



AGENDA

FUEL RELIABILITY PROGRAM ALL EUROPE WORKSHOP

May 20-22, 2025 • In-Person • AC Hotel Manchester Salford Quays • Meeting Room: TBD
17-19 Trafford Road, Salford Quays Manchester M5 3AW, United Kingdom

	Tuesday	Wednesday		Thursday	
	20-May	21-May		22-May	
8 AM - 12 PM	FRP Program Overview, Utility Roundtable, FRP R&D Topic	FRP R&D Topics		BOA Training	Fuel Failure Monitoring and Evaluation Training
12-1 pm	Lunch	Lunch		Lunch	
1PM - 5PM	FRP R&D Topics	BOA Training	Fuel Failure Monitoring and Evaluation Training	BOA Training	Fuel Failure Monitoring and Evaluation Training
6PM - 8PM	Dinner hosted by RR SMRs	Reception hosted by EPRI			

MAY 20, 2025 – FUEL RELIABILITY PROGRAM R&D – DAY 1

TIME	TOPIC	PRESENTER
8:00 a.m.	Welcome and Introductions	<i>Tom Hughes (RR SMRs), Aylin Kucuk (EPRI)</i>
8:10 a.m.	Utility Report Out (Utility Only) – fuel reliability status, challenges, R&D needs and expectations from FRP and other utilities (10 min each utility)	<i>Members/Utilities</i>
10:10 a.m.	Break	
10:30 a.m.	Fuel Reliability Program Update	<i>Aylin Kucuk (EPRI)</i>
10:50 a.m.	U.S. Fuel Failure Trends and Recent Operating Experience	<i>Brenden Mervin (EPRI)</i>
11:20 a.m.	Fuel Reliability Guidelines, Handbooks, Tools, and Training Overview	<i>Brenden Mervin (EPRI)</i>
12:00 p.m.	Lunch	
1:00 p.m.	Flexible Power Operation <ul style="list-style-type: none"> • PWR Crud and Corrosion Risk (Dennis) • BWR Crud and Corrosion Risk (Aylin) • PCI Risk (Brenden) • Utility operating experiences and challenges (Juan, All) 	<i>Dennis Hussey (EPRI) Aylin Kucuk (EPRI) Brenden Mervin (EPRI) Juan Antonio Bermejo Piñar (CNAT) and All</i>
2:30 p.m.	BWR Crud and Corrosion	<i>Aylin Kucuk (EPRI)</i>
2:50 p.m.	Break	
3:10 p.m.	PWR Crud and Corrosion <ul style="list-style-type: none"> • BOA V4.1 Development and Validation (Dennis) • KOH Demonstration (Dennis) • Lithium Uptake in Cladding Oxide (Martin) • Cladding Corrosion Issues—Comanche Peak Observations (Utility Closed) (Aylin) 	<i>D. Hussey (EPRI) Martin Nilsson Lind (Vattenfall) A. Kucuk (EPRI)</i>
5:10 p.m.	Roundtable Discussion and Action Items Review	<i>All</i>
5:30 p.m.	Adjourn	

**MAY 21, 2025 – FUEL RELIABILITY PROGRAM R&D – DAY 2**

TIME	TOPIC	PRESENTER
8:00 a.m.	Prevention of gross quality escapes in the fuel manufacturing (Utility Only)	<i>Christian Hellwig (Axp0)</i>
8:30 a.m.	Debris Induced Fuel Failure Mitigation	<i>Brenden Mervin (EPRI)</i>
9:00 a.m.	Advanced Fuel Technologies <ul style="list-style-type: none">• HBU, Cycle Length Extensions - FFRD Assessment Consequences Evaluation• Power Uprates – Time-at-Temperature	<i>Aylin Kucuk (EPRI)</i> <i>Ken Yueh (EPRI)</i>
10:00 a.m.	Break	
10:20 a.m.	NDE Technologies <ul style="list-style-type: none">• DREAM Visual Fuel Inspection Tool• LiDAR• F-SECT Oxide and Hydrogen	<i>Brenden Mervin (EPRI)</i>
10:50 a.m.	Structural Components <ul style="list-style-type: none">• Fuel Assembly Bow in Ringhals (Petter)• Lateral Stiffness Measurements (Ken)• Additive Manufacturing (Ken)	<i>Petter Gabrielson (Vattenfall)</i> <i>Ken Yueh (EPRI)</i>
11:30 a.m.	PCI Issues	<i>Brenden Mervin (EPRI)</i>
12:00 p.m.	Lunch	
1:00 p.m.	VVER Specific Topics <ul style="list-style-type: none">• VVER Fuel Failure Monitoring and Evaluation Handbook (Ken)• VVER BOA (Dennis)	<i>Ken Yueh (EPRI)</i> <i>Dennis Hussey (EPRI)</i>
1:40 p.m.	Adjourn Meeting	

MAY 21, 2025 – FUEL FAILURE MONITORING AND EVALUATION TRAINING – DAY 2

TIME	TOPIC	PRESENTER
2:00 p.m.	Introduction to Fuel Failure Evaluation <ul style="list-style-type: none"> • Definition of fuel failure • Impacts of failures • Failure causes and key characteristics • Failure trends 	<i>David Smith (EPRI Consultant)</i>
3:30 p.m.	Break	
3:45 p.m.	Principles of Fuel Failure Evaluation <ul style="list-style-type: none"> • Source of radioactivity • Fission product transport to coolant • Activity release analysis • Burnup analysis using cesium ratio 	<i>Ken Yueh (EPRI)</i>
4:30 p.m.	Break	
4:45 p.m.	Fuel Reliability Monitoring (BWR and PWR) <ul style="list-style-type: none"> • Radiochemistry sampling • Activity monitoring and trending 	<i>Ken Yueh (EPRI)</i>
5:10 p.m.	Exercise <ul style="list-style-type: none"> • Slope calculation • Fuel washout 	<i>Ken Yueh (EPRI)</i>
5:30 p.m.	Adjourn	

MAY 22, 2025 – FUEL FAILURE MONITORING AND EVALUATION TRAINING – DAY 3

TIME	TOPIC	PRESENTER
8:00 a.m.	Con't Exercise <ul style="list-style-type: none"> Slope calculation Fuel washout 	<i>Ken Yueh (EPRI)</i>
8:30 a.m.	PWR Fuel failure detection <ul style="list-style-type: none"> Failure Detection Failure Characterization (burnup, size, power, etc)	<i>David Smith (EPRI Consultant)</i>
9:30 a.m.	Break	
9:45 a.m.	BWR failure detection <ul style="list-style-type: none"> Failure Detection Failure Characterization (burnup, size, power, etc) PST 	<i>David Smith (EPRI Consultant)</i> <i>Ken Yueh (EPRI)</i>
11:45 a.m.	Lunch	
12:45 p.m.	Inspection techniques	<i>Ken Yueh (EPRI)</i>
1:15 p.m.	Site considerations	<i>David Smith (EPRI Consultant)</i>
1:40 p.m.	Failed fuel management	<i>David Smith (EPRI Consultant)</i>
3:00 p.m.	Break	
3:15 p.m.	Apparent and root cause analysis	<i>David Smith (EPRI Consultant)</i>
3:45 p.m.	Additional exercise	<i>David Smith (EPRI Consultant)</i> <i>Ken Yueh (EPRI)</i>
4:45 p.m.	Feedback and closure	<i>David Smith (EPRI Consultant)</i> <i>Ken Yueh (EPRI)</i>
5:15 p.m.	Adjourn	

**MAY 21, 2025 – BOA V4.0/V4.1 TRAINING – DAY 2**

TIME	TOPIC	PRESENTER
2:00 p.m.	BOA Workshop Review	<i>Dennis Hussey (EPRI)</i>
2:05 p.m.	BOAv4.0 Theory	<i>Dennis Hussey (EPRI)</i>
3:00 p.m.	BOAv4.1 Development and Validation	<i>Mike Young (EPRI Consultant)</i>
3:45 p.m.	BOA Graphical User Interface Introduction	<i>Kenny Epperson (EPRI Consultant)</i>
4:15 p.m.	Break	
4:30 p.m.	BOAv4.0 Practical (Modeling methodology: Part 1)	<i>Kenny Epperson</i>
5:20 p.m.	Discussion	<i>ALL</i>
5:30 p.m.	Adjourn	

MAY 22, 2025 – BOAV4.0/V4.1 TRAINING – DAY 3

TIME	TOPIC	PRESENTER
8:00 a.m.	BOA Practical (Zinc Applications/Monte Carlo: Part 2)	<i>Kenny Epperson</i>
9:00 a.m.	BOA Practical (CILC Risk Assessments: Part 3)	<i>Mike Young</i>
10:15 a.m.	Break	
10:30 a.m.	EDF Experiences with BOAv4.0	<i>E. Garcia (EDF)</i>
11:15 a.m.	Vattenfall Experiences with BOAv4.0	<i>Martin Nilsson Lind (Vattenfall)</i>
12:00 p.m.	Lunch	
1:00 p.m.	User Specified Issues/Requests	<i>ALL</i>
2:45 p.m.	Break	
3:00 p.m.	User Specified Issues/Requests (continued)	<i>ALL</i>
4:30 p.m.	Feedback and Closure	<i>ALL</i>
5:00 p.m.	Adjourn	