



*Entergy*®

CEA DROP TIME T.S. CHANGE REQUEST  
WATERFORD 3  
APRIL 22, 2015

# Licensee Attendees

- Waterford 3
  - John Jarrell – Manager, Regulatory Assurance
  - Pamela Hernandez – Supervisor, Reactor Engineering
  - Leia Milster – Licensing Engineer, Regulatory Assurance
  - William Steelman – Contractor, SMI
- Westinghouse
  - Kim Jones – Fellow Engineer, Setpoints, Controls & Containment
  - Matthew Wilcox – Senior Engineer, Setpoints, Controls & Containment
  - Amanda Maguire – Senior Engineer, Regulatory Compliance

# Outline

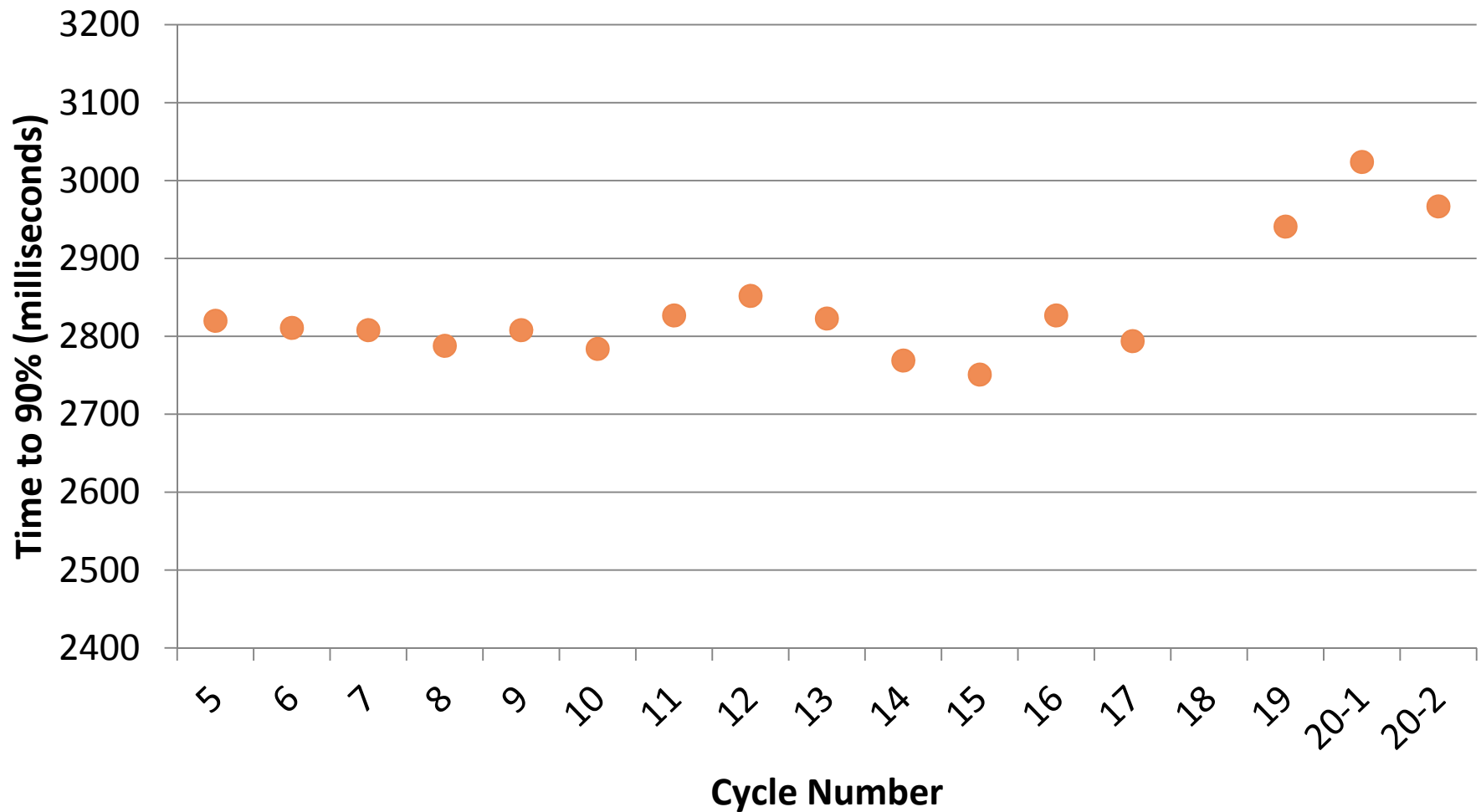
- Background for the License Amendment Request (LAR)
- LAR Technical Content
  - Control Element Assembly (CEA) SCRAM Insertion Curve position vs. time
  - Safety Analysis Margin
  - Core Operating Limit Supervisory System (COLSS) Required Overpower Margin (ROPM)
- Schedule

# Background for LAR

- CEA Drop Times have challenged the Technical Specification (TS) limit in the last two surveillance performances
  - Waterford 3 TS 3.1.3.4 requires:
    - the arithmetic average of all CEA Drop Times be  $\leq 3.0$  seconds
    - Individual CEA drop times  $\leq 3.2$  seconds
    - Insertion time is measured from fully withdrawn position to 90% inserted

# Historical Drop Times

*CEA drop time group arithmetic average*



\* Cycle 20 includes repeated test

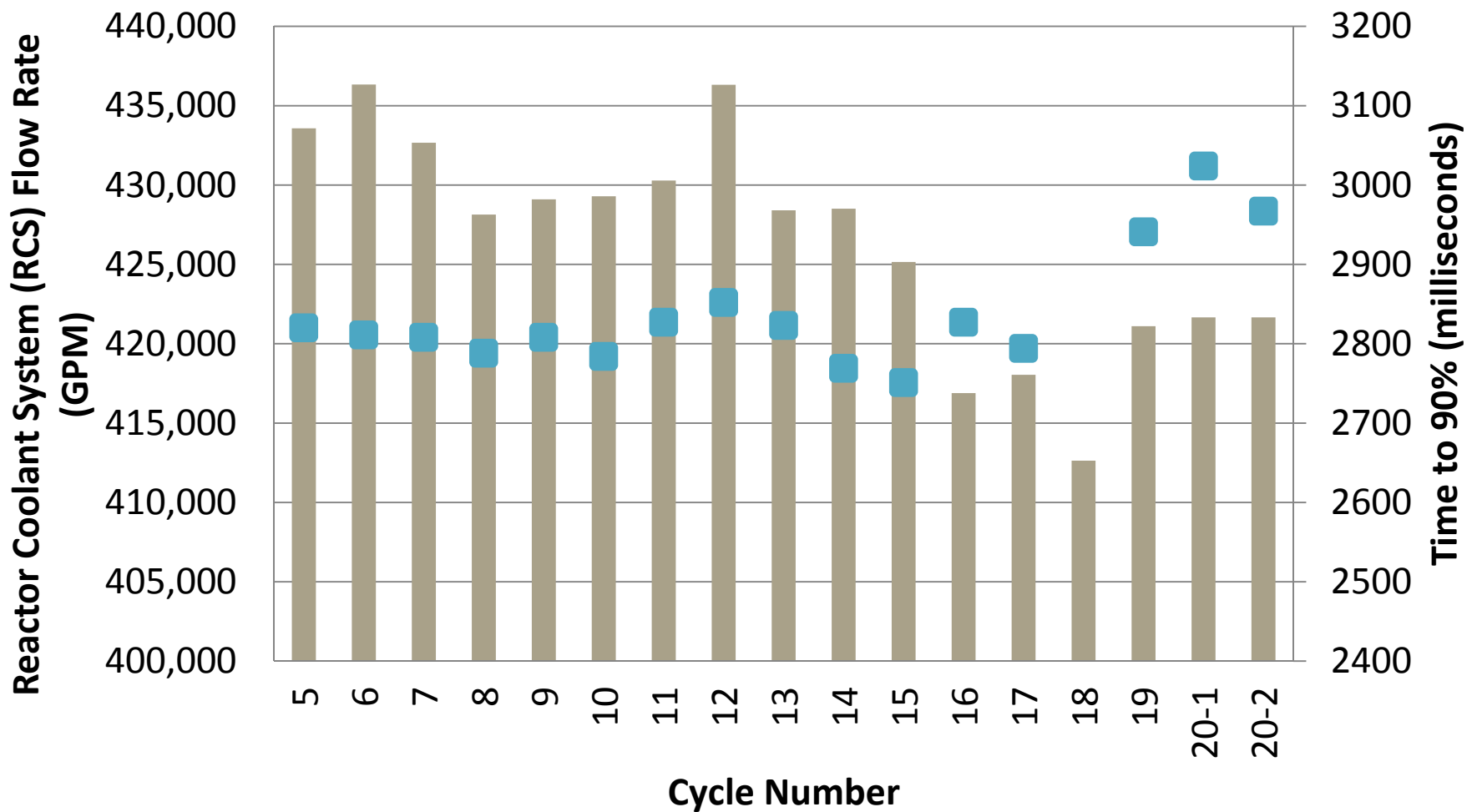
# Potential Causes

## *Plant Primary Side Modifications*

- Steam Generator replacement
- Reactor Vessel Head replacement
- CEA replacement
- Transition to Next Generation Fuel Product

# Historical Drop Times

*CEA drop time group arithmetic average and RCS flow rate*



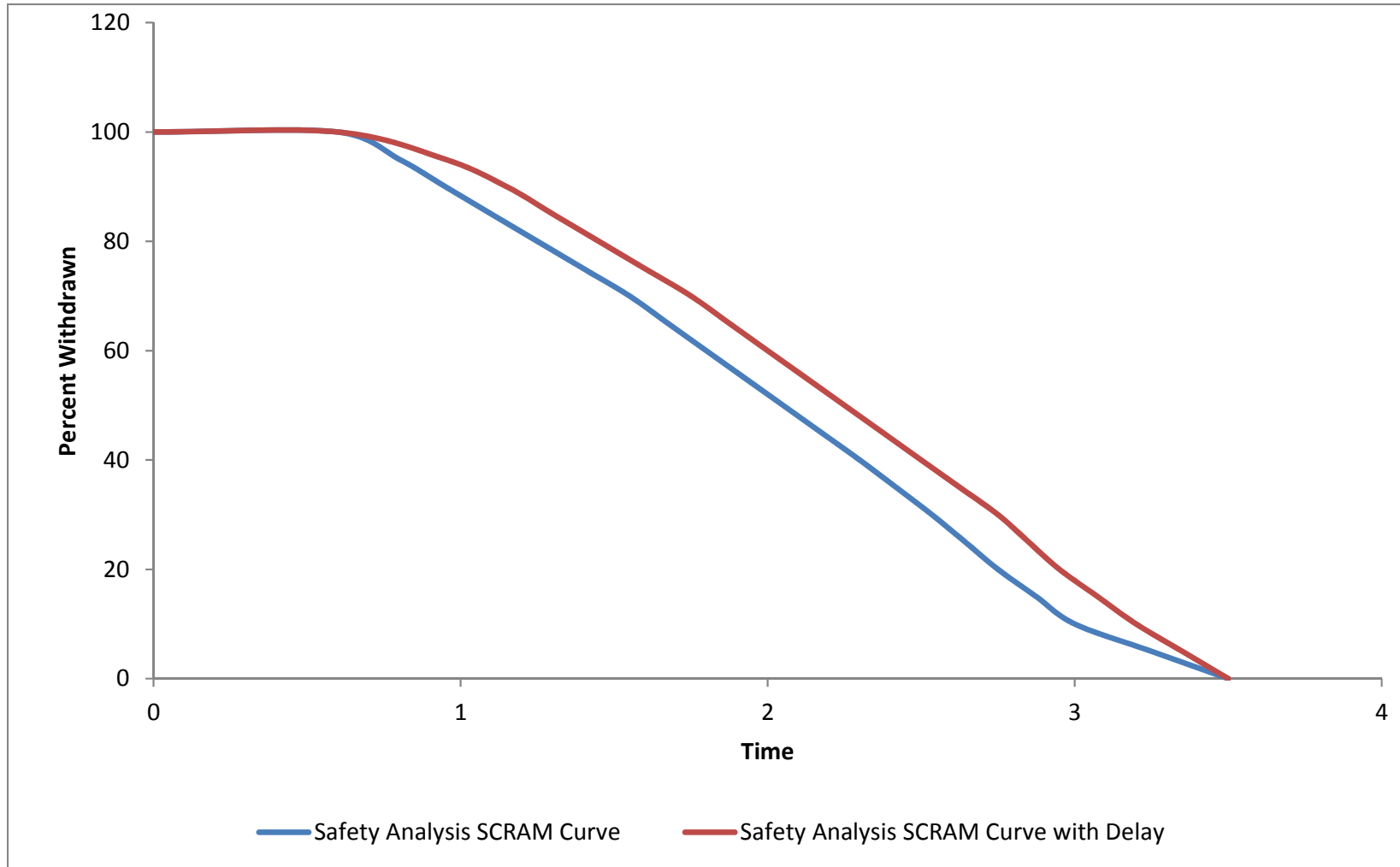
# Proposed TS Change

- Waterford 3 TS 3.1.3.4 would be revised to:
  - Raise the arithmetic average of all CEA Drop Times to be  $\leq 3.2$  seconds
  - Raise the Individual CEA drop times to  $\leq 3.5$  seconds



# CEA SCRAM Insertion Curve

*Average Position vs Time*



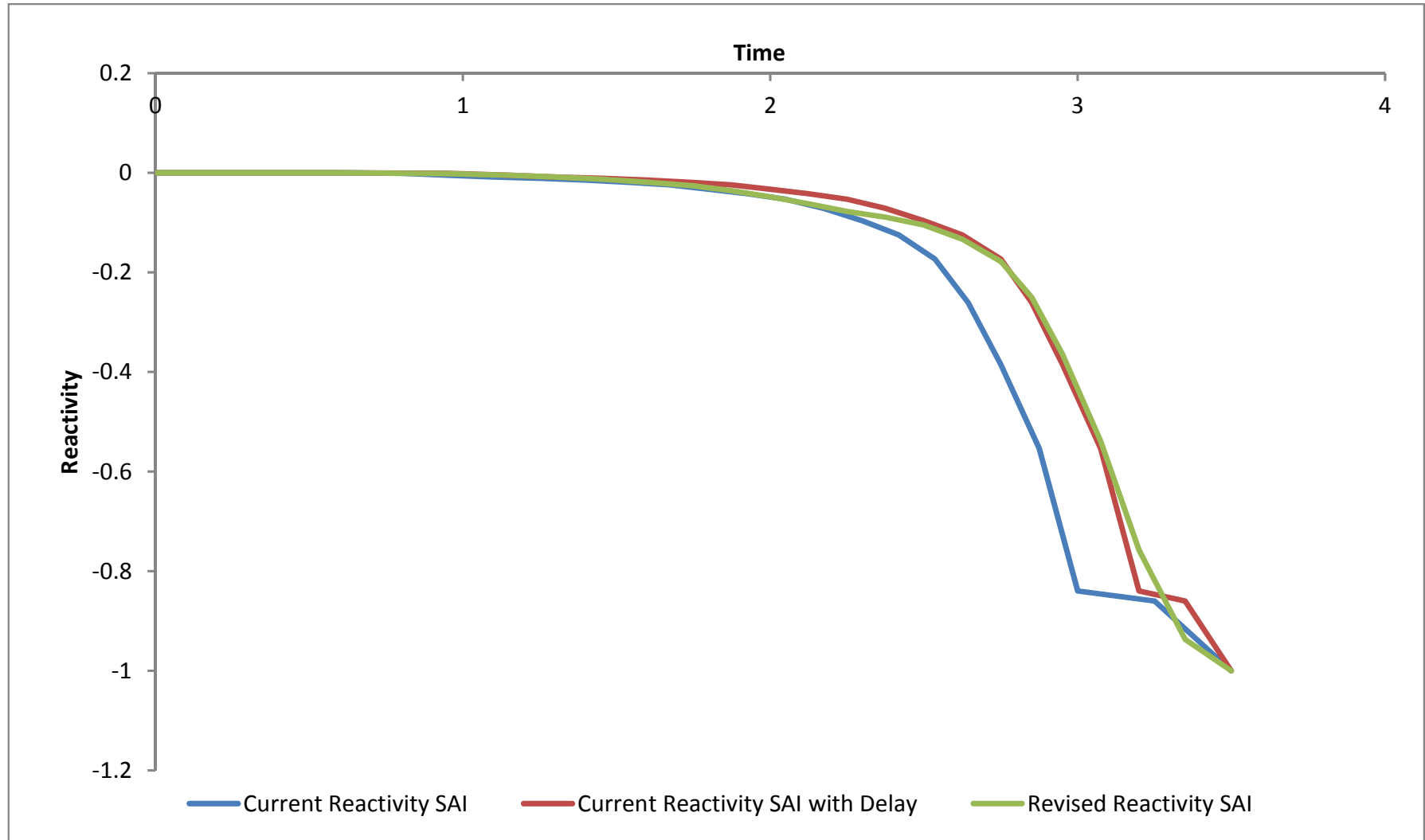
# Safety Analysis Basis

## *Analysis Margin*

- Updated Final Safety Analysis Report (UFSAR) Chapter 15 Design Basis Events are divided into Loss of Coolant Accident (LOCA) and Non-LOCA transient analyses.
- Safety analysis input (SAIs) consist of plant design and operating parameters that include uncertainties associated with them.
- Safety analyses apply the uncertainties in a conservative, or more restrictive, direction.
- On some parameters, the SAI uses a bounding input value, which is more adverse than the plant parameter plus uncertainty.
- Thus, the bounding SAI includes analysis margin, which can be reclaimed later.

# Safety Analysis Margin

## *Revised Reactivity Safety Analysis Input vs Time*



# Safety Analysis Margin

## COLSS ROPM

- Waterford is a Combustion Engineering Design Digital Plant
  - Limiting Conditions for Operations (LCOs)
    - Technical Specifications
    - Core Operating Limits Supervisory System
      - Maintains Departure from Nuclear Boiling Ration (DNBR) Margin
        - » Required Overpower Margin (ROPM)
        - » Linear Heat Rate (LHR)
  - DNB and LHR Protection
    - Core Protection Calculator Systems (CPCS)

# Safety Analysis Margin

## *COLSS ROPM (cont'd)*

- ROPM
  - Event ROPM is the actual thermal margin change during the design basis event (DBE).
  - Initial Analysis ROPM is the thermal margin set aside by the Safety Analyses at the start of the event.
  - COLSS ROPM is the thermal margin reserved by the COLSS to support the Technical Specification LCOs.
  - If  $\text{COLSS ROPM} > \text{Event ROPM}$ , then the minimum DNBR (mDNBR)  $>$  DNB Specified Acceptable Fuel Design Limit (SAFDL)
  - ROPM can be used to offset calculated fuel failures due to DNB.

# Method of Analysis

## *Analysis Basis*

- There are no changes to the LOCA or Non-LOCA transient analysis **methods** from those in the current UFSAR.
- There are no changes to the Core Design / Neutronics methods that provide input to the LOCA and Non-LOCA transient analyses that support the current UFSAR.

# DNBR Correlation

## *Analysis Basis*

- There are no changes to the DNBR critical heat flux correlation.
- The DNB SAFDL value remains unchanged.

# Topical Reports

## *Applicability*

- The change in CEA SCRAM Insertion Curve does not impact the topical reports cited by Waterford Unit 3.
- Non-LOCA case results presented in the topical reports provide illustrative examples to confirm methodology, simulations, and determine trends.
- Conservative selection of inputs are performed in the plant specific analyses to support the UFSAR.



# UFSAR Chapter 15 Non-LOCA Analyses

## *Event Categorization*

- Each Non-LOCA UFSAR Chapter 15 Events will be discussed
- For each event, they are categorized as:
  - Evaluated (Impact analysis and/or evaluation utilizing current methodology)
  - Assessed (Impact determination and justification provided)
  - Bounded by another DBE
  - Not Impacted

# Analyses Evaluated

## *Chapter 15.1.1.3: Increased Main Steam Flow*

- Supports COLSS and CPCS
- Impacted by revised CEA SCRAM Insertion Curve.
  - ROPM increases ~1%.
- Evaluated
  - Impact of Revised Reactivity Safety Analysis Input
    - ROPM decreases by ~0.6% for initial power  $\geq 50\%$ .
    - No impact for initial power  $< 50\%$ .
  - Hot Full Power (HFP)
    - COLSS HFP ROPM  $>$  Initial Analysis ROPM
  - Intermediate power levels for CPCS
    - Both trip and no-trip cases are analyzed.
    - No-trip cases bound trip cases.

# Analyses Evaluated

## *Chapter 15.1.1.3: Increased Main Steam Flow*

- Summary
  - Hot Full Power
    - Revised Reactivity SAI and COLSS ROPM offset the revised CEA SCRAM Insertion Curve.
  - Intermediate Power
    - No-trip cases are expected to remain bounding.
- Conclusions
  - No changes to COLSS Margin expected.
  - No changes to CPCS Input expected.

# Analyses Evaluated

## *Chapter 15.1.2.3: Increased Main Steam Flow with Single Failure (SF)*

- Supports radiological dose fuel failure limit of 8%.
- Analyzed at HFP.
  - Cycle specific fuel failure is ~50% of the limit.
- Impacted by revised CEA SCRAM Insertion Curve.
  - Expected fuel failure to increase by ~2%.
- Evaluated
  - Revised Reactivity SAI to lower expected fuel failure ~1%.

# Analyses Evaluated

## *Chapter 15.1.2.3: Increased Main Steam Flow with Single Failure*

- Summary of the Combined Impact
  - Expected fuel failure to increase by ~1%.
- Conclusions
  - Calculated fuel failure is expected to be < 8%.
  - No change to the radiological dose results expected.

# Analyses Evaluated

*Chapters 15.2.1.3/15.2.2.3: Loss of Condenser Vacuum (LOCV)  
(w/wo SF)*

- Limiting peak reactor coolant system (RCS) pressure for Moderate Frequency and Infrequent events.
- Limiting peak steam generator (SG) pressure for all DBEs.
- Impacted
  - Estimated peak RCS pressure increase < 1 psi.
  - Estimated peak SG pressure increase < 2 psi.

# Analyses Evaluated

## *Chapters 15.2.1.3/15.2.2.3: LOCV (w/wo SF)*

- Evaluated
  - Impact of revised CEA SCRAM Insertion Curve on peak RCS and SG pressure evaluated to determine increases.
    - < 1 psi prior to 90% insertion for RCS pressure.
    - < 5 psia after 90% insertion for RCS pressure.
    - < 1 psia for SG pressure.
  - Impact of Revised Reactivity SAI on peak RCS and SG pressure evaluated to determine decreases.
    - 0 psi prior to 90% insertion for RCS pressure.
    - > 3 psi after 90% insertion for RCS pressure.
    - 0 psi for SG pressure.

# Analyses Evaluated

*Chapters 15.2.1.3/15.2.2.3: LOCV (w/wo SF)*

- Summary of the combined impact
  - Prior to 90% insertion – Peak RCS pressure increases < 1 psi.
  - After 90% insertion – Peak RCS pressure increases < 2 psi.
  - Peak SG pressure < 1 psi.



# Analyses Evaluated

## *Chapters 15.2.1.3/15.2.2.3: LOCV (w/wo SF)*

- Current Chapter 15 Results
  - Current peak RCS pressure = 2711 psia < 2750 psia criterion.
  - Current peak SG pressure = 1181 psia < 1210 psia criterion.
- Conclusions
  - Updated peak RCS pressure < 2750 psia criterion.
  - Update peak SG pressure < 1210 psia criterion.
- Results are used to confirm assessments on subsequent DBEs.

# Analyses Evaluated

## *Chapter 15.3.2.1: Total Loss of Forced Reactor Coolant Flow*

- Supports HFP COLSS ROPM.
- Impacted by revised CEA SCRAM Insertion Curve.
  - ROPM increases ~1%.
- Evaluated
  - Impact offset by safety analysis margin.
    - Revised Reactivity SAI.
    - COLSS HFP ROPM > Initial Analysis Margin
- Summary
  - No impact on the results and conclusions.

# Analyses Evaluated

*Chapters 15.3.3.1/15.3.3.2: Single Reactor Coolant Pump (RCP) Shaft Seizure/Single RCP with a stuck open secondary safety valve*

- Supports radiological dose fuel failure limit of 15%.
- Analyzed at HFP.
  - Cycle specific fuel failure is ~50% of the limit.
- Impacted by revised CEA SCRAM Insertion Curve.
  - Expected fuel failure to increase ~2%.
- Evaluated
  - Revised Reactivity SAI to lower expected fuel failure ~1%.

# Analyses Evaluated

*Chapters 15.3.3.1/15.3.3.2: Single Reactor Coolant Pump (RCP) Shaft Seizure/Single RCP with a stuck open secondary safety valve*

- Evaluated
  - Revised Reactivity SAI to lower expected fuel failure ~ 1%
- Summary
  - Expected fuel failure to increase ~1 %.
  - Total cycle specific fuel failure < 15 %.
  - Insignificant impact on steam releases.
  - No recalculation of radiological doses.
- Conclusion
  - No changes to radiological doses.
  - No changes to COLSS ROPM.

# Analyses Evaluated

## *Chapter 15.4.1.1: Uncontrolled CEA Withdrawal from a Subcritical Condition*

- Supports
  - mDNBR
  - Fuel Melt Limit
- Current Results
  - mDNBR >> DNB SAFDL
  - Fuel Centerline Temperature << Fuel Melt Limit
- Impacted by revised CEA SCRAM Insertion Curve.

# Analyses Evaluated

## *Chapter 15.4.1.1: Uncontrolled CEA Withdrawal from a Subcritical Condition*

- Evaluated
  - Expectation that  $mDNBR \gg DNB\ SAFDL$ .
  - Expectation that Fuel Centerline Temperature  $\ll$  Fuel Melt Limit.
- Conclusions
  - Negligible impact on the results and conclusion.
  - No change to the UFSAR.

# Analyses Evaluated

## *Chapter 15.4.1.2: Uncontrolled CEA Withdrawal at Low Power*

- Supports
  - mDNBR
  - Fuel Melt Limit
- Current Results
  - mDNBR >> DNB SAFDL
  - Fuel Centerline Temperature << Fuel Melt Limit
- Impacted by revised CEA SCRAM Insertion Curve.
- Evaluated
  - Expectation that >> DNB SAFDL.
  - Expectation that Fuel Centerline Temperature << Fuel Melt Limit.
- Conclusions
  - Negligible impact on the results and conclusion.
  - No change to the UFSAR.

# Analyses Evaluated

## *Chapter 15.4.1.3: Uncontrolled CEA Withdrawal at Power*

- Supports COLSS and CPCS.
- Impacted by revised CEA SCRAM Insertion Curve.
  - ROPM increases ~1%.
- Evaluated
  - Impact of Revised Reactivity Safety Analysis Input
    - ROPM decreases by ~0.6% for initial power  $\geq 50\%$ .
    - No impact for initial power  $< 50\%$ .
  - HFP
    - COLSS HFP ROPM  $>$  Initial Analysis ROPM
  - Intermediate power levels for CPCS
    - Both trip and no-trip cases are analyzed.
    - No-trip cases bound trip cases.



# Analyses Evaluated

## *Chapter 15.4.1.3: Uncontrolled CEA Withdrawal at Power*

- Summary
  - HFP: Revised Reactivity SAI and COLSS ROPM offset revised CEA SCRAM Insertion Curve.
  - Intermediate Power: No-trip cases are expected to remain bounding.
- Conclusions
  - No changes to COLSS Margin expected.
  - No changes to CPCS Input expected.

# Analyses Evaluated

## *Chapter 15.4.3.6: CEA Ejection*

- Supports radiological dose fuel failure limit of 15% for DNB and 0% for fuel rod enthalpy.
- Analyzed parametric in power from HFP to Hot Zero Power (HZP).
  - Cycle specific fuel failure is ~70% of the limit.
- Defines key Non-LOCA Input.
  - COLSS ROPM for HFP and intermediate power levels
  - CPCS input
  - Bounding physics input
- Impacted by revised CEA SCRAM Insertion Curve.
  - Expected fuel failure to increase by ~2%.
  - Expected rod enthalpy to increase.
  - Insignificant for steam releases.

# Analyses Evaluated

## *Chapter 15.4.3.6: CEA Ejection*

- Evaluated
  - Revised Reactivity SAI partially offsets the revised CEA SCRAM Insertion Curve for initial power levels  $\geq 50\%$ .
    - Expected to lower fuel failure  $\sim 1\%$ .
    - Expected to offset  $\sim 50\%$  of the enthalpy increase.
  - If calculated fuel failures exceed radiological dose limits, OR if fuel rod enthalpies exceed the limits, THEN:
    - Credit SAI margin in bounding physics data for all power levels if needed to maintain current results.
    - Reduce bounding physics values for ejected CEA rod worth and ejected peaks.

# Analyses Evaluated

## *Chapter 15.4.3.6: CEA Ejection*

- Summary
  - Reduction in bounding ejected CEA rod worth expected.
  - Reduction in bounding ejected CEA peak expected.
  - No changes to COLSS ROPM expected.
  - No changes to CPCS input expected.
- Conclusion
  - Expected impact on fuel failure to remain < 15% for DNB and 0% for fuel rod enthalpy.

# Analyses Evaluated

## *Chapter 15.9: Asymmetric Steam Generator Transient*

- Supports COLSS ROPM and CPCS input.
- Impacted by revised CEA SCRAM Insertion Curve.
  - ROPM increases ~1%.
- Evaluated
  - Impact of Revised Reactivity Safety Analysis Input
    - ROPM decrease by ~0.6% for initial power  $\geq$  50%.
    - Initial Analysis ROPM > Event ROPM
    - COLSS ROPM > Initial Analysis ROPM

# Analyses Evaluated

## *Chapter 15.9: Asymmetric Steam Generator Transient*

- Summary
  - HFP
    - Revised Reactivity SAI and COLSS ROPM offset revised CEA SCRAM Insertion Curve.
  - Intermediate Power
    - Revised Reactivity SAI and Initial Analysis ROPM offset revised CEA SCRAM Insertion Curve.
- Conclusion
  - No change to the COLSS Margin expected.
  - No change to the CPCS Input expected.

# Analyses Assessed

## *Chapter 15.1.1.4: Inadvertent Opening of an Atmospheric Dump Valve*

- Hot Zero Power
  - mDNBR
  - LHR
  - Steam releases
- Current Results
  - mDNBR >> DNB SAFDL at ~85 seconds
  - LHR << Steady State Limit at ~83 second
  - Reactor trip occurs at 600 seconds
  - 2-hour steam releases = ~1 M-lbm
  - Shutdown cooling steam releases = ~2.5 M-lbm

# Analyses Assessed

## *Chapter 15.1.1.4: Inadvertent Opening of an Atmospheric Dump Valve*

- Impacted by revised CEA SCRAM Insertion Curve
  - No Impact on mDNBR and peak LHR.
  - Insignificant impact on steam releases.
- Conclusion
  - No impact on the results and conclusions.



# Analyses Assessed

## *Chapter 15.1.2.4: Inadvertent Opening of an Atmospheric Dump Valve with SF*

- Hot Full Power
  - Supports radiological dose; fuel failure limit is zero.
- Impacted by revised CEA SCRAM Insertion Curve
  - $DNBR < DNB\ SAFDL$
- Evaluated
  - Revised Reactivity SAI to increase DNBR
  - COLSS HFP ROPM  $>$  Initial Analysis ROPM

# Analyses Assessed

## *Chapter 15.1.2.4: Inadvertent Opening of an Atmospheric Dump Valve with SF*

- Impact of CEA SCRAM Insertion Curve is offset by safety analysis margin.
  - Revised Reactivity SAI
  - Analysis Margin in COLSS HFP ROPM value
  - DNBR > DNB SAFDL
  - No Fuel Failure
- Conclusions
  - No impact on the results and conclusions.

# Analyses Assessed

## *Chapter 15.1.3.1: Steam System Piping Failures Post-trip Return-to-Power (R-t-P) and Return-to-Criticality (R-t-C)*

- Hot Full Power and Hot Zero Power w/wo LOAC
- Assessed
  - Insignificant impact on steam releases.
  - Rate of reactivity insertion during the CEA SCRAM rod insertion has a negligible impact on the reactivity balance at the time of R-t-P and R-t-C.
- Conclusions
  - No impact on the results and conclusions.

# Analyses Assessed

## *Chapter 15.1.3.3: Steam System Piping Failures Pre-trip Power Excursion Analysis*

- Supports radiological dose fuel failure limit of 8%.
  - Current calculated fuel failure is zero.
  - DNBR >> DNB SAFDL
- Impacted by revised CEA SCRAM Insertion Curve.
- Assessed
  - Use results from the Increased Main Steam Flow
  - Initial Analysis ROPM > Event ROPM

# Analyses Assessed

## *Chapters 15.1.3.3: Steam System Piping Failures Pre-trip Power Excursion Analysis*

- Impact offset by safety analysis margin.
  - Revised Reactivity SAI
  - COLSS HFP ROPM > Initial Analysis ROPM
  - Initial Analysis ROPM > Event ROPM
  - DNBR >> DNB SAFDL
  - Calculated fuel failure to remain zero.
- Conclusions
  - No impact on the results and conclusions.

## Analyses Assessed

*Chapters 15.2.2.5/15.2.3.2: Loss of Normal Feedwater Flow (w/wo SF)*

- Assessed using LOCV results.
- Expectation is Revised Reactivity SAI offsets increase due to revised CEA SCRAM Insertion Curve.

# Analyses Assessed

## *Chapter 15.2.3.1: Feedwater System Pipe Breaks*

- Assessed using LOCV results.
- Expectation is Revised Reactivity SAI offsets increase due to revised CEA SCRAM Insertion Curve.

# Analyses Assessed

## *Chapter 15.4.1.4: CEA Misoperation: Single CEA Withdrawal (SCEAW)*

- Impacted by revised CEA SCRAM Insertion Curve.
- Current results
  - Analysis performed at intermediate power levels.
  - Both trip and no-trip cases are analyzed.
  - No-trip cases bound trip cases.
- Assessed using CEAW at power results.
- Impact
  - Revised Reactivity SAI is available to offset some of the increase for the trip cases due to revised CEA SCRAM Insertion Curve for initial power levels > 50%.
  - No-trip cases are expected to bound the trip cases.
- Conclusions
  - No change to COLSS Margin expected.
  - No change to CPCS Input expected.
  - No changes to results and conclusions are expected.



# Analyses Assessed

## *Chapter 15.6.3.2: Steam Generator Tube Rupture*

- Supports radiological doses.
  - Primary-to-secondary mass transfer
  - Steam releases
- Assessed
  - Rate of reactivity insertion during the CEA SCRAM rod insertion has an insignificant impact on the primary-to-secondary mass transfer and secondary steam releases.
- Conclusions
  - No impact on the results and conclusions expected.

# Analyses Assessed

## *Chapter 15.6.3.3: LOCA*

- Large Break LOCA
  - SCRAM rod insertion not credited.
  - Not Impacted
- Small Break LOCA
  - Assessed
  - The expectation is the impact is negligible.
- Long term cooling
  - SCRAM rod insertion is not credited.
  - Not Impacted
- Conclusions
  - No changes to the results and conclusions are expected.

# Analyses Assessed

## *Chapter 15.8: Anticipated Transient Without SCRAM*

- Diversified SCRAM System
- Diversified SCRAM System setpoints not impacted
- Rate of reactivity insertion during the CEA SCRAM rod insertion has a negligible impact on the results.
- Not Impacted

# Analyses Bounded by Another Analysis

- Chapters 15.1.1.1/15.1.2.1: Decrease in Feedwater Temperature (w/wo SF)
  - Bounded by the Increased Main Steam Flow (w/wo SF) in Chapters 15.1.1.3/15.1.2.3.
- Chapters 15.1.1.2/15.1.2.2: Increase in Feedwater Flow (w/wo SF)
  - Bounded by the Increased Main Steam Flow (w/wo SF) in Chapters 15.1.1.3/15.1.2.3.

# Analyses Bounded by Another Analysis

- Chapters 15.2.1.1/15.2.2.1: Loss of External Load (w/wo SF)
  - Bounded by the Loss of Condenser Vacuum (LOCV) (w/wo SF) in Chapters 15.2.1.3/15.2.2.3.
- Chapters 15.2.1.2/15.2.2.2: Turbine Trip (w/wo SF)
  - Bounded by the LOCV (w/wo SF) in Chapters 15.2.1.3/15.2.2.3.

# Analyses Bounded by Another Analysis

- Chapters 15.2.1.4/15.2.2.4: Loss of Normal AC Power (w/wo SF)
  - Bounded by the LOCV (w/wo SF) in Chapters 15.2.1.3/15.2.2.3.
  - Bounded by the Total Loss of Forced Reactor Coolant Flow in Chapter 15.3.2.1.

# Analyses Bounded by Another Analysis

- Chapters 15.3.1.1/15.3.2.2: Partial Loss of Forced Reactor Coolant Flow (w/wo SF)
  - Bounded by the Total Loss of Forced Reactor Coolant Flow in Chapter 15.3.2.1.

# Analyses Bounded by Another Analysis

- Chapter 15.4.1.5: Chemical and Volume Control System (CVCS) Malfunction (inadvertent boron dilution)
  - Operational Modes 1 and 2
    - Bounded by the CEA Withdrawal at Power in Chapter 15.4.1.3.
    - Bounded by the CEA Withdrawal at Low Power in Chapter 15.4.1.2.
  - Operational Modes 3, 4, 5 and 6
    - Rods are full inserted for Modes 3, 4, and 5.
    - Rods are removed for Mode 6.
    - Not Impacted



# Analyses Not Impacted

- Chapter 15.1.3.2: Steam System Piping Failures Inside and Outside Containment (Modes 3 and 4 with All CEAs Fully Inserted)
  - Not Impacted
- Chapter 15.4.1.4: CEA Misoperation: Single and Subgroup CEA Drop
  - No reactor trip generated
  - Not Impacted

# Analyses Not Impacted

- Chapter 15.4.1.6: Startup of an Inactive RCS Pump
  - Analyzed in Operational Modes 3, 4, and 5.
  - CEA SCRAM rods are fully inserted.
  - Not Impacted
- Chapter 15.4.3.1: Inadvertent Loading of Fuel Assembly into the Improper Position
  - Not Impacted

# Analyses Not Impacted

- Chapter 15.5.1.2: Inadvertent Operation of the Emergency Core Cooling System (ECCS) during Power Operation
  - Not Impacted
- Chapter 15.6.3.1: Primary Sample or Instrument Line Break
  - Not Impacted

# Analyses Not Impacted

- Chapter 15.7.3.3: Postulated Radioactive Release Due to Liquid Containing Tank Failures
  - Not Impacted
- Chapter 15.7.3.4: Design Basis Fuel Handling Accidents
  - Not Impacted
- Chapter 15.7.3.5: Spent Fuel Cask Accidents
  - Not Impacted

# Analysis Summary

## *UFSAR Chapter 15*

- Negligible impact on the LOCA safety analyses.
- Negligible impact on the Non-LOCA safety analyses.
- No changes to COLSS ROPM expected.
- No changes to CPCS inputs expected.
- Potential decrease in bounding CEA Ejection physics data.
- No changes expected to the results and conclusions contained in the current UFSAR Chapter 15.

# COLSS and CPCS Summary

## *Database or Addressable constants*

- No changes are expected to the COLSS and CPCS database.
- No changes are anticipated to the COLSS and CPCS addressable constants.

# Summary

## *Overall*

- The Chapter 15 Safety Analyses continue to meet all acceptance criteria following the implementation of the Revised CEA SCRAM Insertion Curve on the UFSAR.
- The current UFSAR Chapter 15 Events with the current CEA SCRAM Insertion Curve results and conclusions will bound the Revised CEA SCRAM Insertion Curve in conjunction with modeling bounding physics inputs consistent with COLR operating limits.
- There are no changes to the COLSS and CPCS databases and addressable constants.

# License Amendment Request

## *Schedule*

- CEA Drop Time testing is performed at the end of the refueling outage prior to criticality and is typically a critical path activity
- Failure of the surveillance test would result in an immediate delay in startup following a refueling outage
- Westinghouse analyses work is on-going and is expected to be completed in June 2015
- Waterford 3 requests the LAR approval be completed by October 25, 2015



# Conclusion

- Thank you for your time and consideration
- Questions?