



Southern  
Nuclear

**Alternative Source Term  
Implementation  
Farley Nuclear Plant**  
NRC Pre-submittal Meeting  
September 22<sup>nd</sup>, 2016

# Why Are We Here?

**Farley Nuclear Plant (FNP) will be requesting a License Amendment to ...**

*Implement the Alternative Source Term (AST) Methodology for Design Basis Accident (DBA) consequence evaluation*

## Key Goals for This Meeting:

- ✓ Brief NRC on LAR and Supplemental Information Scope
- ✓ Ensure Common Understanding of FNP Request, Technical Scope and Regulatory Expectations
- ✓ Obtain Feedback Prior to Formal Submittal

***We appreciate your participation and feedback as we prepare for a “no surprises” transition to the NRC review process***

## Submittal Highlights At A Glance:

- Submittal pursuant to Regulatory Guide 1.183, *Alternative Radiological Source Terms For Evaluating Design Basis Accidents At Nuclear Power Reactors*
- Addresses implementation of AST for the 6 Design Basis Accidents
- Also Implements TSTF 448 Rev. 3, *Control Room Habitability*
- No Plant Modifications Are Included
- 12 Month Review Requested (October 2017 Target)



# LAR Content

- **Basis for Proposed Change**
- **Operating Licensing and Technical Specification Changes**
- **Technical Specification Bases Changes**
- **Reg Guide 1.183 Conformance Map**
- **Calculation Summaries for Each DBA**
- **Accident Analysis Input Values Comparison Tables**

Provides discussion of each DBA

Includes Implementation of Technical Specification Task Force (TSTF) Traveler, TSTF-448, Revision 3

- License Condition affecting CRIP (Testing)
- Changes to Technical Specification (TS) 3.7.10, Control Room, and 5.5.18, Control Room Envelope Habitability Program

*Information Only*

To facilitate review process

*Under Development*

Comparison of Current Licensing Basis Analyses to Proposed AST Analyses

# DBA Dose Summary

	CR	EAB	LPZ
Design Basis Accident	REM TEDE	REM TEDE	REM TEDE
<b>LOCA</b>	<b>4.7</b>	<b>13.2</b>	<b>6.0</b>
<b>FHA</b>			
Containment	<b>1.0</b>	<b>2.4</b>	<b>0.9</b>
Spent Fuel Pool	<b>0.2</b>	<b>0.5</b>	<b>0.2</b>
<b>MSLB</b>			
Pre-Accident Iodine Spike	<b>0.2</b>	<b>0.9</b>	<b>0.4</b>
Concurrent Iodine Spike	<b>0.5</b>	1.0	0.5
<b>SGTR</b>			
Pre-Accident Iodine Spike	<b>0.8</b>	<b>4.1</b>	<b>1.5</b>
Concurrent Iodine Spike	<b>0.4</b>	<b>2.1</b>	0.8
<b>Control Rod Ejection</b>	<b>3.7</b>	<b>3.8</b>	<b>3.7</b>
<b>Locked Rotor</b>	<b>Less than 5</b>	1.2	0.8
Acceptance Criteria			
Normal Limits	<b>5</b>	<b>25</b>	<b>25</b>
Well Within (25%)	<b>N/A</b>	<b>6.25</b>	<b>6.25</b>
Small Fraction (10%)	N/A	2.5	2.5

## Key Points

- DBA LOCA is most limiting for total dose
- Fuel Handling Accident continues to bound scenarios allowed by TSTF-312 (implementation under review)
- All events demonstrate reasonable margins to acceptance criteria
- Locked Rotor Control Room dose not reported, non-limiting
- TSC doses evaluated incorporating fission product barrier guidance of NEI 99-01

# DBA Highlights - LOCA

- Most Limiting Accident for Total Dose
- Doses from potential leak to Refueling Water Storage Tank are included
- Provides Operations & Testing Margin Improvement

Key Input	Current Basis	With AST
Unfiltered In-Leakage (CR Pressurization Mode)	43 cfm (+10 cfm)	315 cfm (+10 cfm)
ECCS Leakage Outside of Containment	6,000 cc/hr	20,000 cc/hr

- *NOTE:* Update in Progress (Complete Prior to Submittal)
  - Need to reconcile normal CR unfiltered intake to meet Control Room Integrity Program (CRIP) Requirement
    - Current calculation has 1950 cfm vs. 2340 cfm for CRIP
    - Preliminary conclusion is insignificant increase in dose

# DBA Highlights - FHA

- Evaluates doses from containment accident and spent fuel pool accident scenarios
- Addresses open containment hatch and open personnel airlock configurations
- Addresses doses from ingress/egress to the CR
  - Addresses potentially contaminated Auxiliary Building
  - Bounds doses from open containment penetrations per TSTF-312
- Provides operator action time relief for manually initiating CR pressurization mode
  - CLB Analysis supports 10 minute Action Time
  - AST Analysis supports 20 minutes

# DBA Highlights – Other Events

<b>Steam Generator Tube Rupture</b>	<ul style="list-style-type: none"><li>• Closest to the limit for Exclusion Area Boundary (EAB) dose</li><li>• Both pre-accident and concurrent iodine spike evaluated</li><li>• Continues to support existing operator action time requirement<ul style="list-style-type: none"><li>• Required Action: Terminate break flow within 30 minutes</li><li>• Accident releases evaluated for 1 hour with acceptable dose results</li><li>• Assumes no SG overfill (margin-to-overfill not in Farley licensing basis)</li></ul></li></ul>
<b>Control Rod Ejection</b>	<ul style="list-style-type: none"><li>• Closest to the limit for Low Population Zone (LPZ) dose</li><li>• DG-1199 Gap Fractions are used</li></ul>
<b>Main Steam Line Break</b>	<ul style="list-style-type: none"><li>• Not a limiting dose event</li><li>• Both pre-accident and concurrent iodine spike evaluated</li></ul>
<b>Locked Rotor</b>	<ul style="list-style-type: none"><li>• Not a limiting dose event</li><li>• CR dose being not reported<ul style="list-style-type: none"><li>• Being updated to account for manual operator actions</li><li>• Expect dose remain well less than 5 Rem TEDE</li></ul></li></ul>

# What Feedback Do You Have?

Scope of Submittal

Regulatory  
Expectations

LAR Content

Analysis Results