptable reduction in risk from an ATWS event) (10 CFR50.62)
2. Allowable peak cladding temperature limit is not exceeded (10CFR50.46)
3. Ensure that power/flow oscillations do not occur (GDC 12)
4. Ensure there is no coolant pressure boundary failure (GDC 14)
5. Ensure that containment design conditions are not exceeded (GDC 16)
6. Ensuring structural integrity of the fuel and cladding to ensure long term coolability and that negligible metal-water interactions occur (GDC 35)
7. Maintain containment pressure and temperatures at low levels when reactor coolant is deposited in the containment (GCC 38)
8. Ensure that the containment leakage rate does not exceed design limits (GDC 50)

The ATWS evaluation in Section 15.8 and the Technical Report only addresses challenges to the RCS pressure boundary (criterion 4). Other acceptance criteria are not discussed in Section 15.8 or in the Technical Report.

Provide an evaluation of the full spectrum of events and evaluate their consequences with respect to each of the eight criteria identified above.



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