LTR-RAC-25-28
Enclosure 2
June 12, 2025

ENCLOSURE 2

Open Session Slide Package for the June 16, 2025, Pre-Application Meeting on LEU+ Management Measures and Integrated Safety Analysis

(Non-Proprietary)

Columbia Fuel Fabrication Facility
LEU+ Management Measures and Integrated Safety Analysis

June 2025

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LEU+ Project Objectives

- Increased enrichment supports US pressurized water reactor transitions from 18- to 24-month refueling cycles
- New building in Hopkins, SC will produce fuel assemblies <8% U-235 enrichment
- Operate up to 600MTU/year and partial shift of load from existing operations
- Expansion and processes for <8 wt% will require multiple permits and licenses for construction and operation
- Processes incorporate sustainability principles, automation, and engineered controls
- LEU+ will create new jobs and provide advancement opportunities for current employees

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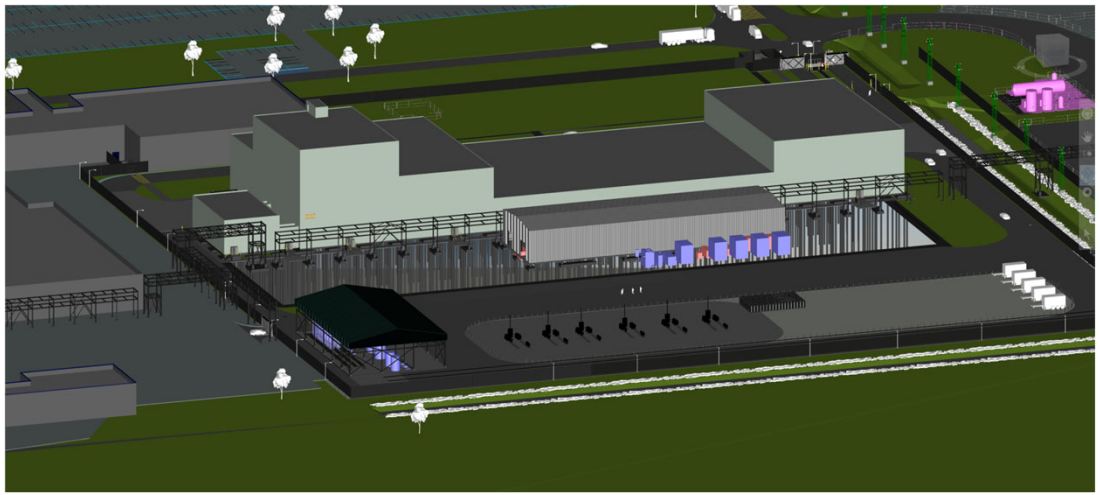
Overview of LEU+ Manufacturing



Conversion
- Ammonia-free dry conversion process 8% enriched UF6
- Lower emissions with use of dry process
- Consideration of automated conversion lines and enclosed processes

Pelleting
- Advanced Doped Pellet Technology (ADOPT) blending
- Consideration of automated pelleting lines and enclosed processes

Burnable Absorbers /Rods
- Integrated Fuel Burnable Absorber (IFBA) dry room
- Automatic rod loading and welding

Uranium Recovery
- Uranium recovery process
- Reduced ammonia process

Mechanical
- Single control access point
- Non-SNM skeletons from current operations
- Ship to customers in Traveller package

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Management Measures

- 10 CFR 70 Requirements
  - Applied to items relied on for safety to ensure availability and reliability to perform
  - May be graded commensurate with the reduction of risk
  - Required for compliance to the performance requirements in 70.61
- CFFF Approved License Application (Chapter 3)
  - Management Measures are applied to IROFS for reasonable assurance that IROFS are available and reliable
  - Management Measures applied to IROFS are identified in the ISA Summary
    - Based on the type of control (e.g., engineered, administrative)

Types of Management Measures

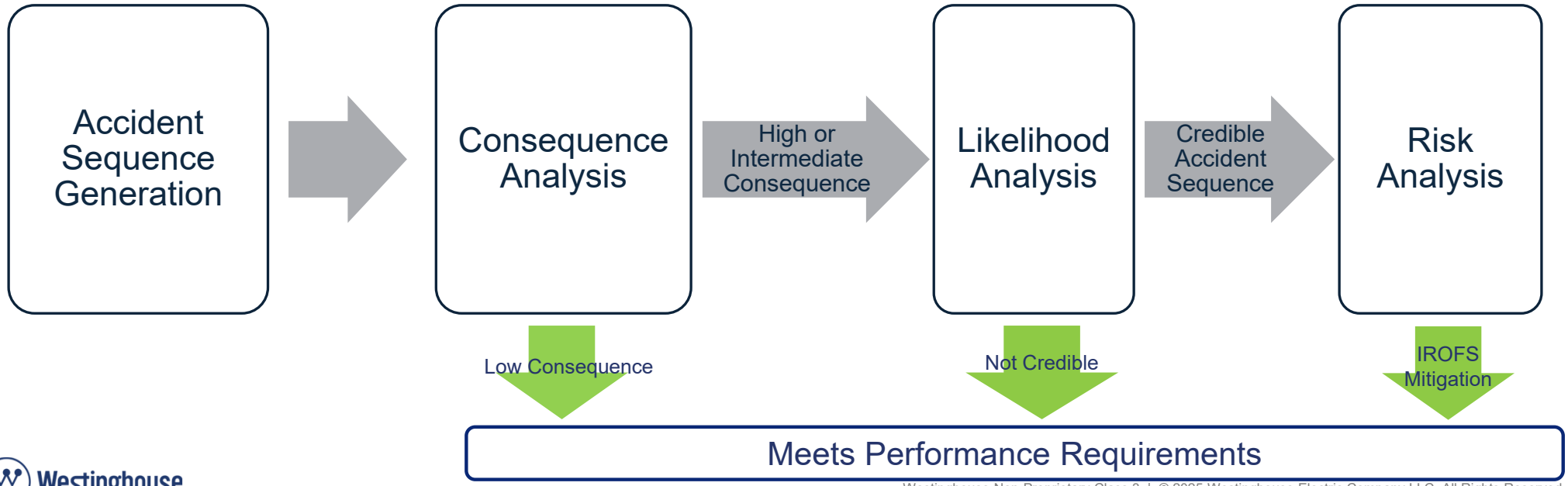
- Configuration management
- Maintenance
- Training and qualifications
- Procedures
- Human performance
- Audits
- Incident investigations
- Corrective Action Program
- Records management
- Other quality assurance elements

Integrated Safety Analysis

- 10 CFR 70 Requirements
  - ISA Summary includes description of the site, facility, and processes
  - Focused on items that affect safety or present hazards
  - Compliance to performance requirements
- CFFF Approved License Application (Chapter 4)
  - Systematic process
    - Initiating events from facility and external hazards
    - Potential and credible accident sequences
    - Likelihood and consequences
    - Selection of IROFS
  - Multi-disciplinary team

CFFF ISA Process (Chapter 4)

- ISA Process described in *CFFF ISA Handbook*
- Segment LEU+ processes into ISA chapters
  - Process Description
  - Upset conditions identified in process hazards analyses



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Risk and Performance Criteria

		Overall Likelihood of Accident					
		Highly Unlikely	Unlikely		Not Unlikely		
		-4	-3	-2	-1	0	1
Severity of Consequences	High						
	Intermediate						
	Low						

Risk Category	Color	Notes
Risk Zone 3		Meets performance criteria
Risk Zone 2		Meets performance criteria but unacceptable risk for long-term operation
Risk Zone 1		Does not meet performance requirements. Unacceptable risk for continued operation.

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Baseline Design Criteria 70.64(a), (b)

Consistent with Approved License Application

- Quality standards/records
- Fire protection
- Environmental and dynamic effects
- Chemical protection
- Control of licensed material, evacuation, onsite emergency facilities
- Essential utility services (none)
- Inspection, testing, and maintenance
- Double Contingency Principle
- Instrumentation and controls

LEU+ Baseline Design Criteria Additions

- Quality standards/records
  - New RFS for lifetime IROFS records
- Natural Phenomena Hazards
  - Building design criteria and white paper
- Defense-in-depth practices
  - Preference to engineered controls
  - Reducing challenges to IROFS

Questions?

End of open portion of meeting