



Main Steam Isolation Valve License Amendment Request



Oconee Nuclear Station
May 24, 2012

- ❖ Purpose of the Meeting
- ❖ Basis for MSIV Modification
- ❖ Description of MSIV Modification
- ❖ Regulatory Approach
- ❖ Schedule
- ❖ Closing Remarks

Purpose of the Meeting

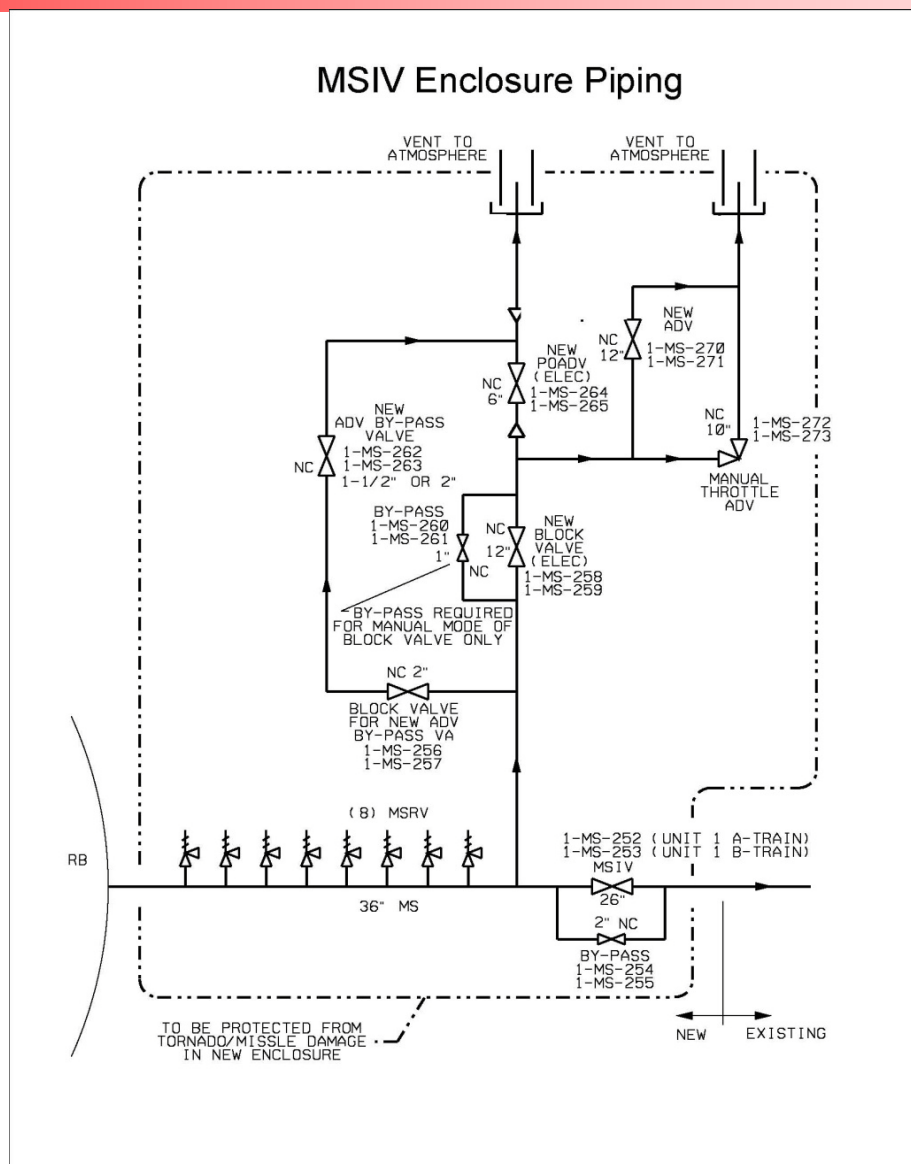
- ❖ First Pre-submittal discussion regarding License Amendment Request (LAR) in support of installation of Main Steam Isolation Valves
- ❖ Initiate discussions between Duke Energy and the NRC so that there is a common understanding of the scope and content of the planned LAR, prior to submittal
- ❖ Scoping 10 CFR 50.59 drafted to identify the scope of the LAR
 - ✓ Most efficient use of NRC and Duke Energy resources
 - ✓ Will not request NRC review of modification
 - ✓ Facilitate timely approval of materials needed to support the modification

- ❖ Part of major upgrades to Oconee Nuclear Station to improve plant safety and address longstanding licensing basis issues
- ❖ Safety Benefit
 - ✓ Enhance Main Steam System integrity to support the Secondary Side Decay Heat Removal function of the Standby Shutdown Facility (SSF)
 - ✓ Tornado missile analysis (TORMIS) relies on 'target' reduction achieved by isolation of the Main Steam piping in the Turbine Building
 - ✓ Facilitates repair of plant equipment following damage to main steam piping in the Turbine Building
- ❖ Meets commitments associated with proposed updates to High Energy Line Break (HELB) and Tornado licensing bases
 - ✓ Proposed update to HELB (outside containment) licensing basis credits MSIVs (LAR re-submitted 12/16/2011 ML12003A070)
 - ✓ Proposed update to tornado licensing basis credits MSIVs (LAR dated 6/26/2008 ML081840371)

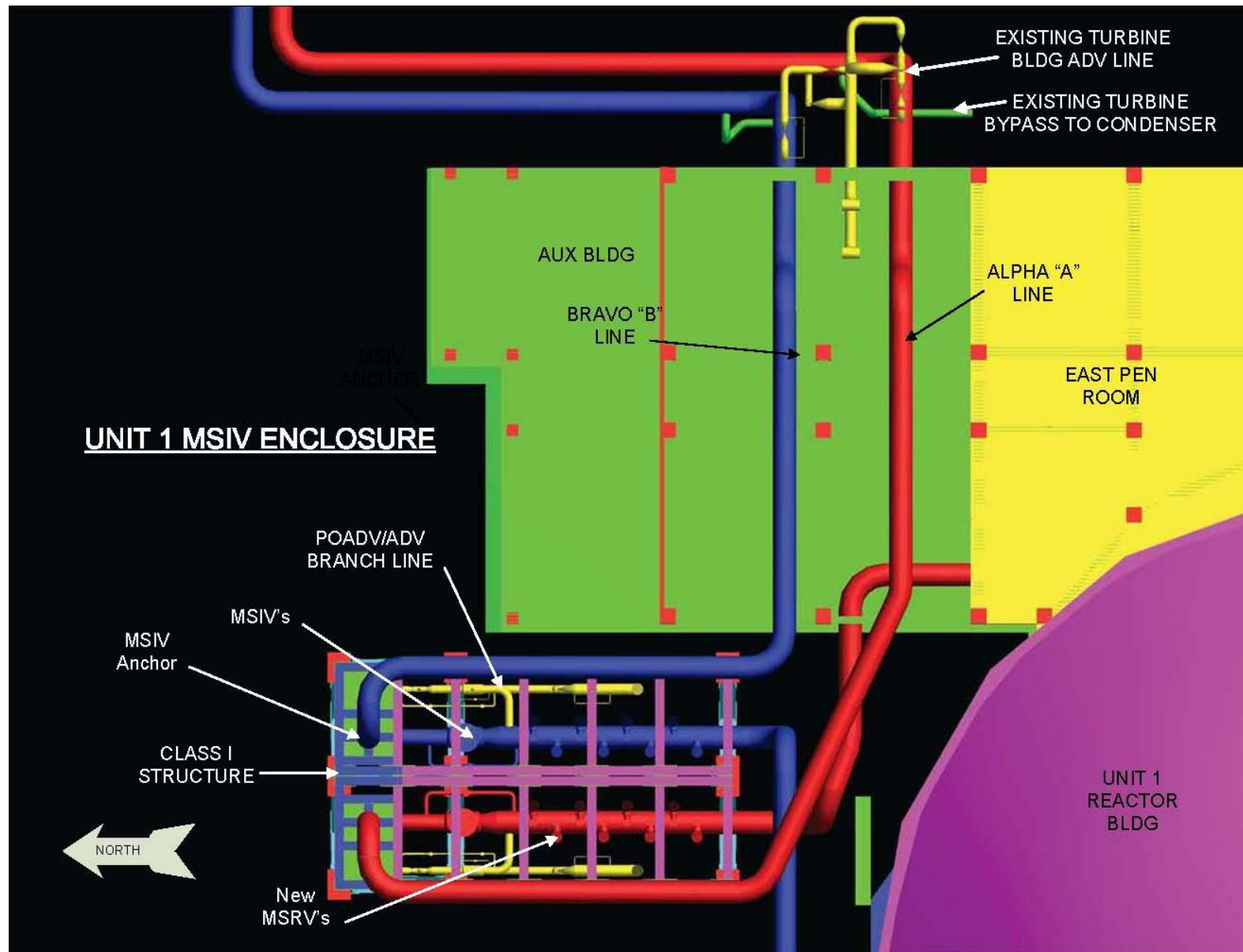


Description of MSIV Modification

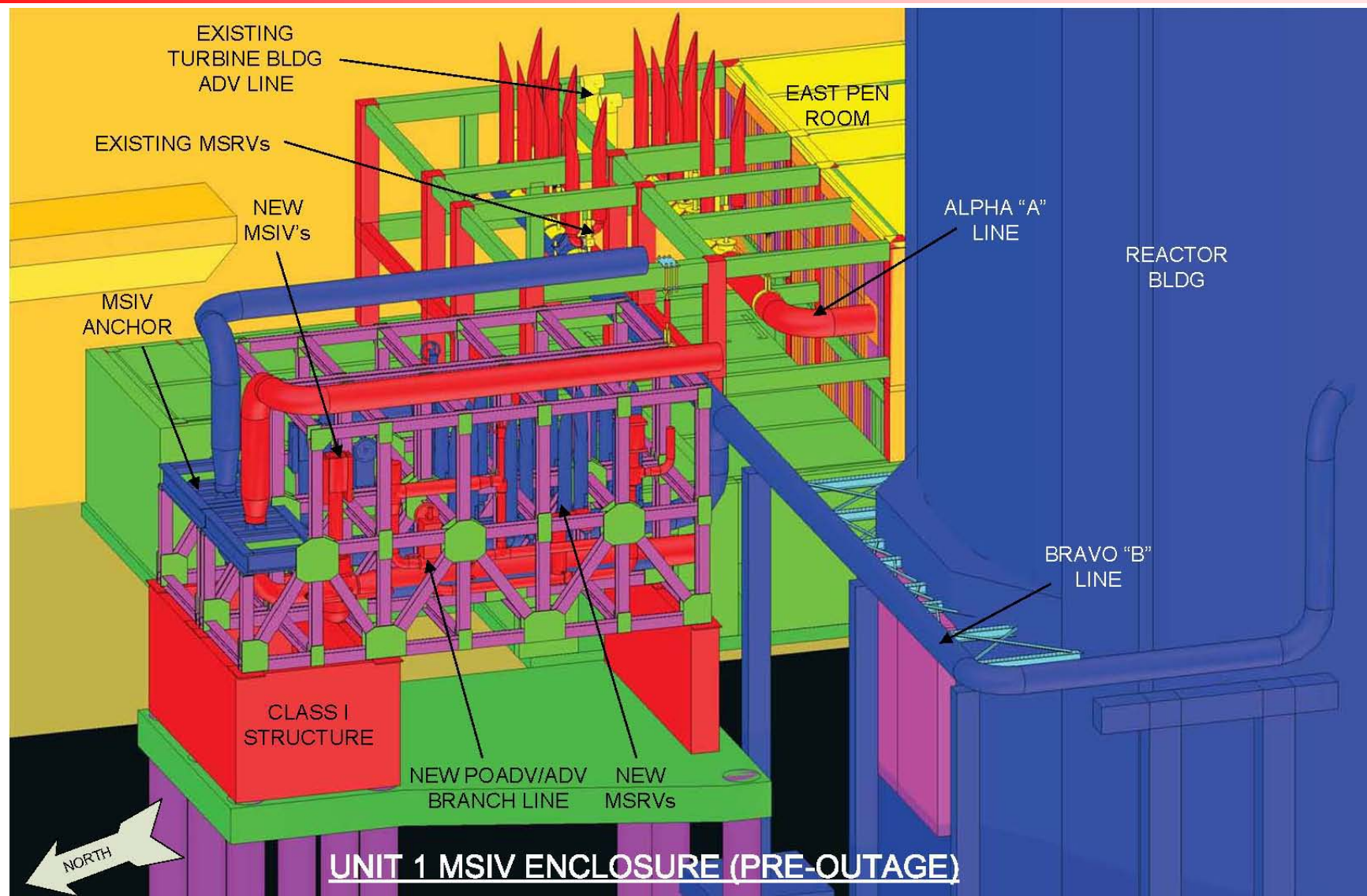
- ❖ A single seismic, tornado protected enclosure (MSIV Enclosure) per unit will be constructed
- ❖ New piping and valves will be installed in the MSIV Enclosure
 - ✓ Main Steam Isolation Valves (MSIVs)
 - ✓ Main Steam Relief Valves (MSRVs)
 - ✓ Atmospheric Dump Valves (ADVs)
 - ✓ Power Operated Atmospheric Dump Valves (POADVs)
- ❖ Majority of construction will occur online with tie-in to existing Main Steam (MS) piping occurring during outage

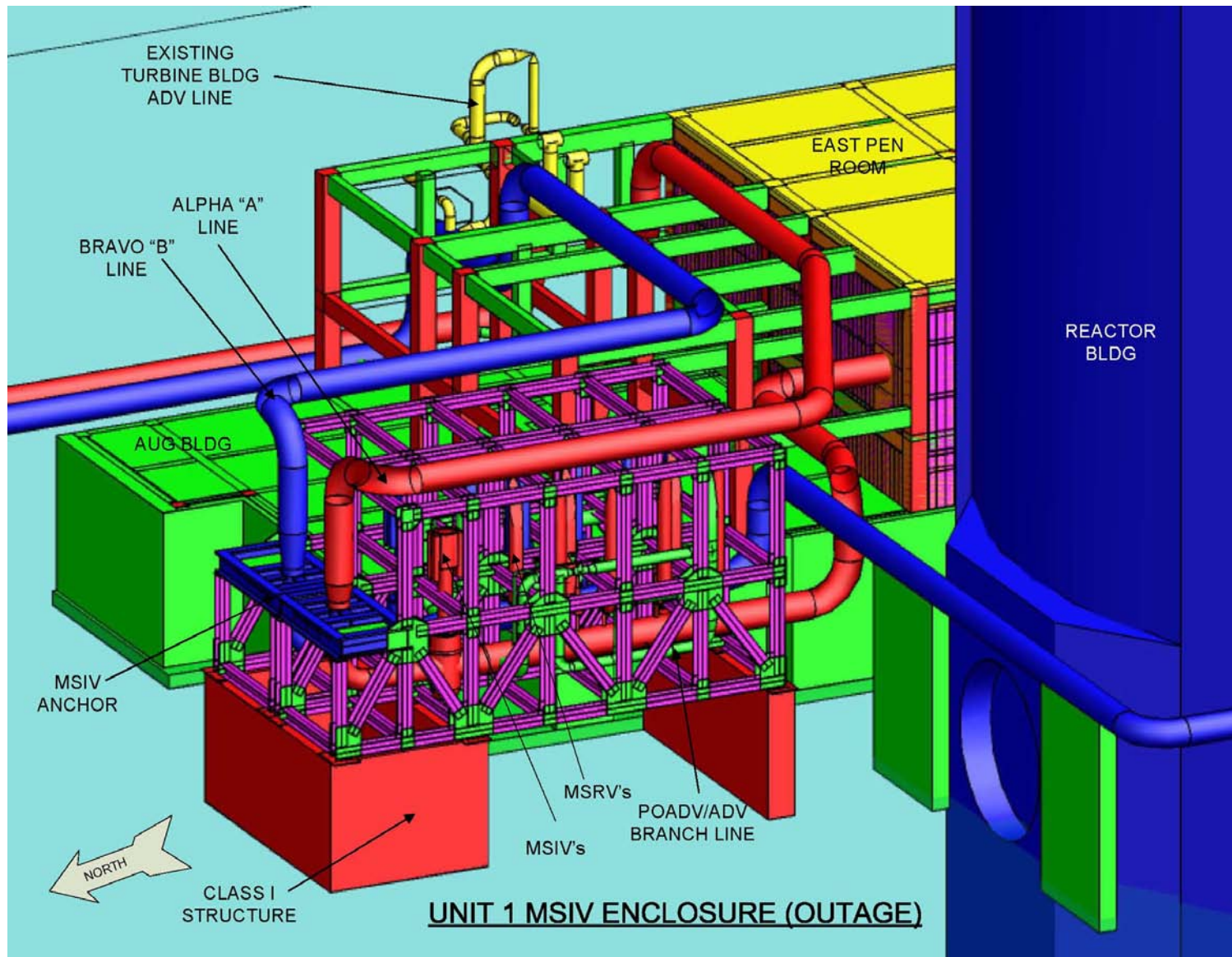


MSIV Enclosure Top View



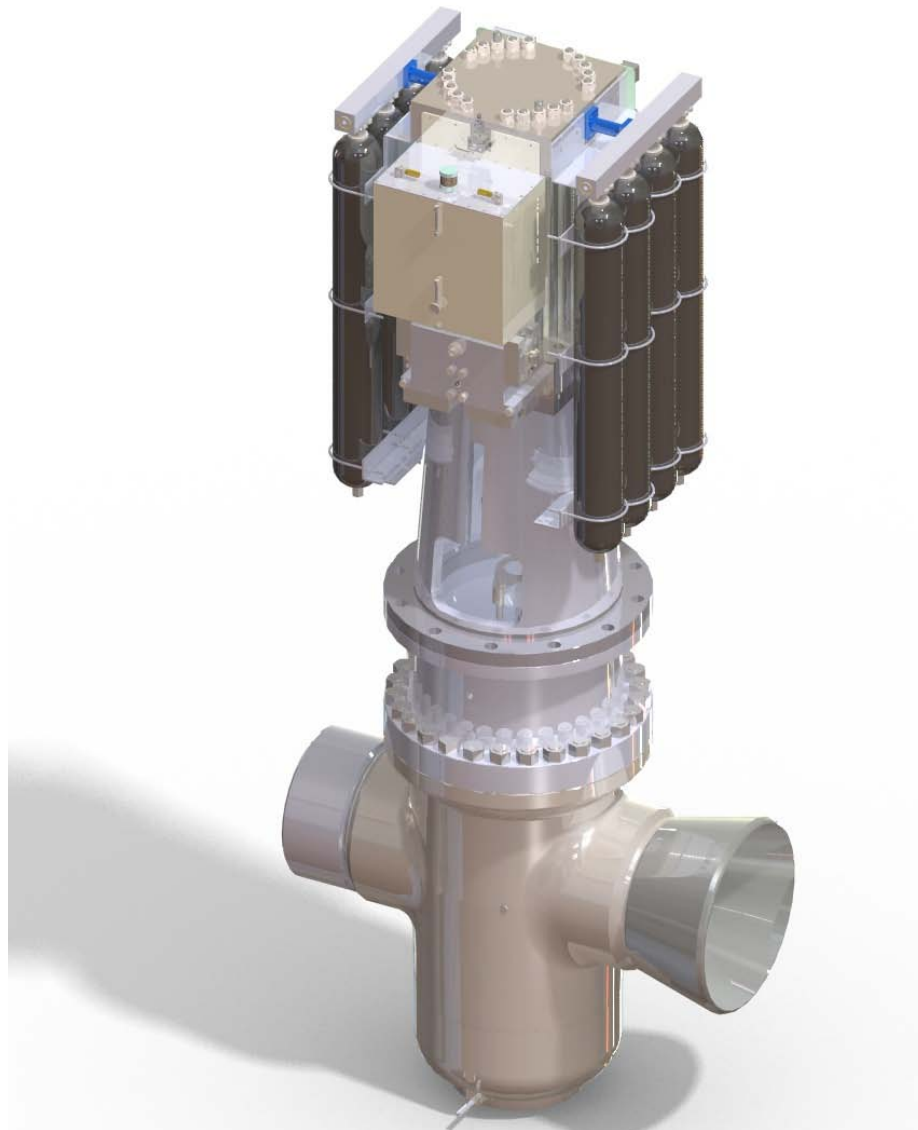
MSIV Enclosure Pre-Outage





- ❖ Designed to close against HELB conditions in less than 5 seconds after receiving a close signal
- ❖ Passive features of valve increase reliability
- ❖ Automatic closure on Low MS Header Pressure provides MS system integrity to support SSF function
- ❖ Design reduces likelihood of inadvertent actuation (preliminary analysis of event – results comparable to turbine trip)
- ❖ Remotely operated from the Control Rooms

Main Steam Isolation Valves



- ❖ Current MSRVs will be replaced with new valves
 - ✓ Addresses obsolescence
 - ✓ Flanged installation will facilitate maintenance and testing

- ❖ New POADV in MSIV Enclosure
 - ✓ Allows operation from the Control Room
 - ✓ Reduces Operator burden for mitigation of SBLOCA

- ❖ Turbine Building manual ADV design duplicated and protected in MSIV Enclosure



- ❖ The Turbine Driven Emergency Feedwater (EFW) Pump licensing basis is maintained
- ❖ A station blackout (SBO) will not cause the MSIVs to close nor will it prevent the MSIVs from closing on a valid low MS pressure signal
- ❖ If an Main Steam Line Break occurs, the Turbine Driven EFW Pump is automatically stopped on low MS pressure in either MS header
- ❖ The Motor Driven EFW Pump aligned to the intact steam generator (SG) provides secondary side decay heat removal after the overcooling has been terminated
- ❖ If the Turbine Driven EFW Pump is desired with both MSIVs closed, steam could be supplied from another unit via the auxiliary steam system

- ❖ Scoping 10 CFR 50.59 drafted to identify the scope of the License Amendment Request
- ❖ Duke Energy needs NRC approval of the Chapter 15 analysis methodology changes associated with the MSIV installation
 - ✓ **DPC-NE-3000-PA, Rev. 4a, “Thermal Hydraulic Transient Analysis Methodology”**
 - ✓ **DPC-NE-3005-PA, Rev. 3b, “Oconee UFSAR Chapter 15 Transient Analysis Methodology”**
- ❖ License Amendment Request will provide Technical Specification (TS) Bases changes and a new Selected Licensee Commitment for information
- ❖ UFSAR changes will be made under 10 CFR 50.71(e) following modification implementation

DPC-NE-3000 changes:

- ❖ Changes to describe actual plant configuration with MSIVs and how the RETRAN model of the MS line would be modified
- ❖ Realistic modeling of the MSIVs, their closing characteristics, and where they are located
- ❖ More accurate modeling of new piping layout, to better predict MS pressure distribution

DPC-NE-3005 changes:

- ❖ Explicit statement within Section 15 for Single MSLB, to clarify that the MSIVs are not credited for isolating the unaffected SG from the faulted SG

- ❖ Continue to rely on the Turbine Stop Valves, required by TS 3.7.2, for design basis accident mitigation
- ❖ TS not required for MSIVs
 - ✓ Add New Selected Licensee Commitment (SLC) to impose functionality requirements for MSIVs consistent with the other equipment that is controlled by SLC
- ❖ No changes required to TS 3.7.4 for ADV flow path
 - ✓ Revise TS 3.7.4 Bases to define the required ADV flow path
- ❖ Revise TS 3.3.11 & 13 Bases to indicate that Automatic Feedwater Isolation System will automatically close the MSIVs on low MS header pressure

MSIV Methodology LAR Schedule

- ❖ 1/31/2013 target date for submittal
- ❖ Request NRC approval by 1/31/2014

Planned MSIV Modification Schedule

- ❖ Unit 1 Fall 2014 Outage Committed Date -12/2014
- ❖ Unit 2 Fall 2015 Outage Committed Date - 12/2015
- ❖ Unit 3 Spring 2016 Outage Committed Date - 07/2016

- ❖ Initiate discussions to develop common understanding of the scope and content of the planned LAR, prior to submittal
- ❖ Scoping 10 CFR 50.59 drafted to identify the scope of the LAR
 - ✓ Most efficient use of NRC and Duke Energy resources
 - ✓ Will not request NRC review of modification
 - ✓ Facilitate timely approval of materials needed to support the modification
- ❖ NRC approval of LAR requested by 1/31/2014
- ❖ Supports first MSIV installation on Unit 1 in Fall 2014 outage