



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

September 6, 2012

LICENSEE: Duke Energy Carolinas, LLC

FACILITY: Oconee Nuclear Station, Units 1, 2, and 3

SUBJECT: SUMMARY OF AUGUST 16, 2012, MEETING WITH DUKE ENERGY CAROLINAS, LLC, TO DISCUSS THE INSTALLATION OF MAIN STEAM ISOLATION VALVES AT OCONEE NUCLEAR STATION, UNITS 1, 2, AND 3 (ONS 1/2/3)(TAC NOS. ME8504, ME8505, AND ME8506)

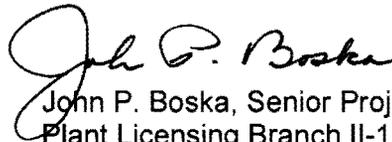
On August 16, 2012, a Category 1 public meeting was held between the U.S. Nuclear Regulatory Commission (NRC) and representatives of Duke Energy Carolinas, LLC (the licensee) at NRC Headquarters, One White Flint North, 11555 Rockville Pike, Rockville, Maryland. The purpose of the meeting was to discuss the licensee's project to add main steam isolation valves (MSIVs) to the six steam generators at ONS 1/2/3. A list of attendees is provided as Enclosure 1, and the licensee's slides are provided as Enclosure 2.

A previous public meeting on this topic was held on May 24, 2012. Refer to the meeting summary dated June 14, 2012, Agencywide Document Access and Management System accession number ML12145A705. In this meeting the licensee presented further information about the location of the steam supply lines to the turbine-driven emergency feedwater pump (TDEFWP) and the controls that would be used for ensuring that the MSIVs are functional during plant operation.

The licensee stated that the steam supply lines from the main steam header to the TDEFWP would not be moved, and would now be located downstream of the MSIVs. The licensee stated that they believed this was acceptable, as the TDEFWP will also be automatically supplied from the auxiliary steam header if the auxiliary steam pressure is greater than the supply from the main steam header. The auxiliary steam header can be supplied from any of the three units, although it is normally supplied from only one selected unit at any given time. The licensee also stated that the EFW systems can be cross-tied among units, allowing EFW to the steam generators to be supplied from a different unit, although operators have to perform the cross-tie in the turbine building. The licensee further stated that the MSIVs would be designed to remain open for a loss of all alternating current (AC) power, as long as they did not depressurize to the low pressure setpoint. The MSIVs would have an automatic closure signal from the Automatic Feedwater Isolation System on low steam pressure sensed upstream of the MSIVs. The NRC staff continued to state some concerns with having the TDEFWP steam supply downstream of the MSIVs. The licensee is aware of the NRC staff's concerns. One possible method would be to submit the design for prior NRC approval, so the licensee could be assured of regulatory approval before starting construction. The licensee stated that there would be no partial stroke test during power operations. The NRC staff agrees that such a test is not required by standard technical specifications, NUREG-1430.

The licensee stated that for now, the MSIVs would not be credited for any design-basis accidents from Chapter 15 of the Oconee Updated Final Safety Analysis Report (UFSAR), but would be credited for events such as tornados, high-energy line breaks (HELBs), and support of the decay heat removal function of the standby shutdown facility (SSF), using the steam generators. Based on that approach, the licensee stated that they believe there is no need to add a plant Technical Specification for the MSIVs. Surveillance requirements designed to verify that the MSIVs are functional would be located in the selected licensee commitment manual, which is the equivalent of a technical requirements manual. The NRC staff is still considering if there is a need for Technical Specifications. The licensee stated that they believe that they only need NRC approval for the methodology changes associated with inadvertent closure of an MSIV at power, and that the remainder of the installation could be done without prior NRC approval. The licensee stated that a preliminary analysis indicates that the inadvertent closure of the turbine stop valves is the bounding condition, as the turbine stop valves close faster than the MSIVs.

No members of the public were in attendance. Public Meeting Feedback forms were not received. Please direct any inquiries to me at 301-415-2901, or by email to John.Boska@nrc.gov.



John P. Boska, Senior Project Manager
Plant Licensing Branch II-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-269, 50-270, and 50-287

Enclosures:

1. List of Attendees
2. Licensee Handout

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**UNITED STATES
NUCLEAR REGULATORY COMMISSION**

MEETING ATTENDANCE FORM

Subject: Oconee Nuclear Station, Addition of Main Steam Isolation Valves

Date: August 16, 2012 Location: OWFN, room O-7B4

PLEASE PRINT LEGIBLY

NAME	ORGANIZATION
John Boska	NRC/NRR/DORL
Boyd Shingleton	Duke Energy - ONS Regulatory Affairs
DAVID HUNT	Duke Energy - Major Projects
Terry Patterson	Duke Energy - Mgr Safety Assurance
Mark Ceraldi	AREVA (SGT) Licensing Engr.
ROBERT SHARPE	AREVA
TOM MARTIN	TALISMAN INTERNATIONAL
Mark Smith	Duke Energy, ONS Design Engr.
John Huang	NRC/NRR/DE/EPTB
Martin Murphy	NRC/NRR/DE/EMCB
William Jessup	NRC/NRR/DE/EMCB
Diana Woodyatt	NRC/NRC/DSS/SRXB
EVAN DAVIDSON	NRC/NRR/DSS/SBPP
Ed Smith	NRC/NRR/DSS/SBPP
GREG CASTO	NRC/NRR/DSS/SBPP
Matthew Hamm	NRC/NRR/DSS/STSB
Stanley Gardocki	NRC/NRR/DSS/SBPP
Stephen Dinsmore	NRC/NRR/DRA/APLA
Tony McMurtry	NRC/NRR/DE/EPTB
Christopher Jackson	NRC/NRR/DSS/SRAB



Main Steam Isolation Valve License Amendment Request



Oconee Nuclear Station
August 16, 2012

FOR INFORMATION ONLY

Purpose of the Meeting

- ❖ Establish a mutual understanding of Duke Energy's position on the following:
 - ✓ The acceptability of installing MSIVs upstream of the Turbine Driven Emergency Feedwater Pump (TDEFWP) steam supply
 - ✓ Planned controls for ensuring MSIV functionality

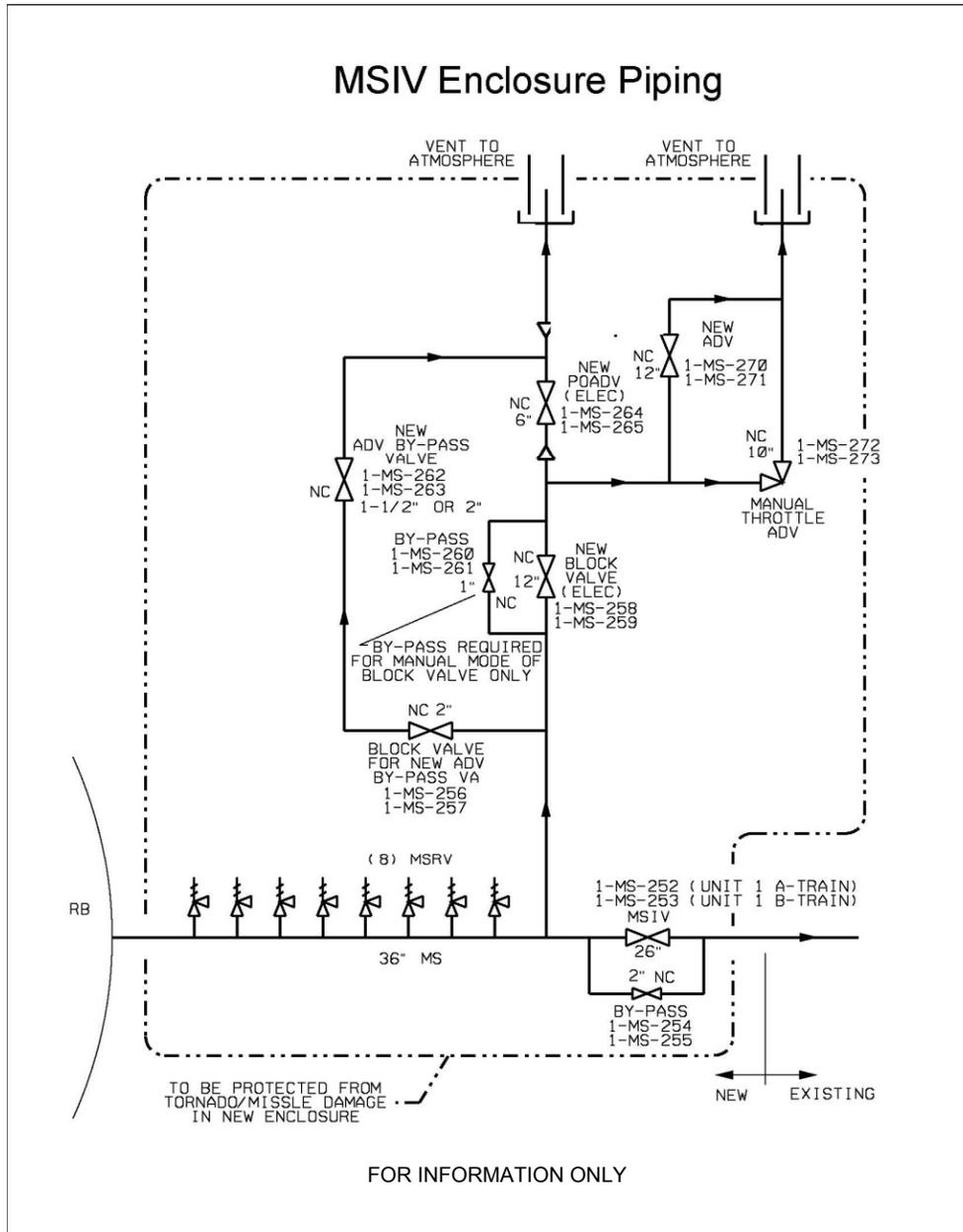
- ❖ Introductions (Terry Patterson)
- ❖ Brief Overview of Main Steam Isolation Valve (MSIV) modification (David Hunt)
- ❖ The acceptability of installing MSIVs upstream of the TDEFWP steam supply (Boyd Shingleton)
- ❖ Planned controls for ensuring MSIV functionality (Boyd Shingleton)
- ❖ Closing Remarks (Terry Patterson)

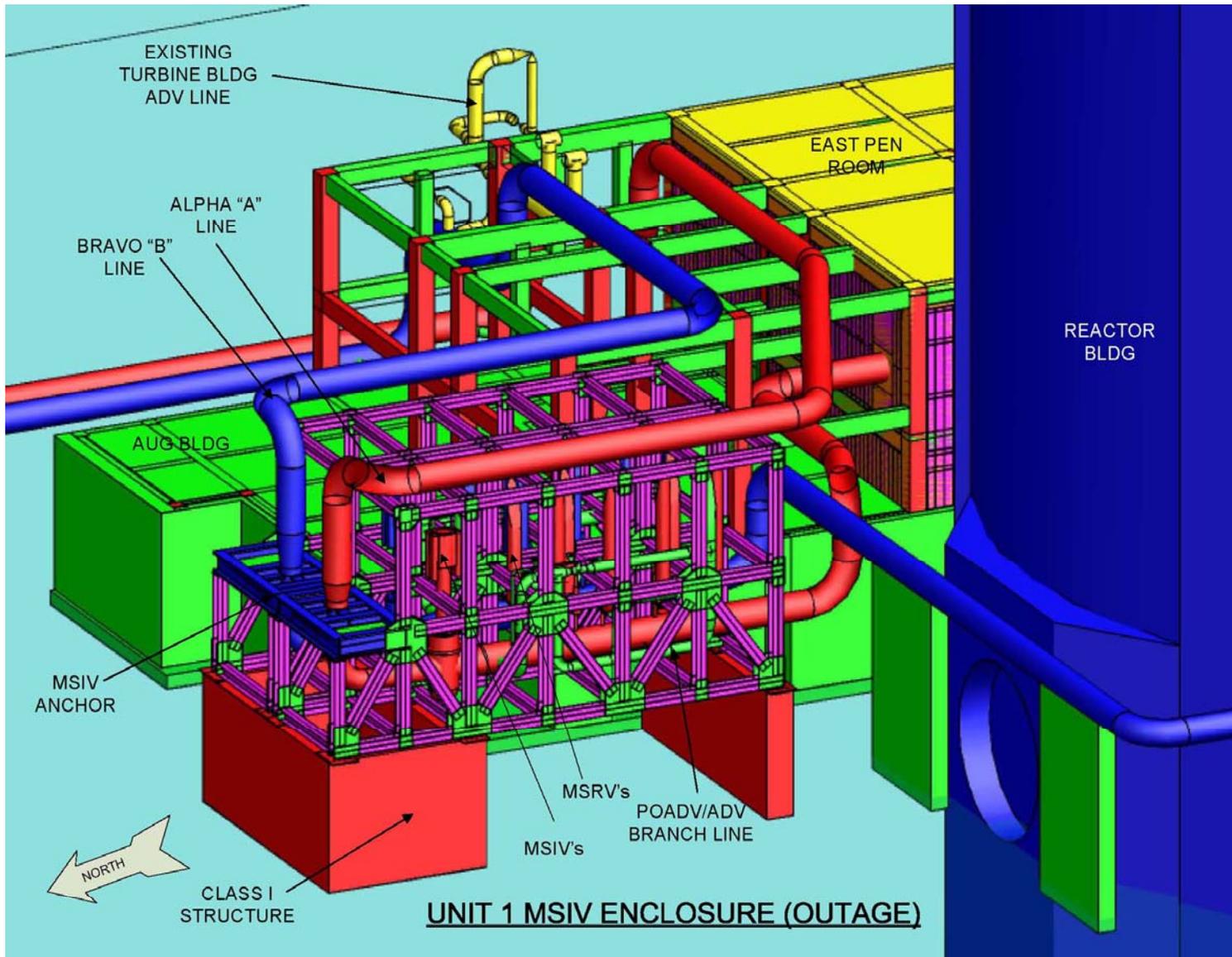


Reason for MSIV Modification

- ❖ Satisfies HELB and tornado License Amendment Requests commitment to install MSIVs
- ❖ Enhances Main Steam (MS) System integrity to support decay heat removal function of Standby Shutdown Facility (SSF) Auxiliary Service Water (ASW) System
- ❖ Reduces the area of targets for tornado missiles that damage the main steam lines
- ❖ Facilitates repair of plant equipment in Turbine Building

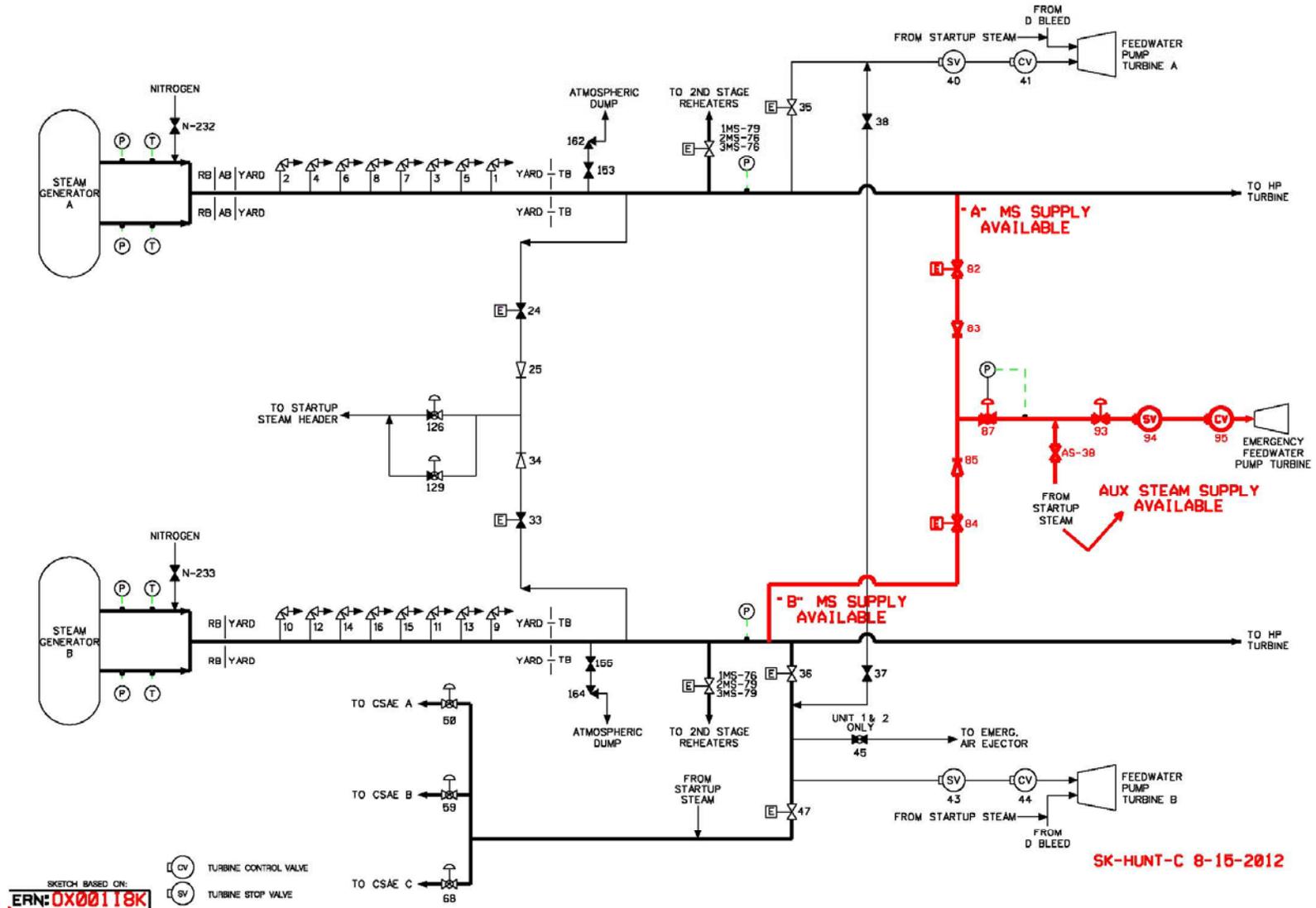
- ❖ Seismic, tornado-protected enclosure (MSIV Enclosure) will be constructed
- ❖ New piping and valves will be installed in the MSIV Enclosure
 - ✓ Main Steam Isolation Valves (MSIVs)
 - ✓ Main Steam Relief Valves (MSRVs)
 - ✓ Atmospheric Dump Valves (ADVs)
 - ✓ Power Operated Atmospheric Dump Valves (POADVs)



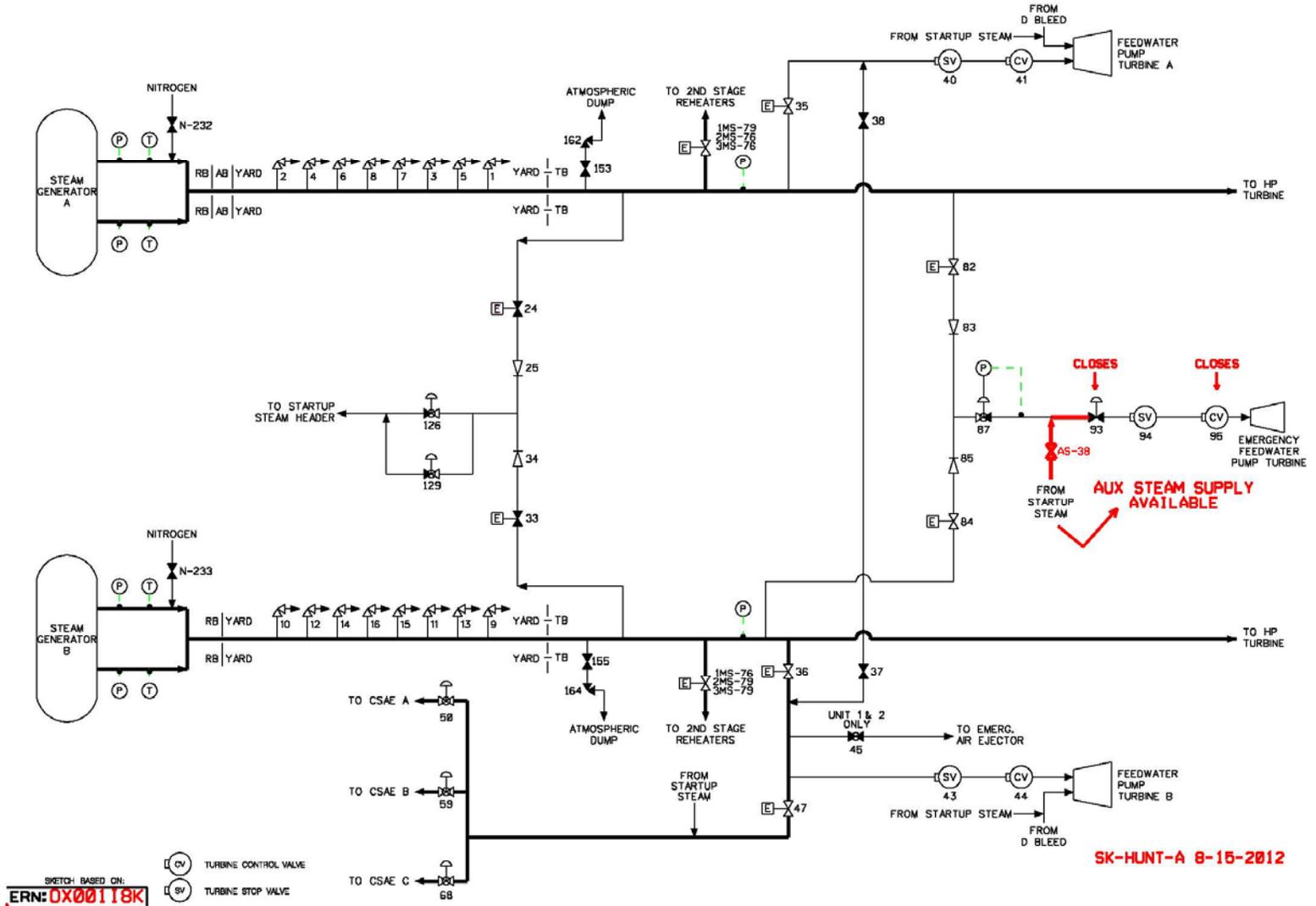


- ❖ Designed to close automatically against main steam line break (MSLB) conditions in 2 to 5 seconds after receiving a close signal
- ❖ Design reduces likelihood of inadvertent actuation
- ❖ Consequences of inadvertent actuation are bounded by inadvertent closure of Turbine Stop Valve (TSV) based on preliminary analysis of event
- ❖ Remotely operated from the Control Room
- ❖ Passive features of valve increase reliability

Current TDEFWP Operation

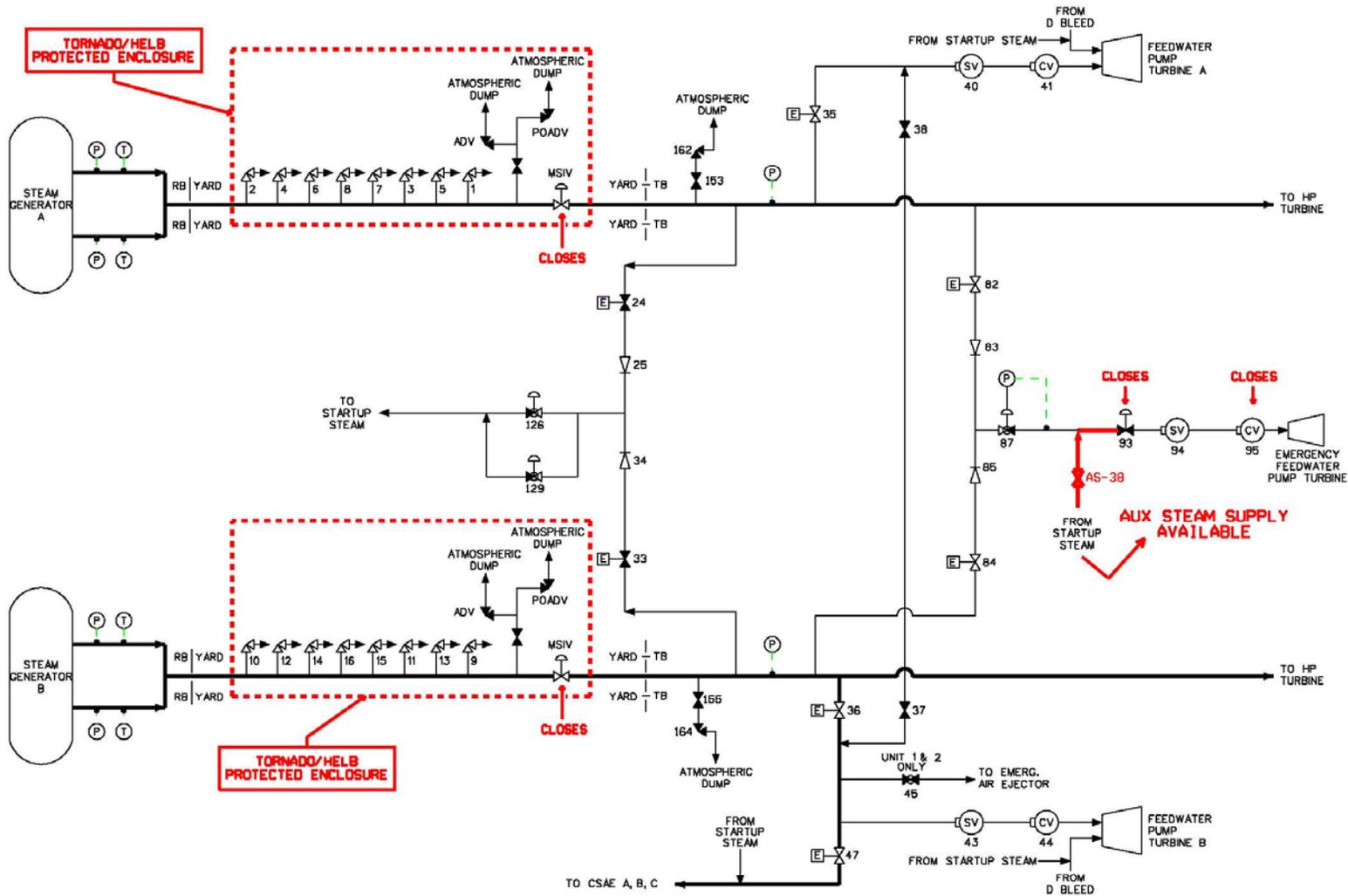


Duke Energy Current TDEFWP Operation (AFIS)



FOR INFORMATION ONLY

Post-MSIV Implementation TDEFWP Operation (AFIS)



SKETCH BASED ON
ERN:0X001T8K
 (CV) TURBINE CONTROL VALVE
 (SV) TURBINE STOP VALVE

SK-HUNT-B 8-15-2012

- ❖ The Automatic Feedwater Isolation System (AFIS) currently isolates the steam supply to the TDEFWP on low MS header pressure to mitigate RCS overcooling
- ❖ For an MSLB in the Turbine Building, EFW may be available from the affected unit or via the cross tie from another unit
- ❖ For an MSLB in the Auxiliary Building, EFW will be available
- ❖ For inadvertent closure of an MSIV, the remaining MS header continues to provide steam to the TDEFWP
- ❖ Based on the above, installation of the MSIVs does not adversely affect mitigation capability of the EFW System

3.7 PLANT SYSTEMS

3.7.2 Turbine Stop Valves (TSVs)

LCO 3.7.2 Four TSVs shall be OPERABLE.

APPLICABILITY: MODES 1, 2 and 3 except when all TSVs are closed.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or both TSVs for one main steam line inoperable in MODE 1.	A.1 Restore TSV(s) to OPERABLE status.	8 hours
B. Required Action and associated Completion Time of Condition A not met.	B.1 Be in MODE 2.	6 hours
C. -----NOTE----- Separate Condition entry is allowed for each TSV. ----- One or more TSVs inoperable in MODE 2 or 3.	C.1 Close TSV. <u>AND</u> C.2 Verify TSV is closed.	8 hours Once per 7 days
D. Required Action and associated Completion Time of Condition B or C not met.	D.1 Be in MODE 3. <u>AND</u> D.2 Be in MODE 4.	12 hours 18 hours

OCONEE UNITS 1, 2, & 3

3.7.2-1

Amendment Nos. 300, 300, & 300

3.7 PLANT SYSTEMS

3.7.2 Main Steam Isolation Valves (MSIVs)

LCO 3.7.2 Two MSIVs shall be OPERABLE.

APPLICABILITY: MODE 1,
MODES 2 and 3 except when all MSIVs are closed [and deactivated].

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One MSIV inoperable in MODE 1.	A.1 Restore MSIV to OPERABLE status.	[8] hours
B. Required Action and associated Completion Time of Condition A not met.	B.1 Be in MODE 2.	6 hours
C. -----NOTE----- Separate Condition entry is allowed for each MSIV. ----- One or more MSIVs inoperable in MODE 2 or 3.	C.1 Close MSIV. <u>AND</u> C.2 Verify MSIV is closed.	[8] hours Once per 7 days
D. Required Action and associated Completion Time of Condition C not met.	D.1 Be in MODE 3. <u>AND</u> D.2 Be in MODE 4.	6 hours 12 hours

BWOG STS

3.7.2-1

Rev. 3.0, 03/31/04

Duke Energy *Planned Method to Control MSIVs*

- ❖ The Turbine Stop Valves will remain the credited MS isolation function for Chapter 15 events and will remain in Technical Specifications
- ❖ New MSIVs enhance MS System integrity to support the Secondary Side Decay Heat Removal function of the SSF ASW System and will be controlled by the Selected Licensee Commitment (SLC) Manual
- ❖ Review of the new ONS MSIV function against the four criterion of 10 CFR 50.36(c)(2)(ii) show that the function should be controlled by a SLC

Criterion 1 – “Installed instrumentation that is used to detect, and indicate in the control room, a significant abnormal degradation of the reactor coolant pressure boundary.”

- ❖ Discussion: The new MSIVs are not installed instrumentation
- ❖ Conclusion: Criterion 1 not applicable to the MSIVs

Criterion 2 – “A process variable, design feature, or operating restriction that is an initial condition of a design basis accident or transient analysis that either assumes the failure of or presents a challenge to the integrity of a fission product barrier.”

- ❖ Discussion: Examples of Criterion 2 Tech Specs from NUREG-1430 include core limitations in TS Section 3.1 and 3.2 and RCS limits in temperature, pressure, flow, and pressurizer level in TS Section 3.4. These are typically baseline assumptions in accident analyses.
- ❖ Conclusion: Criterion 2 not applicable to the MSIVs

Criterion 3 – “A structure, system, or component that is part of the primary success path and which functions or actuates to mitigate a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier.”

- ❖ Discussion: Mitigation strategy of MSLB is not changed by installing the MSIVs. The TSVs are credited and are noted in Oconee TS 3.7.2 as satisfying Criterion 3.
- ❖ Conclusion: Criterion 3 not applicable to the MSIVs

Criterion 4 – “A structure, system, or component which operating experience or probabilistic risk assessment has shown to be significant to public health and safety.”

- ❖ Discussion: Examples of Criterion 4 TSs from NUREG-1430 include
 - the Remote Shutdown System,
 - RCS Loops in Modes 4 and 5,
 - the Pressurizer PORVs,
 - and DHR in Refueling.

No systems or components are noted as being included in NUREG-1430 due to risk significance. Preliminary PRA results demonstrate that the new MSIVs are not risk significant for Oconee.

- ❖ Conclusion: Criterion 4 not applicable to the MSIVs

- ❖ Continue to credit the Turbine Stop Valves, required by TS 3.7.2, for design basis accident mitigation
- ❖ Add New Selected Licensee Commitment (SLC) to impose functionality requirements for MSIVs consistent with the other equipment that is controlled by SLC manual
- ❖ Revise TS 3.3.11 & 13 Bases to indicate that AFIS will automatically close the MSIVs on low MS header pressure

- ❖ Installation of the MSIVs will not adversely affect mitigation capability of the EFW System
- ❖ MSIV functionality will be assured by inclusion in the Selected Licensee Commitment manual

The licensee stated that for now, the MSIVs would not be credited for any design-basis accidents from Chapter 15 of the Oconee Updated Final Safety Analysis Report (UFSAR), but would be credited for events such as tornados, high-energy line breaks (HELBs), and support of the decay heat removal function of the standby shutdown facility (SSF), using the steam generators. Based on that approach, the licensee stated that they believe there is no need to add a plant Technical Specification for the MSIVs. Surveillance requirements designed to verify that the MSIVs are functional would be located in the selected licensee commitment manual, which is the equivalent of a technical requirements manual. The NRC staff is still considering if there is a need for Technical Specifications. The licensee stated that they believe that they only need NRC approval for the methodology changes associated with inadvertent closure of an MSIV at power, and that the remainder of the installation could be done without prior NRC approval. The licensee stated that a preliminary analysis indicates that the inadvertent closure of the turbine stop valves is the bounding condition, as the turbine stop valves close faster than the MSIVs.

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/RA/

John P. Boska, Senior Project Manager
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Docket Nos. 50-269, 50-270, and 50-287

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