



POST-FUKUSHIMA SAFETY REVIEWS PERFORMED AT FUEL CYCLE FACILITIES IN THE UNITED STATES

Jonathan Marcano-Lozada, P.E.
Office of Nuclear Material Safety and Safeguards
U.S. Nuclear Regulatory Commission

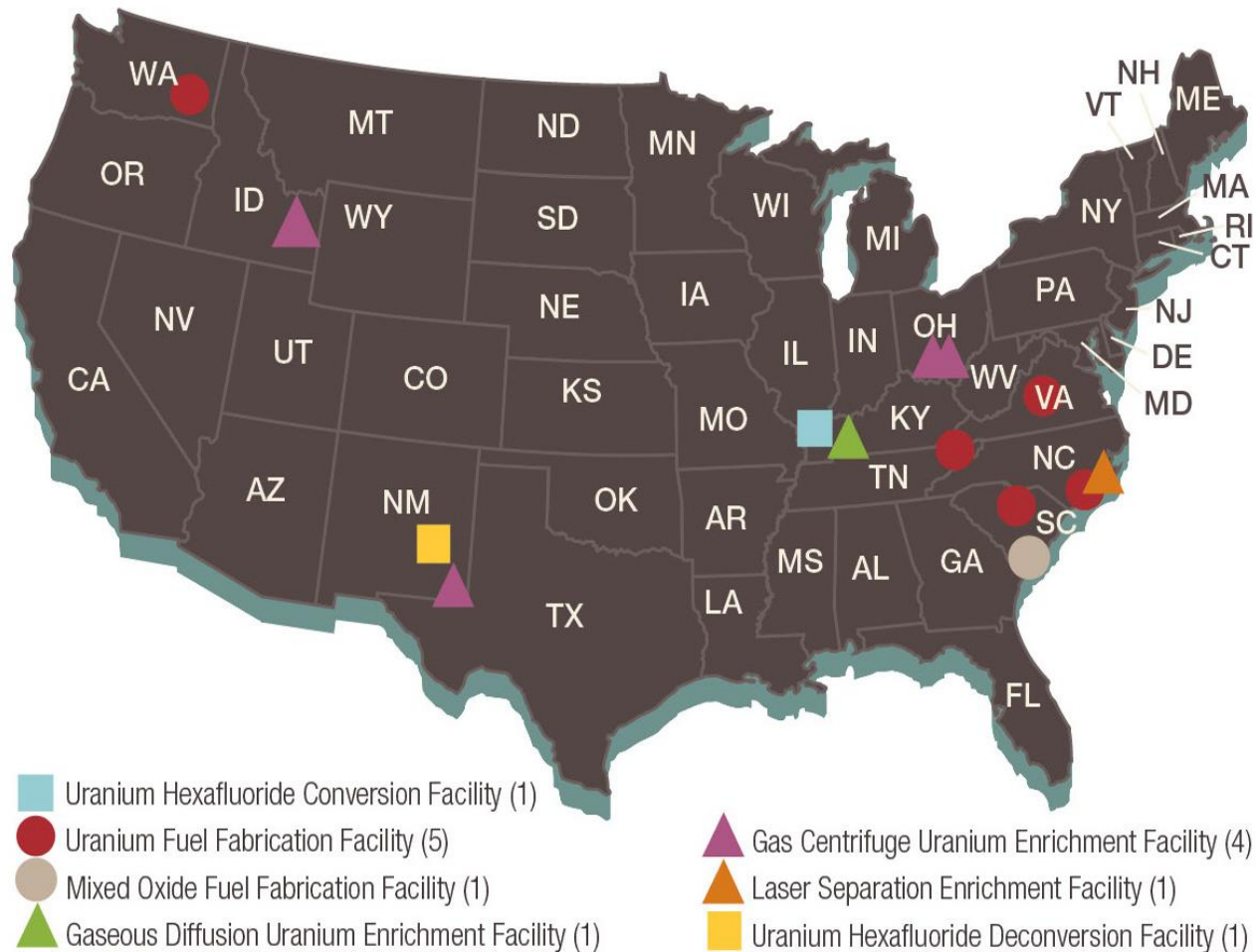
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Presentation Overview

- Background
- Actions at Fuel Facilities
- Objectives of NRC Evaluation
- Evaluation Process
- Challenges
- Facilities Evaluated
- Regulatory Framework and Guidance

Background

Locations of Fuel Cycle Facilities



Background

- Fuel Cycle Facilities Predominant Hazards
 - Uranium Hexafluoride (UF_6) and Hydrogen Fluoride (HF) releases resulting from UF_6 interaction with moisture
 - Fires
 - Criticality Events
 - Chemical Exposures (ammonia, etc.)
 - Exposure hazards from soluble uranium
 - Facilities not affected by station black out and multiunit events

Actions at Fuel Facilities

- Information Notice 2011-08
 - Informed licensees of effects of the Tohoku-Taiheiyou-Oki earthquake
- Temporary Instruction (TI) 2600/015
 - Inspected and evaluated selected fuel facilities

Objectives of TI 2600/15

- Verify adequacy of licensees' mitigation strategies for licensing bases events
- Evaluate adequacy of strategies for selected beyond licensing bases events
- Collect information to determine if additional NRC regulatory actions are warranted

Evaluation Process

- Event Scenarios Considered
 - Seismic
 - Flooding
 - High Winds
 - Onsite Fires
 - Extended Loss of Power and Utilities
- Three Phases
 - Review of licensing bases for each facility
 - Inspections of licensee's prevention/mitigation strategies
 - Assessment of licensee's emergency response plan for beyond licensing basis events

Evaluation Process

- Review of licensing bases for each facility
 - In-office review of licensee safety documentation
 - Review hazards and mitigation for each facility:
 - Location
 - Hazard Level
 - Inventory of hazardous material
 - Prevention Strategies
 - Mitigation Strategies
 - Emergency Planning

Evaluation Process

- Inspections of licensee's prevention and mitigation strategies
 - Walk-downs with facility personnel
 - Sampling of controls relied on to perform a safety function for event scenarios considered
 - Verify that controls are adequate for the safety function and available
 - Interviews of facility emergency response organization (verify knowledge of procedures, training, etc.)

Evaluation Process

- Assessment of licensee's emergency response plan for beyond licensing basis events
 - Identify beyond licensing basis scenarios for facility
 - Review ability of existing prevention and mitigation controls to perform their safety function beyond licensing basis events
 - Interviews with county/state emergency response organizations

Challenges

- Facilities have been operating for decades
- Design information difficult to retrieve
- Different licensing bases
- Changes in the licensing framework over time
- Diversity of facilities, hazards and processes

Fuel Facilities Evaluated

- Conversion
 - Honeywell Metropolis Works, Metropolis, IL
- Enrichment
 - Paducah Gaseous Diffusion Plant, Paducah, KY
- Fuel Fabrication
 - AREVA-Richland, Richland, WA
 - Global Nuclear Fuel – Americas, Wilmington, NC
 - Westinghouse – Columbia Fuels, Columbia, SC
 - B&W Nuclear Operations Group, Lynchburg, VA
 - Nuclear Fuel Services, Erwin, TN

Regulatory Framework and Guidance

- Code of Federal Regulation Parts 40 and 70
- Integrated Safety Analyses (ISA) required for most facilities
 - Systematically assess hazards (including natural phenomena), likelihood and consequences
 - Identify Items Relied on for Safety (IROFS) needed to meet performance requirements
 - Implement management measures to ensure availability and reliability of IROFS
- ISAs form the foundation of licensees' safety program

Regulatory Framework and Guidance

■ Performance Requirements

	Highly Unlikely	Unlikely	Not unlikely
High Consequence Publ Dose > 25 rem Worker Dose > 100 rem	Acceptable	Not Acceptable	Not Acceptable
Medium Consequence Publ Dose 5 - 25 rem Worker Dose 25 -100 rem Env releases > 5000 Tbl 2	Acceptable	Acceptable	Not Acceptable
Low Consequence Publ Dose < 5 rem Worker Dose < 25 rem	Acceptable	Acceptable	Acceptable

Results

- Generic issue with the bases for assumptions in the licensees' safety analyses
- Emergency mitigation strategies adequate for most facilities
- Safety concerns related to adequacy of emergency response plan for Honeywell

Results

- Confirmatory Order issued to Honeywell in accordance with NRC Enforcement Process
- NRC inspected Honeywell's corrective actions and closed Confirmatory Order
 - Evaluation of external events and safety basis
 - Implementation of modifications to structures
 - Implement quality assurance measures for the modifications
 - Revised Emergency Response Plan and onsite emergency exercise
 - Revised ISA Summary

Results

- Generic Letter (GL) 2015-01 was issued on June 22, 2015 (ADAMS ML14328A029)
- Purpose of the GL is to verify that the approved Integrated Safety Analyses (ISAs) address the impacts of natural phenomena hazard events
- NRC received all licensees' responses and is currently performing an evaluation
- Interim Staff Guidance (ISG) FCSE-ISG-15 was issued on July 7, 2015 (ML15121A044)

Questions?

