



Annual Report of Seismic Activities at the USNRC

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15th Annual Meeting
Seismic Subgroup of Working Group IAGE
OECD Headquarters
Paris, France
April 12-16, 2010

Status of US Nuclear Renaissance

Nuclear Power Plants

- Early Site Permits
 - Five Applications Received
 - Four Permits Issued
- Combined Construction/Operating Licenses (COLs)
 - 17 Applications for 26 Plants
 - COLs currently under Review
 - First COLs Scheduled to be Issued in early 2011
 - First Loan Guaranty Granted by DOE – Plant Vogtle
 - Several Applicants Have Requested NRC to Go Slow
 - One COL (2 Plants) Withdrawn replaced by ESP Application

Status of US Nuclear Renaissance (cont'd)

Spent Fuel Repository

- Yucca Mountain Repository Application Docketed
- Application being Reviewed by NRC Staff
- Dept. of Energy Has Filed Application for Withdrawal with Prejudice – Under NRC Review
- Blue Ribbon Panel Named by President to Consider and Recommend a Path Forward (2-Year Schedule)

US NRC Research Ongoing Activities

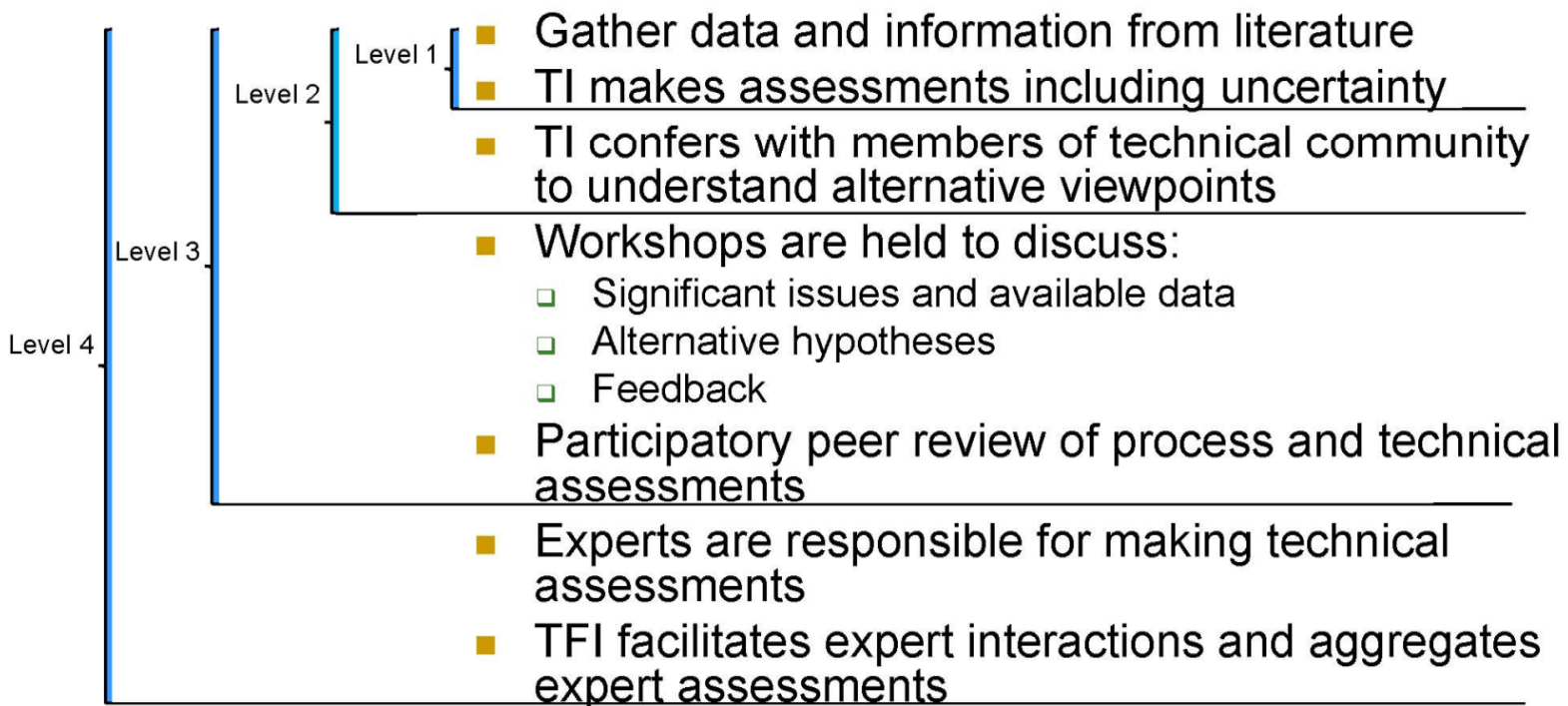
Seismic – PSHA Related

Three Elements of PSHA

Seismic Sources, Attenuation, Analysis Code

- Updating of SSHAC Guidance – Senior Seismic Hazard Analysis Committee
 - Contractor Held Three Workshops
 - Solicited Lessons from Previous PSHAs (Domestic & International)
 - Compiled Specific Observations & Points for Improvement
 - Formal Expert Assessment instead of Expert Elicitation
 - NRC Staff Is Currently Drafting New Guidance
 - Will Contain more Details for Guidance than SSHAC Report - NUREG/CR-6372
 - Draft Contractor Report - Practical Procedures for Implementing the Guidelines of the Senior Seismic Hazard Analysis
 - Publish NUREG in late 2010

SSHAC Study Levels



US NRC Research Ongoing Activities

Seismic - PSHA Related (cont'd)

- Seismic Source Characterization for the Central & Eastern US
 - Collaborative Program with DOE, Industry, & NRC with USGS
 - Conducted at SSHAC Level 3
 - Developing Improved Databases – Seismic Catalog, Geophysical & Geological Surveys, etc.
 - Collecting New Center, Body, & Range of Informed Technical Community for New Seismic Source Characterization
 - Recently Completed Final Workshop to Present Status & to Describe Data Set Content
 - Expected in late 2010 to early 2011 Timeframe

US NRC Research Ongoing Activities

Seismic – PSHA Related

- Next Generation Attenuation Relationship Development for the CEUS
 - Development of a Time-History Database
 - Examine Controlling Parameters
 - Stress Drop
 - Spectral Shape
 - Uncertainty - sigma
 - Strong Motion Simulation for Finite Sources
 - NGA-East Development Project Completed Program Plan
 - NGA-East Program is rolling
 - Results Expected in 2012 or 2013

- Analysis of Effect of the Cumulative Absolute Velocity (CAV) Filter Approach on the Probabilistic Hazard Curves

US NRC Research Activities & Plans

- Seismic – Indirect Improvements to PSHA
 - Instrumentation for Independent Monitoring of Seismic Activity in the CEUS through Expansion of the Advanced National Seismic System & Transportable Array Program
 - Multi-Dimensional Loading in Site Response Analyses
 - Analyses of Extreme Ground Motion
 - Performance-Based SSI
 - Review of Available Base Isolation Research



USNRC Research Activities & Plans

- Tsunami
 - Tsunamigenic Source Characterization along US East & Gulf Coasts – Landsides, Important Source
 - Tsunami Generation and propagation Models

Tsunami Research Goals

- Better Understanding of Tsunamigenic Hazards for all US Coastline
- Development of a Source Database by Locale & Type
- Integration of Landslide Modeling with Hazard Model
- Input for Probable Maximum Tsunami Hazard Levels – Deterministic Approach
- Development of Probabilistic Tsunami Hazard Assessments (where appropriate)
- Incorporation into Regulatory Guidance

Seismic Engineering Topics

- Soil Structure Interaction
- Random Vibration Theory-Based Techniques for Site Response
- Seismic Base Isolation Techniques
 - Compilation of Domestic and International Experience
 - Analysis & Understanding of Benefits and Costs
 - Developing a Cooperatives Project with JNES
- Seismic Analysis for Advanced Reactor Designs
- Update of Seismic Analysis of Water-Retaining Structures