



Southern
Nuclear

**Alternative Source Term
Implementation
Farley Nuclear Plant**
NRC Pre-submittal Meeting
September 22nd, 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

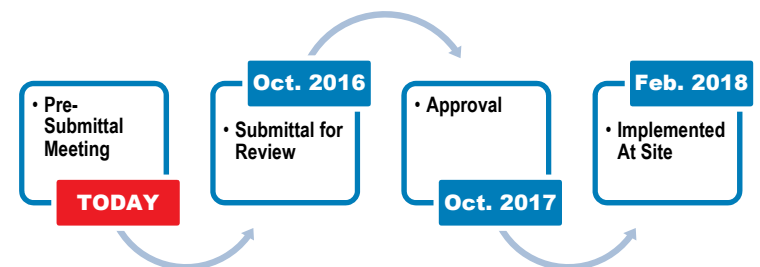
Key Goals for This Meeting:

- ✓ 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
LOCA	4.7	13.2	6.0
FHA			
Containment	1.0	2.4	0.9
Spent Fuel Pool	0.2	0.5	0.2
MSLB			
Pre-Accident Iodine Spike	0.2	0.9	0.4
Concurrent Iodine Spike	0.5	1.0	0.5
SGTR			
Pre-Accident Iodine Spike	0.8	4.1	1.5
Concurrent Iodine Spike	0.4	2.1	0.8
Control Rod Ejection	3.7	3.8	3.7
Locked Rotor	Less than 5	1.2	0.8
Acceptance Criteria			
Normal Limits	5	25	25
Well Within (25%)	N/A	6.25	6.25
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

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

What Feedback Do You Have?

Scope of Submittal

Regulatory
Expectations

LAR Content

Analysis Results