

GL 2004-02 CLOSE OUT

FOR

THREE MILE ISLAND

UNIT 1

MEETING WITH NRC
OCTOBER 30, 2014



GL 2004-02 Close Out for TMI

Purpose of Meeting:

- **Communicate current TMI plan for closure of GL 2004-02 .**
- **Provide updated schedule of activities related to closure of GL 2004-02 for TMI.**
- **Identify any areas of concern that can be addressed during the TMI strainer testing program.**
- **Identify areas where additional discussion/review may be required to ensure successful closure of GL 2004-02 for Three Mile Island Unit 1.**

GL 2004-02 Close Out for TMI

In July, 2012, NRC provided three options for closure of GSI-191*:

Option 1: Compliance based on approved models

- Plants must meet “clean plant criteria” or
- Have sufficiently low strainer bypass and
- Meet the 15 gram per fuel assembly limit

Option 2: Mitigative measures and alternative methods

2a – Deterministic Resolution Path

2b – Full Risk-Informed Resolution Path

Option 3: Different regulatory treatments for strainer and in-vessel effects

- Use deterministic approach for strainer and a risk-informed approach to in-vessel.
- This option only conceptually defined in 2012 and is still under development.

* SECY-12-0093

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TMI selected Option 2a – complete additional modifications and pursue refinements to evaluation methods and acceptance criteria.*

{TMI previously applied a 7D ZOI for Nukon insulation. The updated analyses and testing will apply the 17D ZOI.}

TMI committed to:

- Replace the NUKON insulation currently installed on the pressurizer with Metallic Reflective Insulation (MRI) in T1R21 (Fall 2015).
- Complete strainer head loss testing based on the reduced strainer debris load by 12/31/15
- Re-evaluate strainer bypass by 7/31/16
- Submit a final updated supplemental response to support closure of GL 2004-02 for TMI Unit 1 by 6/1/17.

*TMI Letter (TMI-12-148) to USNRC dated May 16, 2013.

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Current TMI plan/schedule:

- Conduct strainer head loss and bypass testing @ Alden Research Laboratory (Holden, MA) in 2014
- Based on strainer head loss test results, replace Nukon blanket insulation on the pressurizer with MRI in fall 2015 refueling outage (T1R21).
- Submit final updated supplemental response to the NRC in 2016 pending completion of the PWROG efforts.

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Strainer test sequence:

Single Top Hat Bypass Test – November 2014

This test will evaluate the effect of debris concentration/mixture and water chemistry on strainer bypass. The results of this ‘sensitivity’ test will be factored into a large scale bypass test.

Strainer Head Loss Testing – December 2014

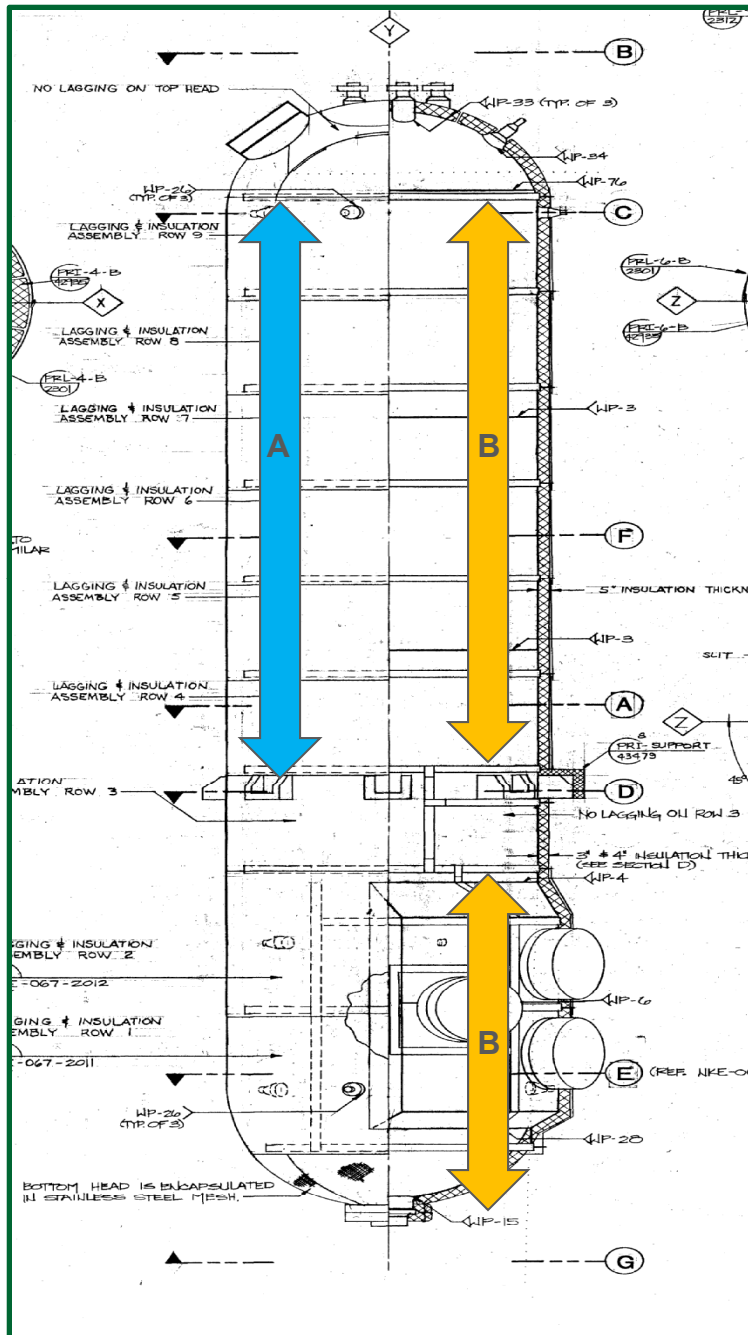
This test sequence will consist of a thin bed test followed by one or two full load head loss tests as required to determine the limiting debris quantity. A test plan has been developed to evaluate several options for insulation replacement on the pressurizer. The final decision for the scope of insulation replacement in T1R21 will be determined by the test results.

Strainer Bypass Test – December 2014

The information gained in the single top hat bypass test will be used to develop the test plan/procedures for the final bypass test.

Test plans and procedures are currently being developed.

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TMI pressurizer is currently insulated entirely with Nukon blanket insulation. Two options for replacing Nukon with MRI will be investigated:

Option A: replace Nukon insulation above the support region with the exception of the upper head.

Option B: replace Nukon insulation in all locations except upper head and inside the support.

The head loss test sequence will determine which option will result in acceptable NPSH for the ECCS pumps and acceptable maximum strainer DP.

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Estimated debris reduction:

- Option A results in approximately 46% reduction in the volume of blanket insulation on the pressurizer
- Option B results in approximately 81% reduction in the volume of blanket insulation on the pressurizer
- If necessary, a further reduction in the volume of fiber debris at the strainer can be achieved by removing the insulation currently included in Option B as 'margin' and crediting the pressurizer support as a robust barrier (Option C).

{Following insulation replacement on the pressurizer, some small amounts of blanket insulation will remain on piping and components within the ZOI.}

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TMI is continuing to follow PWROG efforts to establish the allowable debris limits for in-vessel effects.

The current calculated TMI bypass of 34 grams fiber/fuel assembly is based on bypass testing that was performed for another utility with an Enercon top hat strainer similar to TMI's.

The TMI specific bypass test is expected to provide a lower bypass fraction.

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Proposed Debris Preparation Protocol for Head Loss and Final Bypass Tests*

- Debris categorized as small or large pieces and intact blankets will be prepared as follows:
 - Insulation torn into 1”-4” pieces by hand
 - Torn insulation will be wetted using garden hose nozzle
 - Wetted debris will be mixed using a paddle to ensure even moisture penetration
 - Additional water spray applied to ensure small pieces are separated from each other
 - Preparation ends when it has been confirmed that the pieces readily separate within the slurry and no pieces remain floating
- Fine debris will be added to the tank first

*Fiber will be prepared only as ‘fines’ for the single top hat bypass test.