総合資源エネルギー調査会 自主的安全性向上・技術・人材WG 第16回会合 資料4

NRRC Activities and Future Direction

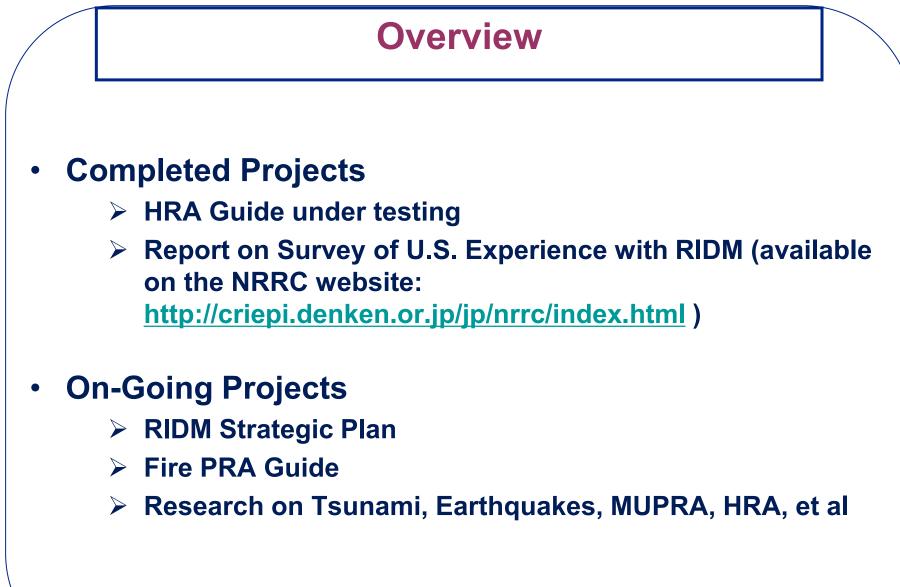
George Apostolakis Head Nuclear Risk Research Center <u>apostola@mit.edu</u> 16th METI-WG Meeting June 6, 2017



Nuclear Risk Research Center

CRIEPI

(C)





Nuclear Risk Research Center

Report Contents

"Risk-Informed Decision Making: A Survey of United States Experience"

Chapter 1:Introduction and Summary Chapter 2:The History of United States Nuclear Regulation Chapter 3:Case Studies

1. STP - Diagnostic Evaluation

CRIEPI

- 2. STP Emergency Diesel Generator (EDG) Failure
- 3. The Emergence of Outage Risk Management
- 4. Outage Duration and Risk Management
- 5. Component Risk Significance and Notification
- 6. Operator Training Insights based on Best-Estimate Accident Analysis
- 7. Utilizing Insights from Operating Experience
- 8. Risk Information and Insights in Operational Decision Making
- 9. Transfer of Emergency Diesel Generator (EDG) Maintenance from Shutdown to On-Line
- 10. Insights from a Spent Fuel Pool (SFP) PRA

- 11. Reactor Trip Rates
- 12. Generation Risk Assessment
- 13. Building a Safety Culture
- 14. Risk Monitoring to Integrate Risk Thinking into Daily Plant Status
- 15. Communicating Risk Insights
- 16. Successful application of RI-ISI of reactor coolant system piping
- 17. Risk-Managed Technical Specifications (RMTS)
- 18. Reactor Oversight Process (ROP)
- Limited Success of Risk-Informed Graded Quality Assurance (RI-GQA) or Rule 10 CFR 50.69
- 20. Risk-Informed In-Service Testing

3

Workshop (June 1, 2017)

<u>Lecturers</u> Dr. George Apostolakis (NRRC Head);

Prof. Ali Mosleh (Director, Garrick Institute for the Risk Sciences, UCLA); Mr. Mark Cunningham (Consultant; formerly USNRC);

Mr. Rick Grantom (Consultant; formerly South Texas Project) <u>Participants</u>: Total 91

Nuclear Operators: 42 (Hokkaido EPCO, Tohoku EPCO, Tokyo Electric Power Company Holdings, Chubu EPCO, Hokuriku EPCO, Kansai EPCO, Chugoku EPCO, Shikoku EPCO, Kyusyu EPCO, JAPC, JNFL, J-Power)

Nuclear Industry: 15 (FEPC, JANSI, Toshiba, Hitachi-GE Nuclear Energy, Mitsubishi Heavy Industries)

Government Agencies: 13 (Nuclear Regulation Authority,

Agency for Natural Resources and Energy) CRIEPI NRRC: 21







- (Apostolakis) Major lessons learned from U.S. RIDM experience
 - External interventions for major regulatory changes
 - Cultural challenges
- (Grantom) Organizational Infrastructure for RIDM
 - Skill sets required
- (Cunningham) Reactor Oversight Process
 - SPAR models
- (Grantom) Operational Risk Management
 - > All plant personnel should be PRA cognizant

(C)