

Industry Implementation Schedule

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EPRI Fuel Reliability Program

Chair, Regulatory Technical Advisory Committee

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Tennessee Valley Authority

Public Webcast: 10 CFR 50.46c Implementation

May 7, 2015

Purpose

- Identify Fleet Implementation Schedule
 - Latest Incarnation
 - Step Change from April 23 2015 Schedule
 - Living Document
 - Updated as circumstances firm-up
 - Assumptions
 - Based in Part on NEI Draft Rule Comment Package
 - Public Meeting Discussions

Assumptions *(Relative to Draft Rule)*

- With Respect to the Rule:
 - Base Line is Draft Rule from Federal Register Notice
 - Base Line Delta's:
 - Long Term Cooling remains consistent with current rule
 - Existing methodology supplements only address explicit changes relative to the existing rule language
 - “New” methodologies encompass entire new rule language

Assumptions *(Relative to Draft Rule)*

- With Respect to the Rule: *(continued)*
 - Base Line is Draft Rule from Federal Register Notice
 - Base Line Delta's:
 - Breakaway Oxidation testing to become integrated into Vendor manufacturing / quality programs
 - Establish criteria for methodology application
 - Allowance for fuel manufactured prior to vendor program

Assumptions *(Relative to Draft Rule)*

- With Respect to the Rule: *(continued)*
 - Base Line is Draft Rule from Federal Register Notice
 - Base Line Delta's:
 - Resolution of debris related issues (e.g., GSI-191), whether by deterministic or risk-informed approach, addressed per existing owners group programs
 - Handled outside of 50.46c implementation
- No Additional Draft Rule Publication to FRN

Assumptions *(Schedule)*

- May 7 Schedule:
 - More Complete Utilization of Licensee Survey Feedback
 - Base Line January 1, 2015
 - FRN Notice of Final Rule April 1, 2016
 - Two Phases
 - Completing Methods and Programs Development
 - Docketing of Licensee Submittals

Assumptions *(Schedule)*

- May 7 Schedule: *(continued)*
 - Hydrogen Pickup Models
 - Vendor Specific
 - Capture Mechanical Design Updates
 - LAR Staggering for Each Vendor
 - Level of Effort (LOE)
 - Level 1: Post-processing existing analysis
 - Level 2: New, limited confirmation analyses
 - Level 3: Full re-analyses
 - Large vs Small Break LOE Breakdown where Applicable
 - Capture Contract Date
 - Vendor resource development lead time (in progress)

Results



- Significant Times

- FRN Rule Publication: April 1, 2016
- First Vendor Submittal: June 2016
- Final Method Packages in Place: ~Nov. '17-May '18
- Initial LAR Submittal: December 2018
- First LAR SE Issued: April-May 2019
- Last LAR Submittal: May-June 2020
- Full Fleet Compliance: May-June 2022

Open Issue

- Compound “*Compliance*”
 - LOCA Internal to Another LAR
 - Example: Fuel Design Change
 - (potentially impacting ~30 units over 60 months)
 - Assumed 3 yr. Advance Timing
 - 1 yr. for LOCA component of LAR; 2 yrs. for NRC review.
 - Final FRN creates discontinuity in LAR preparation.
 - Schedule methods ready date implies earliest fuel change could be ~2021.
 - Fuel Change LAR Limbo
 - 2 yrs. between FRN and acceptable methods being available.
 - FRN + 3 yrs. or earlier submittal potentially fails LIC-109 review.
 - 50.46c package effectively delays fuel change by acting as LAR supplement.
- Potential Fuel Supply Issue

ID	Name	Duration	Start	Finish	Half 1, 2015				Half 2, 2015				Half 1, 2016				Half 2, 2016				Half 1, 2017				Half 2, 2017				Half 1, 2018				Half 2, 2018				Half 1, 2019				Half 2, 2019				Half 1, 2020				Half 2, 2020				Half 1, 2021				Half 2, 2021				Half 1, 2022				Half 2, 2022				Half 1, 2023																																																																																																																																																																																							
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1	Publish Final Rule Language	327 days	1/1/15 8:00 AM	4/1/16 5:00 PM	[Gantt bar]																																																																																																																																																																																																																																																							
2	Public Meetings	111 days	1/1/15 8:00 AM	6/4/15 5:00 PM	[Gantt bar]																																																																																																																																																																																																																																																							
3	ACRS	129 days	6/5/15 8:00 AM	12/2/15 5:00 PM	[Gantt bar]																																																																																																																																																																																																																																																							
4	Final Package for Commission	30 days	12/3/15 8:00 AM	1/13/16 5:00 PM	[Gantt bar]																																																																																																																																																																																																																																																							
5	FRN Publication of Final Rule	57 days	1/14/16 8:00 AM	4/1/16 5:00 PM	[Gantt bar]																																																																																																																																																																																																																																																							
6	Analytical Methods Development	524 days?	4/4/16 8:00 AM	4/5/18 5:00 PM	[Gantt bar]																																																																																																																																																																																																																																																							
7	Develop Hydrogen Uptake LTR	437 days	4/4/16 8:00 AM	12/5/17 5:00 PM	[Gantt bar]																																																																																																																																																																																																																																																							
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26	Regulatory Review	306 days	7/5/16 8:00 AM	9/5/17 5:00 PM	[Gantt bar]																																																																																																																																																																																																																																																							
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45	Mechanical Design Updates	360 days?	4/4/16 8:00 AM	8/18/17 5:00 PM	[Gantt bar]																																																																																																																																																																																																																																																							
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51	Vendor 2	358 days	4/4/16 8:00 AM	8/16/17 5:00 PM	[Gantt bar]																																																																																																																																																																																																																																																							
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53	Regulatory Review	178 days	12/12/16 8:00 AM	8/16/17 5:00 PM	[Gantt bar]																																																																																																																																																																																																																																																							
54	Vendor 3	360 days	4/4/16 8:00 AM	8/18/17 5:00 PM	[Gantt bar]																																																																																																																																																																																																																																																							
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57	PWR Topical n/BAW	180 days	4/4/16 8:00 AM	12/9/16 5:00 PM	[Gantt bar]																																																																																																																																																																																																																																																							
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61	Breakaway Oxidation Program	457 days	4/4/16 8:00 AM	1/2/18 5:00 PM	[Gantt bar]																																																																																																																																																																																																																																																							
62	Vendor 1	371 days	4/4/16 8:00 AM	9/4/17 5:00 PM	[Gantt bar]																																																																																																																																																																																																																																																							
63	Material Testing	49 days	4/4/16 8:00 AM	6/9/16 5:00 PM	[Gantt bar]																																																																																																																																																																																																																																																							

	Name	Duration	Start	Finish	Half 1, 2015		Half 2, 2015		Half 1, 2016		Half 2, 2016		Half 1, 2017		Half 2, 2017		Half 1, 2018		Half 2, 2018		Half 1, 2019		Half 2, 2019		Half 1, 2020		Half 2, 2020		Half 1, 2021		Half 2, 2021		Half 1, 2022		Half 2, 2022		Half 1,																																																				
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379	LAR Review	175 days	6/4/19 8:00 AM	2/3/20 5:00 PM																																																																																					
380	 LAR 65	778 days	3/1/17 8:00 AM	2/21/20 5:00 PM																																																																																					
381	 Contract In Place	67 days	3/1/17 8:00 AM	6/1/17 5:00 PM																																																																																					
382	Develop LAR	175 days	10/22/18 8:00 AM	6/21/19 5:00 PM																																																																																					
383	LAR Review	175 days	6/24/19 8:00 AM	2/21/20 5:00 PM																																																																																					

