

June 14, 2011

MEMORANDUM TO: Chairman Jaczko  
Commissioner Svinicki  
Commissioner Apostolakis  
Commissioner Magwood  
Commissioner Ostendorff

FROM: Catherine Haney, Director */RA/*  
Office of Nuclear Material Safety and Safeguards

SUBJECT: ANNUAL UPDATE ON REPROCESSING ACTIVITIES

This memorandum provides an update of the activities undertaken by the staff of the U.S. Nuclear Regulatory Commission (NRC) related to the development of a regulatory framework for licensing commercial reprocessing facilities.

By way of background, in the staff requirements memorandum (SRM) dated June 27, 2007, to SECY-07-0081, "Regulatory Options for Licensing Facilities Associated with Global Nuclear Energy Partnership," dated May 15, 2007, the Commission directed the staff to provide the regulatory gap analysis and the technical basis document with recommended options on a path forward and an associated rulemaking plan, if appropriate. In 2008, the Director of the Office of Federal and State Materials, using the authority delegated to him by SRM to SECY-07-0134, "Evaluation of the Overall Effectiveness of the Rulemaking Process Improvement Implementation Plan," waived the requirement to develop a rulemaking plan because the regulatory gap analysis and technical basis documents are expected to provide much of the same information that would normally be included in a rulemaking plan.

On March 24, 2011, General Electric-Hitachi (GEH) sent a letter of interest (ML11125A069) to NRC urging continued progress toward, and a definitive date for, a final rule on the licensing of a recycling facility. Similarly, AREVA sent a letter (ML11132A015), dated April 27, 2011, to the Commission, strongly urging the NRC to continue its activities to prepare a modern licensing basis for future recycling facilities.

Since the last update, the staff concentrated on four interdependent areas of activity that are essential for the development of a regulatory framework for licensing commercial reprocessing/recycling facilities. These areas are stakeholder outreach, international knowledge sharing, site visits and seminars, and the development of a draft regulatory basis document and a draft environmental topical report (ETR).

CONTACT: Raj Mohan Iyengar, NMSS/HLWRS  
(301) 492-3174

The staff conducted two public workshops and received stakeholder input on the 19 (“high” and “moderate” priority) regulatory gaps identified in SECY-09-0082, “Update on Reprocessing Regulatory Framework - Summary of Gap Analysis,” dated May 28, 2009. The public workshops occurred on September 8, 2010, in Rockville, MD, and on October 19, 2010, in Albuquerque, NM. The staff will consider the stakeholders’ feedback in the development of the regulatory framework. Key insights gained from the two workshops are summarized below.

- 1) Although not all stakeholders were supportive of developing reprocessing capabilities in this country, there was a generally accepted view that a well-grounded and stable reprocessing/recycling regulatory framework is necessary to assess the impacts on public health and safety.
- 2) Stakeholders from industry voiced strong and repeated requests for a stable regulatory framework that can support an economically viable design of reprocessing facilities.
- 3) Many stakeholders expressed the desire for robust “technology-neutral” and “risk-informed and performance-based” regulation. However, certain groups did express concern that a lack of prescriptive requirements could lead to an inadequate safety basis.
- 4) Some groups also expressed concern that since no reprocessing facility exists in the U.S.A., it may not be possible to implement a “risk-informed” regulations for new technologies that have unknown risks or lack applicable data.
- 5) Many stakeholders supported the development of a new regulation (Part 7x), rather than a revision of 10 CFR Parts 50 and 70.

The staff intends to conduct a two-day public meeting in June 2011 to further enhance the development of the regulatory framework and to continue the pursuit of an open and transparent regulatory process.

Staff continued to engage international counterparts who have operating experience with reprocessing facilities. Those countries included France, Japan, and the United Kingdom. The staff engaged these counterparts as part of the Interagency Agreement DE-A101-07-NE24496/005, established on September 12, 2007, between the U.S. Department of Energy (DOE) and the NRC. The visits provided the staff with regulatory and technical insights concerning environmental protection and safety/risk assessment issues. The visits also provided insights and information to help develop the regulatory basis document and the environmental topical report.

The staff participated in five technical seminars provided by DOE. The topics of these seminars were DOE’s Fuel Cycle Research and Development (R&D) program, Environmental Protection Agency’s (EPA’s) application of 40 CFR Part 190 to reprocessing facilities, Transmutation Technology, and GEH’s spent nuclear fuel electrochemical separations process, and AREVA’s aqueous separation process. As a result, the staff gained valuable technical insights to better inform the regulatory framework development. Specifically, the information gained from the EPA seminar helped in the staff’s ongoing efforts to resolve the gaps on effluent controls and monitoring. The seminar on GEH electrochemical technology improved the staff’s understanding of the design, safety and safeguards aspects of non-aqueous facilities.

Over the last year, the staff has been working to develop a draft ETR and a draft regulatory basis document. The ETR will be used to develop the Environmental Impact Statement should the Commission move forward with a reprocessing rulemaking. A draft regulatory basis document is being developed using insights gained from literature review, public outreach, site visits, and past NRC experience and will be completed in September 2011. As part of this effort, the staff is developing approaches for resolving the 19 regulatory gaps that were identified in SECY-09-0082. In addition, the staff has identified additional technical areas and regulatory aspects that may need to be addressed at a later date. One of the technical areas involves the development of safety/risk criteria for potential accidents at a reprocessing facility. Other areas needing further development during the rulemaking process include identification of criticality limits for mixtures of fissile isotopes and specification of design and manufacturing equipment requirements. The staff has also identified regulatory guides that require revision or development. The staff envisions developing a standard review plan, regulatory guides, and other technical documents needed to support an effective and efficient regulatory process. These areas and documents will be further developed in upcoming years, should a decision be made to move forward with rulemaking.

During the remainder of this fiscal year, the staff will develop a Commission Paper that will provide the next steps in a reprocessing rulemaking, including resource estimates. The draft regulatory basis document will be provided with this Paper. The regulatory basis document will outline the resolution of several complex technical issues, including the resolution of the 19 regulatory gaps, along with the staff's proposed approaches, rationale, and alternative approaches.

cc: SECY  
OGC  
OCA  
OPA  
CFO

Over the last year, the staff has been working to develop a draft ETR and a draft regulatory basis document. The ETR will be used to develop the Environmental Impact Statement should the Commission move forward with a reprocessing rulemaking. A draft regulatory basis document is being developed using insights gained from literature review, public outreach, site visits, and past NRC experience and will be completed in September 2011. As part of this effort, the staff is developing approaches for resolving the 19 regulatory gaps that were identified in SECY-09-0082. In addition, the staff has identified additional technical areas and regulatory aspects that may need to be addressed at a later date. One of the technical areas involves the development of safety/risk criteria for potential accidents at a reprocessing facility. Other areas needing further development during the rulemaking process include identification of criticality limits for mixtures of fissile isotopes and specification of design and manufacturing equipment requirements. The staff has also identified regulatory guides that require revision or development. The staff envisions developing a standard review plan, regulatory guides, and other technical documents needed to support an effective and efficient regulatory process. These areas and documents will be further developed in upcoming years, should a decision be made to move forward with rulemaking.

During the remainder of this fiscal year, the staff will develop a Commission Paper that will provide the next steps in a reprocessing rulemaking, including resource estimates. The draft regulatory basis document will be provided with this Paper. The regulatory basis document will outline the resolution of several complex technical issues, including the resolution of the 19 regulatory gaps, along with the staff's proposed approaches, rationale, and alternative approaches.

cc: SECY  
OGC  
OCA  
OPA  
CFO

**DISTRIBUTION:**

M. Bailey, NMSS	W. Burton, NRO	R. Caldwell, NSIR	L. Camper, FSME	D. Coe, RES
J. Danna, FSME	D. Diaz-Toro, FSME	D. Dorman, NMSS	A. Frazier, OEDO	C. Hair, OGC
B. Hill, NMSS	T. Hiltz, NMSS	J. Kinneman, NMSS	M. Layton, NSIR	D. Lenehan, OGC
K. McConnell, FSME	J. McHale, NRR	D. McIntyre, OPA	V. Ordaz, NMSS	W. Ott, RES
RidsEDOMailCenter	RidsNMSSOD	S. Rubin, RES	N. StAmour, OGC	G. Suber, FSME
J. Sulima, NMSS	D. Weaver, NMSS	M. Weber, OEDO	J. Weil, OCA	

**WITS 200600265/SECY2010-0364**

**ADAMS ACCESSION NUMBER: ML111260666**

OFFICE	NMSS/ HLWRS	NMSS/ HLWRS	TechEd	NMSS/ HLWRS	OGC	NMSS/ HLWRS	FSME	FSME	NMSS
NAME	Rlyengar	T. Ahn for JGuttman	QTE/CHsu via e-mail	JDavis	MYoung via e-mail	AMohseni	APersinko	JPiccone	C.Haney
DATE	05/05/11	05/06/11	05/06/11	05/06/11	05/06/11	05/06/11	05/11/11	05/12/11	06/14/11

**OFFICIAL RECORD COPY**