Southern Nuclear

SNC Proposed Alternatives for Containment Unbonded Post-Tensioning System Inservice Inspection Requirements

Public Meeting Discussion

December 16, 2025

Meeting Purpose and Agenda

The purpose of this meeting is to discuss SNC Proposed Alternatives for

Farley CTMT Post-Tensioning System

This meeting will cover the following topics:

- Hydrogen Stress Cracking (1985, 2012, and 2017)
- Anchor Heads properties and locations
- Water Presence and location
- Augmented Exams for 2012, 2017, and 2021
- ASME Code Section IWL 2521 Requirements

We appreciate your participation and feedback

SNC Alternative for Farley CTMT Post-Tensioning System

ASME Code Requirements

ASME Boiler and Pressure Vessel Code, Section XI, 2007 Edition with 2008 Addenda

- IWL-2500
- Requires inspections for affected components each Section XI inspection interval
- Affected components: Farley Unit 1 and 2

SNC Alternative for Farley CTMT Post-Tensioning System

Hydrogen Stress Cracking:

What were the causing of events of 1985, 2012, and 2017?

- **The cause of the 1985 anchor head failures was attributed to hydrogen stress corrosion cracking. Reference LER 85-005-01 for more details.**

SNC Alternative for Farley CTMT Post-Tensioning System

Hydrogen Stress Cracking:

What were the causing of events of 1985, 2012, and 2017?

- **The cause of 2012 and 2017 anchor head failures were attributed to hydrogen stress corrosion cracking. Specifically, the 2011 and 2017 failures were tied to higher than specified hardness limits which would lend the heads more susceptible to hydrogen stress corrosion cracking when in the presence of moisture.**

SNC Alternative for Farley CTMT Post-Tensioning System

- Discuss the actions taken by SNC to detect widespread degradation beyond sampled components. NRC notes high number of replaced or repaired anchor heads compared to samples inspected.

- SNC has replaced all anchor heads from the lot that was identified as having high hardness. A sampling of other lots was performed with no results of high hardness. SNC performed visual exams on a sampling of anchor heads with a stamp FN to ensure no cracking was present. SNC has additionally inspected the grease in tendons to verify the moisture content. SNC also has installed automatic sump pumps in the tendon access gallery to ensure no standing water is in the area of the tendon access.

SNC Alternative for Farley CTMT Post-Tensioning System

- Drawing or Diagram for material for anchor heads, unreplaced anchor head with potential high hardness
  - All anchor heads in lot found with high hardness have been replaced.
- Drawing or Diagram for locations with water presence
  - To be provided during presentation as separate file.
- Factors contributing to low CPM base numbers and locations
  - Original P1 or P2 grease, how the samples were previously taken, and from where the sample was taken can affect the numbers. Historically Samples have been taken from multiple location for tendons to verify the CPM numbers are correct.

SNC Alternative for Farley CTMT Post-Tensioning System

Locations affected by high hardness, water, and low CPM base numbers

2017/2019 Replaced anchor heads per SNC1000660 H1CA, H29CA, H31CA, H9AB, H15AB, H1BC, H3BC, H5BC, H7BC, H37AB, H13BC, and H15BC

Anchor Head De-tensioned H11BC

All replaced anchor heads were from Lot 10114 except H-37AB

2012 CAR Replacements: Unit 1: H25AC, H27AC, H30AC, H7AB(failed), H29AB, H33AB, H35AB, H41AB, H44AB, H28BC and D322. Unit 2: H5DE, V60, D220, and D231.

THE LOCATIONS ABOVE CAN BE FOUND IN DIFFERENT CAR AND DESIGN WORK ORDERS.

SNC Alternative for Farley CTMT Post-Tensioning System

Tendon Selections in 2012, 2017, and 2021 examinations:

- For each of the exam periods the selections were completed through calculations. The program randomly selects tendons from each group (Hoop, Vertical, or Dome) all tendons that have not previously been inspected, outside of the common tendon, which is required to be selected for each inspection.

SNC Alternative for Farley CTMT Post-Tensioning System

• Examination Results and resolutions of non-conformances for initial inspection and subsequent inservice inspections for tendons requiring AUG exams Per IWL-2512-2	• To be provided during presentation as separate file.
• Present distribution of replaced or re-tensioned hoop tendon locations and demonstrate whether balanced effects of prestressing tendon system is maintained for structural integrity of the CTMT structure	• To be provided during presentation as separate file.

SNC Alternative for Farley CTMT Post-Tensioning System

- Present tendon force trends for the replaced/re-tensioned tendons during 2012 and 2017 events

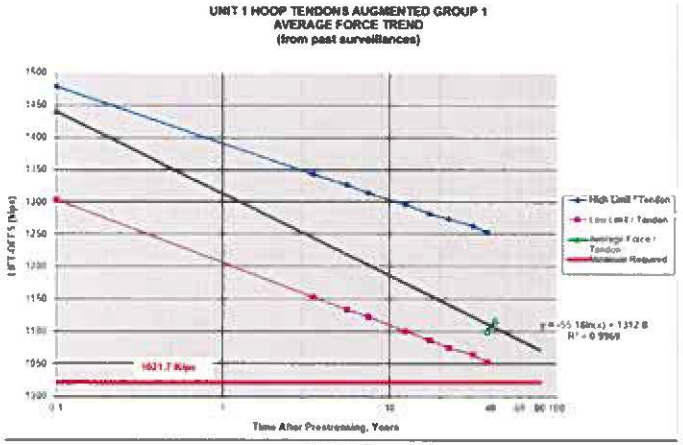

FIGURE 27

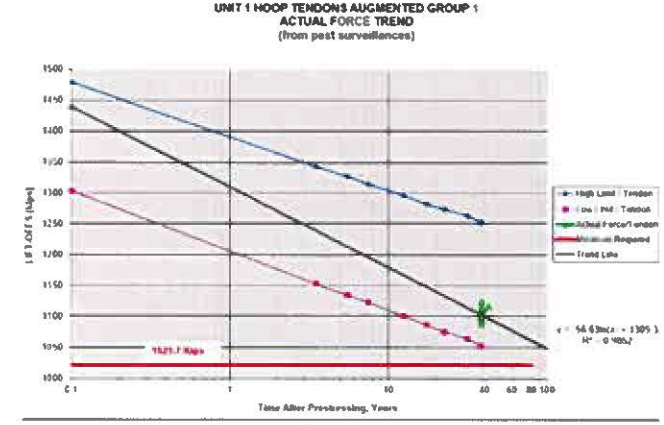

FIGURE 28

What Feedback Do You Have?

Any feedback
or Questions