DUKE COGEMA
STONE & WEBSTER

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U.S. Nuclear Regulatory Commission
Washington, DC 20555

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DCS-NRC-000069

Subject: Docket Number 070-03098
Duke Cogema Stone & Webster
Mixed Oxide Fuel Fabrication Facility
Response to Request for Clarification

During review of Duke Cogema Stone & Webster's (DCS') Mixed Oxide Fuel Fabrication Facility (MFFF) Construction Authorization Request (CAR), NRC staff requested a clarification of the ISA process described in CAR Figure 5.4-1 that correlates the figure to the tables in CAR Chapter 5 and the internal supporting documentation. This correlation is provided in Enclosure A. If you have any questions, please contact me at (704) 373-7820.

Sincerely,

Peter S. Hastings, P.E.
Licensing Manager

Enclosures: as stated

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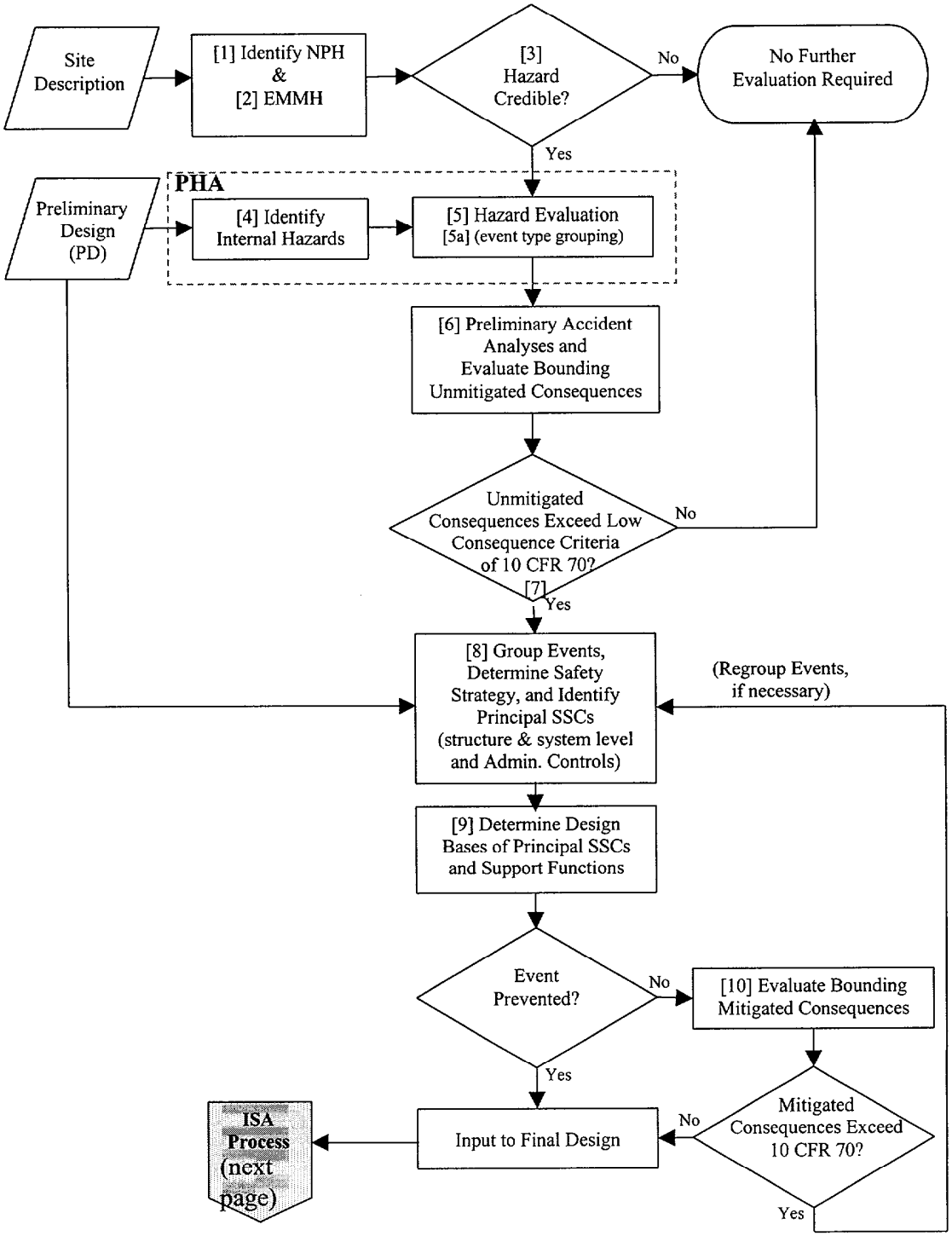
Enclosure A

The attached figure provides a cross-reference from the actions in Figure 5.4-1 to the tables in chapter 5 and the supporting DCS calculations. Sample hazard identification, hazard evaluation, and consequence evaluation sheets are also provided for information.

Figure 5.4-1: Safety Assessment of the Design Basis



Enclosure A
CAR Figure 5.4-1 to CAR Information Cross Reference Table

Identifier from Figure 5.4-1	Table Title	SA Table Number	Supporting Calculation
[1] – Identify NPH	(a) Comprehensive List of NPH [Natural Phenomena Hazards] Initially Evaluated and Applicable NPH	(a) Table 5.5-5	(a) Natural Phenomena Hazard List
[2] – Identify EMMH	(a) EMMH Screening Evaluation Summary	(a) Table 5.5-8 (Column 1)	(a) Preliminary Hazards External Man-Made Event Screening
[3] – Hazard Credible	(a) List of Applicable NPHs (b) EMMH Screening Criteria (c) EMMH Screening Evaluation Summary	(a) Table 5.5-6 (b) Table 5.5-7 (c) Table 5.5-8	(a) Natural Phenomena Hazard List (b) & (c) Preliminary Hazards External Man-Made Event Screening
[4] – Identify Internal Hazards	(a) Summary Hazard Identification Table by Workshop/Process Support Group	(a) Table 5.5-4	(a) Preliminary Hazard Analysis (Hazard Identification Checklists)
[5] – Hazard Evaluation	(a) Unmitigated Events, Aqueous Polishing (b) Unmitigated Events, Receiving Workshop (c) Unmitigated Events, Powder Workshop (d) Unmitigated Events, Pellet Workshop (e) Unmitigated Events, Cladding and Rod Control Workshop (f) Unmitigated Events, Assembly Workshop (g) Unmitigated Events, Waste Handling (h) Unmitigated Events, Miscellaneous Areas (i) Unmitigated Events, Support Facilities Outside MFFF (j) Unmitigated Events, HVAC Systems (k) Unmitigated Events, Gloveboxes (l) Unmitigated Events, Facility Wide (m)Unmitigated Events, General Hazard	(a) Table 5A-2 (b) Table 5A-3 (c) Table 5A-4 (d) Table 5A-5 (e) Table 5A-6 (f) Table 5A-7 (g) Table 5A-8 (h) Table 5A-9 (i) Table 5A-10 (j) Table 5A-11 (k) Table 5A-12 (l) Table 5A-13 (m)Table 5A-14	(a) – (m) Preliminary Hazard Analysis (Hazard Evaluation Table)

Enclosure A
CAR Figure 5.4-1 to CAR Information Cross Reference Table

Identifier from Figure 5.4-1	Table Title	SA Table Number	Supporting Calculation
[5a] – Event type grouping	(a) Mapping of Hazard Assessment Events to Loss of Confinement Event Groups (b) Mapping of Hazard Assessment Events to Fire Event Groups (c) Mapping of Hazard Assessment Events to Load Handling Event Groups (d) Explosion Groups and Associated Hazard Assessment Events (e) Mapping of Hazard Assessment Events for Chemical Event Group	(a) Table 5.5-9 (b) Table 5.5-12 (c) Table 5.5-15 (d) Table 5.5-18 (e) Table 5.5-23	(a) – (e) Preliminary Accident Analysis
[6] – Preliminary Accident Analyses and Evaluate Bounding Unmitigated Consequences	(a) Methods (b) Unmitigated Events Consequence Discussion	(a) Section 5.4 (b) Inferred from Section 5.5 Text and Tables of Principal SSCs	[Methods are described in each supporting document and consequences are described in the first and last calculations] Dose Consequences for Potential Radioactive Releases from Hazard Events Input Values for Radioactive Release Calculations for the MFFF Dispersion Factors (X/Q) Values for MFFF Accident Analysis Chemical Consequences for Potential Chemical Hazard Events

Enclosure A
CAR Figure 5.4-1 to CAR Information Cross Reference Table

Identifier from Figure 5.4-1	Table Title	SA Table Number	Supporting Calculation
[7] – Unmitigated Consequences Satisfy Low Consequence Criteria of 10 CFR 70	(a) Low Consequence Screened Hazard Assessment Events	(a) Table 5.5-25	Dose Consequences for Potential Radioactive Releases from Hazard Events Input Values for Radioactive Release Calculations for the MFFF Dispersion Factors (X/Q) Values for MFFF Accident Analysis
[8] – Group Events, Determine Safety Strategy, Identify Principal SSCs	(a) Summary of Principal SSCs for Facility Worker Protection from Loss of Confinement Events	(a) Table 5.5-10	(a) – (j) Preliminary Accident Analysis
	(b) Summary of Principal SSCs for Public and Site Worker Protection from Loss of Confinement Events	(b) Table 5.5-11	
	(c) Fire Event – Summary of Principal SSCs – Facility Worker	(c) Table 5.5-13	
	(d) Fire Event – Summary of Principal SSCs – Public and Site Worker	(d) Table 5.5-14	
	(e) Summary of Principal SSCs for the Facility Worker Protection from Load Handling Events	(e) Table 5.5-16	
	(f) Summary of Principal SSCs for Public and Site Worker Protection from Load Handling Events	(f) Table 5.5-17	
	(g) Principal SSCs and Associated Safety Functions for all Receptors for the Explosion Event Type	(g) Table 5.5-19	
	(h) List of Principal SSCs for NPH and their Associated Safety Functions	(h) Table 5.5-21	
	(i) Principal SSCs and their Safety Functions for the Chemical Event Type	(i) Table 5.5-24	
	(j) MFFF Principal SSCs	(j) Table 5.6-1	

Enclosure A
CAR Figure 5.4-1 to CAR Information Cross Reference Table

Identifier from Figure 5.4-1	Table Title	SA Table Number	Supporting Calculation
[9] – Determine Design Bases of Principal SSCs and Support Functions	(a) Identify Support System Functions for Principal SSCs (b) Design Bases	(a) Table 5.5-22 (b) Table 5.6-1 and Supporting areas of the CAR	MFFF System Dependencies Final Preliminary Design Documents
[10] – Evaluate Bounding Mitigated Consequences	(a) Bounding Event Consequences	(a) Table 5.5-26	Dose Consequences for Potential Radioactive Releases from Hazard Events Input Values for Radioactive Release Calculations for the MFFF Dispersion Factors (X/Q) Values for MFFF Accident Analysis

Enclosure A
CAR Figure 5.4-1 Step 4 (Hazard Identification Checklist)

Attachment A Hazard Identification

SYM: Sort Number: 1

Hazardous Materials

- ☐ Corrosive chemicals
- ☐ Toxic Chemicals ☐ Alkali Metals
- ☐ Hydroxylamine Nitrate
- ☐ Nitric Acid
- ☐ Hydrazine ☐ Other Oxidizers

Other

Ionizing Radiation Sources

- ☐ Fissile Material
- ☐ Radioactive Material
- ☐ Radiography Equipment
- ☐ Radioactive Sources

Other

Explosive Materials

- ☐ Explosive gases
- ☐ Explosive chemicals
- ☐ Incompatible Chemicals - Explosive Incompatibilit
- ☐ Radioactive/Hydrogenous (Radiolysis)

Other

Flammable/ Combustibles

- ☐ Flammable Gases ☐ Hydrogen ☐ Solvents ☐ Other Combustibles ☐ Pyrophoric Materials
- ☐ Flammable Liquids ☐ Methane ☐ Propane ☐ Oxygen Other

Thermal Sources

☐ Incompatible Chemicals - Thermal Release

- ☐ Furnaces ☐ Grinders ☐ Welding Equipment ☐ Cryogenic ☐ Electrical Heating Resistor
- ☐ Evaporators/Boilers ☐ Lasers ☐ Bunsen burners ☐ Microwave ☐ Heater
- ☐ Electrical Equipment ☐ Heating Plates ☐ Radioactive Decay Heat ☐ Electric Arc
- ☐ Electrolyzers ☐ Other Process Equipment ☐ Solar Other

Gravitational

- ☐ Cranes/Hoists
- ☐ Human efforts
- ☐ Lifts
- ☐ Suspended objects

Other

- ☐ Elevators
- ☐ Crane Loads in Motion
- ☐ Carts
- ☐ Conveyors
- ☐ Dollies

Kinetic Energy Sources

- ☐ Fork Lifts ☐ Presses
- ☐ Impacter ☐ Shears
- ☐ Power-driving Tools
- ☐ Air Ejector/Air Lift/Air Jet ☐ Steam Ejector

Other

Pressure Sources

- ☐ Autoclaves
- ☐ Gas Receivers
- ☐ Pressure Vessels
- ☐ Steam Header and Steam Lines
- ☐ Gas Bottles

Other

Rotational / Friction

- ☐ Belts ☐ Gears ☐ Exhausters
- ☐ Centrifuges ☐ Power Rotating Tools
- ☐ Fans ☐ Bearings ☐ Motors

Other

Confinement Type

- ☐ AP vessels, tanks and piping
- ☐ Glove Box
- ☐ Containers inside Gloveboxes
- ☐ Containers outside Gloveboxes
- ☐ Rods/ Assemblies
- ☐ HVAC ☐ HEPA Filters
- ☐ Off-gas Process Confinement
- ☐ Pneumatic transfer tubes

Other

Utilities

- ☐ Process Water Supply
- ☐ Compressed Air
- ☐ Process Gas Lines
- ☐ Pneumatic Pipe Vacuum Transfer System
- ☐ Radiation Air Monitoring System
- ☐ Reagents Supply Lines
- ☐ Steam/Condensate Lines
- ☐ Contaminated Drains

Other

Enclosure A
CAR Figure 5.4-1 Step 5 (Hazard Evaluation Table)

Hazard Table Appendix B

Event Type / Location / SSC	Cause	Major Effects	Risk *No Controls*	Prevention	Mitigation	Risk *With Controls*
			Worker: Site: Public: Risk Level:			Worker: Site: Public: Risk Level:

Enclosure A
CAR Figure 5.4-1 Step 6 (Dose Consequences for Potential Radioactive Releases from Hazard Events)

User Input										Automatically Calculated					Unmitigated Dose, Sv			Mitigated Dose, Sv		
Event	Room/Cell/GB	Unit	Release Mechanism	LPF Credit Type	Material	Form	Mass, kg	DR	Entrainment Time (min)	ARF	RF	DR	LPF	Stack Mass (kg)	Site Worker	Public	EC Ratio	Site Worker	Public	EC Ratio