

Dry Cask Storage

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Agenda

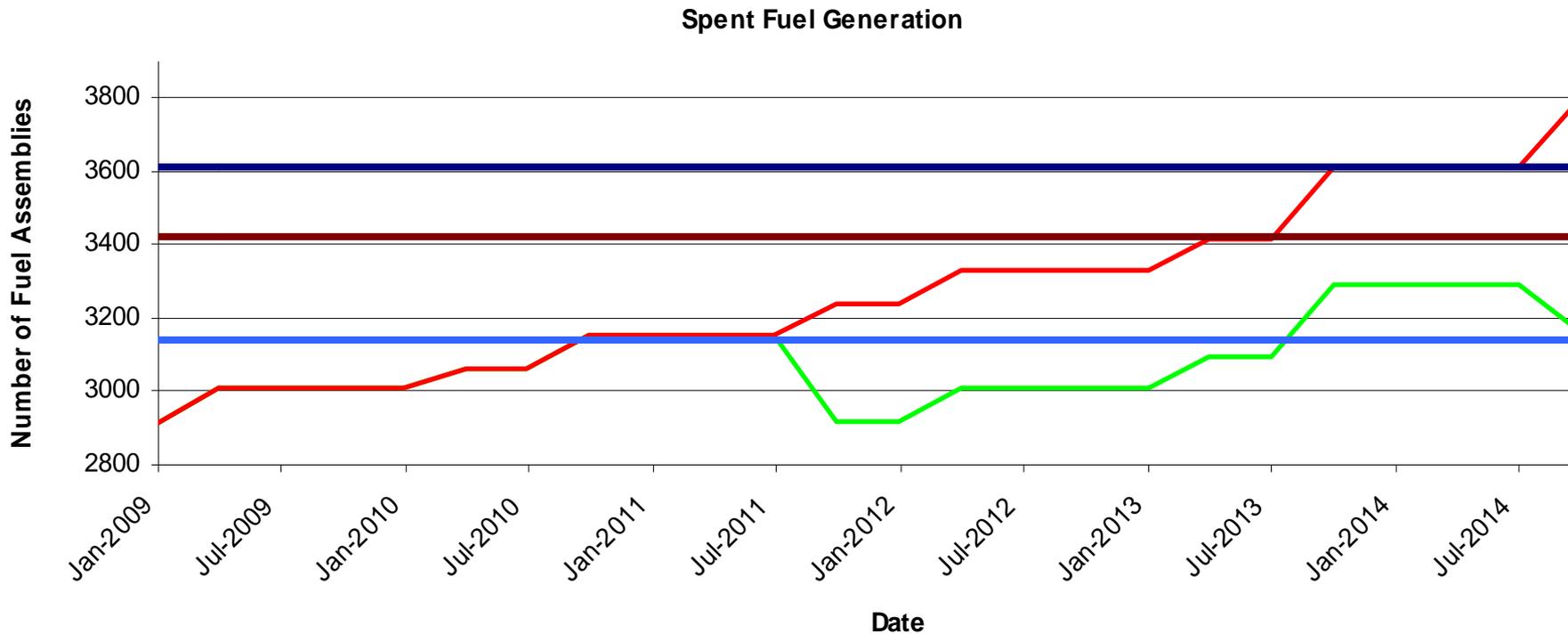
- Introduction & Purpose
- Problem Definition
- Dry Cask Storage Project
- Project Schedule
- Storage Cask Design Selected
- ISFSI Site Selection
- Licensing Issues
- Quality Assurance/Quality Control
- Operating Experience Reviews
- Future Project Updates
- Questions and Discussion



Problem Definition

- Nuclear Waste Policy Act
 - Passed in 1983 and Amended in 1986
 - Yucca Mountain Opening Delayed and Uncertain
- Cook Plant
 - Installed High Capacity Racks in 1990s
 - Pool Filling – Loss of Full Core Reserve in 2013
 - Need 90 Casks thru End of License (2037)
 - Need 112 Casks for Decommissioning (202 total)

Problem Definition



Assemblies in SFP w/ Dry Storage

Assemblies in SFP w/o Dry Storage

SFP Limit (3613)

2 Cores + 1 Reload (3143)

One Full Core Offload (3420)



Dry Cask Storage Project

- ❑ Approved in 2007
- ❑ GOAL: Maintain Full Core Offload Ability
- ❑ First Loading Campaign in 2011
- ❑ General License per 10 CFR 72.210
- ❑ Project Scope: Cask Procurement, ISFSI Design and Construction, Evaluation and Preparation of Heavy Haul Pathways, and First Loading Campaign
- ❑ Vendors: HOLTEC (Cask System), Shaw Group (A/E Services), S&L and AES (Engineering Services)



Project Schedule

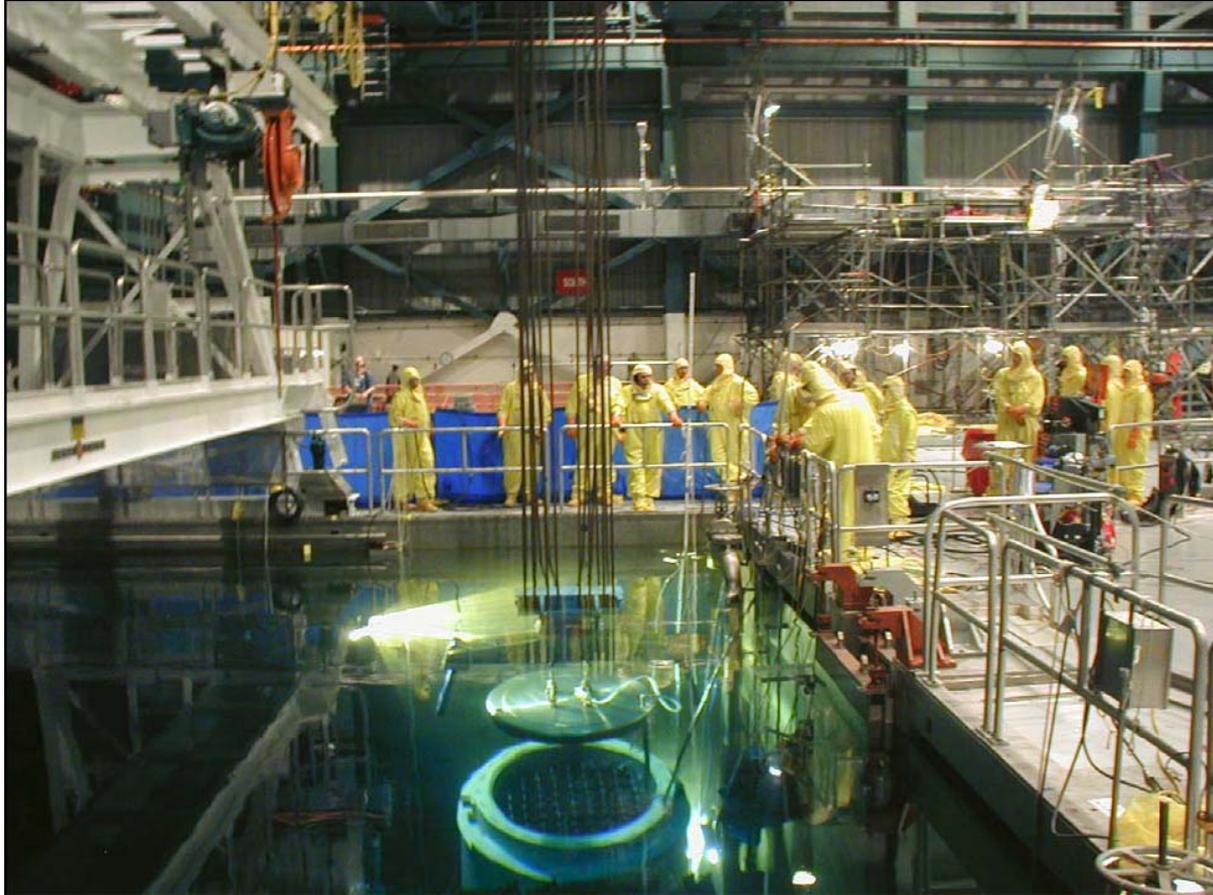
- Design Phase – Ongoing thru 4th Qtr 2009
- Construction – 1st thru 4th Qtr 2010
- Cask Loading
 - Formal Notification of General License-Mar. 2011(Est.)
 - ISFSI Dry Run-May 2011(Est.)
 - Initial Canister Loading-July 2011(Est.)
- Additional Cask Loadings – Every 2-3 Years



Storage Cask Design Selected

- HOLTEC HI-STORM 100 Cask System
 - Certificate of Compliance No. 72-1014
 - Vertical Storage
 - 32 fuel assemblies per Multi-Purpose Canister (MPC)

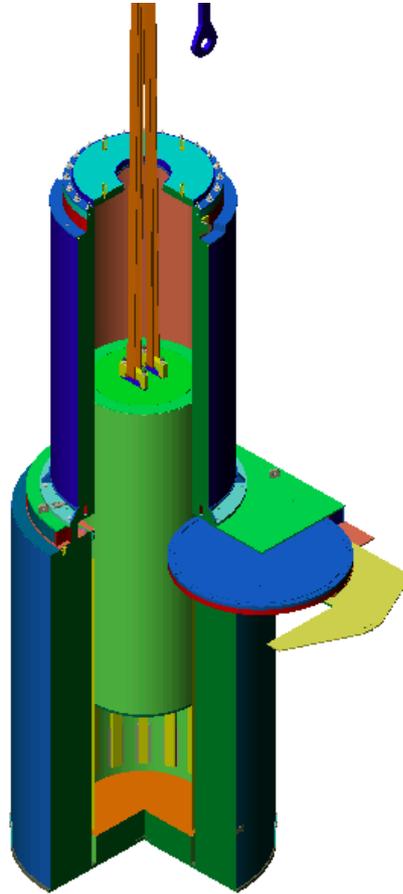
Loading



Vertical Cask - Loading



Vertical Cask - Loading



Vertical Cask Transporter (VCT)



Vertical Cask Transporter (VCT)



Vertical Cask – On Pad





ISFSI Site Selection

- Selection Criteria
- Plant Sites Considered
- Site Chosen

Site Selection Criteria

- Environmental
 - Visual Impact
 - Flooding Potential
 - Site Drainage
 - Proximity To Ponds, Streams, Wetlands, Other Environmental Factors
 - Dose To Plant Staff
 - Site Boundary Radiological Dose Impacts
- Operational
 - Dry Fuel Storage System - Minimum Area Requirements
 - Security For ISFSI And Plant
 - Construction Interferences With Plant Operations
 - Transfer Cask Vehicle Access
 - Proximity To Overhead Power Lines Or Other Obstructions
 - Security Requirements – DBT
 - Need To Relocate Existing Plant Facilities / Cost
 - Main Site Access Restrictions
 - Effect On Parking
- Regulatory
 - Proximity To Owner Controlled Boundary
 - State, Federal, Local Regulations
 - UFSAR Commitments
 - Impact On Site Emergency Plan
 - Hazards – Proximity To Potential Forest Fire And Other External Events
- Design & Construction
 - Subsurface And Geologic Conditions
 - Soil Liquefaction Potential
 - Slope Stability

Site Selection





Site Chosen-Upper Parking Lot

- ❑ Accommodates 94 Casks (Phase 1) to EOL + 80 Casks (Phase II) for Decommissioning
- ❑ Surrounded by Natural and Man Made Features
- ❑ Proximity to Protected Area/Plant Services
- ❑ Favorable Environmental Features
- ❑ Limited Impact on Plant Operations



Licensing Issues

- ❑ General License Approach
- ❑ Heavy Load Path
- ❑ Uprating of Single Failure-Proof Crane
- ❑ Existing Exemption to 10 CFR 20.2001
- ❑ Cask Drop Protection System (CDPS)



Heavy Load Path

- ❑ Using Existing Single Failure-Proof Auxiliary Building Crane
- ❑ Maintaining Compliance with NUREG-0612 and NUREG-0554
- ❑ Restricted Load Path Between Cask Pit and EL. 609' Track Bay
- ❑ Evaluation Addresses Buried Commodities, Load Path Stability, Interferences, and Fire/Explosion Hazards

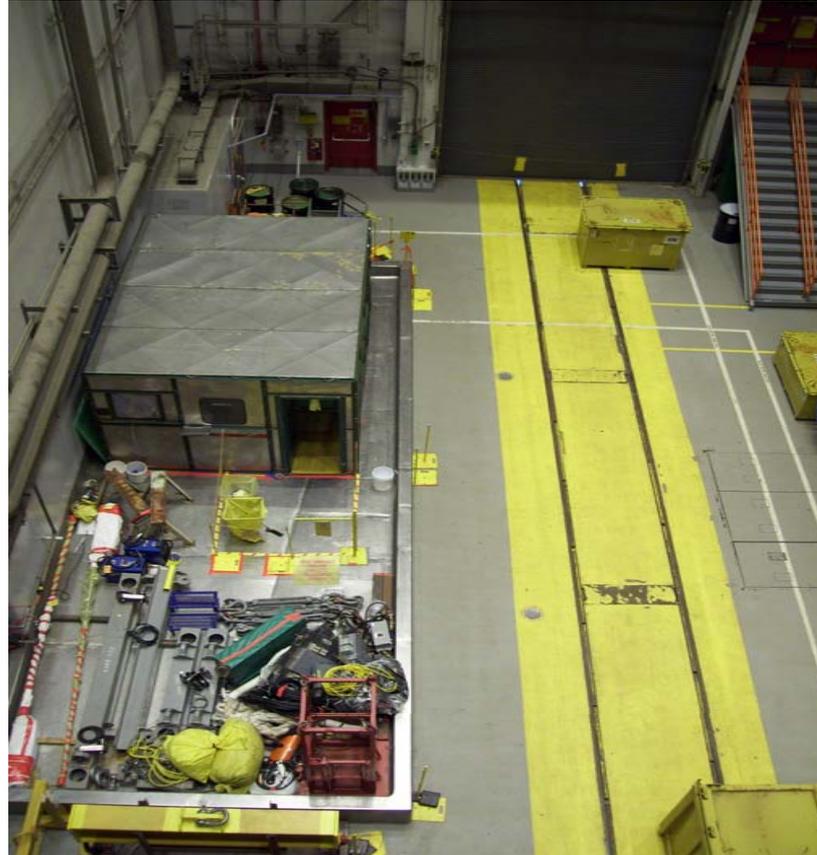
Heavy Load Path-Auxiliary Building



Heavy Load Path-Spent Fuel Pool



Heavy Load Path-Track Bay



Heavy Load Path-Main Access Road



Heavy Load Path-Upper Parking Lot



Uprating of Single Failure-Proof Crane

- East Auxiliary Building Crane: 150 Ton Design Rated Load (DRL) Limit, 60 Ton Maximum Critical Load (MCL) Limit
- Uprating Methodology-Auxiliary Building
 - Seismic Response Spectra per RG 1.60
 - Seismic Damping per RG 1.61
 - 10 CFR 50.59 Review
- Analytical Results: 150/145 Ton DRL/MCL

Exemption to 10 CFR 20.2001

- ❑ Turbine Room Sump Absorption Pond Sludge Deposited in Upper Parking Area in 1982
- ❑ Cesium, Iodine and Cobalt-8.89 mCi Total
- ❑ NRC Safety Evaluation on 11/10/94 Grants Exemption to 10 CFR 20.2001-Added to ODCM
- ❑ Dry Cask Storage Project Goal: Release Area Upper Parking Lot from Unnecessary RP Controls
- ❑ Core Bores Taken in May 2009, Analyzed for Gamma and 10CFR61 Hard-to-Detect Isotopes, Region III Inspection & Independent Sampling
- ❑ DeNuke Final Report Expected to Support ODCM Revision



Cask Drop Protection System (CDPS)

- ❑ Dashpot-Designed Structure in SFP to Limit Floor Loads from Postulated Dropped Fuel Cask
- ❑ Design Described in Response to FSAR Q&A-1977
- ❑ Unit 1 License Amendment No. 23 and NRC Safety Evaluation on Design on Jan. 4, 1978
- ❑ UFSAR Section 14.2.1.4, TRM 8.9.3 and 8.9.4 for Spent Fuel Cask Movement and CDPS
- ❑ CDPS is Partially Installed
- ❑ 10 CFR 50.59 Review to Revise Licensing Bases by Reliance on Single Failure-Proof Crane Design



Quality Assurance/Controls

- Program Upgrades to Incorporate 10 CFR 71 and 10 CFR 72
- Dedicated, Experienced QA Specialist on Project Team
- Performance Assurance and Verification Project Support
- Activities Include Supplier Approval, Inspections and Audits of Fabrication, Construction, and Loading Operations, and Review of Vendor Non-Conformance Reports



Operating Experience Reviews

- ❑ GOAL: Implement Lessons Learned from Sites with ISFSIs under Construction and in Operation
- ❑ Project OE Database Created
- ❑ HOLTEC Users Group (HUG)
- ❑ NRC ADAMS Database
- ❑ HOLTEC/Shaw-Stone & Webster Inputs
- ❑ Industry Contacts



Future Project Updates

- Periodic Status Meetings or Conference Calls with Region III and NMSS
 - Address Regulatory Information Needs
 - Structure Meeting Agenda to NRC Oversight Areas of Interest
 - Establish Interface Point(s) of Contact
- Next NMSS Project Update?



Questions & Discussion
