

February 22, 2002

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

DOCKETED
USNRC

BEFORE THE COMMISSION

2002 FEB 25 PM 3: 29

In the Matter of)
)
DUKE COGEMA STONE & WEBSTER)
)
(Savannah River Mixed Oxide Fuel)
Fabrication Facility))
_____)

OFFICE OF THE SECRETARY
RULEMAKINGS AND
ADJUDICATIONS STAFF

Docket No. 0-70-03098-ML
ASLBP No. 01-790-01-ML

GEORGIANS AGAINST NUCLEAR ENERGY
NOTICE OF INFORMATION RELEVANT TO STAY MOTION

I. INTRODUCTION AND SUMMARY

On January 4, 2002, Georgians Against Nuclear Energy ("GANE") submitted a petition for interlocutory review, charging that the pending proceeding for the authorization of construction of Duke Cogema Stone & Webster's ("DCS's") proposed Mixed Oxide Fuel Fabrication Facility ("MOX Facility") violates the NRC's safety regulations and the National Environmental Policy Act.¹ At the same time, GANE also filed a stay motion, requesting the Commission to suspend the ongoing construction authorization proceeding, pending its consideration of GANE's Petition for Review.²

GANE now brings before the Commission new information regarding changes in DCS's plans for the proposed MOX Facility, which provides additional grounds for

¹ See Georgians Against Nuclear Energy's Petition for Interlocutory Review ("Petition for Review").

GANE's stay request.³ These changes stem from the Department of Energy's ("DOE's") announcement, in late January, that the U.S. government has abandoned its previous plan to immobilize some of the U.S. surplus plutonium supply, and now intends to process all of the surplus plutonium stock, including 6.4 metric tons of plutonium of uncertain chemical composition, into MOX fuel.

In response to the change in federal policy, DCS recently announced that it will change its construction authorization request ("CAR") and Environmental Report ("ER") to add at least one new step to the plutonium purification process for MOX. DCS acknowledges that it has not yet performed the necessary analyses and design work these changes will require and therefore the plans outlined in the viewgraphs are preliminary. DCS estimates that these changes will delay the schedule for the construction approval proceeding by about 11 months. Other factors, not yet taken under consideration by DCS, may delay the proceeding further. This new information shows that a stay of the instant proceeding is warranted and would not cause harm to any of the parties.⁴

² See Georgians Against Nuclear Energy's Request for Stay of Hearing on Construction Authorization Request Pending Ruling on Petition for Review (January 4, 2002) ("Stay Motion").

³ Separately, GANE and BREDL have asked the ASLB to suspend discovery in this proceeding until the CAR and the Environmental Report have been updated to reflect the significant changes that DCS proposes to make in its CAR and Environmental Report. See Georgians Against Nuclear Energy and Blue Ridge Environmental Defense League Motion to Postpone Discovery, February 22, 2002.

⁴ GANE notes that DCS's new schedule does not resolve any of the problems raised in GANE's Petition for Review. Like the original NRC Staff schedule for the proceeding (see Petition for Review at 4), DCS's new schedule continues to assert that the CAR will be submitted and reviewed separately from the license application. In fact, DCS's new schedule goes further than the previous NRC Staff schedule towards violating the intent of the NRC's regulations requiring the filing of a completed license application. Under the previous schedule, the NRC Staff anticipated that it would receive the license

II. CHANGES TO MOX PROGRAM

On January 23, 2002, the DOE announced a change in the United States' plans for disposal of surplus plutonium. The DOE has dropped a previous plan to immobilize 17 tons of surplus plutonium, and now plans to convert 34 tons of surplus plutonium, including 6.4 tons of impure plutonium previously scheduled for immobilization, to MOX fuel. This plutonium was previously considered to be unsuitable for processing to MOX because it contains high levels of impurities.

In a meeting with the Nuclear Regulatory Commission ("NRC" or "Commission") Staff on February 13, 2002, DCS presented viewgraphs showing that it will need to resubmit or revise the CAR and the Environmental Report because it has to add a new step to the MOX production process to remove impurities from the 6.4 tons of contaminated plutonium, known as "Alternate Feedstock."⁵ DCS will construct new equipment to remove chlorides from the Alternate Feedstock. See Viewgraphs at 10-12.

At the meeting, DCS also announced that the DOE has changed its plans for disposal of the high-alpha and uranium waste that will be generated by the MOX Facility.

application in July of 2002, and construction would be approved in September. This two-month overlap would have given the Staff some time before approving the CAR, albeit brief, to identify aspects of the plant's proposed operation that are not adequately addressed by its design. At the February 13 meeting, however, Peter Hastings, DCS's Licensing Manager, stated that under DCS's proposed new schedule, DCS will not submit its license application until *after* the NRC Staff's approves the CAR. Thus, the new schedule completely eliminates the overlap between submittal of the license application and approval of the CAR.

⁵ The February 13 meeting was opened to the public under the NRC's open meeting policy. Members of the public were allowed to ask questions at the end of the meeting. No transcript was made of the meeting. Copies of the viewgraphs are attached as Exhibit 1.

See Viewgraph at 14. Instead of storing the waste as a liquid in tanks at the Savannah River Site, the DOE intends to build a new facility to convert it to a solid. *Id.* at 17. Although DOE has yet to design the proposed waste facility or prepare an EIS, which will likely contain such details, DCS anticipates that high-alpha waste will be disposed of in the Waste Isolation Pilot Project (“WIPP”) Facility in New Mexico, and stripped uranium waste will be disposed of as low level waste. *Id.* DCS officials stated at the meeting that DCS intends to design and build storage tanks for interim storage of the liquid waste pending its transfer to a DOE Facility. DCS representatives stated that they did not know the specifics of DOE’s plans for construction of a facility for conversion of the waste from a liquid to a solid form.

At the February 13 meeting, DCS presented a viewgraph which showed that as a result of these changes, the schedule for completion of the CAR and the ER and completion of the NRC’s safety and environmental review at the construction authorization stage of the proceeding would slip by 11 months. *See* Viewgraphs at 5. For instance, DCS predicts that the NRC Staff’s September 30, 2002 date for issuing the Safety Evaluation Report (“SER”) for construction approval will be delayed until August 31, 2003. Similarly, DCS predicts that issuance of the Final EIS will be delayed from September 30, 2002, until August 31, 2003. *Id.* It appears that DCS’s time estimate for issuance of the Final EIS may not be conservative: during the meeting, NRC Staff member Jennifer Davis, who is responsible for the EIS, said that it was more realistic to predict a Final EIS would not be ready until December of 2003.

DCS's new schedule appears to be based on delays to DCS's own timetable, and does not take into account the effect of changes in the DOE's program for implementing its policy changes. GANE believes that the schedule for opening the proposed MOX Facility will be further delayed by the need for DOE to take additional actions, including supplementation of DOE's Storage and Disposition of Weapons-Usable Fissile Materials Final Programmatic Impact Statement (1996) and the Surplus Plutonium Disposition Final Environmental Impact Statement (1999) to reflect (a) the abandonment of immobilization as the preferred alternative for surplus plutonium disposition, (b) the determination that impure plutonium stocks are amenable to MOX processing, (c) the processes required to render impure plutonium stocks suitable for MOX, and (d) the ramifications of DOE's decision to solidify liquid waste from the MOX fabrication process. Moreover, DOE must identify or design a facility for solidification of liquid waste, prepare an EIS for the facility, schedule construction, and coordinate the dates of operation of the solidification facility with the dates of operation of the MOX Facility. Finally, the changes to the MOX program underscore the need for a Memorandum of Understanding between the DOE and NRC that would coordinate DOE and NRC responsibilities for waste disposal.⁶ These actions may require more time, in addition to the 11 months predicted by DCS.

⁶ A draft MOU regarding security issues apparently exists but has not been completed. GANE has sought a copy of the MOU but NRC declined to provide a copy of the draft, which it says is held up by DOE. *see* GANE Motion to Dismiss the Proceeding (Exhibit 7, e-mail message from Michael F. Weber to Glenn Carroll, June 22, 2001), August 13, 2001.

At the February 13 meeting, DCS also announced that one of the members of the DCS consortium, Duke Engineering & Services ("Duke E&S"), is being sold to Framatome ANP, a French corporation. See Viewgraphs at 24. At the same time, Duke E&S's ownership interest in the MOX Facility is being transferred to Duke Energy, Duke E&S's original parent corporation, in order to avoid the Atomic Energy Act's prohibition against majority foreign ownership of nuclear facilities, 42 U.S.C. § 2133(d). DCS plans to revise the CAR to reflect these changes. It will not be possible to determine whether Framatome's involvement in the MOX Facility project violates the Atomic Energy Act, until the CAR is revised and the NRC Staff and parties have had a chance to review it.

III. DISCUSSION

The new information presented by DCS at its February 13 meeting with the NRC Staff shows that completion of the NRC's safety review and EIS, and the ultimate licensing of the proposed MOX Facility, are likely to be delayed by at least 11 months. As discussed above, this time estimate does not appear to take into account other factors besides DOE's own timetable, and therefore may not be conservative. Moreover, DOE must perform significant revisions to its previous EIS's for plutonium disposition, which may further delay the schedule. In addition, DOE must design, perform an EIS, and construct a facility for solidification of MOX waste in timely fashion to be available to take the high alpha liquid waste from the MOX Facility. Finally, the DOE and NRC must issue a Memorandum of Understanding establishing their respective roles in the MOX undertaking. Under the circumstances, a delay of 11 months is the very minimum that can be expected.

The current schedule for discovery, established by the Atomic Safety and Licensing Board ("ASLB") in a February 12, 2002, Memorandum and Order, provides for over ten months of discovery on the CAR and ER, starting in January 2002, and concluding November 15, 2002. It is now clear that this schedule could be postponed by at least 11 months, and still provide the parties with ample time for discovery. A stay would preserve the status quo and conserve the resources of the parties while they wait for a determination from the Commission regarding the fundamental legality of the construction authorization proceeding.

IV. CONCLUSION

In consideration of the foregoing supplemental information, the Commission should grant GANE's request for a stay of this proceeding.

Respectfully submitted,



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Dated February 22, 2002
in Decatur, Georgia

⁷ This pleading was prepared with substantial assistance from GANE's legal adviser, Diane Curran.

CERTIFICATE OF SERVICE
by Georgians Against Nuclear Energy
(Docket # 70-3098, ASLBP # 01-790-01-ML)

I hereby certify that copies of GANE's Notice of Information Relevant to Stay Motion were sent to the following by e-mail with paper copies served via FedEx overnight service.

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Respectfully submitted,

A handwritten signature in cursive script that reads "Glenn Carroll". The signature is written in black ink and is positioned above a horizontal line.

Glenn Carroll
for Georgians Against Nuclear Energy

February 22, 2002 in Decatur, Georgia



DUKE COGEMA
STONE & WEBSTER

Mixed Oxide Fuel Fabrication Facility (MFFF)

**NRC Staff Briefing on
Surplus Plutonium Disposition Program Changes**

Duke Cogema Stone & Webster
13 February 2002



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STONE & WEBSTER

Agenda

- Introduction
 - Executive Summary: program changes and schedule impact
 - Changes to SPD Program
 - Processing of “alternate feedstock” (material previously slated for immobilization)
 - Waste solidification
 - Changes to ER and CAR
 - Licensing program and schedule
 - Status of outstanding CAR items
-



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Introduction

- Program changes
 - Process some materials previously slated for immobilization
 - Solidification of waste in lieu of processing through SRS waste tanks
- Changes to facility necessitates delay in completion of design, but licensing basis not significantly impacted
 - Design addition to facility to insert new AP process step
 - Remainder of facility largely unaffected
 - Minimal environmental and safety impacts anticipated



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Executive Summary

Program Changes and Schedule Impact

- Processing of some materials previously slated for immobilization
 - Total resulting quantities
 - 25.6 MT PuO₂ through Pit Disassembly and Conversion Facility
 - ~6.4 MT PuO₂ originally slated for immobilization
 - ~2 MT PuO₂ future allocation
 - Total 34 MT Pu (consistent with Russian agreement)
 - Material originally slated for immobilization includes impurities that require additional processing
- Waste processing of high- α and uranium waste streams
 - Processing & solidification at SRS facility off the MFFF site
 - In lieu of processing through SRS HLW waste tanks
 - Responsive to concerns about adding to SRS HLW waste tank volumes
- Overall net reduction in environmental impact of MFFF and connected/related activities



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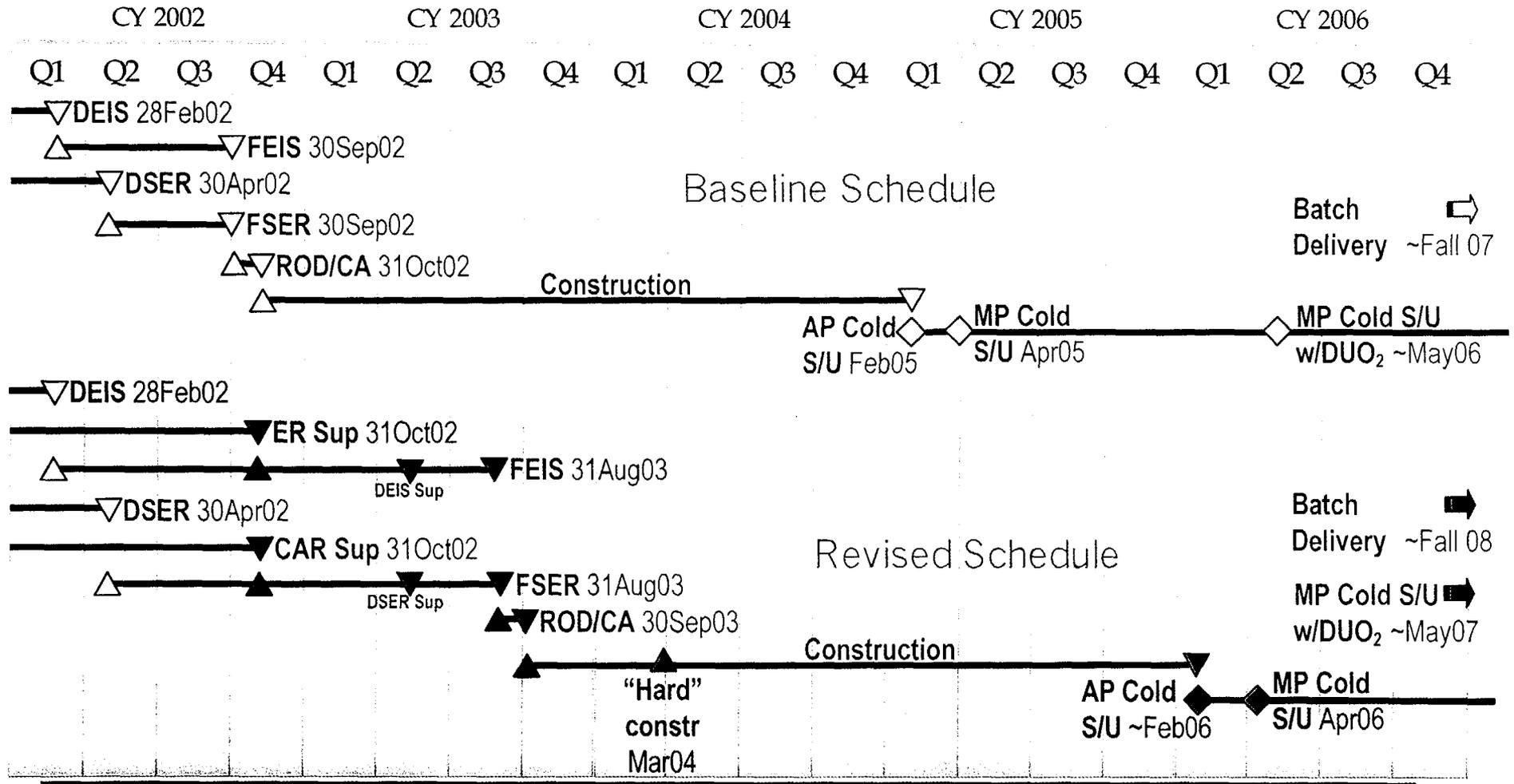
Executive Summary (continued) Program Changes

- Summary of scope of proposed changes for MOX facility
 - Decanning changes to accommodate different can configurations
 - Additional electrolyzer and ball mill
 - Additions to aqueous polishing (AP) to remove chlorides and other salts
 - <10% change in overall building footprint to accommodate AP change
- Licensing impact
 - Supplement to Environmental Report
 - Description of additional equipment and environmental impact of “alternate feedstock” changes discussed above
 - Revised environmental impact of waste disposition
 - Supplement to Construction Authorization Request
 - Design bases and description of equipment associated with “alternate feedstock” changes discussed above



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Executive Summary (continued) Preliminary Schedule Evaluation





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Changes to Surplus Plutonium Disposition Program



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“Alternate Feedstock” General Material Characteristics

- Material will be unclassified when received at MFFF
- Feed material will be PuO₂ provided in DOE-STD-3013 containers
- Pu isotopics in same range as material described in existing design (i.e., Pu-240 < 9%)
- Weapons grade Pu isotopics and uranium content well characterized prior to delivery and consistent with PDCF specs
- Precise impurity characterization may not be available



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“Alternate Feedstock” Impurity Characteristics

- Current baseline impurities
 - Characterized by americium, gallium, uranium (“PDCF spec”)
- Alternate Feed Type 1: similar to current baseline PDCF feed
- Alternate Feed Type 2 : feed with salts, without chlorides
 - Main impurities : aluminum, calcium, chromium, copper, iron, tantalum, magnesium, silver, manganese, potassium, silicon
- Alternate Feed Type 3 : feed with salts and chlorides (~half of material)



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“Alternate Feedstock” Process and Equipment Modifications

**Powder Pretreatment (MP)
Purification (AP)**



Changes to MP Powder Pretreatment

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- Footprint not changed
 - Receiving/storage of 3013 containers unchanged
 - Powder pretreatment process (all powders)
 - Ball milling to reduce grain size (2 units)
 - Powder density measurement unit
 - Chemical characterization (quantify impurities)
 - Pretreatment buffer storage
 - Store reusable cans before and after milling, waiting for laboratory results
 - 2-week capacity with similar design to buffer storage between AP and MP
 - Addition of re-canning function (packaging analyzed PuO₂ in 3013 containers)
 - Additional laboratory equipment
 - Sampling glove box after ball milling step
 - Gloveboxes for sample dissolution and preparation
 - Gloveboxes for chlorine and fluorine analysis and specific preparation
 - 2 ion coupled plasma mass spectroscopy units and 1 ion coupled plasma atomic emission spectroscopy unit
-



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Changes to AP Purification Process (continued)

- Type 1 and 2 Feedstock
 - Process and equipment: no change vs normal feedstock (PDCF feedstock)
 - Impact on the process design: limited
- Type 3 Feedstock - Salt & Chloride
- Process changes to remove chloride
 - For material specification purposes and to limit corrosion
 - Feedstock solution electrolyzed in two steps (dissolution after Cl removal)
 - Filter off-gas, then wash to convert Chlorine into NaCl
 - Process developed/implemented in La Hague UCD plant to treat scrap material with chloride content and extract Pu
- Additional equipment
 - Two dissolution lines (same type equipment as existing processes)
 - One feeding hopper and one electrolyzer each
 - Two filters each with appropriate slab tanks
 - Washing column with soda and chloride salts liquid waste storage tanks



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Changes to AP Purification Process (continued)

- Changes to AP area
 - Footprint increase in the AP area
 - Reconfiguration of interior spaces and equipment
 - HVAC changes to accommodate room changes and new gloveboxes
- Changes to waste characteristics
 - Additional salts
 - Increase in raffinates volume (by a factor of ~1.5) resulting in increase of ~10% of overall volume of high- α liquid waste
 - Increase of ~10% in low-level liquid waste volume (rinsing)
 - Increase in silver content due to the impurity impact on the efficiency of the silver recovery unit



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Licensing Impacts





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Changes to Environmental Report

- Revise to address “Alternate Feedstock”
 - No immobilization
 - MFFF will receive ~6 MT feed material not matching original PDCF specification
 - MFFF expects to process 34 MT PuO₂
- Revise to reflect changes in SRS waste processing
 - High- α waste and stripped uranium waste will be solidified by SRS instead of transfer to F-Area Tank Farm
 - New waste processing building (not on MOX site but within F-Area) for MOX and PDCF wastes
- Also revise to incorporate ER RAI responses and clarifications



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Changes to ER: “Alternate Feedstock”

- Describe processing changes
 - Powder processing equipment to prepare the feedstock for chemical processing
 - Minor chemical processing changes to add chloride removal
 - Storage for resulting waste (mainly chlorides, other salts)
 - Building footprint increases <10% to accommodate additional equipment
- Effluents
 - Airborne effluents will contain trace amounts of chlorine, well below regulatory levels
 - Clean condensate and storm water effluents remain unchanged



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Changes to ER “Alternate Feedstock” (continued)

- Continue to transfer waste to SRS for processing and disposition
 - Liquid waste volumes anticipated to increase ~10% overall
 - Solid waste volumes should not change
- Impacts of changes expected to be bounded by existing analyses for public and worker dose calculations for normal and accident analyses



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Changes to ER Waste Processing

- Change to SRS waste processing strategy for high- α and uranium waste streams from MFFF
 - Processing and solidification at SRS facility off the MFFF site
 - Replaces SRS F-Area Outside Facility and use of HLW waste tanks
 - Responsive to concerns about adding to SRS HLW waste tank volumes
- Conceptual design underway (by DOE)
 - Receive waste from MFFF and PDCF
 - MFFF piping of waste streams largely unaffected (no substantive impact on CAR)
- MFFF and PDCF waste stream characteristics
 - MFFF raffinate and PDCF sources - TRU waste with proven disposition path
 - Stripped uranium more appropriately disposed as LLW



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Changes to ER Waste Processing (continued)

- Environmental impacts
 - Construction of waste processing building
 - Normal and accident releases (airborne and liquid effluents)
 - Transportation impacts for waste
 - Disposal impacts



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ER Conclusion

Changes to ER from “alternate feedstock” and waste solidification result in insignificant:

- changes in the types and amounts of any effluents that may be released offsite
- increase in individual or cumulative occupational radiation exposure
- increase in the potential for or consequences from radiological accidents
- MFFF construction impact and minimal impact from construction of new waste processing building



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Changes to CAR and Safety Assessment

- Revise to address “Alternate Feedstock”
 - Update facility, processes, system descriptions:
 - MOX Receiving and Decanning
 - AP Dissolution and other small changes
 - Facility layout
 - Waste stream(s)
 - Confirm safety analyses are bounding for new processes
- Only minor revision to overall description anticipated for waste changes
- Also revise to incorporate CAR RAI responses and clarifications



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Changes to CAR and Safety Assessment (continued)

- Anticipated impacts on existing operations
 - CAR safety assessment made conservative bounding assumptions
 - Consequences of changes expected to be bounded by existing analyses
 - Existing events identified in the CAR expected to be representative of any new events identified as a result of new process
- New PSSCs (if any) will be identified



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Outstanding CAR Items

Institutional Changes



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Status of Outstanding Clarifications

- Nuclear criticality safety
- HEPA filters
- TBP and HAN/Hydrazine
- Likelihood requirements



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Corporate Change

- Unrelated to program changes
- Duke Engineering & Services (DE&S) being sold by Duke Energy to Framatome ANP
- DE&S ownership/interest in DCS transfer to Duke Energy along with key personnel
- DCS still applicant/licensee
- No changes in project staffing
- Details will be captured in revision to CAR

