

SPENT FUEL STORAGE CHALLENGES AND OPPORTUNITIES

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Presented by CSG South/SLC



Spent Fuel Storage: Challenges and Opportunities

Craig Piercy, ANS Washington Representative

WEBINAR

Southern Legislative Conference of
The Council of State Governments

June 16, 2015

American Nuclear Society

- 11,000 men and women
- Local sections across the US and in Europe, Asia and Latin America
- Industry, government, national labs, academia
- Focused on nuclear engineering and related disciplines, but open to all nuclear professionals.
- **The central professional organization of the US nuclear community**
- **ANS.ORG/JOIN**



U.S. Waste Repository Scenarios



Nuclear Futures	Legal Limit	Extended Licensing	Constant Energy Generation	Constant Market Share	Growing Market Share
Total used fuel by 2100 (MTHM)	63,000	120,000	240,000	600,000	1,300,000
<u>Number of Geologic Repositories</u>					
Current Approach	1	2	4	9	21
Expanded Capacity	1		2	5	11
MOX Recycle	1			2	5
Continuous Recycle	1				

The Politics of Nuclear Waste



- Yucca Mountain vs. Blue Ribbon Commission
- Management entity is a critical step
- What are the political drivers for US nuclear policy reform?



American Nuclear Society

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Spent Fuel Storage at Southern Nuclear

Clay Channell

Fleet Rx Services/Dry Cast Storage Manager

Southern Nuclear Company

Southern Nuclear is the license holder and operator of Alabama Power and Georgia Power's plants: Six units at three plant sites and an additional two units currently under construction.

- **Plant Farley Units 1 & 2 near Dothan, Al**
- **Plant Hatch Units 1 & 2 near Vidalia, Ga**
- **Plant Vogtle Units 1 & 2 near Augusta, Ga**
- **Plant Vogtle Units 3 & 4 (under construction)**

Current Storage Method

Southern Nuclear uses two methods to store spent nuclear fuel:

- **Spent Fuel Pool**
- **Independent Spent Fuel Storage Installation (ISFSI) - Dry Cask Storage**

Spent fuel pools are near capacity, requiring SNC to perform dry cask storage in order to keep our reactors operating and generating power.

Current Storage Method

Dry cask storage is also required as a result of delays in the construction of a permanent storage facility – Yucca Mountain.

SNC utilizes the general license issued pursuant to 10 CFR 72.210 for storage of spent nuclear fuel in our ISFSIs.

The SNC fleet uses the Holtec HI-STORM 100 systems for storage of spent fuel in the ISFSIs.

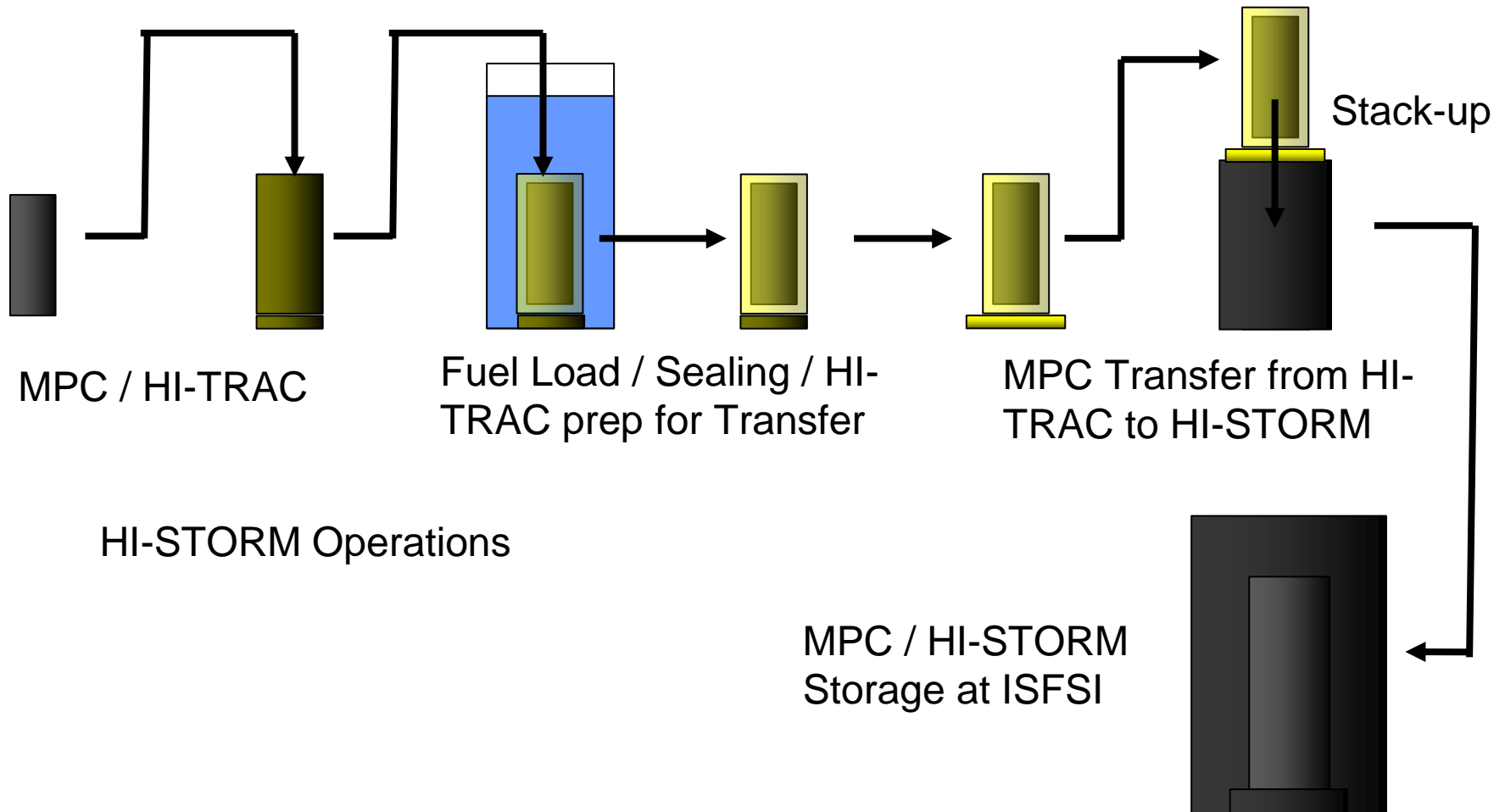
Fuel Storage Activities

All three SNC plants periodically place used fuel into dry cask storage operations.

- **Plant Hatch first cask load in 2000**
- **Plant Farley first cask load in 2005**
- **Plant Vogtle first cask load in 2013**

Without movement of used fuel into dry storage systems, none of the plants could continue to operate.

Fuel Storage Process

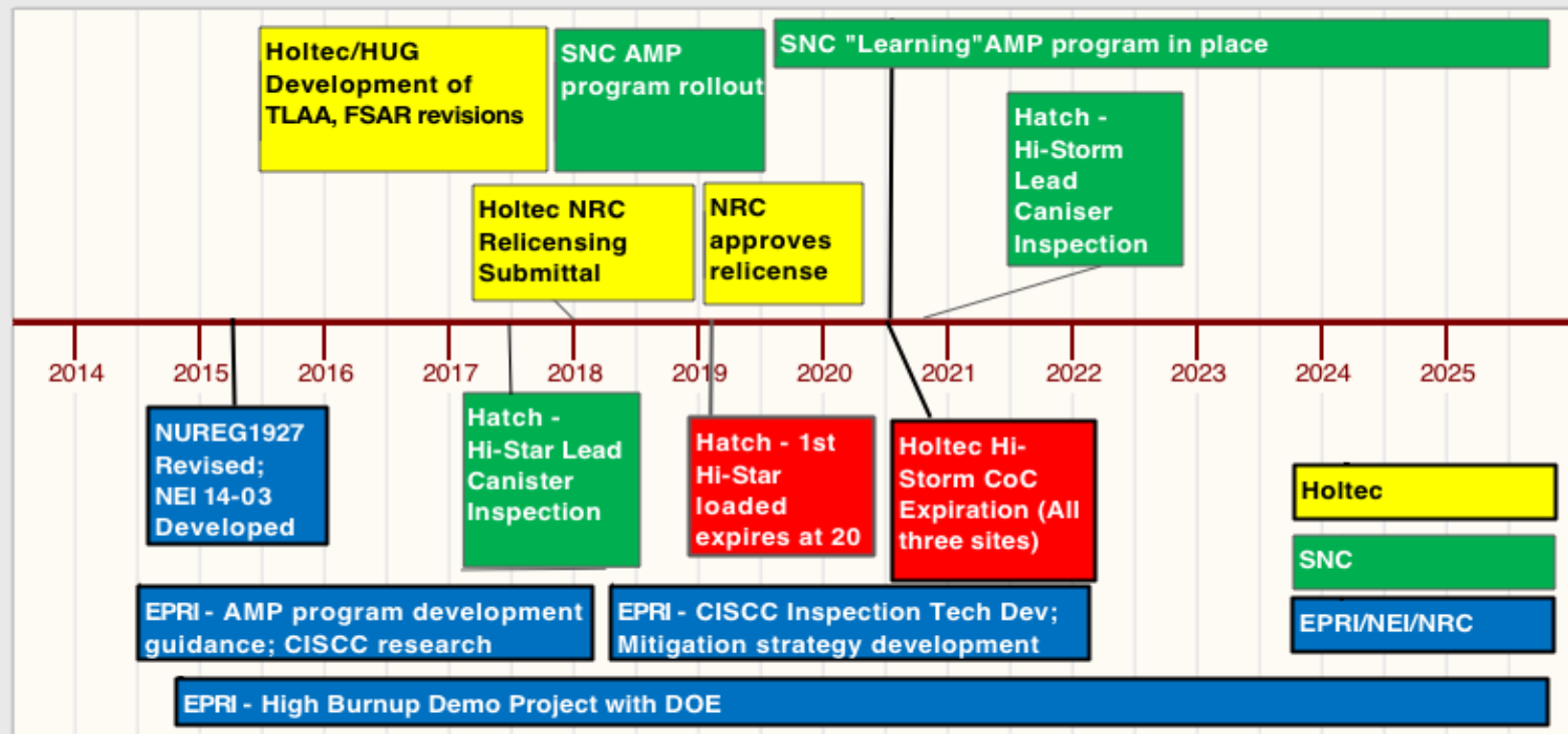


Licensing Activities

The cask license renewal process is currently the focus of regulatory attention.

NRC regulations were established with a 20 year license duration for dry cask storage systems. The regulations anticipated that license renewal would be required and include a renewal process.

Cask Relicensing Timeline



QUESTIONS?





AMERICA'S NUCLEAR SOLUTION

Update on WCS' Plans for Consolidated
Interim Storage of Used Nuclear Fuel

Betsy Madru
Vice president of government affairs



AMERICA'S NUCLEAR SOLUTION

WCS current facilities





AMERICA'S NUCLEAR SOLUTION

Clive Facility

(Previous Industry Standard for Class A)





AMERICA'S NUCLEAR SOLUTION

Barnwell Facility (Previous Industry Standard for Class B/C)





AMERICA'S NUCLEAR SOLUTION

WCS Compact Facility (New Industry Standard)





AMERICA'S NUCLEAR SOLUTION

Compact Waste Facility





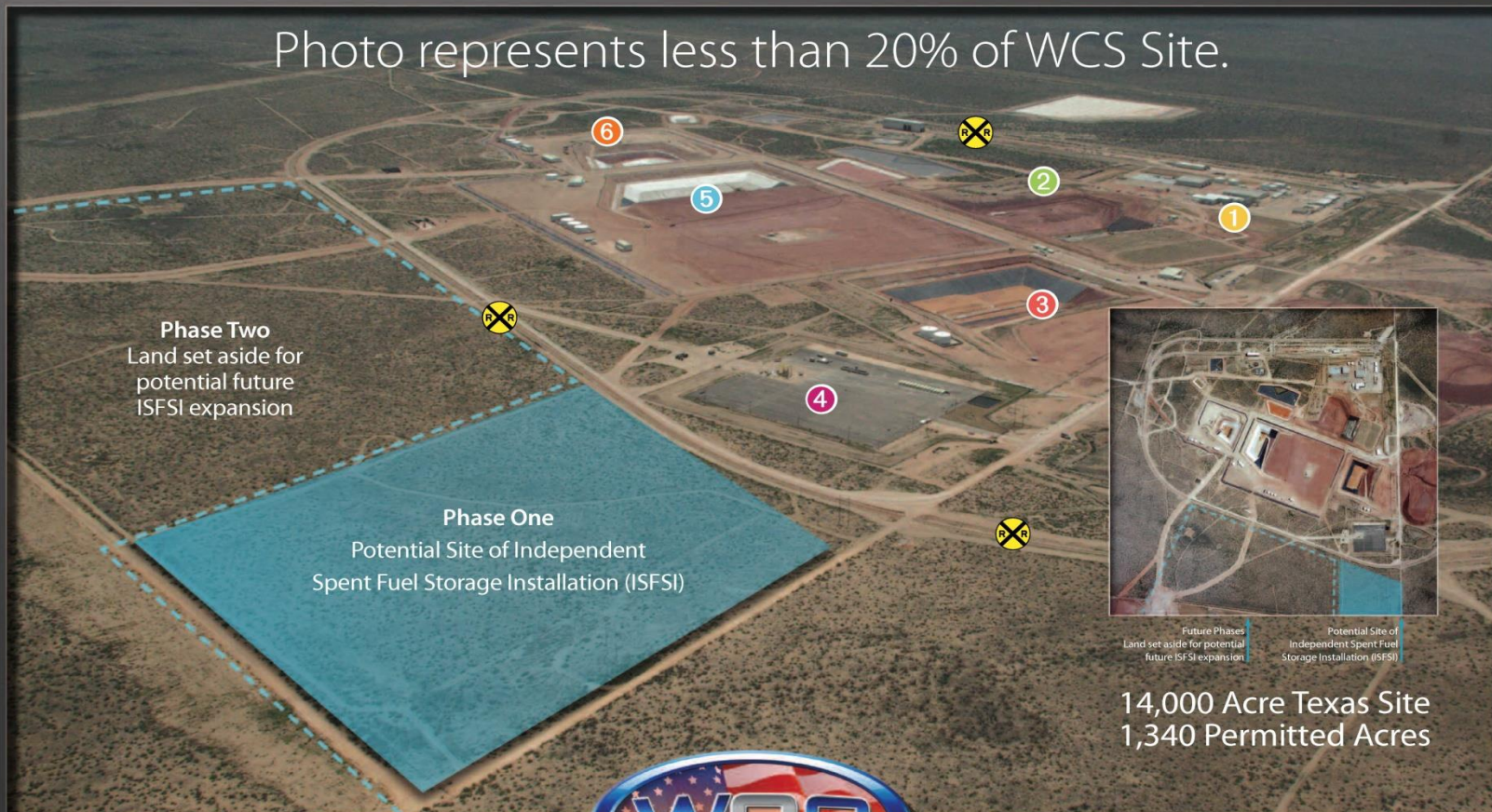
Location of ISFSI

AMERICA'S NUCLEAR SOLUTION

POTENTIAL SITE OF INDEPENDENT SPENT FUEL STORAGE INSTALLATION (ISFSI)

- 1 Treatment & Storage
- 2 Hazardous Waste Landfill
- 3 Byproduct Disposal Facility
- 4 Low Level Storage Pad
- 5 Federal Waste Facility
- 6 Compact Waste Facility

Photo represents less than 20% of WCS Site.



14,000 Acre Texas Site
1,340 Permitted Acres



AMERICA'S NUCLEAR SOLUTION



Project Scope

- Environmental impacts will be analyzed with storage of 40,000 MTHM for 40 years.
 - 8 separate phases; storage of up to 5,000 MTHM in each phase.
- License includes three NUHOMS storage systems, which cover three decommissioned and seven operating sites.
 - Discussions underway to include other systems for other sites
- Storage of used fuel from up to 10 decommissioned nuclear power plants (9 locations) will fit in Phase 1.
- License for 40 years with renewals of up to 20 years.
- Licensing with NRC has already started.
- Discussions with DOE have started on how this could impact the DOE strategy for used nuclear fuel.



Timeline

- February 2015 – filed the notice of intent
- Currently – meetings with interested parties, legislative members, NRC pre-application meetings
- April 2016 – file license application
- June 2019 – NRC issues license application
 - Assumes a three year review period
- September 2019 – Construction begins
- December 2020 – Operations could begin



AMERICA'S NUCLEAR SOLUTION

License Application

- WCS has the lead role in preparing the license application, with support from AREVA.
- First public pre-application meeting is in June.
- License application for Private Fuel Storage that was approved by the NRC provides a template.
- Safety Analysis Report will be prepared for AREVA'S NUHOMS system.
 - Additional systems to be added as license amendments.



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Community Support

- WCS initiated discussions with Andrews County, Texas for support to site a Centralized Interim Storage Facility in the County.
- WCS underscored we were proceeding with the project only with the support of the local community.
- Andrews County resolution passed unanimously on January 20, 2015.



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No Impact on Yucca

- The WCS facility has no real impact on the debate about a permanent repository.
 - Industry has generated 71,780 mtu/date and at a rate of 2,000-3,000 mtu/year, there is still need a permanent solution
- Allows transportation system to be developed and tested.



AMERICA'S NUCLEAR SOLUTION

WCS is Budget Friendly

- No up-front federal expenditures for site selection, characterization and licensing.
- Consolidation of multiple sites into one will save licensing and security costs.
- Federal expenditures for transportation and storage will result in progress instead of studies.
- Opportunity to reduce payments from the unappropriated Judgment fund.
 - Federal government estimates their liability to be almost \$13 billion by 2020.



What Does WCS Need?

- WCS is willing to start the process with no federal funding, but needs to be able to be paid for storage along with DOE taking title to the waste for consolidated interim storage.
 - Legislation or policy clarification
- Industry support for using the waste fund to pay for interim storage.
- DOE to make significant progress in transportation of used fuel so we have something to store in December 2020.



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Questions?

www.WCSstorage.com

Questions?

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of the GoToWebinar taskbar.

