POLICY ISSUE
NOTATION VOTE

May 15, 2007 SECY-07-0081

FOR: The Commissioners

FROM: Luis A. Reyes
Executive Director for Operations

SUBJECT: REGULATORY OPTIONS FOR LICENSING FACILITIES ASSOCIATED WITH THE GLOBAL NUCLEAR ENERGY PARTNERSHIP

PURPOSE:

To provide regulatory options for developing the U.S. Nuclear Regulatory Commission (NRC) conceptual framework for licensing major Global Nuclear Energy Partnership (GNEP) facilities and associated Special Nuclear Material (SNM). The staff seeks approval of its recommendation for a conceptual licensing process for GNEP that focuses on developing technical bases documents to support rulemaking in the near term and developing a single GNEP regulation in the long term. The staff is also updating the Commission on recent activities that impact the staff's GNEP activities.

SUMMARY:

A major element of GNEP is the development and eventual commercial deployment of advanced nuclear fuel recycling technologies. The U.S. Department of Energy (DOE) has proposed three types of interrelated project-specific GNEP facilities to close the fuel cycle: a nuclear fuel recycling center or Consolidated Fuel Treatment Center (CFTC); an advanced recycling reactor or Advanced Burner Reactor (ABR); and an advanced fuel cycle research facility, also referred to as the Advanced Fuel Cycle Facility (AFCF).

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DOE shifted its approach to GNEP in August 2006 by moving away from a small-scale demonstration and turning, instead, to a large-scale industry-focused approach. An industry-focused approach consists of DOE partnering with industry to demonstrate GNEP technologies, on a commercial-scale, in facilities that meet NRC requirements.

This paper presents four options for developing the NRC's regulatory framework for the GNEP program. A summary table of the options is found in the discussion section of this paper. A detailed description of each option with the pros and cons are found in Enclosure 1. More details on GNEP facilities and the general nature of the associated materials and wastes can be found in Enclosure 2. Resources are presented in Enclosure 3. A list of acronyms and initialisms is presented in Enclosure 4.

The staff recommends first developing the technical basis documentation to support rulemaking for 10 CFR Part 70 and conducting a gap analysis on 10 CFR Part 50 with respect to licensing a reprocessing facility and an advanced recycling reactor. Next, when uncertainties due to budget, preferred technologies, and commercialization are better understood, staff would then begin rulemaking to develop one integrated GNEP regulation.

BACKGROUND:

In SECY-06-0066, "Regulatory and Resource Implications of a Department of Energy Spent Nuclear Fuel Recycling Program," the staff described the processes that would likely be involved in DOE's GNEP program and the potential regulatory and resource implications for NRC, assuming the eventual licensing of spent fuel recycling facilities and advanced recycling reactors. At that time, DOE's plans involved engineering and operating demonstration-scale testing facilities.

Since then, DOE has announced plans to accelerate GNEP and invite earlier commercial entity participation. The emphasis is now on providing to industry only general parameters for the CFTC and the ABR so as not to constrain industry's design flexibility. In August 2006, DOE solicited industry expressions of interest (EOIs), to design and build facilities utilizing advanced technologies that are either proven or nearly mature, either domestically or internationally (i.e., spent fuel reprocessing and advanced fast burner reactors). DOE is still evaluating the responses. The NRC staff understands that: 1) DOE hopes to partner with industry to build industry-led, commercial-scale fuel reprocessing/fuel fabrication plants (referred to as CFTCs) and fast burner reactors (referred to as ABRs); 2) DOE plans to engage industry again before the end of fiscal year (FY) 2007; 3) DOE plans to retain the lead on research and development in the less proven technical areas of the GNEP program at the AFCF (e.g., (a) recycling technologies; (b) remote fuel fabrication; (c) fast reactor fuel reprocessing; and (d) studying fission product waste forms); and 4) a DOE Secretarial decision on the scope of GNEP for the immediate future (commercial versus research and development) is to be made in June 2008.

DOE's current schedule indicates that they believe that at least one CFTC commercial facility and one ABR commercial facility will be operational as soon as 2020. In DOE's GNEP Strategic Plan, published in January 2007, DOE states that it is reasonable to expect in a decade or more that design, approval, and construction of GNEP "base technology" facilities would take place. Therefore, assuming that construction and startup can be completed in

a 6- to 7-year timeframe, and that NRC staff can review an application and complete the hearing process in a 3-year timeframe, the staff estimates that the private entity(ies) would need to submit an application as soon as FY 2010 to meet DOE's schedule.

DISCUSSION:

The following discussion covers two main topics: (1) the staff's progress in addressing certain commitments in SRM-SECY-06-0066; and (2) the options to develop a regulatory framework for commercial GNEP facilities and associated SNM.

SRM Activities

The Commission directed the staff to ensure that NRC resource commitments are appropriately tied to DOE's GNEP program decisions. The shift in DOE's GNEP strategy impacts the NRC's decisions regarding whether rulemaking is warranted, and if so, when it should be developed. It also impacts NRC's decisions regarding the staff's path forward with regard to establishing the correct scope of a reimbursable agreement with DOE for NRC non-regulatory GNEP activities and the need to prepare draft legislation, for Commission approval, that would give NRC licensing authority for demonstration-scale DOE reprocessing, fuel fabrication, vitrification, and interim waste storage facilities.

The staff is working on a reimbursable agreement to recoup costs associated with non-regulatory activities, such as training, workshops, developing knowledge of GNEP technologies and appropriate activities associated with the AFCF, which would not be regulated by NRC. However, the majority of the resources associated with the accelerated GNEP program are needed to develop the regulatory infrastructure for the CFTC and ABR, for which costs cannot be recouped from DOE[1]. Therefore, the staff will continue its work related to developing a reimbursable agreement and memorandum of understanding (MOU) with DOE, but these agreements will only address the AFCF-related activities and overall technology familiarization for all GNEP facilities, processes, and materials, unless otherwise directed by the Commission. The staff expects prompt establishment of the reimbursable agreement and MOU. Efforts have been delayed, in part, because FY 2007 funds could not be allotted under the continuing resolution, but the staff is poised to move promptly once an agreement is signed.

Legislation is not required, if DOE is successful in partnering with industry for the CFTC and the ABR, as NRC has authority to license commercially operated facilities under Section 103 of the Atomic Energy Act. Due to the current DOE efforts in preparing for an industry-focused GNEP program, at this point in time, the staff does not plan to proceed with drafting such legislation.

Specific Options for CFTC/ABR

The staff has developed four options, for Commission consideration, regarding how the CFTC and the ABR could be licensed. The options are presented below. A detailed discussion of each option, followed by pros and cons, is presented in Enclosure 1.

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[1] NRC cannot be reimbursed for activities that the agency is required, by statute, to perform (i.e., preparation for licensing fuel cycle facilities intended for commercial use).

Table: Regulatory Options for GNEP

Option	CFTC	ABR	Comments
1.	Revise Part 70 to include spent fuel reprocessing; consider additional safety analysis requirements for a reprocessing facility; and revise Part 50 as appropriate.	Use existing Part 50, with exemptions, as necessary, or a suitably modified and adapted Part 52 process, to address sodium-cooled fast reactor technology.	Rulemaking for the CFTC. Potential rulemaking for the ABR.
2.	Same as Option 1.	Create a new regulation specific to advanced recycling reactors (Part 5X).	Two rulemakings.
3.	Develop a specific GNEP regulation applicable to both fuel reprocessing and recycle reactors (10 CFR Part XX).		One rulemaking for commercial GNEP facilities.
4.	(1) Issue a Federal Register Notice (FRN) in FY 2007 soliciting public and stakeholder input on desirable attributes of the regulatory framework for GNEP, as well as comments on whether there are any major substantive technical issues relating to an accelerated schedule that may affect development of GNEP regulations and/or how such facilities should be regulated. (2) After consideration of public and stakeholder comments, decide on either issuing an Order or directing a rulemaking to establish specific requirements. (3) Concurrently, develop a licensing-basis document for fuel separations/fuel fabrication/advanced recycling reactor facilities to be used by the Commission in developing an Order or as the technical basis for the rulemaking process, as appropriate.		Potentially one rulemaking.

COMMITMENT:

The staff will update resource estimates contained in this paper as the information becomes available. Also, the staff will keep the Commission informed about significant developments in DOE's GNEP activities and associated impacts on NRC oversight.

RECOMMENDATIONS:

The staff recommends the Commission proceed with Option 1, specifically developing the regulatory framework by preparing the technical basis documentation to support rulemaking for Part 70 and the potential rulemaking for the ABR. Also, the staff would explore whether Part 52 could be suitably modified to address sodium-cooled fast reactor technology. This approach takes into account the DOE GNEP programmatic uncertainties related to selection and commercialization of new technologies. Based on DOE's responses during its August 2006 briefing to industry on GNEP and subsequent discussions with DOE, the staff estimates that a license application for a GNEP facility might be received by NRC as soon as 2010. In addition, licensee presentations at the March 2007 Regulatory Information Conference indicated amendment requests could be submitted as early as 2007 for demonstration and pilot facilities. Nevertheless, the uncertainties in budget and commercialization/maturity of the industry-focused approach, diminishes the staff's confidence in this estimate. Therefore, the staff recommends a phased-approach to developing the regulatory infrastructure for GNEP. In Phase I, staff would focus on preparing technical bases documents for the CFTC and in Phase II, staff would focus on both the CFTC, see Option 1 in the above Table, and the ABR.

The staff does not expect DOE to select technologies or make a decision about whether it is ready to partner with industry to commercialize these facilities until June 2008. Until this date, efficiencies can be gained from developing the technical basis for rulemaking for the CFTC and starting the preliminary work that could be used in the future for ABR rulemaking. The staff believes that the current production facility regulation (Part 50) is not viable for GNEP, particularly the CFTC. This is based on the unique technical requirements needed for the new technology and the unique issues specific to the interrelationship among GNEP closed fuel cycle technologies/facilities. In Phase I, the staff would conduct a gap analysis on Part 50 to identify what changes in regulatory requirements would be necessary to license a reprocessing facility and advanced recycling reactor.

Next, in Phase II, provided there are adequate Congressional appropriations for GNEP activities and DOE's industry-focused approach matures over the next year (June 2008), the staff would then shift from Option 1 to Option 3 and develop a GNEP regulation covering GNEP facilities and associated SNM. With regulatory gap analyses for Part 50 underway or completed, and Part 70 technical basis for rulemaking completed, this approach would then allow the staff to evaluate efficiently and effectively whether there are unique programmatic or technical interrelationships among all closed fuel cycle technologies at a time where there would be more certainty about what technologies will be used, whether it can be commercialized, and when. In addition, this approach would be more efficient and less burdensome with regards to making conforming changes to existing regulations.

In light of budget, technological, and commercialization uncertainties, the staff believes that a measured regulatory approach to GNEP now will increase regulatory clarity, understanding of licensing requirements and expectations, and regulatory reliability for future applicants.

RESOURCES:

If adopted and implemented as planned, GNEP will be a long-lived project. Only FY 2007 - 2009 resources are addressed in this paper. Enclosure 3 contains four tables which reflect GNEP proposed resources. Table 1 reflects immediate proposed resource needs to implement the staff's recommendation, none of which have been yet approved for GNEP. Table 2 reflects the current status of budget progress, as related for GNEP.

The resources originally proposed by the NRC staff to support GNEP in the FY 2008 budget process were eliminated during the Office of Management and Budget passback, whereas the FY 2008 President's Budget includes over $400 million for DOE support of GNEP. Without resources in FY 2008 obtained through supplemental appropriations or some other means, the staff would not be able to provide a proposed regulatory infrastructure to DOE and industry in time to support the Secretary of Energy's decision in June 2008 and would not be ready to review a license application in FY 2010. Without NRC progress in establishing the proposed changes to the applicable regulations and accompanying guidance documents it would be difficult for DOE to make programmatic decisions about GNEP. Furthermore, it will be difficult for potential applicants to make informed decisions concerning deployment of GNEP technologies without a stable and reliable regulatory framework in place.

Table 3 reflects the proposed resources, by office, that are needed now in order to prepare for rulemaking should the Commission agree that rulemaking should start in FY 2009. Table 4 reflects the projected FY 2009 resource needs, by office, for the start of rulemaking. Several offices have staff available and ready to implement the staff's GNEP recommendation.

COORDINATION:

The Office of the General Counsel has no legal objection concerning this paper. The Office of the Chief Financial Officer has reviewed this paper for resource implications and has no objections.

/RA/

Luis A. Reyes
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Enclosures:
1. Detailed Discussion of Regulatory Development Options
2. Additional Information on GNEP Facilities
3. Resources
4. Acronyms/Initialisms List

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DETAILED DISCUSSION OF REGULATORY DEVELOPMENT OPTIONS FOR NRC REGULATION OF THE GLOBAL NUCLEAR ENERGY PARTNERSHIP

Option 1: Consolidated Fuel Treatment Center (CFTC):

Revise Part 70 to include spent fuel reprocessing; consider additional safety analysis requirements for a reprocessing facility and revise Part 50 as appropriate.

Advanced Burner Reactor (ABR):

Use existing Part 50, with exemptions, as necessary, or a suitably modified and adapted Part 52 process, to address sodium-cooled fast reactor (SFR) technology.

CFTC

This option for developing the regulatory infrastructure for a reprocessing facility like the CFTC involves revising Part 70 to authorize the Commission to issue one combined license to construct and operate a reprocessing facility and to possess, use and reprocess the requisite radioactive materials. Part 70 was revised, in September 2000, to add Subpart H, "Additional Requirements for Certain Licensees Authorized to Possess a Critical Mass of Special Nuclear Material." Subpart H includes requirements for an integrated safety analysis (ISA), which evaluates hazards and their interrelationships, which will be important for the types and quantities of organic reagents and materials that will likely be used in the CFTC. The ISAs allow flexibility in that complex risk significant processes require more rigorous and comprehensive safety attributes than that required for processes that are less complex and risk significant. In principle, if the facility has processes with high complexity, uncertain phenomenology, or potentially high risk, then the applicant should choose more rigorous methods of analysis than is typical for lower risk facilities, to identify accident sequences, evaluate reliability and availability of safety controls, and assess phenomena and consequences.

In this option, the staff would evaluate whether, and what types of, safety analyses for the CFTC are appropriate and necessary. Based on discussions with the U.S. Department of Energy (DOE), the staff expects that the CFTC will have significantly greater quantities of plutonium, other transuranic (TRU), and fission products present at the facility as compared to current facilities where Part 70 licensed material is processed into nuclear fuel. Considering both soluble and insoluble forms of dispersible plutonium and other materials that are highly radioactive, the magnitude of potential exposures and release from potential accident sequences could be significantly higher at the CFTC than at other facilities where Part 70 licensed materials are currently being used. Therefore, enhanced risk assessment and management may be appropriate for CFTC fuel recycle plants, through revised ISA requirements that could approach or even be equivalent to, a Probabilistic Risk Assessment (PRA). If Part 70 were modified to incorporate reprocessing (both for materials reprocessing and CFTC facility construction and operation), then Part 50[1] should be revised as appropriate to remove its applicability to reprocessing facilities.

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[1] Currently, Part 50 includes Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants, and Appendix F, "Policy Relating to the Siting of Fuel Reprocessing Plants and Related Waste Management Facilities."

It might be possible to place the majority of the changes to Part 70 in a separate Subpart(s). Each section of the existing Part 70 would likely fall into one of two categories. The first type would be sections which require no modifications, such as § 70.22 on general information on the contents of applications. The second type would require modification to incorporate specific features of reprocessing and irradiated material handling facilities; an example would be additions to the baseline design criteria to address shielding and other applicable requirements for reprocessing from the Part 50 appendices. The staff has already begun to perform a review of Parts 50 and 70 to determine what sections would need to be revised to take this approach.

Rulemaking with significant revisions to Part 70 would likely take two years. Consequently, technical basis development to support rulemaking on the revisions to Part 70 would need to begin in 2007. In addition, a new standard review plan (SRP) may be needed to assist the staff in applying the new portions of the revised Part 70 containing reprocessing and irradiated material handling requirements. Such an SRP could be modeled after the Mixed-Oxide SRP (NUREG-1718). Ideally, the re-issued rule would provide regulatory flexibility and could include an option for design certification modeled after some variant of Part 52.

ABR

NRC could license an ABR (most likely a sodium-cooled fast reactor) using either Part 50, with exemptions, as necessary, or a suitably modified and adapted Part 52 process. In the past, when NRC reviewed or licensed non-light water reactor (non-LWR) designs (e.g., Clinch River Breeder Reactor), it was necessary for the staff to determine the applicability of specific Part 50 requirements to these designs and the need for exemptions and/or additional requirements to address the unique aspects of these designs. These determinations were made on a case-by-case basis and were implemented by exemptions and/or license conditions, to address those areas where the current regulations did not apply. This approach would be consistent with the Next Generation Nuclear Plant (NGNP) process that is being developed currently. Efficiencies could be gained in the future from lessons learned before embarking on rulemaking. However, it would be more efficient and effective to develop additional licensing criteria for a sodium-cooled fast reactor to address the unique characteristics of the design prior to receipt of a license application. Also, if a suitable modified Part 52 process is recommended by the staff after more is known about the ABR and after a Part 50 gap analysis is completed then a rulemaking would be required if the Commission approved the modified approach to Part 52.

Pros and Cons for Option 1

Pros -

1. Starting the rulemaking process for the CFTC now is consistent with DOE's process and plans for the CFTC. DOE is developing conceptual engineering alternative studies for fuel separations that are expected to be completed by June 2008. Staff estimates that rulemaking for revising Part 70 to include reprocessing or rulemaking for the creation of a GNEP regulation will take approximately 2 years.

2. This option is more efficient than the other options. Due to budget and commercialization uncertainties in the GNEP program, the need to aggressively

launch into a rulemaking to develop a new Part in NRC regulations for both the CFTC and the ABR may not be warranted at this time.

3. Evaluating the adequacy of the current Part 70 Integrated Safety Assessment (ISA) requirements with regard to the CFTC could lead to a greater understanding of the risk inherent in the hazards present from hazardous chemicals and highly radioactive irradiated materials potentially used in GNEP fuel separations and fuel fabrication processes.

4. This approach will avoid the need for many exemptions for CFTC licensing because it will not focus GNEP reprocessing on Part 50.

5. Although, Part 70, as it stands now, also does not address reprocessing, using Part 70 as a framework for regulating the CFTC is more compatible with material and fuel requirements and issues as opposed to Part 50 requirements.

6. For the ABR, the staff would use the work already started, as applicable, on ANPR for an alternative to Part 50, which is intended to encompass sodium-cooled fast reactors (SFRs) and High Temperature Gas-cooled Reactor (HTGR) technologies. This would promote stability and predictability in licensing SFRs.

7. With regard to the ABR, licensing a non-light-water reactor (non-LWR) using the existing regulations before developing new regulations is consistent with several industry comments provided to NRC regarding the advanced notice of proposed rulemaking (ANPR) for non-LWRs. Thus far, industry generally supports the approaches to risk-inform and performance-base requirements for nuclear power reactors, but there are concerns that they may require considerable time to resolve, especially regarding advanced reactors. The Nuclear Energy Institute (NEI) believes it is premature to write a new rule, such as a new advanced reactor regulation that is being explored through the ANPR for an alternative to Part 50, until more experience is available in the licensing of new reactors, especially new non-LWRs. It would be preferable to NEI to first gain experience with a design certification of new non-LWRs under Part 52. See comment letter from Adrian P. Heymer, NEI (Comment #4) under http://ruleforum.llnl.gov, Approaches to Risk Inform and Performance-Base Requirements for Nuclear Power Reactors (RIN 3150-AH81), as well as all other public comments received to date.

8. With regard to the ABR, this option is also consistent with the NGNP licensing strategy. HTGR stakeholders are advocating the use of the Part 50 licensing process with exemptions, as necessary for licensing the first HTGR.

Cons-

1. Because the CFTC and ABR are addressed separately, by different regulations and potentially different licensing organizations, this approach has the potential to create a situation that may overlook fuel and reactor technology interfaces that may affect reactor performance and operation (e.g., licensing a fuel type at the CFTC that may not be able to be used in the ABR).

2. Technology-specific reliability and availability data may not be available for the CFTC or ABR because it would be a first-of-a-kind facility and some systems may be passive. Under this scenario for the reprocessing facility, during the development of a technical basis for revising Part 70, if staff determines that a Probabilistic Risk Assessment (PRA) is appropriate for reprocessing facilities, it may be challenging to conduct a PRA with limited data or to address passive systems. Likewise, lack of specific data for the ABR could result in similar difficulties.

3. Part 50 may not address the sufficient range of hazards associated with ABR. It will be necessary for the staff to determine, on a case-by-case basis, the applicability of Part 50 to these designs and the need for exemptions and/or additional requirements to address the unique aspects of these designs and the potential interrelationships between the facilities and materials in the closed fuel cycle. Licensing such a facility under Part 50 would require numerous exemptions to address those areas where the current regulations did not apply and license conditions to ensure that safety requirements for SFRs are met. Without developing additional licensing criteria to address the unique characteristics of the design, this approach would not be efficient nor effective for a standardized design, which is currently envisioned for the GNEP program.

Option 2: CFTC: Same as Option 1.

ABR: Create a new Part 5X.

CFTC

This option is the same as Option 1 for the CFTC.

ABR

The second option for regulating the ABR involves developing a new regulation, a new Part 5X, specific to sodium-cooled fast reactors. This new Part 5X would employ design certification and other appropriate processes similar to those in Part 52 and would require a PRA, based on the level of risk and potential consequences associated with potential accidents at ABRs. Because NRC guidance and review procedures for PRA for reactors are mature, based on the experience with LWR PRAs, requiring PRAs for a sodium-cooled fast flux reactor would promote stability and predictability in licensing SFRs with additional development.

One possible approach to this new regulation has already been initiated by the Commission. To address non-LWR designs, the Commission had directed the staff to explore developing a risk-informed and performance-based regulatory framework for licensing advanced reactor designs (i.e., ANPR for an alternative to Part 50[2]). The staff has not yet determined whether a new reactor regulation will be technology-neutral or if it will include technology-specific sections

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[2]"Approaches to Risk-Informed and Performance-Based Requirements for Nuclear Power Reactors," 71 Fed. Reg. 26267 (May 4, 2006) (NRC is considering developing a comprehensive set of risk-informed, performance-based, and technology neutral requirements for licensing nuclear power reactors). "

(e.g., for a High Temperature Gas-cooled Reactor and a SFR). The staff published the draft framework as a Working Draft - NUREG-1860 in December 2006. A recommendation to the Commission on how to proceed with the advanced reactor initiative is planned for May 31, 2007. If Option 2 is selected, then staff would ensure that it would be consistent with the direction by the Commission on the ANPR for an alternative to Part 50.

Pros and Cons for Option 2:

Pros -

Pros 1 through 5 for Option 1 above apply to this option.

Cons -

1. Con 1 and Con 2 for Option 1 above apply to this option.

2. Pro 7 for Option 1 above applies as a Con for this option with respect to the ABR. See http://ruleforum.llnl.gov for all public comments received to date on, Approaches to Risk Inform and Performance-Base Requirements for Nuclear Power Reactors (RIN 3150-AH81). Specifically, under this option, creating a new Part 5X, is not consistent with NEI's comments expressing an interest in initially using Part 50, with exemptions as necessary, to license a next generation reactor. NEI's opinion indicates that rulemaking should not be pursued at this time until more information is gained through experience.

3. For a new ABR regulation, there is a possibility that increased comment and controversy on portions of the entire proposed regulation that were otherwise closed or accepted by licensees (e.g., general reporting requirements in Part 50) would occur, even though those portions may not have significantly changed. This could result because of concern about new material in Part 5X, eventually resulting in further changes in Parts 50 or 52.

4. Promulgating a new Part 5X will involve more effort than amending existing Parts. It increases the size of rulemaking and requires more effort to be expended to incorporate and respond to public comments on requirements that are being carried over from existing Parts (e.g., Parts 50, 52, and 70).

5. If Part 5X rulemaking is undertaken, then the placement of technology specific and/or generic requirements in Part 5X may require subsequent modification or clarification to be consistent with the decisions that the Commission will make on the ANPR for an alternative to Part 50.

Option 3: Develop a specific GNEP regulation applicable to both fuel reprocessing and recycle reactors (10 CFR Part XX).

A third option for regulation of GNEP facilities is to create a new Part XX to 10 CFR. This new Part XX would contain regulatory requirements for both the CFTC and the ABR, thereby providing one regulation for all facilities and associated SNM involved with GNEP, addressing

both facilities for spent fuel reprocessing and fuel fabrication, and reactor facilities for fuel "burning." This option obviates the need to make extensive changes to existing regulations. A new Part XX would combine the applicable portions of reactor regulations from Part 50, fissile material processing regulations from Part 70, and a design certification and other appropriate processes either similar to those in Part 52 or a suitably modified. Additional licensing criteria (technical requirements) would be necessary to address the unique characteristics of the ABR design and to assess the design for enhanced safety in light of other recycling processes (fuel separation and fuel fabrication) and NRC's policy on advanced reactors (see 51 Fed. Reg. 24643 (July 8, 1986)). Furthermore, a standardized design for an advanced recycling reactor, such as the ABR, designed to produce recycled material to be used as a product to fabricate fuel for the ABR, will involve a close interrelationship with the fuel separation and fuel fabrication designs.

The new Part XX would also give a DOE-industry partnership the option of design certification of a smaller, design-certified module [e.g., 400-800 metric tons/yr (440-880 tons)/yr] that could be duplicated to provide the desired total capacity [e.g., 2000 to 3000 metric tons (2200-3300 tons)/yr]. Specific regulatory requirements related to spent fuel reprocessing and irradiated material handling for the CFTC and ABR could be included in the new Part.

Under a new Part XX, GNEP facilities and associated SNM would be addressed comprehensively in one regulation. Fuel and material issues affecting reactor performance and operations are expected to be at the forefront of GNEP considerations, thereby, supporting development of one integrated regulation. This integrated, stand-alone regulation would also provide regulatory flexibility for NRC to accommodate changes in DOE's design, while minimizing impacts to existing regulations and licensees. Furthermore, an integrated regulation would likely avoid a regulatory framework that may overlook fuel and reactor technology interfaces. In addition, creating a regulation specific to GNEP facilities would likely be easier for an applicant to navigate. Regardless of whether the GNEP facilities are co-located, as envisioned by DOE, such an approach would lend itself to facilitate integration of requirements for reprocessing, fuel fabrication, reactor operations, and waste management. Based upon staff analysis, this new GNEP regulation might also specifically require an integrated risk assessment for co-located facilities, thereby allowing for a more efficient and effective safety review for such facilities.

One possible way to organize the new regulation is to address programmatic requirements for the CFTC, the ABR, and associated interrelationships between the CFTC and the ABR in separate sections. Technical requirements could be located in a Subpart or Appendix to Part XX. The actual organization of the new Part XX with respect to the (1) ABR, (2) the CFTC, (3) associated SNM, (4) associated facilities [such as temporary storage for spent fuel and waste, waste vitrification, etc.], and (5) potential programmatic or technical criteria related to the unique interrelationship between the GNEP facilities and/or materials.

Pros and Cons for Option 3

Pros-

1. Whether co-located or not, GNEP facilities and associated SNM regulations would be addressed as a comprehensive unit that would probably be easier for an applicant to navigate. Such an approach could facilitate integration of licensing requirements for reprocessing, fuel fabrication, reactor plant facilities,

and optimization of waste management. This is consistent with the DOE strategy to consider giving preference to Funding Opportunity Announcement applicants if the proposed site has the potential for supporting both the CFTC and the ABR.

2. This integrated approach would likely avoid creating a situation that may overlook fuel and reactor technology interfaces.

3. Development and implementation of a new Part XX for GNEP facilities and associated SNM would not impede NRC's implementation of Parts 50 and 52, in reviewing new reactor applications.

4. A separate regulation, including requirements for additional safety analysis for the CFTC, may be desirable to avoid concerns from existing 10 CFR Part 70 facilities about changes to Part 70 impacting their facilities.

5. Development of a new regulation minimizes impacts on existing Part 70 and Part 50 licensees and licensing actions.

6. The new regulation will be a stand-alone regulation. This approach requires the least number of conforming changes to existing regulations. This approach will also provide the most flexibility for NRC to accommodate changes in the regulations with respect whether a DOE-industry partnership for only the CFTC versus the ABR will be pursued in the near term.

Cons-

1. Con 2 of Option 1 applies to this option.

2. A new Standard Review Plan will be needed for a new Part XX, including guidance for reviewing a more quantitative ISA, in certain technical areas, for the CFTC, and the PRA for the ABR.

3. Establishing a combined regulation that integrates requirements for reprocessing, fuel fabrication, and reactor plant facilities could involve greater effort than developing separate requirements for the different facilities, if the added complexity of the combined regulation offsets the efficiencies of scale associated by doing the combined rulemaking.

4. For a new regulation, there is a possibility that increased comment and controversy on portions of the entire proposed regulation that were otherwise closed or accepted by licensees (e.g., general reporting requirements in Part 50 or Part 70) would occur, even though those portions may not have significantly changed. This could be because of concern about new material in Part XX, eventually resulting in further changes in Parts 70, 50 or 52.

5. Promulgating a new Part will involve more effort than amending existing Parts. It increases the size of rulemaking and may require more effort to be expended to incorporate and respond to public comments.

Option 4: CFTC/ABR: (1) In fiscal year (FY) 2007, the Commission issues a Federal Register Notice (FRN) soliciting public and stakeholder input on desirable attributes of the regulatory framework for GNEP, as well as comments on whether there are any major substantive technical issues relating to an accelerated schedule that may affect development of GNEP regulations and/or how such facilities should be regulated; (2) After consideration of public and stakeholder comments, the Commission decides on either issuing an Order or directing a rulemaking to establish specific requirements; (3) Concurrently, the staff develops a licensing-basis document for fuel separations/fuel fabrication/advanced recycling reactor facilities to be used by the Commission in developing an Order or as the technical basis for the rulemaking process, as appropriate.

Before making a decision on whether to issue an Order or rulemaking for spent fuel reprocessing/fabrication/advanced recycling reactor facilities, the Commission could issue a FRN in FY 2007 that formally solicits public and stakeholder input on how to proceed with developing a regulatory framework for GNEP. The FRN could also solicit comment on whether there are any major substantive technical issues relating to an accelerated schedule that may affect development of the regulations and/or regulating such facilities.

Generally, the Commission does not provide the public an opportunity to comment on the possible issuance of an Order establishing licensing requirements. However, given DOE's and possibly industry's accelerated schedule, it may be too late to solicit stakeholder input and complete a rulemaking before industry submits the first application(s).

DOE is engaging industry on these topics. DOE and industry discussions about the viability of commercialization and the potential issues associated with potentially by passing engineering scale demonstration for specific new GNEP technologies are not publically available. DOE and industry have entered into confidentiality agreements associated with certain details of the responses to DOE's EOI Requests. Therefore, industry may be reluctant to provide comments to staff on the regulatory and technical framework for GNEP at this point in time. Nevertheless, there is benefit to the conceptual regulatory development process to solicit comments on any issues that may potentially impact how commercial GNEP fuel separations/fuel fabrications facilities are regulated.

With this option, the staff, concurrent with solicitation of public and stakeholder comments, would draft a licensing basis document for the CFTC/ABR. Public comments would be considered, as appropriate, in the draft licensing-basis document. The draft licensing basis document would be developed by the staff based on the "best understanding" of the technology and could be used as the basis for an Order, if the Commission decides not to proceed with rulemaking after evaluating public and stakeholder comments. Conversely, if the Commission decides to proceed with rulemaking after evaluating public and stakeholder comments, the draft licensing-basis document would be used as the technical basis in the rulemaking process.

This option recognizes the pace of DOE's selection of technology and design process. This option also allows greater flexibility to accommodate prompt and significant shifts by DOE in GNEP strategy.

Pros and Cons for Option 4:

Pros-

1. Significant time savings could be realized if the Commission decided that an Order is appropriate. Under such a situation, this option could require the least amount of time, with the bulk of the time spent on performing the review of regulations, to develop a licensing-basis document – and obtaining internal staff, committee, and Licensing Board review. For example, in a recent case, involving an enrichment facility, existing regulations provided the basis for staff's technical review of the applicant's submittals, thereby accelerating the issuance of the Notice and Commission Order.

2. By soliciting public and stakeholder comment early, may result in staff obtaining a better understanding of the potential for the commercialization of new technologies and potential health and safety and safeguards issues that may result due to an accelerated industry-focused approach.

Cons-

1. Con 2 of Option 1 applies to this option.

2. If an Order were issued, the need may arise for future Orders for amendments because conditions were not envisioned at the time of the initial Order.

3. If an Order were issued, public confidence may be undermined because of the perception that NRC is deliberately skirting the development of applicable regulations through the notice and comment rulemaking process.

4. Industry may be reluctant to provide comments to staff on GNEP at this point in time. DOE and industry discussions about the viability of commercialization and the potential issues associated with potentially by passing engineering scale demonstration for specific new GNEP technologies are not publically available. DOE and industry have entered into confidentiality agreements associated with certain details of the responses to DOE's EOI Requests.

For Options that involve rulemaking (Options 1, 2, and 3):

If the Commission decides rulemaking should be pursued for GNEP facilities and if DOE continues with its current GNEP commercial operational schedule, then the rulemaking process and the development of SRPs and regulatory guides would need to begin now (in order to process an application received in FY 2010). In general, rulemaking takes about 2 years to complete but occasionally takes longer for more complex and controversial rules. Optimally, a proposed rule would be issued at least one year before issuance of the final rule and the final rule at least six months before subsequent receipt of any license applications. The one year period between issuance of the proposed rule and the issuance of the final rule would provide industry with the opportunity to begin its design work based upon the technical requirements described in the proposed rule. Under this scenario, in order to receive quality application(s) for

the CFTC and/or the ABR, the staff estimates that it would need to begin developing a technical basis document to support any rulemaking no later than June 2007.

In addition to implementing the Commission's selected option, the staff will evaluate other regulations with respect to GNEP facilities and associated SNM, such as those that involve waste management (Part 60, 61, and 63), transportation (Part 71), material control and accounting (Part 74), facility physical protection and transportation security (Part 73), environmental protection (Part 51), and fees (Part 170 and 171) to complete the conceptual regulatory framework for GNEP by the end of September 2007, as directed by the Commission through SRM-SECY-06-0066.

ADDITIONAL INFORMATION ON GLOBAL NUCLEAR ENERGY PARTNERSHIP FACILITIES

Advanced Fuel Cycle Facility

On its GNEP website (www.gnep.energy.gov/gnepProliferationResistantRecycling.html), DOE describes the Advanced Fuel Cycle Facility (AFCF) as the third component of its integrated spent fuel recycling capability and DOE says it plans to design and direct an AFCF, as a modern state-of-the-art laboratory designed to serve fuel research needs for the next 50 years. It would use modular, flexible construction techniques with near-term priority given to the fabrication and qualification of fuels for an advanced fast reactor. The facility will test separations processes on fast reactor spent nuclear fuel and fabricate fast reactor transmutation fuel for irradiation in an ABR.

The AFCF is planned as a pilot-scale facility, with a nominal capacity of around 25 metric tons of heavy metal (MTHM) (28 tons)/yr. The facility would test processes on fast reactor Spent Nuclear Fuel (SNF) and fabricate fast reactor transmutation fuel for irradiation in an Advanced Burner Reactor (ABR). There would probably be a small amount of interim storage onsite. The AFCF would likely develop and test the uranium- extraction (UREX) process and its variants. Some portions of the Consolidated Fuel Treatment Center (CFTC) may be similar to the AFCF, perhaps at the sub-module or individual component-scale. The staff plans to visit the U.S. Department of Energy (DOE) laboratories, in fiscal year (FY) 2007, to understand the technology development, to better comprehend how it may be applied at the commercial-scale CFTC, and associated safety requirements. The staff will participate in periodic technical exchanges with DOE and the involved laboratories and will review and comment on selected DOE documents pertinent to design and operation of facilities and processes. Also, the staff will attend meetings and present progress updates to the Advisory Committee on Nuclear Waste, and submit progress reports, as directed in Staff Requirements Memorandum (SRM)-SECY-06-0066. The AFCF is not intended for commercial use, and will likely be located at an existing DOE laboratory.

NRC does not have general regulatory authority over this type of DOE facility. NRC has legal authority to license commercial facilities and only those DOE facilities that fall within the scope of section 202 of the Energy Reorganization Act of 1974.[1] Based on the staff's preliminary discussions with DOE, it is anticipated that DOE will request that NRC provide technical support, ensuring that the construction and operation of the AFCF are consistent with NRC's safety and safeguards requirements.

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[1] If the GNEP facilities are DOE controlled or DOE contractor operated facilities, then 1) the ABR may qualify under section 202(1) or (2) provided that it is "operated as part of the power generation facilities of an electric utility system, or when operated in any other manner for the purpose of demonstrating the suitability for commercial application of such a reactor" and 2) the CFTC may qualify under section 202(5) provided the facility is "under a contract with and for the account of the Department of Energy that is utilized for the express purpose of fabricating mixed plutonium-uranium oxide nuclear reactor fuel for use in a commercial nuclear reactor licensed under such Act other than any such facility that is utilized for research, development, demonstration, testing, or analysis purposes."

CFTC

Under the DOE industry-focused approach, the CFTC is to be planned as the commercial- scale version of the AFCF, with a nominal annual capacity of 2500 metric tons of heavy metal (MTHM)(2800 tons)/year (i.e., approximately equal to the annual SNF discharge rate from all existing nuclear reactors in the U.S.). In its CFTC Request for Expression of Interest (EOI), DOE only identified "... some rough parameters for considering the ultimate characteristics of a CFTC facility for GNEP." However, DOE stated that the CFTC must comply with all environmental protection laws and regulations and "...must be capable of being licensed under U.S. Nuclear Regulatory Commission (NRC) regulations applicable to demonstration operations on privately owned land regardless of where the demonstration is sited."

DOE has told industry that it would like the CFTC to be designed to perform several key functions, including: (1) separating reusable uranium and transuranic elements from spent light-water reactor (LWR) fuel, for use in fabricating fast reactor driver fuel; (2) separating LWR and fast reactor SNF into their usable components and fabricating transmutation fuel from those components; and (3) ensuring that the facility designs meet the U.S. standards for safeguards and security. Of particular note is that DOE envisions that it will plan and design, partnering with industry, a large-scale CFTC, with either auxiliary, presumably small-scale, demonstration functions to augment the CFTC, or it will build a separate transmutation fuel separations and fabrication facility, to perform further research and development on transmutation fuels technologies. This suggests multiple designs, possible design certifications, and possibly multiple license amendments.

At this time, NRC staff concludes that the CFTC is not yet clearly defined. DOE acknowledges many existing technical challenges. There are many CFTC technology challenges that may affect the success of implementing a closed fuel cycle.

The CFTC is intended to be a fuel reprocessing and fabrication facility. It is anticipated that DOE, partnered with industry, will use an aqueous (e.g., UREX+) separation technology, to separate spent light water reactor (LWR) fuel into its uranium, transuranic (TRU), and fission product components. The staff expects that pyroprocessing may be used for recycling fuel from the ABR after more DOE research and development. The recovered uranium and TRU radionuclides will be used in fabricating fast reactor driver fuel and TRU transmutation fuel.

A commercial reprocessing facility is defined as a "production facility," under the Atomic Energy Act of 1954, as amended, and could be licensed under Part 50, "Domestic Licensing of Production and Utilization Facilities." Licensing the CFTC under Part 50, however, would present a formidable challenge because 1) it would be the first reprocessing facility licensed in the past 40 years and 2) essentially all the technical standards, requirements, and acceptance criteria in Part 50 are now specific to LWRs, which have significantly different safety and environmental considerations than a spent fuel reprocessing facility. Therefore, development of new regulations will likely be required to efficiently and effectively license the CFTC reprocessing activities, particularly if more than one commercial CFTC were to be licensed. In addition, the fuel fabrication portion of the CFTC would be currently licensed under 10 CFR Part 70, "Domestic Licensing of Special Nuclear Material." This would further complicate the CFTC licensing because multiply licenses would be necessary for one facility. However, Section 161h of the Atomic Energy Act provides the Commission with the flexibility to use a single licensing action to cover all the needed authorizations.

ABR

Under DOE's industry-focused approach, the ABR would be developed as a commercial-scale fast reactor that would be used to transmute fuel and consume transuranic (TRU) elements within the fuel, generate electricity, and support implementation of the GNEP. DOE has focused on the sodium-cooled fast reactor because it believes it to be the most mature technology available now, to serve its purpose. However, in DOE's ABR Request for EOI, DOE said it was open to other technologies, if the technology were mature or ready to be deployed.

DOE envisions the ABR as a fast neutron spectrum reactor, to consume TRU elements within the fuel, and generate electricity. DOE expects that the ABR will be qualified with conventional fast reactor fuel, followed by modification, so that it would eventually be used for recycling fast reactor transmutation fuel. In its ABR Request for EOI, DOE only identified "some rough parameters" for considering the ultimate characteristics of an ABR for GNEP. As with the CFTC Request for EOI, DOE clearly stated, in its ABR Request for EOI, that the ABR must comply with all environmental protection laws and regulations and must be capable of being licensed and operated under NRC regulations applicable to operations on privately owned land, regardless of where the ABR is sited. Also, DOE noted that to support timely implementation supportive of GNEP goals, the ABR system should be capable of commercial deployment, as early as possible. The ABR is intended to be a fast neutron reactor capable of transmuting and consuming ("burning" by fission) TRU elements while generating electricity. DOE has focused on sodium- cooled fast reactors (SFRs), because it believes the technology to be the most mature.

The ABR would initially use fuel that would be similar to the fuel used in previous fast reactors in the United States. Later, after more research and testing is conducted, the TRU elements (plutonium, neptunium, americium, and curium) could be fabricated into fuel for the ABR.

As reflected in DOE's August 2006 request for EOIs, DOE has not yet committed to a specific separation technology, or to a specific reactor type for implementation in GNEP. Most of the GNEP literature in the public domain and DOE reports to Congress have focused on aqueous separation technologies, especially the uranium-extraction (UREX+) based separation processes, and sodium-cooled fast reactors. DOE believes these technologies are currently the most mature technologies. DOE has emphasized that it will consider different technologies and now plans to make decisions, in part, based on input from industry as discussed in DOE's Notice of Intent to Prepare a PEIS for GNEP (72 Fed. Reg. 331, January 4, 2007). Although the scale of the facilities and technology selection remain fluid at this point, for the purposes of this paper, the staff assumes that UREX and sodium-cooled fast reactor technologies are the most likely candidates that will be deployed under DOE's accelerated industry-focused GNEP approach.

Uncertainties Related to Technologies

First, the technologies have only been demonstrated at the laboratory or bench scale. Second, uncertainties such as scaling up the chemical separations for the recycle process, or fabricating and qualifying the transmutation fuel for the ABR exists and need to be evaluated and resolved, as necessary. Furthermore, to add to the uncertainty, in its CFTC Request for EOI, DOE gave industry only "examples" of technical characteristics of the CFTC. Potentially, the CFTC could have interim SNF and waste storage, a reprocessing/separations area, new fuel fabrication,

and a waste solidification facility. These may be areas within the same large facility, adjacent/joined facilities, or discrete facilities on the same site. Most likely, the interim SNF storage facility would be constructed and operated first, perhaps 5-10 years ahead of the other facilities. DOE might arrange funding or otherwise contract to have the facilities built, but the facilities would be regulated by NRC. The facilities may or may not be located on DOE sites. In addition, Waste Incidental to Reprocessing determinations would have to be made for certain waste streams arising from these facilities.

RESOURCES

Table 1 reflects the fiscal year (FY) 2007 - 2008 proposed resources needed for the Global Nuclear Energy Partnership (GNEP) activities under the staff's recommendation. None of these resources have yet been approved specifically for GNEP. Although several offices have staff available and ready to implement the staff's GNEP recommendation, additional funding through supplemental appropriation for FY 2008 is needed.

Consistent with Commission direction in Staff Requirements Memorandum (SRM)-SECY-06-0066, staff is preparing a reimbursable agreement with the U.S. Department of Energy (DOE) for GNEP. Resources that the staff expects to be provided by this DOE reimbursable agreement are reflected in the first row of this table. The reimbursable agreement is in concurrence and is expected to be in place by the end of May 2007. The type of work to be covered by the DOE reimbursable agreement is described under the first row of the "Activity" column of Tables 1 and 3. The second row reflects the resources the staff would need for the development of a regulatory framework for commercial GNEP facilities and associated Special Nuclear Material in order to keep pace with DOE's progress.

Table 1. FY 2007 - 2008 Proposed Resource Needs

ACTIVITY	FY 2007		FY 2008	
DOE Resources (for the US. Nuclear Regulatory Commission (NRC)) 1. Proposed to be covered under the DOE/NRC Memorandum of Understanding (MOU) (funds from DOE) Interactions with DOE and industry/international entities for learning about GNEP technology -Safety -Safeguards -Environmental -Related training -Related Travel	Full Time Equivalent (FTE) 4.4	Contract Funds 200K	FTE 7.15	Contract Funds 1050K
2. NRC Resources Develop Licensing Technical Bases to Support Rulemaking: -Complete the conceptual licensing process -Gap Analysis -Technical Basis in support of rulemaking -Early draft Standard Review Plans (SRPs), etc.	7.0	150K	12.8	1M
3. Total Resources Needed by FY	11.4	350K	19.95	2.050M

Note: RES has budgeted under the Advanced Fuel Cycle Initiative: 150K and 1 FTE in FY 2007. These values were included in item 2 of this table.

The proposed additional FY 2007 NRC resources requires 6 FTE which would have to come from lower priority FY 2007 work, if the Commission directs the staff to prepare technical basis documents in support of a FY 2009 rulemaking. Because the staff did not receive funding for GNEP in FY 2008, the funding to support the necessary regulatory development activity would

have to come from supplemental appropriations or some other means. Table 2 reflects the FY 2007 - FY 2009 proposed resources needed, the resources budgeted and the associated shortfalls. The staff anticipates that DOE will extend the reimbursable agreement, once in place, through FY 2009.

Table 2. Summary of Proposed FY 2007- FY2009 Resources for GNEP

FY	Total Resources Required		Budgeted		Delta		Possible Funding Source for Delta	
	FTE	Contract $	FTE	Contract $	FTE	Contract $	FTE	Contract $
07	11.4	350 K	1.0	150K	10.4	200K	4.4 (DOE) 6.0 (NRC - lower priority work)	200K (DOE)
08	19.95	2.05M	0.0	0.0	19.95	2.05M	7.15 (DOE) 12.8 (Supplemental Appropriations)	1050K (DOE) 1M (Supplemental Appropriations)
09	23.55	2.05M	0.0	0.0	-TBD	-TBD-	7.15 (DOE) 15.8 (NRC FY09 Budget Submission	1050K (DOE) 1M (NRC FY09 Budget Submission

Table 3 reflects the proposed resources, to be provided by office, and the resources that the staff expects that DOE will provide in FYs 2007-2008 for GNEP activities that will fall under the DOE reimbursable agreement, once it is in-place. For the proposed NRC funds (bottom half of the table), the staff assumes that: 1) FY 2007 NRC resources will be reallocated from lower priority work, if the Commission agrees that NRC should go forward with the staff's recommendation and 2) that for FY 2008, NRC GNEP resources may be provided through supplemental appropriations or some other means.

Table 4 reflects the staff's FY 2009 proposed resources by office. It assumes that the proposed work needed to prepare for rulemaking (FY 2007 - FY 2008) was already accomplished. If this proposed work cannot be accomplished, then the start of rulemaking would be delayed approximately 1 - 2 years. For FY 2009, resources were requested through the FY 2009 budget process. The staff proposed $1.1M and 13 FTE in the FY 2009 budget. Additional resources will be also requested through the DOE reimbursable agreement, once it is in-place. However, 2.2 FTE in FY 2009 rulemaking and 100K for safeguards evaluation were not requested, but will be addressed during the FY 2010 budget process.

Table 3. FY 2007- FY 2008 Proposed Resources by Office

Activity	Office	FY07						FY08					
Proposed to be Covered under the DOE/NRC GNEP MOU (Funds from DOE)		Funds ($)			FTE			Funds ($)			FTE		
		CFTC	ABR	ACFC	CFTC	ABR	AFCF	CFTC	ABR	AFCF	CFTC	ABR	AFCF
Interactions with DOE and industry/ international entities - including: 1. Learning Technology 2. Safety 3. Safeguards 4. Environmental 5. Information Sharing on Regulatory Process • Related Training • Related Travel	NMSS				1.3	1.3	0.5				1.5	1.5	0.75
	FSME**				0.1	0.1	0.1				0.1	0.1	0.1
	NRO				0.1	0.1	-				0.1	0.2	-
	RES				0.2	0.2	0.2				0.9	0.9	0.2
	OIP				-	-	-				0.1	0.1	-
	NSIR				0.1	0.1	-				0.2	0.2	0.2
	Total				1.8	1.8	0.8				2.9	3	1.25
PROPOSED DOE FUNDS	Subtotal	$200K travel			4.4 FTE			$300K travel $750K contract			7.15 FTE		
Develop Licensing Technical Bases: • Complete the Conceptual Framework • Gap Analyses • Technical Basis for CFTC • Preliminary Technical Basis for ABR • Early Draft SRPs (Fuel Fab, Fuel Reprocessing, and Recycle Reactor)	NMSS			-	3.0	1.0	-	300K		-	6.0	2.0	-
	FSME**			-	0.2	0.1	-			-	0.4	0.2	-
	NRO			-	0.1	0.1	-			-	0.2	0.2	-
	RES			150K*	1.0	-	1.0*	300K	300K	-	0.9	0.9	0.2
	OIP			-	-	-	-			-	0.1	0.1	-
	OGC				.05	.05					.05	.05	
	NSIR			-	0.2	0.1	-	50K		50K	0.75	0.75	-
	Total			150K	4.6	1.35	1	650K	300K	50K	8.4	4.2	0.2
PROPOSED NRC FUNDS	Subtotal	150K			7.0 FTE			1M			12.8 FTE		
GRAND TOTAL (Proposed) (DOE plus NRC sources of Funds)		350K			11.4 FTE			2.05M			19.95 FTE		

* Already budgeted for the Advanced Fuel Cycle Initiative
** Includes DILR and DWM

Table 4. FY 2009 Proposed Resources by Office

Activity	Office	FTE	Funds
Proposed to be Covered under the DOE/NRC GNEP MOU **(Proposed GNEP Funds from DOE)** Interactions with DOE and industry/ international entities - including: • Learning Technology • Safety • Safeguards • Environmental • Information Sharing on Regulatory Process • Related Training • Related Travel	NMSS	3.75	350
	FSME(DWM)	0.2	50
	FSME (DILR)	0.1	-0-
	NRR	-0-	-0-
	NRO	0.3	50
	RES	2.0	350
	OIP	0.2	-0-
	NSIR	0.6	200
	Total	**7.15**	**1000K**
FY 09 NRC GNEP BUDGET Develop Licensing Technical Bases: • Complete Technical Basis for ABR and CFTC • Continue Drafting SRPs (Fuel Fab, Fuel Reprocessing, and Recycle Reactor) • Prepare Rulemaking Plan • Start Rulemaking	NMSS	9.5	400K
	FSME(DWM)	1.0	
	FSME (DILR)	0.5	
	NRO	1.0	
	NRR	0.5	
	RES	2	600K
	OIP	0.1	-
	OGC	0.2	-
	NSIR	1	100K
	Total	**15.8**	**1100K**
PROPOSED NRC and DOE FY 09 FUNDING	**Grand Total**	22.9	2100K

Acronyms/Initialisms List

ABR	Advanced Burner Reactor or an advanced recycling reactor
AFCF	Advanced Fuel Cycle Facility or advanced fuel cycle research facility
ANPR	Advanced Notice of Proposed Rulemaking
CFTC	Consolidated Fuel Treatment Center
CFR	U.S. Code of Federal Regulations
COL	Combined License
DOE	U.S. Department of Energy
EIS	Environmental Impact Statement
EOIs	Expressions of Interest
FCSS	Fuel Cycle Safety and Safeguards
FRN	Federal Register Notice
FSME	Office of Federal and State Materials and Environmental Management Programs
FTE	Full Time Equivalent
FY	Fiscal Year
GNEP	Global Nuclear Energy Partnership
HLW	High-level Waste
HTGR	High Temperature Gas-cooled Reactor
ISA	Integrated Safety Analysis
K	Thousand
LWR	Light Water Reactor
MOU	Memorandum of Understanding
MOX	Mixed Oxide
MTHM	Metric Tons of Heavy Metal
NGNP	Next Generation Nuclear Plant
NEI	Nuclear Energy Institute
NEPA	National Environmental Policy Act
NMSS	Office of Nuclear Material Safety and Safeguards
NRC	U.S. Nuclear Regulatory Commission
NRO	Office of New Reactors
NRR	Office of Nuclear Reactor Regulation
NSIR	Office of Nuclear Safeguards and Incident Response
OGC	Office of General Council
OIP	Office of International Programs
PB	President's Budget
PBPM	Planning, Budgeting, and Performance Management
PRA	Probabilistic Risk Assessment
RES	Office of Nuclear Regulatory Research
SFR	Sodium-cooled Fast Reactor
SNF	Spent Nuclear Fuel
SNM	Special Nuclear Material
SRM	Staff Requirements Memorandum
SRP	Standard Review Plan
TRU	Transuranic
UREX	Uranium-Extraction