

POLICY ISSUE
(Notation Vote)

October 7, 2016

SECY-16-0115

FOR: The Commissioners

FROM: Victor M. McCree
Executive Director for Operations

SUBJECT: RULEMAKING PLAN ON FINANCIAL ASSURANCE FOR
DISPOSITION OF CATEGORY 1 AND 2 BYPRODUCT MATERIAL
RADIOACTIVE SEALED SOURCES

PURPOSE:

The purpose of this paper is to request Commission approval to initiate a rulemaking to require financial assurance for disposition of Category 1 and 2 byproduct material Radioactive Sealed Sources (RSS).¹ This rulemaking would revise § 30.35 of Title 10 of the *Code of Federal Regulations* (10 CFR), "Financial Assurance and Recordkeeping for Decommissioning."

CONTACTS: Ryan Whited, NMSS/DUWP
301-415-1154

Robert D. MacDougall, NMSS/MSTR
301-415-5175

¹ The International Atomic Energy Agency (IAEA) Safety Guide No. RS-G-1.9, "Categorization of Radioactive Sources," identifies five categories of RSSs. Category 1 and 2 RSSs present the greatest health hazard and are considered the most risk significant.

SUMMARY:

The U.S. Nuclear Regulatory Commission's (NRC) regulations in 10 CFR 30.35 require a fixed dollar amount of financial assurance or a Decommissioning Funding Plan (DFP) for licensees possessing byproduct material with a half-life greater than 120 days and at activity levels above certain thresholds. However, the thresholds for sealed byproduct material are such that many licensees possessing Category 1 and 2 byproduct material RSSs are not required to provide financial assurance for decommissioning. Where financial assurance is required, it is to support decommissioning of the site, not necessarily to disposition an individual RSS that has become disused or unwanted.

The NRC staff conducted a scoping study to determine whether additional financial planning requirements for end-of-life management for some radioactive byproduct material, particularly RSSs, were needed. Based on the scoping study, which is documented in SECY-16-0046, "Radioactive Byproduct Material Financial Scoping Study,"² the NRC staff recommends that the financial assurance requirements in 10 CFR 30.35 be expanded to include all Category 1 and 2 byproduct material RSSs tracked in the National Source Tracking System (NSTS).

There are three main reasons for proceeding with this rulemaking. Requiring financial assurance for disposition of Category 1 and 2 byproduct material RSSs would:

- Ensure that licensees possessing these risk-significant RSSs are financially prepared for the costs of end-of-life dispositioning.
- Complement the existing regulatory framework to ensure safe and secure management of Category 1 and 2 byproduct material RSSs by facilitating timely disposition when these RSSs become disused or unwanted.
- Help ensure that dispositioning costs are borne by those who receive the associated economic benefits from the use of these sources.

The proposed rulemaking would result in increased regulatory costs, and its implementation would require additional NRC and Agreement State resources. Engagement with Agreement States and other stakeholders early in the rulemaking process would be prudent to ensure that the benefits of the rule and resource impacts are well understood and that the new requirements can be implemented effectively and efficiently.

BACKGROUND:

In the Staff Requirements Memorandum for SECY-15-0129, "Commission Involvement in Early Stages of Rulemaking,"³ dated February 3, 2016, the Commission approved a streamlined rulemaking plan requirement in the form of a SECY paper that would request Commission approval to initiate each rulemaking not already explicitly delegated to the NRC staff. Accordingly, the NRC staff requests approval to initiate a rulemaking to require financial assurance for disposition of Category 1 and 2 byproduct material RSSs.

² Agencywide Documents Access and Management System (ADAMS) Accession No. ML16067A367.

³ ADAMS Accession No. ML16034A441.

The NRC regulations in 10 CFR 30.35 are intended to ensure adequate financing for the decommissioning of facilities containing byproduct material above prescribed thresholds. They require a fixed dollar amount of financial assurance or a DFP for licensees possessing byproduct material with a half-life greater than 120 days and at activity levels above certain thresholds. Activity thresholds are provided in 10 CFR 30.35 for both unsealed and sealed byproduct material. The thresholds that require financial assurance for sealed byproduct material are seven orders of magnitude higher than for unsealed material. As a result, many licensees that possess byproduct material RSSs, including many Category 1 and 2 RSSs, are not required to provide financial assurance for decommissioning.⁴

End-of-life costs for dispositioning of byproduct material RSSs can be significant. These can include costs for interim storage, packaging and conditioning, transportation, and costs associated with the selected disposition option. Dispositioning may include options such as return to the manufacturer or supplier for reuse or recycling, transfer to another licensee, disposal as low-level waste, or decay in storage for subsequent management and disposal. Licensees are not required to declare when RSSs in their possession are unwanted, nor are they required to provide for prompt dispositioning. If a licensee has not anticipated and planned for the cost of dispositioning, it may represent a significant financial burden. As a result, licensees may choose indefinite long-term storage as the most practical management option.

In SECY-16-0046, dated April 7, 2016, the NRC staff cited a number of studies noting the potential for increased safety and security risks when disused sources are not promptly dispositioned. For example, a 2006 report from the Radiation Source Protection and Security Task Force (Task Force) noted that some NRC licensees, "...may not have sufficient funds set aside to cover the costs of disposal or other appropriate disposition, potentially resulting in prolonged storage and possible misuse or abandonment."⁵ The report also noted that high disposal costs may prompt licensees to delay disposal either by choice or economic necessity. The 2010 Task Force report reiterated that, "...while secure storage is a temporary measure, the longer sources remain disused or unwanted the chances increase that they will become unsecured or abandoned."⁶ The 2014 Task Force report further stated that financial assurance requirements "... are likely to decrease the time that commercial sealed sources remain in storage because the funds necessary for source disposal will be immediately or quickly available."⁷ Requiring financial assurance for byproduct material Category 1 and 2 RSSs may help reduce the use of long-term storage as a management option, supporting Commission policy that disposal is preferred to storage.⁸

Since 2003, the U.S. Department of Energy's National Nuclear Security Administration (NNSA) has implemented a program to remove excess RSSs that posed a potential threat to public health, safety, and national security. While acknowledging the safety and security concerns associated with disused sources, the NNSA noted in comments provided to the NRC staff that

⁴ For example, two of the most common radionuclides tracked in the NSTS are cobalt-60 and cesium-137. For cobalt-60 in sealed form, the threshold quantity for Category 2 radioactive material is 8.1 curie (Ci), while the 10 CFR 30.35 threshold for financial assurance is 10,000 Ci. For cesium-137 in sealed form, the threshold quantity for Category 2 radioactive material is 27 Ci, while the 10 CFR 30.35 threshold for financial assurance is 100,000 Ci.

⁵ ADAMS Accession No. ML062190349.

⁶ ADAMS Accession No. ML102230141.

⁷ ADAMS Accession No. ML14219A642.

⁸ "Low-Level Radioactive Waste Management and Volume Reduction," 77 FR 25760 at 25781 (May 1, 2012).

increased government involvement in efforts to address RSS management and disposal is not sustainable.⁹ The NNSA stated that additional financial planning requirements could encourage the use of available commercial disposal options, or defray the cost of packaging and transportation, thereby reducing the funding required for NNSA-sponsored RSS recovery and management programs.¹⁰

DISCUSSION:

Title

Financial Assurance for Disposition of Category 1 and 2 Byproduct Material Radioactive Sealed Sources.

Estimated Schedule

Initiate regulatory basis phase – October 2017.

Complete regulatory basis – October 2018.

Publish proposed rule – October 2019.

Publish final rule – October 2020.

Preliminary Priority

High. Using the Common Prioritization of Rulemaking (CPR) prioritization methodology, the proposed rulemaking exceeds the minimum criterion for a preliminary priority of “High” because the rule would be a moderate contributor toward both the Safety and the Security Goals in the NRC’s 2014-2018 Strategic Plan. The proposed rulemaking would address one Safety Goal Implementation Strategy and two Security Goal Implementation Strategies.

The Safety Goal Implementation Strategy is to “Enhance the NRC’s regulatory programs, as appropriate, using lessons learned from domestic and international operating experience and other sources.” For this strategy, the requested rulemaking would enhance the NRC’s regulatory programs by addressing lessons learned and recommendations from the NRC, other U.S. and international studies indicating that, as a 2005 U.S. Government Accountability Office (GAO) report stated, “greater quantities and longer periods of storage, particularly of unwanted sealed radiological sources, will likely increase safety and security risks.”¹¹ The rulemaking would also implement guidance in the IAEA *Code of Conduct on the Safety and Security of Radioactive Sources*, Paragraph 22(b), that every Member State’s regulatory body “ensures that arrangements are made for the safe management and secure protection of radioactive sources, including financial provisions where appropriate, once they have become disused.”

⁹ ADAMS Accession No. ML15310A044.

¹⁰ Such programs include the Off-Site Source Recovery Project managed by NNSA and the Source Collection and Threat Reduction Program, which is funded by NNSA and administered by the Conference of Radiation Control Program Directors (CRCPD).

¹¹ GAO-05-967, *DOE [Department of Energy] Needs Better Information to Guide Its Expanded Recovery of Sealed Radiological Sources* (September 2005).

The rulemaking would also be a moderate contributor to the Security Goal and would implement the first and third Security Goal Implementation Strategies:

1. “Ensure the effectiveness and efficiency of the regulatory framework using information gained from operating experience and external and internal assessments; ...” and
3. “Support U.S. national security interests and nuclear nonproliferation policy objectives within NRC’s statutory mandate through cooperation with domestic and international partners.”

Regarding Security Goal Implementation Strategy 1, the proposed rulemaking would improve the effectiveness of the regulatory framework by addressing issues from operating experience identified by several internal and external groups, including but not limited to, the Radiation Source Protection and Security Task Force and the GAO.

Concerning Security Goal Implementation Strategy 3, one of the “Contributing Activities” to this Strategy in the Strategic Plan is to “[p]articipate with Agreement States, the Conference of Radiation Control Program Directors, and the DOE’s National Nuclear Security Administration in identification, location, and recovery of unwanted and uncontrolled radioactive materials, often referred to as ‘orphan sources.’” In light of the positions of these partner institutions on the desirability of NRC action, as noted in SECY-16-0046, a rulemaking to require adequate financial assurance for the dispositioning of Category 1 and 2 byproduct material RSSs would constitute substantial and constructive “participation” with these partners and an important contributing activity to the success of Security Strategy 3.

The requested rulemaking would also be a moderate contributor to Regulatory Effectiveness Strategy 1 in the NRC’s Strategic Plan. This strategy calls for the NRC to “[p]roactively identify, assess, understand, and resolve safety and security issues.” Initiating a rulemaking to require financial assurance for Category 1 and 2 byproduct material RSSs would be a proactive measure to help ensure the timely, safe, and secure dispositioning of these sources and minimize the likelihood of new problems.

Description and Scope

Under the proposed rulemaking, the NRC staff would establish financial assurance requirements in 10 CFR 30.35 for the dispositioning of all byproduct material Category 1 and 2 RSSs that are required to be tracked in the NSTS.¹² Sufficient financial assurance would be required to cover costs associated with storage, conditioning, packaging, transportation, reuse, recycling, or disposal, as applicable. The text below describes the NRC staff’s initial proposed scope of the rulemaking. Alternative approaches to ensuring financial assurance will be explored through development of the regulatory basis and proposed rule, both which will involve interaction with stakeholders. The current regulatory requirements in 10 CFR 30.35 address financial assurance for decommissioning. This proposal would consider adding requirements to provide financial assurance for the dispositioning of Category 1 and 2 RSSs that are required to be tracked in the NSTS.

¹² Nationally Tracked Source Thresholds are listed in Appendix E to 10 CFR Part 20. Tracking of these sources is required by 10 CFR 20.2207. The NSTS tracks more than 76,000 Category 1 and 2 RSSs held by both NRC and Agreement State licensees. More than 99 percent of RSSs tracked in the NSTS are byproduct material.

The proposed rule would apply the new requirements to licensees possessing affected RSSs regardless of site decommissioning status, and would apply to RSSs entering the NSTS as well as those currently tracked.

The proposed rulemaking focuses on Category 1 and 2 RSSs, as these sources have the highest risk significance and are generally the most likely to pose dispositioning challenges. Dispositioning costs are likely to be higher for Category 1 and 2 sources as a group compared to other source categories. Requiring financial assurance for byproduct material Category 1 and 2 RSSs may help reduce the use of long-term storage as a management option, supporting the Commission policy that disposal is preferred to storage.¹³ In addition, requiring financial assurance would:

- Ensure that licensees possessing these risk-significant RSSs have planned and are financially prepared for the costs associated with end-of-life dispositioning.
- Complement the existing regulatory framework to ensure safe and secure management of Category 1 and 2 byproduct material RSSs by facilitating timely dispositioning when these RSSs become disused or unwanted.
- Help ensure that dispositioning costs are borne by those who receive the associated economic benefits from the use of these sources.

In evaluating alternatives to rulemaking, the NRC staff chose enforceability and consistency of implementation as the paramount considerations; cost-effectiveness was also an important consideration. Based on these considerations, the NRC staff concluded that rulemaking is the most effective way to ensure that adequate financial resources are available to disposition Category 1 and 2 byproduct material RSSs. Although the issuance of guidance or a generic communication would cost less, neither could effectively provide the key attributes of enforceability and consistency. Licensing actions would provide these attributes, but would cost considerably more than a generic rulemaking. Interagency cooperation would cost the least, but also provide the least assurance of the desired outcome, since it would depend heavily on factors beyond NRC's control. Thus, as indicated below, the NRC staff determined that rulemaking is the preferred option. Alternatives considered include:

- Issue Guidance. This alternative would not result in any change in the NRC's regulations, and as such, licensees would not need to provide financial assurance for byproduct material Category 1 and 2 RSSs beyond the current requirements in 10 CFR 30.35.
- Issue a Generic Communication. Similar to issuing guidance, this option would not establish new financial assurance requirements, and would therefore not be binding or enforceable. It would address the regulatory need only to the extent that licensees voluntarily implement improved financial planning practices.
- Take Individual Licensing Actions. Issuing orders or license amendments would provide clear and enforceable direction to licensees, but could only be implemented case by case, and therefore would be highly resource-intensive. The NRC alone has 353 Category 1 and Category 2 sealed source licensees in the NSTS database, and the Agreement States have 1,779. In general, the significant expenditure of NRC and Agreement State resources that would be needed to process hundreds of individual licensing actions is not warranted when there are other less resource intensive options

¹³ "Low-Level Radioactive Waste Management and Volume Reduction" (77 FR 25760 at 25781; May 1, 2012).

that would produce the same outcome.

- Interagency Cooperation. The NRC could work with other agencies, such as NNSA, to help ensure continued support for existing RSS recovery and management programs. It is unclear, however, to what extent the NRC could influence the future viability of these programs in such matters as program funding and administration.
- Issue a Rule. This is the preferred alternative because it provides a clearly enforceable basis for licensee or applicant action and ensures the greatest degree of consistency.

SECY-16-0046, Enclosure 1,¹⁴ provides a discussion of numerous technical issues important to financial planning for RSS disposition. If the Commission approves the initiation of rulemaking, the NRC staff through the rulemaking process, would further assess these issues in developing the regulatory basis for the draft proposed rule including exploring various options for development of the rule. In addition, a rulemaking working group could conduct outreach to organizations such as the CRCPD, the Organization of Agreement States (OAS), international partners, industry, and other groups who have studied this issue. The experiences of Agreement State and international partners in implementing similar efforts would be particularly useful.

Relationship of the Work to the NRC's Strategic Plan

The rule would be a moderate contributor toward both the Safety and the Security Goals in the NRC's 2014-2018 Strategic Plan, and would address one Safety Goal Implementation Strategy and two Security Goal Implementation Strategies. The Safety Goal Implementation Strategy is to "Enhance the NRC's regulatory programs, as appropriate, using lessons learned from domestic and international operating experience and other sources." The Security Goal Implementation Strategies are to "Ensure the effectiveness and efficiency of the regulatory framework using information gained from operating experience and external and internal assessments" and to "Support U.S. national security interests and nuclear nonproliferation policy objectives within NRC's statutory mandate through cooperation with domestic and international partners." The relationship of the proposed rulemaking to these Implementation Strategies is discussed in detail in the "Preliminary Priority" section of this paper.

Cost and Benefits

As described below, the proposed action is estimated to involve a medium magnitude of costs. The benefits of the proposed action are described in the "Description and Scope" section. Aside from the resource estimates to complete the proposed rulemaking, costs are discussed qualitatively pending the more detailed analyses that would be performed to support a regulatory basis document and eventual regulatory analysis for a proposed rule.

The estimated costs of the subject rulemaking are discussed in Enclosure 1. The estimated cost to revise the associated guidance in [NUREG-1757](#), Vol. 3, Rev. 1, "Consolidated Decommissioning Guidance: Financial Assurance, Recordkeeping, and Timeliness" (ADAMS Accession No. ML12048A683) is also provided in Enclosure 1.

Expanding the financial assurance requirements in 10 CFR 30.35 would result in increased regulatory costs that could potentially affect beneficial uses of radioactive material. These costs

¹⁴ ADAMS Accession No. ML16068A205.

and benefits would be evaluated in detail as part of the rulemaking process. For some licensees, new financial assurance requirements could shift the financial burden of planning for RSS disposition to a point earlier in a source's lifecycle than anticipated. Also, the cost of additional regulatory oversight would be passed on to licensees and applicants. For new sources, licensees or applicants would be able to evaluate these costs when deciding whether or not to acquire a source. For both new and existing sources, the NRC would need to consider carefully various options for the rule requirements and/or phasing of implementation to mitigate potential adverse impacts on licensees and those who benefit from the use of these radioactive materials. Adverse impacts could be particularly acute for licensees with limited revenue streams and limited ability to pass the added costs on to customers. New requirements could potentially increase the number of disused sources if some existing licensees determine that the costs associated with implementing these requirements outweigh the associated benefits.

The NRC and Agreement State administration of expanded financial assurance requirements will require additional resources. Regulators will need to develop or amend regulatory guidance associated with the new or modified requirements. In addition, regulatory agencies may need to acquire or supplement existing professional expertise in financial assurance. Information technology and other infrastructure will be needed to track compliance. Resource impacts for regulatory agencies will depend on numerous factors, including the scope of any new requirements, how many licensees are affected, and the level of expertise required to evaluate licensee compliance with the new requirements.

Cumulative Effects of Regulation

The NRC staff determined that the recommended rulemaking could add to the cumulative effects of regulation (CER) for licensees possessing byproduct material Category 1 and 2 RSSs, but the extent of the impact will depend on another rulemaking whose nature and scope remains to be determined. A follow-on rulemaking to clarify 10 CFR Part 37 exemption and implementation issues is planned. Because both the 10 CFR Part 37 rulemaking and the recommended financial assurance rulemaking would affect licensees with Category 1 and 2 sources, these licensees would have additional demands on their management, staff, and financial resources if both rules were implemented simultaneously. If the Commission approves this rulemaking and the Part 37 rulemaking, the NRC staff will coordinate with the staff leading the 10 CFR Part 37 rulemaking. The NRC staff will request comments in each rulemaking, specifically, regarding potential CER impacts, and will solicit comments during the additional stakeholder interactions anticipated as part of the regulatory basis and proposed rule development.

Additional CER impacts of this proposed rulemaking could affect Agreement State agencies. These agencies are required to adopt regulations compatible with NRC regulations within 3 years after promulgation of an NRC rule that requires compatibility. Depending on the state agencies' potential 10 CFR Part 37 rulemaking caseloads, their resources available for this activity may be affected. This in turn may affect their ability to promulgate compatible rules within the allowed 3 year timeframe.

Agreement State Considerations

The proposed rulemaking would result in increased regulatory costs and would require additional NRC and Agreement State resources. Engagement with the NRC's Agreement State partners from the early stages of rulemaking would be important to ensure that potential resource expenditures and other impacts, including the effects of compatibility requirements, are well understood for effective and timely implementation.

As part of its scoping study, the NRC staff asked stakeholders to comment on how the NRC should engage with Agreement States to consider the impact of any subsequent rulemaking. Respondents from Agreement State regulatory agencies and the OAS generally supported additional financial assurance requirements for RSSs, but stressed the need for the NRC to maintain flexibility in implementing new requirements. The OAS noted in its comments¹⁵ that, as with other rulemakings, the NRC should consider forming a working group to coordinate with Agreement States in the development of proposed rule requirements. In addition, the OAS suggested that in determining compatibility, the NRC should consider the impact on States in terms of review of financial assurance documents on an ongoing basis for a greatly increased number of licensees.

Backfitting and Issue Finality

This rulemaking would affect licensees who possess Category 1 and 2 byproduct material RSSs. Most of these users are licensed under 10 CFR Part 30. Backfitting and issue finality provisions do not apply to entities that hold 10 CFR Part 30 licenses alone. The NRC staff recognizes, however, that some entities holding licenses protected from backfitting under 10 CFR Parts 50, 70, 72, or 76 could also hold a license for the possession of Category 1 and 2 byproduct material RSSs. Similarly, some 10 CFR Part 52 licensees protected under issue finality provisions may hold a license for the possession of Category 1 and 2 byproduct material RSSs. This rulemaking is not intended to apply to licensees under 10 CFR Parts 50, 52, 70, 72 or 76 that are already required to demonstrate financial assurance for construction, operation, and decommissioning, including the disposition of any Category 1 and 2 byproduct material RSSs possessed under their license. This rulemaking would apply to non-power reactor licensees that possess Category 1 and 2 byproduct material RSSs under a Part 30 license or equivalent Agreement State license and are not already subject to financial assurance requirements for the disposition of these sources. The NRC staff has not identified any current license holders under Part 72 or Part 76 that also have a license for the possession of Category 1 and 2 byproduct material RSSs. Further, the NRC staff finds that current requirements under Parts 50 and 52 provide sufficient financial assurance for the disposition of the Category 1 and 2 byproduct material RSSs possessed under these licenses. However, some license holders under 10 CFR Part 70 with Category 1 or 2 byproduct material RSSs may not be subject to existing requirements that would provide adequate financial assurance for the disposition of these sources. In such circumstances, the proposed rule would apply and a backfit analysis would be required. The NRC staff does not anticipate any of the exceptions to preparing a backfit analysis will apply in this case, and therefore does not expect to rely on them. In developing the technical basis for the proposed rule, the NRC staff will ensure that licensees are not subjected to redundant financial assurance requirements. The NRC staff plans to further

¹⁵ Comment (4) of Sherrie Flaherty, on NRC Byproduct Material Financial Scoping Study (STC-15-065) (ADAMS Accession No. ML15300A255).

evaluate and address the potential for backfitting impacts in the course of developing and obtaining stakeholder input on the regulatory basis for this rulemaking.

Guidance

Concurrent with issuance of a proposed rule, the NRC staff would need to provide draft guidance for public comment through an update to [NUREG-1757](#), Vol. 3, Rev. 1, or develop new guidance. The NRC staff would also need to provide final guidance concurrently with the final rule.

Advisory Committee on Medical Uses of Isotopes Review

At a public teleconference on June 24, 2016, the NRC staff provided the Advisory Committee on Medical Uses of Isotopes (ACMUI) with an overview of its scoping study and the planned path forward including development of this rulemaking plan. Should the Commission approve the initiation of rulemaking, the NRC staff will continue to periodically engage ACMUI as part of the rulemaking process.

Advisory Committee on Reactor Safeguards Review

The NRC staff engaged the Advisory Committee on Reactor Safeguards (ACRS) Technical Support Branch and confirmed that the proposed rulemaking does not fall within the purview of ACRS responsibilities. Therefore, the staff does not recommend ACRS review for this action.

Committee to Review Generic Requirements Review

The NRC staff has made the Committee to Review Generic Requirements (CRGR) aware of the potential for backfitting issues for some 10 CFR Part 70 licensees, and will work with the CRGR to address any such issues that the NRC staff, the Committee, or interested stakeholders may identify.

Analysis of Legal Matters

The Office of the General Counsel (OGC) has reviewed this rulemaking plan and has not identified any issues necessitating a separate legal analysis at this time.

COMMITMENT:

If the Commission approves initiation of this rulemaking, the NRC staff will add the rule to the CPR during the next budget formulation cycle.

RECOMMENDATION:

The NRC staff recommends that the Commission approve initiation of a rulemaking to require financial assurance for disposition of Category 1 and 2 byproduct material RSSs.

The Commissioners

- 11 -

RESOURCES:

The enclosure includes an estimate of the resources needed to complete this rulemaking.

COORDINATION:

OGC has no legal objection to this action. The Office of the Chief Financial Officer has reviewed this paper for resource implications and has no objection.

/RA Glenn Tracy Acting for/

Victor M. McCree
Executive Director
for Operations

Enclosure:
Resource Estimate

RESOURCES:

The enclosure includes an estimate of the resources needed to complete this rulemaking.

COORDINATION:

OGC has no legal objection to this action. The Office of the Chief Financial Officer has reviewed this paper for resource implications and has no objection.

/RA Glenn Tracy Acting for/

Victor M. McCree
Executive Director
for Operations

Enclosure:
Resource Estimate

ADAMS Accession No: Pkg: ML16200A185

OFFICE	DUWP:PM	DUWP:LA	MSTR:PM	DUWP:BC	MSTR:BC	ADM:BC
NAME	R. Whited (J. Shaffner for)	T. Moon	R. MacDougall	G. Suber (S. Dembek for)	S. Whaley	C. Bladey
DATE	7/18/16	7/20/16	7/20/16	8/01/16	7/26/16	8/19/16
OFFICE	OGC (NLO)	NSIR:D	MSTR:D	NRR:D	NRO:D	CFO
NAME	O. Mikula	B. Holian	D. Collins	B. Dean	J. Uhle	M. Wylie
DATE	9/13/16	8/17/16	8/31/16	8/23/16	8/25/16	8/18/16
OFFICE	DUWP:D	NMSS	NMSS:D	EDO		
NAME	J. Tappert	W. Moore	M. Dapas	V. McCree (GTracy for)		
DATE	9/15/16	9/15/16	9/20/16	10/ 07 /16		

OFFICIAL RECORD COPY