



**Safety Culture in Decommissioning:  
Vermont Yankee  
Experience**

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**RIC 2017 W20**

**March 15, 2017**



# Overview

## Vermont Yankee Safety Culture Experience

- Vermont Yankee Milestones
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- SAFSTOR Phase I: Post shutdown
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# Vermont Yankee Milestones

- Notification of permanent cessation of operations at the end of 2014, submitted to NRC 9/23/2013
- Post-Shutdown Decommissioning Activities Report (PSDAR) and site-specific Decommissioning Cost Estimate submitted 12/19/2014
- Shutdown for defueling outage 12/29/2014
- 10 CFR 50.82(a)(1) certifications submitted 1/12/2015
  - The Part 50 VY license no longer authorizes operation of the reactor or emplacement or retention of fuel into the reactor vessel, 10 CFR 50.82(a)(2)
- Termination of Reactor Oversight Process and Commencement of Decommissioning Inspection Program 1/20/2015
- SAFSTOR Phase I staffing reductions 1/19/2015
- SAFSTOR Phase II staffing reductions 5/5/2016
- ISFSI-related construction activities began July 2016
- Schedule for dry fuel campaign April 2017 to 3Q2018

## Background: Implementation of NEI 09-07

- In 2011, Entergy issued a new fleet procedure to implement NEI 09-07 as part of the industry initiative for Fostering a Strong Nuclear Safety Culture.
- In 2012, Entergy conducted a review of its NEI 09-07 implementing procedure, using a self-assessment process and six-person team.
- The review suggested that safety culture monitoring activities could benefit from an increased focus on the use of intuition and observation for “faint signals” by station managers, and a reduced emphasis on the collection and binning of hard data into the traits associated with safety culture.
- This feedback was provided to NRC and NEI, and contributed to changes reflected in NEI 09-07 Revision 1 (March 2014).
- This Entergy procedure has been used for Nuclear Safety Culture Monitoring during the final operating cycle, and continues to be used post-shutdown as a site-specific VY procedure.

# Pre-Shutdown: Final Operating Cycle

## Safety Culture Monitoring

- Site maintained focus on safe operations by retaining the existing operational organization intact through defueling.
- Site Project Management organization established to oversee preparation for decommissioning activities.
- Existing site processes continued to be utilized to extent practical, including NEI 09-07 implementing procedure to monitor for culture issues.
- In early 2014, NRC implemented quarterly assessment reviews under the Reactor Oversight Process in order to more closely monitor and review overall plant activities to assure that there are no issues emerging that might indicate a decline in focus on the safe operation of the facility.

# Pre-Shutdown: Final Operating Cycle

## Results of Final Operating Cycle “Finish Strong”

- 633 continuous days on line (breaker-to-breaker)
- Longer Operating Cycle - 21 months vs. 18 months
- Unit Capability Factor top decile performance at 98.39
- Forced Loss Rate top quartile
- Equipment Reliability Index performance at 93
- Excellent CRE performance (22.577 rem)
- INPO Plant Performance Index
- Fuel performance (4613 calendar days of failure-free fuel)
- Maintained Regulatory Performance
  - No findings/violations greater than Green, no substantive cross-cutting issues
  - Remained in Licensee Response Column

# SAFSTOR Phase I: Post-shutdown

## Safety Culture Monitoring

- Site continued applying NEI 09-07 process to monitor for culture issues
- VY implemented site-specific procedure for Safety Review Committee (SRC)
  - Tailored to focus on safety aspects of decommissioning
  - Provides additional perspective to safety culture monitoring panels and site leadership teams
  - Experience and independent views of SRC bring external look to cultural problems which may be invisible to those living in the culture day to day
  - In oversight role, challenges leadership to remain self-critical
- VY continued to maintain part-time contractor as on-site Employee Concerns Coordinator, previous VY employee familiar with site personnel and processes

# SAFSTOR Phase I: Post-shutdown

## Examples of issues and actions taken:

- Warning flags marking the potential erosion of standards
  - Issues entered into the Corrective Action Program indicated early signs of developing problems in the radiation practices.
  - The site was slow to respond to indications of a decline in industrial safety performance: June 2015 first OSHA recordable injury was the first in a considerable time, followed by two in September 2015.
- Corrective actions were put in place to achieve sustained performance with monitored results.
- Status of issues communicated at station leadership and alignment meetings, and during other regular site meetings.
- Management of groundwater ingress into turbine building basement.
- Change management, *i.e.*, additional staffing reductions



## SAFSTOR Phase II: Transfer to Dry Fuel

### Safety Culture Monitoring

- Minor changes to NEI 09-07 implementing procedure due to site organizational changes.
- Reduction in commitment for SRC oversight, primary focus on safe storage of irradiated nuclear fuel.
- No changes to maintaining part-time contractor as on-site Employee Concerns Coordinator.

## SAFSTOR Phase II: Transfer to Dry Fuel

### Examples of issues and actions taken:

- Transition of Security Force from Entergy employees to contractor personnel under “Securitas” in June 2016, involved 71 security officers and supervisors
- Staffing reduction to 62 site Entergy VY personnel in May 2016
- Oversight of contractors
  - ISFSI-related construction activities, began July 2016, continuing through 2017 and into 2018
  - Preparations for fuel loading campaign
    - Scheduled to commence April 2017, complete mid-2018
- Impacts of accelerating schedule from 2020 to 2018, as well as license transfer to NorthStar application

## Path Forward

- Continue to ensure site leadership is aware of and taking actions with respect to work force issues that have a potential impact on nuclear safety culture.
- Adjust safety culture monitoring plan, as allowed by the process, to fit VY needs.
- Ensure actions area assigned to bring issues to the proper level of attention with site leadership.
- Continue to commit to SRC reviews at the site as an external oversight.

## Summary

- Vermont Yankee experience during the final operating cycle and thus far in decommissioning indicates that safety culture monitoring is an important part of the decommissioning process
  - There have been no significant safety issues
  - Decommissioning project remains on schedule and within budget
- The NEI 09-07 implementing procedure used by VY and based on the Entergy fleet procedure allows for flexibility, and emphasizes increased focus on use of intuition and observation for “faint signals”

# Vermont Yankee



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