



Hatch Pre-Submittal Meeting Request to Eliminate the Requirement for Automatic Main Steam Isolation on High Turbine Building Area Temperature

August 2021





Meeting Purpose

- The purpose for this meeting is to discuss proposed license amendment request (LAR) to eliminate the requirement for automatic main steam isolation on High Turbine Building Area Temperature, and to add new TS 3.7.10 to monitor turbine building area temperature
- Follow-up to October 14, 2020 pre-submittal meeting (Meeting Summary - ML20289A424) based on scope change
 - October 14, 2020 meeting proposed to remove Function 1.f (Main Steam Line Isolation - Turbine Building Area Temperature – High) from Technical Specification (TS) and relocate to Technical Requirements Manual (TRM)
 - Revised proposal retains turbine building area temperature monitoring requirement in TS, but removes automatic main steam isolation



Meeting Agenda

- LAR Summary Description
- System Design and Operation
- Current Licensing Basis Requirements
- Reason for Proposed Change
- Description of Proposed Change
- Technical Evaluation of Proposed Change



LAR Summary Description



LAR Summary Description

- Revision to TS 3.3.6.1, “Primary Containment Isolation Instrumentation,” Table 3.3.6.1-1, to eliminate the requirement for automatic main steam isolation on high turbine building area temperature (Function 1.f)
- TS requirements for turbine building area temperature monitoring will be relocated to a new TS 3.7.10

The background consists of several overlapping, semi-transparent gray geometric shapes. There are triangles of various sizes and orientations, some rectangles, and a large trapezoidal shape on the right side. The colors range from light gray to a medium-dark gray, creating a layered, architectural feel.

System Design and Operation



System Design and Operation

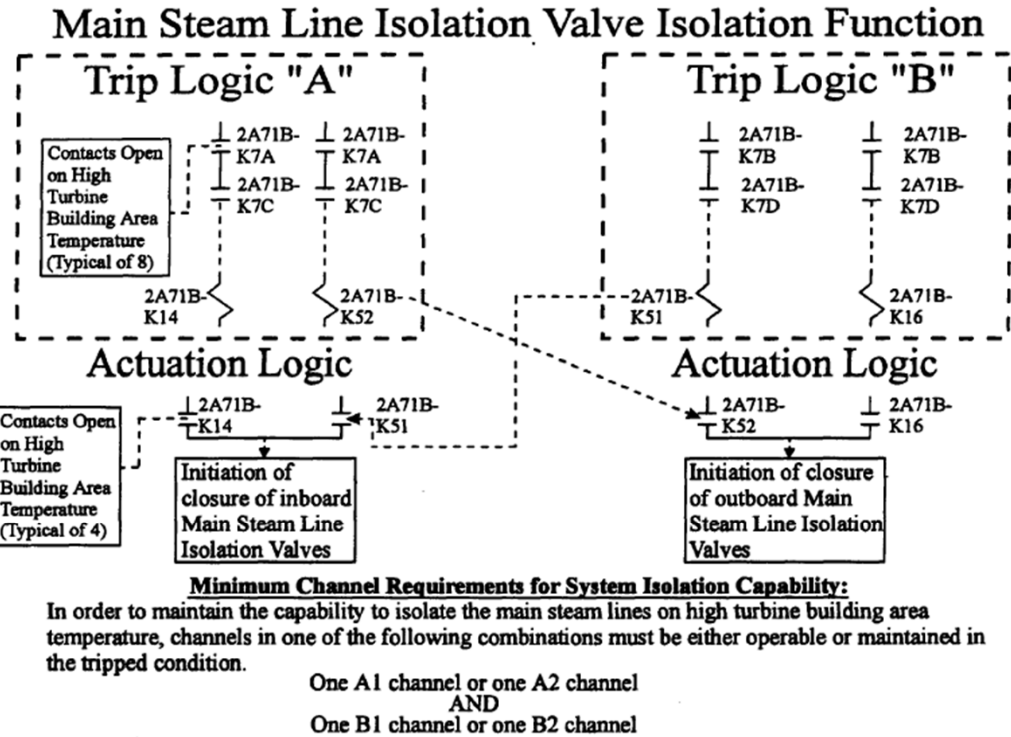
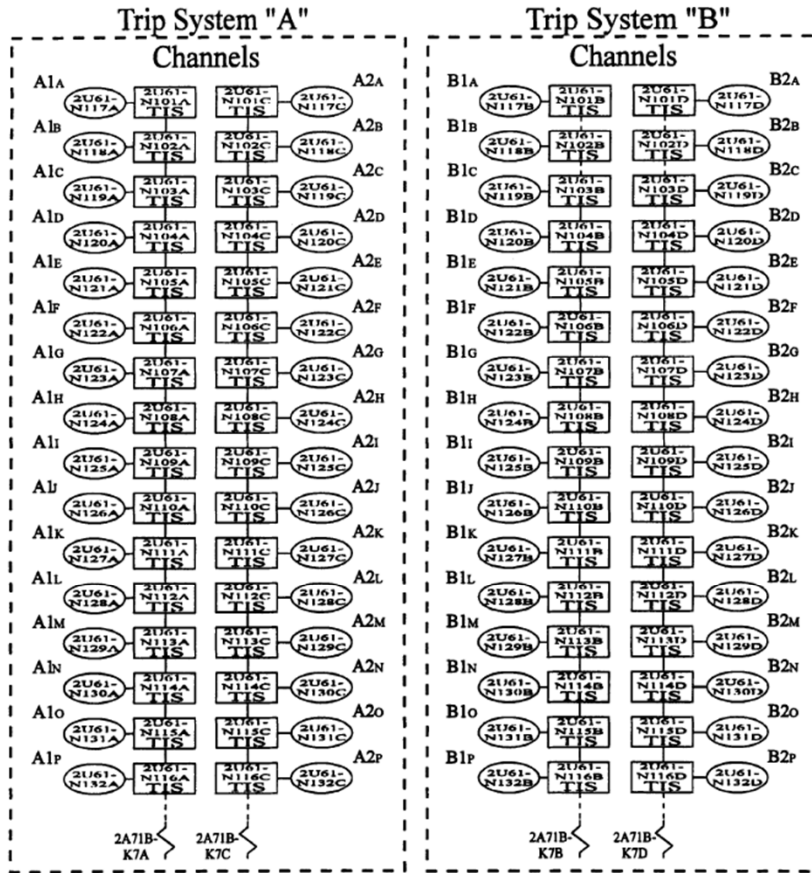
- Main Steam Line (MSL) leakage in the turbine building is monitored to protect the assumptions of the accident dose analyses.
 - Monitoring of area temperature around MSL is one of several indications of MSL leakage
- Allowable Value chosen to detect a leak equivalent to between 1% and 10% rated steam flow
- Credit for temperature instruments is not taken in any transient or accident analysis in the updated final safety analysis report (UFSAR), since bounding analyses are performed for large breaks such as main steam line breaks (MSLBs)



System Design and Operation

- The Turbine Building Area Temperature – High Function monitors area temperature around the MSLs in the turbine building, and isolates the Main Steam Isolation Valves (MSIVs) on high temperature
- Normally energized; de-energized to trip

Turbine Building Temperature Main Steam Line Isolation Logic





Current Technical Specification Requirements



Current Technical Specification Requirements

- Technical Specification (TS) requirements are 32 (of 64) channels Operable to ensure no single instrument failure can preclude isolation function
 - Each trip stream must have 2 channels per main steam line (8 total channels)
 - No more than 40 feet may separate any two Operable channels
- Allowable Value $\leq 200^{\circ}\text{F}$



Reason for Proposed Change



Reason for Proposed Change

- Due to area configuration, indicated temperature can trend close to isolation set points for reasons other than small steam leak (e.g. issues with turbine building area chillers, temperature monitoring instrument drift)
 - Has resulted in numerous half-Group 1 isolations, none of which were caused by a steam leak
- Removing automatic MSIV isolation will reduce the probability of an unnecessary plant transient (either an unplanned maintenance outage or a complicated scram)
- New TS requirements will allow for a controlled shutdown if a small steam leak exists, which is more commensurate with the safety significance
- If temperature exceeds setpoint for reasons other than a small steam leak, new TS will provide appropriate remedial actions to ensure plant is operating safely and within assumed plant conditions



Description of Proposed Change

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LCO 3.7.10 TB maximum area temperature shall be ≤ 200 °F.

APPLICABILITY: MODES 1, 2, and 3.



ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. TB maximum area temperature > 200°F.	A.1 Initiate action to verify no main steam line leak.	Immediately
	<u>AND</u>	
	A.2 Verify no main steam line leak.	Once per 12 hours thereafter
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.	12 hours
	<u>AND</u>	
	B.2 Be in MODE 4.	36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.7.10.1 Verify TB maximum area temperature is within limit.	In accordance with the Surveillance Frequency Control Program



Technical Evaluation



Technical Evaluation

- Evaluation of design basis showed basically two criteria for MSL turbine building isolation function:
 1. Leak Before Break
 - Early intergranular stress corrosion cracking (IGSCC) showed isolating on a small leak provided assurance that the leak would not grow to a break
 - Small cracks in main-steam piping are not subject to IGSCC due to high quality steam and corresponding lack of corrosive environment
 - Furthermore, TS 3.7.10 will require a shutdown if a leak is confirmed
 2. Dose Limits
 - Dose limits may be exceeded if a LOCA were to occur concurrent with an on-going (undetected) leak in the main steam piping in the turbine building
 - Proposed TS 3.7.10 provides assurance that a leak would be properly identified
 - If TS 3.7.10 Condition B were entered based on confirmed steam leak, impact to radiological consequences would be insignificant



Technical Evaluation – Small Leak Detection Indications

- In addition to TS Table 3.3.6.1-1 Main Steam Line Isolation Instrumentation, other methods to detect a small leak in the turbine building include:
 - Verifying no unexpected, sudden rise in maximum area temperature
 - Verifying no unexpected change in radiation monitors
 - Verifying no unexpected rise in turbine building sump levels
 - Verifying no unexpected change in megawatts electric (MWe)
 - Visual (e.g. cameras, drones) and sound indications



Technical Evaluation – Risk Insights

- Risk insights provided related to proposed change
 - Risk analysis demonstrates with reasonable assurance that eliminating the requirement for automatic main steam isolation on high turbine building area temperature is within RG 1.174 acceptance criteria
 - Analysis calculates Δ CDF and Δ LERF that results from assuming the turbine building steam line break high temperature function fails
 - The following conservatisms are assumed in the risk evaluation:
 - No credit of reduced chance of spurious actuation from a fire
 - No assumption of operator action to detect a steam leak
 - Unisolated breaks of any size result in core damage and large early release

The background consists of several overlapping geometric shapes in various shades of gray. A large, light gray triangle is on the left, pointing downwards. A darker gray triangle is on the right, pointing upwards. A medium gray triangle is in the center, pointing downwards. A light gray triangle is at the bottom, pointing upwards. The shapes overlap to create a complex, layered effect.

Questions?