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# The Status of the APR1400 NRC DC Project

May 11, 2015

KHNP

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# I. Project Summary

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- **Phase I Project Period**  
: Dec. 2010 ~ Sep. 2013 (34 Months)
  
- **Phase II Project Period**  
: Oct. 2013 ~ Oct. 2017 (49 Months)
  
- **Leading Organization**  
: KEPCO/KHNP
  
- **Participating Organizations**  
: KEPCO E&C, KNF, Doosan Heavy Ind., (KAERI)

# Organizations for APR1400 NRC DC




## II. Project History and Progress

- [Mar. 2009] Submittal of the Intent of APR1400 DC Application to US NRC
- [Apr. 2010~Oct. 2014] Performed total 18 PARMs
- [Sep. 2014] Spot inspection for GSI-191 experimental work
- [Dec. 2014] Submittal of the APR1400 DC application to the US NRC
- [Mar. 2015] Receive the Docketing letter of APR1400 DC application
- [Apr. 2015] Receive the First RAIs[Ch. 2 & 3]
- [Apr. 2015] 1<sup>st</sup> Clarification Meeting wit NRC on Mechanical and PRA area
- [Apr. 2015] 2<sup>st</sup> Clarification Meeting wit NRC on Fuel and Safety Analysis area

 **U.S.NRC**  
United States Nuclear Regulatory Commission  
*Protecting People and the Environment*

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March 4, 2015

### NRC To Begin Full Certification Review of APR1400 Reactor

The Nuclear Regulatory Commission has [docketed for review](#) Korea Electric Power Corp. and Korea Hydro and Nuclear Power's application to certify the APR1400 reactor design for use in the United States.

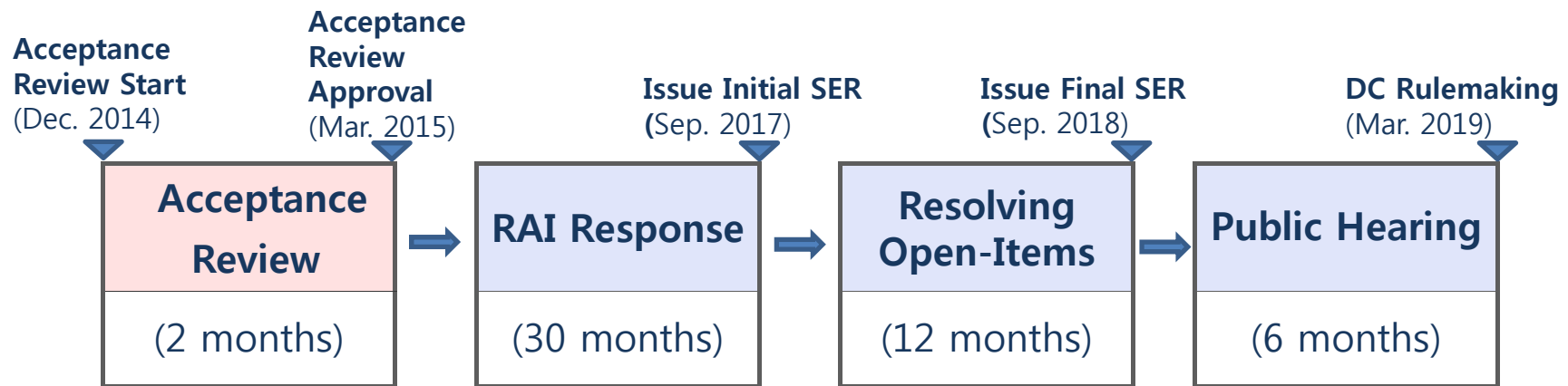


### III. Phase II Schedule [Draft]

○ Original Period: October 1<sup>st</sup>, 2013 – October 31<sup>st</sup>, 2017 (49 months)

▷ Project period and costs could be flexible depending on the level of RAIs.

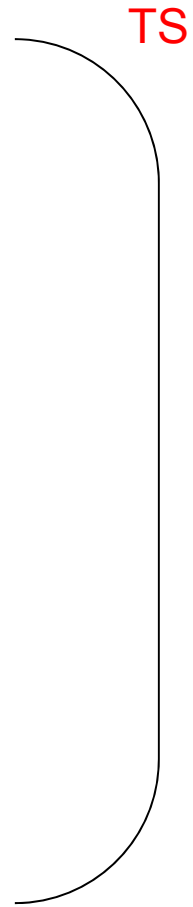
▷ Phase II launched based on the initial project plan, but the plan will be adjusted every year by reflecting the level of RAIs.



APR1400 NRC DC Project Phase II Schedule [Draft]

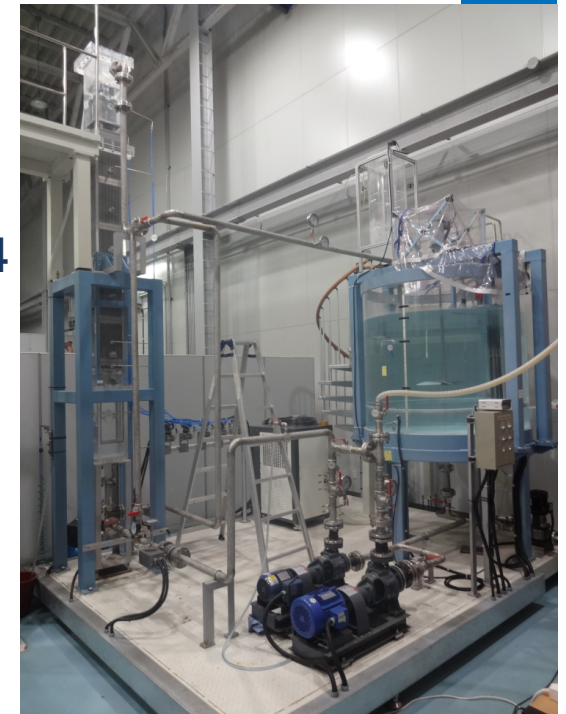
# IV. Major Updated Areas

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# V. KEPCO/KHNP's Major Actions

- Submittal of DCDs, Topical Reports(TR) and Technical Reports(TeR)
  - DCD Tier 1 and DCD Tier 2(Ch 1~Ch 19)
  - Environmental Report
  - 5 TRs, 57 TeRs
- TR RAI Responses : 49 RAIs in the area of TR so far
  - 30 days response : 21
  - 60 days response : 5
  - 90 days response : 23
- DCD RAIs : 5(7Q) Final RAIs and 6(15Q) Draft RAIs
- GSI-191 experimental works and NRC audit
  - Audit for documents and calc sheets in Aug. 2014
  - 5 days inspection for experimental work in Sep
  - NOVs in four areas and Responses
- QA
  - QAPD Rev 4 : Approved as of July 2014
  - QA system setup : QA manual and 84 Procedures





# TRs and TeRs Transmitted

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- TRs
  - QA Program Description
  - KCE-1 Critical Heat Flux Correlation for PLUS7 Thermal Design
  - PLUS7 Fuel Design
  - Fluidic Device Design
  - Realistic Evaluation Methodology for Large-Break LOCA
  
- TeRs
  - Submitted with DCD : 51
  - Additionally Submit : 6
    - . CFD Analysis of Fluidic Device
    - . In-vessel Downstream Effect Tests for the APR1400
    - . Loss of Large Area Analysis Report
    - . Evaluations and Design Enhancements to Incorporate Lessons Learned from Fukushima Dai-Ichi
    - . ATWS Evaluation
    - . Shutdown Evaluation Report

## VI. Status of RAI

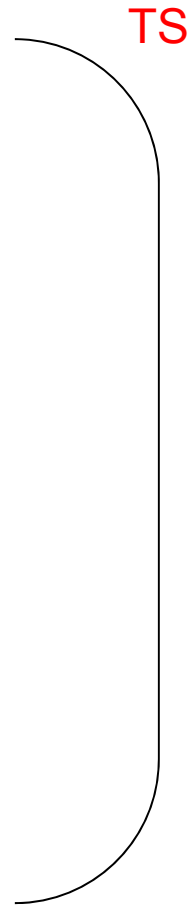
Chapter	DCD Sec.	Draft RAI #	Draft Question #	Issue Date (Draft)	RAI #	Question #	Issue Date (Final)	Need for Clarification	Response Cycle (Days)
2	2.5.4	7827	02.05.04-XX-26549	04/02/15	1-7827	02.05.04-1	04/13/15	Y	30
2	2.5.4	7827	02.05.04-XX-26550	04/02/15	1-7827	02.05.04-2	04/13/15	Y	30
2	2.5.2	7828	02.05.02-XX-26551	04/02/15	2-7828	02.05.02-1	04/13/15	Y	30
2	2.5.3	7829	02.05.03-XX-26552	04/02/15	3-7829	02.05.03-1	04/13/15	Y	30
2	2.5.4	7847	02.05.04-XX-26580	04/22/15				N	30
2	2.5.4	7847	02.05.04-XX-26581	04/22/15				N	30
2	2.5.4	7847	02.05.04-XX-26582	04/22/15				N	30
2	2.5.4	7847	02.05.04-XX-26583	04/22/15				N	30
2	2.5.4	7847	02.05.04-XX-26584	04/22/15				N	30
2	2.5.4	7847	02.05.04-XX-26585	04/22/15				N	30
2	2.5.4	7847	02.05.04-XX-26586	04/22/15				N	30
2	2.5.4	7847	02.05.04-XX-26589	04/22/15				N	30
2	2.5.4	7847	02.05.04-XX-26590	04/22/15				N	30
2	2.5.2	7848	02.05.02-XX-26587	04/22/15				N	30
2	2.5.2	7848	02.05.02-XX-26588	04/22/15				N	30
3	3.7.4	7830	03.07.04-XX-26553	04/02/15	4-7830	03.07.04-1	04/13/15	Y	30
3	3.7.4	7830	03.07.04-XX-26554	04/02/15	4-7830	03.07.04-2	04/13/15	N	30
11	11.1	7833	11.01-XX-26557	04/21/15				Y	30
12	12.5	7854	12.05-26596	04/28/15				N	30
12	12.2	7855	12.02-26597	04/28/15				N	30
13	13.5.2.1	7889	13.05.02.01-26723	05/07/15					
19	19	7842	19-26571	04/27/15	5-7842	19-1	05/07/15	N	60

# VI. KWDC Licensing Team [1/3]

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- Organization



## VI. KWDC Licensing Team [2/3]

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- **Role & Responsibility**

- ✓ **Director at KWDC**

- ✓ Overall coordination of licensing activity
- ✓ Management level communication with NRC

- ✓ **General licensing manager**

- ✓ Coordination of licensing issues from NRC
- ✓ Coordination of conference call and meeting with NRC
- ✓ Corresponds to NRC lead PM

- ✓ **Chapter Leads (CL)**

- ✓ Work on assigned DCD chapters and TR ; correspond to NRC chapter PM
- ✓ Understand RAI, Review/feedback RAI response, Lead technical meeting

- ✓ **SMEs**

- ✓ Progress control of RAI response, facilitate communication between CL and designers in Korea, technical support of CL, backup CL (in absence)

- ✓ **KHNP staffs (KS)**

- ✓ Project progress control, SGI control, administrative control ; meeting setup
- ✓ Official RAI tracking, NRC action item tracking

## VI. KWDC Licensing Team [3/3]

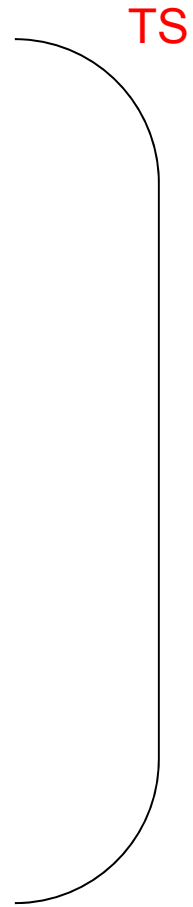
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- **Start-up Plan**
  - ✓ **Administrative preparation ( ~ end of April)**
  - ✓ **Assignment of Role (early May)**
    - ✓ 4~5 DCD chapters and related TR per CL
    - ✓ Sharing and developing future plan and work protocol ; How do SMEs support CLs ?
    - ✓ Drop-in meeting with NRC PM
  - ✓ **Familiarization with APR1400 DC Project ( ~ end of May)**
    - ✓ Licensing plan will be provided as on-the-job instruction manual
    - ✓ QA, project procedures will be provided
    - ✓ Licensing documents will be provided ; DCD, TR, TeR
    - ✓ Internal training on the APR1400 project history and status
  - ✓ **Development of KWDC internal procedure ( ~end of June)**
    - ✓ Finalization of Licensing Plan
    - ✓ Reference to RAI response procedure, DCD change procedure, and configuration control procedure

# Structure of Consultation Service

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## VIII. Future Plans

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- NRC Meeting in May
  - May 20~21
  - PTLR related Issue (Chapter 5)
  
- Near Future NRC Meetings
  - Physical Security
  
- Bi-Weekly PM Conference Call
  - May 19
  
- Bi-Weekly PSA Conference Call
  - May 28
  
- Participation of 4 SMEs : June

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**Thank you for your attention!**



# Topics to be Discussed

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- RAI Numbering System
- AECOM/WEC Chapter Leads as Korean Team Representatives
- Keep 30 Days Response Duration, However...
- Audit via ERR or Face-to Face Meeting
- CHF TR Issue
  - Suspension Period
  - During suspension period, public meeting or conference call needed?
  - Ask the technical bases, references, guidelines for the steps' position
- Meeting Minutes