

**Memorandum of Agreement  
for  
Acceptance of  
Naval Spent Nuclear Fuel**

0067

QA:QA

DOC.20081104.0002

between the  
Director, Naval Nuclear Propulsion Program (NNPP),  
Department of the Navy, Arlington, VA  
and the  
Director,  
Office of Civilian Radioactive Waste Management (RW)  
U.S. Department of Energy (DOE), Washington, DC

Revision 1  
April 11, 2000

**I. Introduction**

**A. Background**

This Memorandum of Agreement (MOA) furthers section 302(b)(4) of the *Nuclear Waste Policy Act of 1982*, as amended (NWPA), and the regulations setting forth the *Standard Contract for Disposal of Spent Nuclear Fuel (SNF) and/or High-Level Radioactive Waste (HLW)* (Standard Contract), 10 CFR Part 961, which provide that federal agencies requiring disposal services for SNF and/or HLW must transfer by way of Defense Nuclear Waste Disposal appropriations, amounts equivalent to the fees that would be paid under the Standard Contract by any other person. This MOA includes, as appropriate, terms and conditions equivalent to those set forth in the NWPA and the Standard Contract for persons other than Federal agencies. A cross-reference between the MOA and the articles of the Standard Contract is provided in Appendix A.

Through this MOA, RW and NNPP seek to achieve safe and timely disposal of naval SNF by identifying data needs, interfaces and acceptance criteria and developing compliance procedures needed to support the acceptance of naval SNF by RW and the geologic repository construction authorization and license application to the Nuclear Regulatory Commission (NRC).

**B. Authorities**

Authorities for this MOA are the NWPA, the Atomic Energy Act of 1954, Presidential Executive Order 12344, *Naval Nuclear Propulsion Program*, Public Law 98-525, the *Department of Defense Authorization Act, 1985* (42 U.S.C. 7158), and Public Law 106-65, the *National Defense Authorization Act for Fiscal Year 2000* (50 U.S.C. 2406).

**C. Documents Required for Implementation**

Other documents (including amendments and revisions thereto) required for implementation of this MOA are:

1. The *Memorandum of Agreement for Acceptance of Department of Energy Spent Nuclear Fuel and High-Level Waste* between the Assistant Secretary for Environmental Management (EM) and the Director, Office of Civilian Radioactive Waste Management (OCRWM);
2. The *Standard Contract for Disposal of Spent Nuclear Fuel and/or High-Level Radioactive Waste*, 10 CFR Part 961;
3. The *OCRWM Quality Assurance Requirements and Description* document (QARD) (DOE/RW-0333P);
4. The *Civilian Radioactive Waste Management System Requirements Document* (CRD) (DOE/RW-0406);
5. The Federal Register: Volume 52, page 31513 (August 20, 1987), *Civilian Radioactive Waste Management; Calculating Nuclear Waste Fund Disposal Fees for Department of Energy Defense Program Waste*.

#### D. Policy on Cooperation and Joint Activities

NNPP and RW will cooperate to ensure that all current and future activities relating to acceptance of naval SNF continue to be performed in a safe, secure, cost-effective manner, in accordance with applicable requirements, the respective functions of the organizations, and in a manner that contributes toward a public understanding and acceptance of NNPP and RW goals and activities. NNPP and RW will provide mutual support for budget justification to the Office of Management and Budget, and hearings before Congress to implement this MOA, to the extent consistent with their individual missions.

## II. Definitions

Definitions of terms articulated in section 2 of the NWPA, Article I of the Standard Contract, and the CRD, Appendix B, *Definitions*, are incorporated by reference into this MOA. The following additional definitions are specific to this MOA:

- A. Acceptance - the transfer at RW's site of responsibility, custody and physical possession of naval SNF from NNPP to RW.
- B. Acceptance criteria - all technical and programmatic requirements which must be satisfied by naval SNF for the Civilian Radioactive Waste Management System (CRWMS) to meet regulatory requirements as delineated in Appendix C.
- C. Administrators - the NNPP manager designated by the Director, NNPP, and the RW manager designated by the Director, OCRWM, shall be responsible for executing the terms of this MOA, and for resolving or elevating associated issues and disputes.
- D. Naval SNF Characterization - performance of all the activities (e.g., data collection, testing, inspections, document preparation, analyses) necessary to describe naval SNF adequately for acceptance, storage (if needed), transportation, and disposal (this includes preclosure and postclosure performance in the repository).
- E. Conditioning - any process which prepares or treats naval SNF for storage, transportation, or disposal in accordance with regulatory requirements and CRWMS acceptance criteria. ~~This includes processing and passivation of SNF.~~
- F. Conformance Verification - the process used to demonstrate that naval SNF is in accordance with CRWMS acceptance criteria.

- G. Incidental maintenance - transportation cask maintenance activities not associated with routine maintenance, to be performed to ensure that cask certification requirements are satisfied. These include correction of problems, including those identified during acceptance, preparation for use, unloading or preparation for shipment. Incidental maintenance is limited to those corrections that are necessary to meet a test or inspection requirement or to perform a step or activity described in the handling procedures.
- H. Integrated Acceptance Schedule - the document to be provided by NNPP, in coordination with EM, to RW for approval, that defines the schedule under which RW shall accept NNPP SNF, DOE SNF and HLW.
- I. Naval SNF - SNF that is generated and managed by NNPP.
- J. Naval Nuclear Propulsion Program (NNPP) - the joint Navy/DOE organization responsible under Executive Order 12344 (42 USC 7158 and 50 USC 2406) for all matters pertaining to naval nuclear propulsion. Within DOE, the NNPP is known as the Office of Naval Reactors.
- K. Nonconforming naval SNF - naval SNF that does not meet the applicable CRWMS acceptance criteria outlined in accordance with Appendix C.
- L. Nonstandard naval SNF - nonconforming naval SNF that has been reviewed by RW and deemed acceptable for entry into the CRWMS. (This is different from the definition of nonstandard SNF in the Standard Contract.)
- M. Routine maintenance - scheduled cask maintenance activities necessary to maintain transportation casks in serviceable condition and in compliance with the Certificate of Compliance.
- N. RW facility - a facility operated by or on behalf of RW for the purpose of storing (if needed) or disposing of SNF and/or HLW in accordance with the NWPA.
- O. Safeguards Verification - the process used to demonstrate that appropriate safeguards are in place for all special nuclear material (as defined in 10 CFR Part 70).
- P. Spent Nuclear Fuel Canisters – sealed metallic containers maintaining multiple SNF assemblies in a dry, inert environment and overpacked separately and uniquely for storage, transportation, and disposal.

### **III. Purpose, Scope and Term**

#### **A. Purpose/Scope**

This MOA establishes the terms and conditions under which RW will make available disposal services to NNPP for naval SNF. Coordination between NNPP and the Office of Environmental Management (EM) is addressed in Sections V and VI of this MOA. For the purposes of this MOA, naval SNF is specifically excluded from the inventory of SNF owned by EM, on behalf of DOE.

This MOA applies to the acceptance of naval SNF from NNPP by RW, and the responsibilities of NNPP and RW relative to transportation, storage (if needed) and disposal of such SNF. This MOA also provides for the recoupment by RW, through appropriations, of all direct costs, indirect costs, and all allocable overhead for the services to be rendered hereunder by RW.

## B. Term

This MOA shall remain in effect from the date of the last signature until all NNPP and RW responsibilities and requirements are satisfied, or until this MOA is superseded by other appropriate documents or rescinded by NNPP and RW.

## IV. Quality Assurance

Quality Assurance for activities associated with disposal of naval SNF shall be accomplished as specified in Appendix E, *Coordination and Implementation of Quality Assurance Activities Associated with Naval Spent Nuclear Fuel*.

## V. Responsibilities

### A. Data Needs

1. RW shall identify and document, in coordination with NNPP and EM, the OCRWM Data Needs for DOE SNF (including naval SNF). Data shall be consistent with Appendix F of the Standard Contract (as applicable to naval SNF), or revisions thereto. This document shall identify data needed on a prioritized basis by RW for accepting, transporting (if needed after acceptance), storing (if needed) and disposing of naval SNF (e.g., characterization data, physical and chemical characteristics, canister characteristics, radionuclide concentrations and radiation levels, criticality safety, thermal characteristics, safeguards, and material control and accountability). As a part of this data needs assessment, RW, in coordination with NNPP and EM, shall define the content of the data records package. Any changes to the OCRWM Data Needs for DOE SNF or the data records package shall be coordinated between RW, NNPP and EM.
2. RW shall develop and issue, in coordination with NNPP, a Data Needs Schedule documenting when specific naval SNF data are needed, so that the data may be provided by NNPP in a timely manner. Revisions to the Data Needs Schedule shall be coordinated with NNPP.
3. NNPP shall provide naval SNF data, qualified for their intended use and in accordance with the Data Needs Schedule.
4. RW shall review the data provided by NNPP for completeness and consistency with the OCRWM Data Needs for DOE SNF and shall promptly inform NNPP if additional information is needed.

### B. Design, Certification, and Fabrication of Transportation and Storage Systems

1. NNPP shall be responsible for the design, NRC certification and fabrication of the transportation casks for naval SNF in accordance with 10 CFR Part 71.
2. NNPP shall be responsible for NRC certification of the naval SNF canisters and associated storage overpacks and equipment for use at an RW storage facility, as necessary. RW shall provide to NNPP the appropriate requirements in a timely manner to facilitate any necessary changes to designs and Certificates of Compliance. NNPP shall update the Safety Analysis Report to address RW facility environmental conditions, as necessary. RW shall be responsible for the fabrication of storage modules and equipment at the RW facility. NNPP and RW responsibilities for storage at an RW storage facility shall only apply if such a facility is available.

3. NNPP shall comply with 10 CFR Part 21, *Reporting of Defects and Noncompliance* for those basic components to be used or accepted at an RW facility.

C. Transportation and Loading Operations

1. NNPP shall arrange for and provide all preparation, assembly of the packaging for shipment, required inspections, and other activities necessary for the loading of naval SNF canisters into transportation casks at the NNPP facility. NNPP shall provide access for an RW representative to observe these activities, and shall notify RW thirty (30) days in advance of the start of loading activities. RW shall notify NNPP fifteen (15) days before the start of loading whether RW will observe the activities.
2. NNPP shall load naval SNF into the naval SNF canisters. NNPP shall notify RW thirty (30) days in advance of the start of loading activities. If requested by RW, NNPP shall provide access for RW representatives to observe preparatory and loading activities. RW shall notify NNPP fifteen (15) days before the start of loading whether RW will observe the activities.
3. NNPP shall be responsible for all transportation operations outside of the RW facility boundary and before acceptance inside the RW boundary for naval SNF, including compliance with applicable laws and regulations, including the NWPA.
4. NNPP shall be responsible for routine maintenance of transportation casks and equipment. NNPP shall also be responsible for incidental maintenance of the transportation casks and equipment, while in NNPP's possession and control. Any necessary expenditures for routine and/or incidental maintenance shall be funded by NNPP appropriations.
5. While at the RW facility, RW shall be responsible for incidental maintenance, protection and preservation in accordance with NNPP procedures of any and all transportation casks and equipment, while in RW's possession and control and any necessary expenditures for such incidental maintenance shall be funded by RW from Defense Nuclear Waste Disposal appropriations. No modifications to the transportation casks will be made without prior written agreement by NNPP.
6. For the handling of naval SNF canisters and transportation casks at an RW facility, NNPP shall provide RW the following at least six (6) months in advance of shipment to the RW facility, or as requested by RW, to accommodate handling:
  - (a) Written procedures for handling and loading/unloading into/out of overpacks for all naval SNF canisters;
  - (b) Training for RW's personnel in handling and loading/unloading into/out of overpacks for all naval SNF canisters, and
  - (c) Procedures, technical information, special tools, equipment, lifting trunnions, spare parts and consumables needed for incidental maintenance, protection and preservation of the naval SNF canisters and transportation casks.
7. RW shall arrange for and provide all preparation, disassembly of the packaging for unloading, required inspections, and other activities necessary for the unloading of naval SNF canisters at the RW facility. NNPP may have a representative present during unloading. Transportation casks returned to NNPP shall meet NNPP surface contamination limits.

8. NNPP and RW shall determine appropriate responsibilities in the event that naval SNF requires transportation from an RW storage facility to an RW disposal facility.

D. Repackaging Prior to Delivery - If, prior to acceptance by RW, it is determined that any naval SNF canisters need modification to meet requirements of an NRC-licensed RW storage or disposal facility (e.g., repackaging), NNPP shall perform these changes/upgrades.

E. Conformance and Safeguards Verification of Naval SNF

1. RW shall perform conformance verification of naval SNF delivered to RW as necessary, in accordance with Appendix C. The authorized RW representative shall agree to accept such naval SNF (which meets all CRWMS acceptance criteria) for disposal when RW has completed safeguards verification of the naval SNF and after all surveys, placarding, and labeling checks have been completed. This safeguards verification shall rely on records provided by NNPP, i.e., NNPP shall be responsible for the accuracy and content of the records sufficient to satisfy NRC regulations.
2. Improperly described naval SNF:
  - (a) Prior to Acceptance: If prior to its acceptance NNPP or RW finds that naval SNF is improperly described, the discovering party shall notify the other party within ten (10) days, in writing, of such finding. In the event of such notification, NNPP shall provide RW with a proper designation within thirty (30) days. Acceptance of such naval SNF shall not be made by RW until the SNF has been properly described. NNPP shall not transfer such SNF unless RW agrees to accept such SNF under other arrangements as may be agreed to, in writing, by the parties. Temporary storage for the naval SNF will be at the RW facility and the SNF shall not be disposed of, until the waste is correctly described and transfer of custody is made. If, after proper description, the affected naval SNF still meets all CRWMS acceptance criteria, a disposition decision shall be made by the RW Administrator, in coordination with the NRC (if a licensing condition has been violated) and NNPP. If the naval SNF does not meet these criteria, the RW and NNPP Administrators shall raise the issue to the appropriate authorities in accordance with Section XI.
  - (b) After Acceptance: If subsequent to its acceptance NNPP or RW finds that the naval SNF is improperly described, the discovering party shall promptly notify the other party within ten (10) days, in writing, of such finding. In the event of such notification, NNPP shall provide RW with a proper designation within thirty (30) days. In the event of a failure by NNPP to provide proper designation, RW may hold, in abeyance any and all deliveries scheduled thereafter. Temporary storage for the naval SNF will be at the RW facility and the SNF shall not be disposed of, until the SNF is correctly described. If, after proper description, the affected naval SNF meets all CRWMS acceptance criteria, a disposition decision shall be made by the RW Administrator, in coordination with the NRC (if a licensing condition has been violated) and NNPP. If the naval SNF does not meet these criteria, the RW and NNPP Administrators shall raise the issue to the appropriate authorities in accordance with Section XI.

5. NNPP, in coordination with EM, shall update and submit to RW, the Integrated Acceptance Schedule at least annually, unless no change is appropriate. In coordination with EM and NNPP, RW may submit changes to the Integrated Acceptance Schedule to support management of the SNF at the RW facility.
6. RW shall provide the maximum-minimum turnaround time from when a shipment is received at the repository, until the transportation overpack is ready to return to the NNPP facility. Such information will be provided in technical baseline documents defined in Appendix C.

#### B. Records Packages

1. NNPP shall transfer the original (or copies in accordance with requirements for Quality Assurance records packages) completed data records package to RW, at the time of acceptance. The content of the data records package shall be defined as part of the identification of data needs addressed in Section V.A.
2. Copies of data packages shall be made available for RW review and approval at least twelve (12) months prior to the scheduled acceptance.
3. RW shall review the copies of the data packages for completeness and accuracy in accordance with appropriate Quality Assurance requirements, and respond to NNPP with the findings at least six (6) months prior to the scheduled acceptance.

C. Emergency Deliveries - Emergency acceptance of naval SNF may be made as agreed to by RW.

### VII. Acceptance Criteria

#### A. Characterization and Conditioning

1. NNPP shall be responsible for characterization and associated costs of naval SNF prior to acceptance.
2. NNPP shall condition naval SNF, as necessary, to ensure its compliance with all CRWMS acceptance criteria outlined in Appendix C.

#### B. Acceptance Criteria Development

1. RW shall, in a timely manner, develop and update, in coordination with NNPP, and in accordance with Appendix C, acceptance criteria for acceptance, transportation (if needed after acceptance), storage (if needed) and disposal. If new naval SNF waste forms are identified, RW shall, as needed, incorporate additional criteria into the CRWMS acceptance criteria.
2. It is anticipated that the baselined acceptance criteria will be adequate for repository licensing. However, because the NRC will make the final determination of the adequacy of acceptance criteria in conjunction with issuing the repository license amendment to emplace, these criteria are not final and changes to them may occur as the licensing process progresses. Risks associated with future decisions which are dependent upon the CRWMS acceptance criteria will be carefully considered and appropriate measures will be taken to mitigate the potential consequences of an adverse change to the criteria. In the event of a change to the criteria, RW and NNPP will cooperate to identify appropriate

measures to ensure compliance with the regulatory requirements while minimizing the adverse impacts to NNPP and DOE.

### C. Acceptance Criteria Compliance

1. NNPP shall document that the naval SNF is in compliance with all CRWMS acceptance criteria in accordance with Appendix C.
2. RW may conduct its own reviews, tests and analyses when necessary, to confirm that the naval SNF is acceptable in accordance with all CRWMS acceptance criteria.
3. Disposition of naval SNF that does not meet acceptance criteria shall be agreed to by RW and NNPP in accordance with the following:
  - a. **Nonconforming naval SNF** - To request RW acceptance of nonconforming naval SNF, NNPP shall submit an action plan for correction or disposition for review and approval. The action plan must adequately identify and describe the nonconformance, any action to change or correct the nonconformance and an evaluation of how the nonconformance will impact the CRWMS (e.g., repository performance). RW shall either approve or disapprove the action plan within four (4) months of receipt. Disapprovals shall be accompanied by an explanation. The action plan shall be approved by the NNPP and RW Administrators, and it shall become part of the records package to which the action plan applies.
  - b. **Nonstandard naval SNF** - After approval of the action plan, RW will advise NNPP within four (4) months as to the technical feasibility of accepting nonstandard naval SNF according to the Integrated Acceptance Schedule, and any schedule adjustment for such services. NNPP shall implement the approved actions and document in the records package that the action plan has been completed.
  - c. NNPP shall bear such responsibility for any costs which RW may incur in connection with acceptance of nonstandard naval SNF.

### VIII. Fees and Terms of Payment

A. Implementation of the MOA - Individual actions of this MOA shall be funded as a part of annual budgeting by the responsible implementing organization, except as noted.

#### B. Determination of Fees

1. This MOA implements the NWPA provisions for full cost recovery for services outlined in this agreement. The DOE nuclear materials share (which includes naval SNF and DOE SNF and HLW) of the total cost of the CRWMS shall be based on the fee calculation methodology published in the Federal Register.
2. The calculation of the outstanding obligation for DOE nuclear materials shall be consistent with the NWPA requirement for equity, i.e., for fees paid by federal agencies to be equivalent to those paid under the Standard Contract. This calculation shall include: previous payments, early payments, interest and credits.
3. RW shall develop and issue a Fee Payment Schedule subsequent to issuance of the Total System Life Cycle Cost (TSLCC) projection. This Fee Payment Schedule shall identify projected annual fees for disposal of DOE nuclear materials.

4. RW's annual budget requests for Defense Nuclear Waste Disposal activities shall include the annual fee for DOE nuclear materials as reflected in the Fee Payment Schedule and any outstanding obligations. Defense Nuclear Waste Disposal appropriations received shall be credited towards the outstanding DOE nuclear materials disposal obligation balance. NNPP, in coordination with EM, shall determine and identify to RW, how past and current Defense Nuclear Waste Disposal appropriations, and any subsequent payments, are to be allocated and credited toward naval SNF and DOE SNF and HLW obligations. RW will support development of this allocation as requested by NNPP and EM.

#### C. Payments

1. Prior to physical acceptance of naval SNF under this agreement, RW, NNPP and EM shall determine whether Defense Nuclear Waste Disposal appropriations have satisfied all prior outstanding financial obligations for the disposal of naval SNF.
2. All prior outstanding financial obligations, up to the year of initial acceptance, must be paid before the acceptance by RW of any naval SNF, DOE SNF and/or HLW.
3. During CRWMS operations, if the Defense Nuclear Waste Disposal appropriation is less than the amounts identified in the Fee Payment Schedule for Defense Nuclear Waste Disposal activities, the receipt rate of naval SNF, DOE SNF and HLW will be adjusted consistent with the Defense Nuclear Waste Disposal appropriation.
4. To allow for initial acceptance of naval SNF or to maintain annual receipt rates during CRWMS operations, as required in the National interest, NNPP may make supplemental allocations, in addition to Defense Nuclear Waste Disposal appropriations, to meet necessary payments towards naval SNF disposal. Alternatively, RW-1 and the Director, NNPP, may agree to establish an alternate Fee Payment Schedule, in coordination with EM and in accordance with the NPSA.

#### D. Effect of Payments

Subsequent to transfer of funds to RW satisfying all cumulative financial obligations for the total system life cycle cost of disposal of naval SNF, the full cost recovery provisions of the NPSA will be considered to have been fulfilled.

#### E. Expenditure of Funds

Nothing in this MOA is intended to obligate the expenditure of funds in a manner inconsistent with the NPSA, the Anti-Deficiency Act and other relevant Federal statutes.

#### IX. Delays

In the event that circumstances (e.g., regulatory enforcement actions, *force majeure*) cause a substantial delay in naval SNF transfer to RW or lead to an unanticipated increase in the costs associated with handling naval SNF, the party experiencing the delay or involved in the incident shall notify the other party as soon as practicable. NNPP and RW will readjust their schedules and activities, as appropriate, to accommodate such delays.

This agreement shall not be abrogated by delays resulting from programmatic, budgetary, or other causes. In the event that there is a dispute because one party must bear costs associated

with the delay resulting from a fault of the other party, it shall be addressed in accordance with Section XI. Delays in Defense Nuclear Waste Disposal appropriations may delay acceptance under this MOA.

#### **X. Official Notices**

All necessary communications to implement this MOA shall be in writing and shall be sent to the respective Administrators, as defined in Section II, *Definitions*.

#### **XI. Issue and Dispute Resolution**

The RW Administrator shall have authority to implement activities under this MOA for which RW has responsibility. Issues and disputes will be resolved through negotiations between NNPP and RW. The Administrators shall be responsible for these negotiations and disposition of any issues and disputes. Discussion of issues may be delegated to staff level, as appropriate. Agreements and changes to this MOA proposed by the Administrators shall be submitted to NNPP and RW for approval. Issues or disputes shall be raised to higher authorities, namely, (1) Director, NNPP and RW-1, and (2) the DOE Under Secretary/Secretary of the Navy.

#### **XII. Classified Information**

For the acceptance, transportation, storage (if needed) and disposal of naval SNF, exchange of classified information between NNPP and RW will be necessary. NNPP shall provide necessary classified information to properly cleared, technically qualified RW personnel on a need-to-know basis. Any classified data that are transmitted or received by NNPP or RW shall be documented, handled and transmitted in accordance with appropriate security requirements.

RW shall make appropriate arrangements with regulatory agencies to ensure that classified information is handled in accordance with applicable security requirements. RW shall be responsible for proper handling, storage, and dissemination of classified information furnished by NNPP.

NNPP and RW shall be responsible for all costs associated with safeguarding classified information under their respective custody associated with disposal of naval SNF.

#### **XIII. Amendments and Clarifications**

The provisions of this MOA may require future modifications. Accordingly, at the request of either NNPP or RW, the parties shall negotiate and, to the extent mutually agreed, amend this agreement as necessary or proper to reflect their respective interest, or to reflect changing statutory or legislative direction.

#### **XIV. Permits**

RW and NNPP shall procure all necessary permits or licenses (including any special nuclear material licenses) and comply with all applicable laws and regulations of the United States, States and municipalities necessary to execute their respective responsibilities and obligations under this MOA.

**XV. Entire MOA**

A. This MOA, which consists of Sections I through XV and Appendices A through E, contains the entire agreement between the parties with respect to this subject matter and supersedes any previously agreed to MOA relating to this subject. Any representation, promise, or condition not incorporated in this MOA shall not be binding on either party.

B. Nothing in this MOA is intended to adversely affect in any way the contractual obligation of any other persons with whom NNPP or RW are currently under contract.

C. Appendices

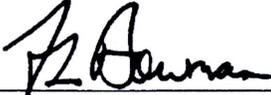
A. *Cross-reference With the Standard Contract, 10 CFR Part 961.11*

B. *Integrated Acceptance Schedule*

C. *Subagreement on the Naval SNF Technical Baseline*

D. *Working Agreement for Repository Spent Nuclear Fuel Matters*

E. *Coordination and Implementation of Quality Assurance Activities Associated with Naval SNF*

 6/21/00  
\_\_\_\_\_  
Director, NNPP

  
\_\_\_\_\_  
Director, OCRWM

Deputy Administrator, NNSA

## Appendix A

### *Cross-reference With the Standard Contract, 10 CFR Part 961.11*

<u>961.11</u>	<u>MOA</u>	<u>961.11</u>	<u>MOA</u>
Prologue	Sections I, III	XI	N/A for interagency
Article I	II	XII	X
II	III.A	XIII	N/A for interagency
III	III.B	XIV	N/A for interagency
IV.A.1(a)	VI.A.2, VI.A.5	XV	XIII
A.1(b)	VI.A.2, VI.A.5	XVI	XI
A.2(a)	V.C	XVII	N/A for interagency
A.2(b)	V.A	XVIII	N/A for interagency
A.2(c)	V.C	XIX	N/A for interagency
B.1	V.F	XX	XIV
B.2	V.B, V.C	XXI	N/A for interagency
B.3	N/A for interagency	XXII	XV
B.4	V-VII	Appendix A	VI.A
B.5	VI.A	Appendix B	VI.A
V.A	V.F	Appendix C	VI.A
B.1	VI.A, V.A	Appendix D	VI.A
B.2	VI.A, V.A	Appendix E	VII.B, VII.C
C	VI.A, V.A	Appendix F	V.A, VII.B, VII.C
D	VI.C		
E	VI.A		
VI.A.1(a)	VII.B, VII.C		
A.1(b)	V.A, VII.B, VII.C		
A.2(a)	V.A		
A.2(b)	VII.C		
B.1	VI.A		
B.2	V.E		
B.3	V.E		
VII	V.F		
VIII.A	VIII.B, VIII.C		
B	VIII.B, VIII.C		
C	VIII.B		
D	VIII.D		
E	VIII.B		
IX	IX		
X	N/A for interagency		

**EXAMPLE** (e.g., alternating between 40 MTHM Idaho naval SNF and 40 MTHM Hanford N-reactor SNF)

Year	Delivery Total MTHM	Jan	Feb	Mar	Apr (MTHM/Site/Type)	May	June	July	Aug	Sept	Oct	Nov	Dec
2010	TBD												
2011	TBD												
2012	TBD												
2013	TBD												
2014	TBD												
2015	400	40/ID/Nav	40/Hanf/NR <sub>x</sub>		40/ID/Nav40/Hanf/NR <sub>x</sub> 40/ID/Nav					40/Hanf/NR <sub>x</sub> 40/ID/Nav40/Hanf/NR <sub>x</sub>			
2016	400												
2017	400												
2018	400												
2019	400												
2020	400												
2021	400												
2022	400												
2023	400												
2024	400												
2025	400												
2026	400												
2027	400												
2028	400												
2029	400												
2030	400												
2031	400												
2032	200												
2033	0												

REV 1

B-1

4/11/00

Integrated Acceptance Schedule - Material Description

Revision \_\_\_\_\_  
Page \_\_ of \_\_

Acceptance Year \_\_\_\_\_  
Total MTHM for Acceptance Year \_\_\_\_\_

1. Acceptance Date (Month/Year) \_\_\_\_\_

2. Site Name \_\_\_\_\_

3. a. Description of Naval SNF

Type of Fuel \_\_\_\_\_  
Cladding Material \_\_\_\_\_  
Initial Enrichment \_\_\_\_\_  
MTHM - Discharged \_\_\_\_\_  
Number of assemblies \_\_\_\_\_  
Burnup \_\_\_\_\_  
Condition \_\_\_\_\_  
Age \_\_\_\_\_  
Thermal Output \_\_\_\_\_

b. Description of HLW

MTHM Equivalent \_\_\_\_\_  
Thermal Output \_\_\_\_\_  
Year Produced \_\_\_\_\_

4. Type of Transportation Cask Required:

Truck \_\_\_\_\_  
Rail \_\_\_\_\_  
Barge \_\_\_\_\_

## Appendix C

### *Subagreement on the Naval SNF Technical Baseline*

#### Purpose

This Appendix defines the responsibilities for the development and control of the technical baseline that supports the acceptance of canistered naval SNF generated by the NNPP into the CRWMS.

#### Scope

This Appendix is limited to issues related to the development, concurrence, distribution, compliance and conformance verification of acceptance criteria relative to naval SNF and coordination of associated issues. For the purposes of this Appendix, the technical baseline shall only include the documents identified in Figure 1.

#### Definitions

**CRWMS Acceptance Criteria** - All technical and programmatic requirements which must be satisfied by naval SNF for the CRWMS to meet regulatory requirements, as documented in the Waste Acceptance System Requirements Document.

**Interface Control Documents (ICDs)** - The documentation defining detailed design solutions needed for design, development and operation of the CRWMS (developed by the RW Yucca Mountain Site Characterization Office (YMSCO), and Office of Acceptance, Transportation, and Integration (OATI), as needed).

**Naval SNF Canister System Technical Baseline Compliance Document** - The documentation that establishes top-level requirements for the design of the naval SNF canister system canister and transportation overpack and which demonstrates compliance with CRWMS acceptance criteria.

#### RW Responsibilities

- a. Development of CRWMS Acceptance Criteria and Interface Documents - RW shall, in collaboration with NNPP, develop acceptance criteria and interface documents, as needed, for naval SNF. These requirements shall be documented in accordance with Figure 1. RW shall include NNPP in technical reviews of these documents within the scope of this Appendix.
- b. NNPP Concurrence with CRWMS Acceptance Criteria and Interface Documents - RW shall include NNPP as an ad hoc member of the RW Baseline Change Control Board(s) for changes to the CRWMS acceptance criteria. Initial issuance and changes to detailed acceptance criteria and interface documents (if needed) shall be concurred in as an ad hoc

member of the YMSCO and OATI Change Control Boards by NNPP. This does not include revisions that do not impact NNPP, and typographical, clerical and/or administrative changes, but these will be sent for NNPP information while still drafts.

- c. Development of NNPP Technical Baseline Documents - RW shall provide qualified reviewers to support technical reviews of NNPP's documents related to acceptance of naval SNF.
- d. RW Concurrence with NNPP Technical Baseline Documents - RW shall concur that the NNPP technical baseline compliance document has been reviewed, resolution of all identified comments has been accepted and that no identified outstanding issues remain. Concurrence by RW does not relieve NNPP of the responsibility to meet all applicable requirements contained in the CRWMS acceptance criteria.
- e. Distribution of CRWMS Acceptance Criteria and Interface Documents - RW shall provide directly to NNPP, controlled copies of all CRWMS acceptance criteria documents and interface documents.
- f. Coordination - RW shall meet with NNPP periodically, as needed, to discuss issues related to acceptance of naval SNF. In addition, RW shall request NNPP participation at all meetings which address related issues.
- g. Conformance Verification of CRWMS Acceptance Criteria and Interface Documents - RW may perform conformance verification reviews to ensure CRWMS requirements have been met. This may include review of documentation, and/or performance of tests and analyses where necessary, to provide demonstration that the naval SNF provided by NNPP is acceptable for disposal in accordance with CRWMS acceptance criteria.

#### NNPP Responsibilities

- a. Development of CRWMS Acceptance Criteria and Interface Documents - NNPP shall provide qualified reviewers for technical reviews of CRWMS acceptance criteria and interface documents applicable to acceptance of naval SNF.
- b. NNPP Concurrence with CRWMS Acceptance Criteria and Interface Documents - NNPP shall participate as an ad hoc member of the RW Baseline Change Control Board(s) for changes to the CRWMS acceptance criteria, and shall concur as an ad hoc member of the YMSCO and OATI Change Control Boards on initial issuance and changes to detailed acceptance criteria and the interface document(s) within the scope of this Appendix. This does not include revisions that do not impact NNPP, and typographical, clerical and/or administrative changes, but these will be sent for NNPP information while still drafts.
- c. Development of NNPP Technical Baseline Documents - Using the baselined CRWMS acceptance criteria, NNPP shall prepare and update design-level technical specifications, technical design and development plans, and documentation of data gathering, analysis

and/or testing activities for naval SNF, which comply with CRWMS acceptance criteria. These documents shall be in accordance with Figure 1.

- d. RW Concurrence with NNPP Technical Baseline Compliance Document - NNPP shall develop a document that defines how the NNPP will comply with all CRWMS acceptance criteria. NNPP shall obtain RW concurrence with this document. Concurrence by RW does not relieve NNPP of the responsibility to meet all applicable CRWMS acceptance criteria.
- e. Distribution of NNPP Technical Baseline Compliance Document - NNPP shall provide RW controlled copies of the NNPP technical baseline compliance document. In addition, NNPP shall provide RW with copies of other acceptance technical documentation, for information, upon request.
- f. Coordination - NNPP shall meet with RW periodically, as needed, to discuss issues related to acceptance of naval SNF. In addition, NNPP shall request RW participation at all meetings which address related issues.
- g. Conformance Verification of CRWMS Acceptance Criteria and Interface Documents - NNPP shall provide the necessary documentation for RW to perform verification reviews to ensure CRWMS requirements have been met.

# RW/NNPP TECHNICAL BASELINE REQUIREMENTS

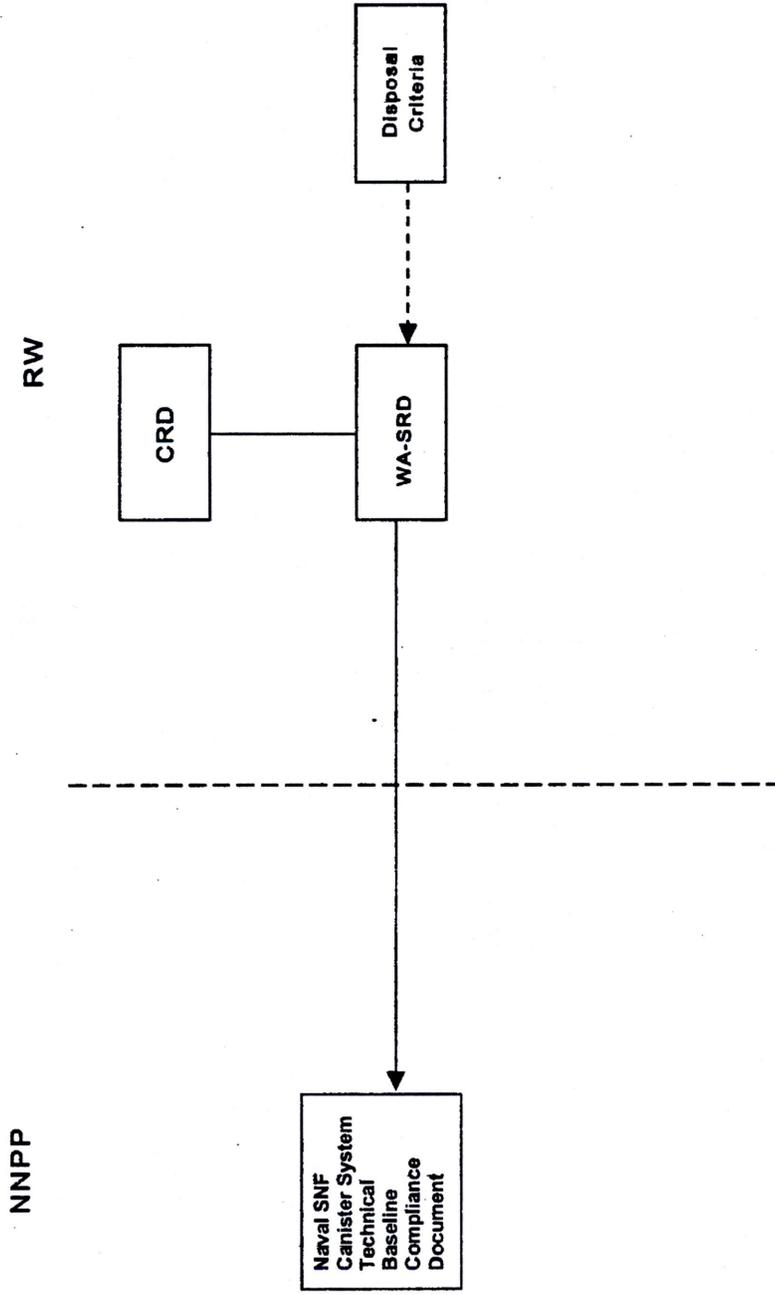


FIGURE 1

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## Appendix D

### *Working Agreement for Repository Spent Nuclear Fuel Matters*

1. Purpose: This Working Agreement (Agreement) is entered into for the purpose of facilitating the exchange of near-term analytical information between NNPP and the Yucca Mountain Site Characterization Office (YMSCO) pertaining to naval SNF planned to be disposed of in a geologic repository. Such information exchange is intended to ensure that analyses prepared covering naval spent fuel are consistent with those prepared for non-naval SNF, and to ensure that each party is fully informed of the actions of the other which may affect matters under either party's responsibility. The Agreement also identifies, where appropriate, which party has the responsibility for specific actions.
2. NNPP's Responsibilities: NNPP is responsible for:
  - a. Preparing and providing to YMSCO information and analyses concerning naval SNF to support the Nuclear Waste Policy Act, and other applicable laws and regulations. This includes the information listed below, along with a full description of how the information was prepared and calculated, and the bases used for the calculations:
    - (1) naval SNF integrity analyses to establish the expected length of time naval spent fuel cladding integrity is maintained with no release of fission product radioactivity, and once integrity is breached, what is the expected isotope profile and time profile for release of radioactivity.
    - (2) criticality analyses for naval SNF in the disposal container prior to container degradation and for naval SNF after container degradation, but before the loss of cladding integrity and fission product and uranium release.
    - (3) the expected range of thermal loads per container of naval SNF, the expected time profile of heat output, the expected distribution of heat outputs among the containers, and the expected timing of delivery of such containers to the repository.
    - (4) the expected dose to the public and any effect on the environment consistent with information provided in the final Environmental Impact Statement for a Container System for the Management of Naval SNF (NFEIS) dated November 1996 for the transportation of naval SNF to the repository. This covers both normal and off-normal conditions.
    - (5) additional information and analyses determined to be necessary in support of the repository licensing process.
  - b. Quality Assurance for all activities, calculations, data collection, analyses, etc. shall be accomplished as specified in Appendix E, *Coordination and Implementation of Quality Assurance Activities Associated with Naval SNF*.

- c. Working with DOE-EM and the National Spent Nuclear Fuel Program at the DOE Idaho Operations Office (DOE-ID) in preparing analyses and information to be included in the Yucca Mountain Site Environmental Impact Statement (EIS). Analyses and information covering naval SNF will be included in those to be prepared by DOE-EM and DOE-ID covering non-naval DOE SNF, and supplied to YMSCO jointly by NNPP and DOE-ID.
  - d. Keeping YMSCO apprised of any interactions which NNPP has with the NRC concerning matters covered under this Agreement or potentially affecting the licensing of the repository.
  - e. Information and analyses for evaluation of potential accidents involving naval SNF container or canister handling at the repository, such as an inadvertent drop of a loaded naval SNF canister or transportation cask.
3. YMSCO Responsibilities: YMSCO is responsible for:
- a. Consulting with NNPP in developing, establishing or modifying requirements and methodology pertaining to or affecting analyses which NNPP will supply under paragraph 2 above, to ensure consistency between analyses for naval and non-naval SNF and to ensure that the equipment that NNPP needs to design and procure will meet the design requirements of the repository. Where such consultations indicate that NNPP concurrence should be obtained on the requirements or methodology, that will be done. Overall CRWMS acceptance criteria development and concurrence are covered in Appendix C.
  - b. Evaluating the effect on repository criticality once naval SNF cladding integrity is expected to be lost. These analyses will cover both the "near-field" and "far-field" effects. YMSCO will provide the input documentation of input parameters including necessary references, detailed models including background information and documentation necessary to follow models, computer codes, instructions for use of computer codes, and all results used in these criticality and dose analyses to permit NNPP to perform an independent check on the assumptions and results; NNPP will provide the results of these independent analyses for YMSCO use. Changes to this information will be provided to NNPP in a timely fashion.
  - c. Providing NNPP in a timely fashion schedules containing "need-dates" for information or analyses, and the bases for those need dates in support of NEPA work, repository licensing, or other activities. If NNPP foresees difficulty in meeting a particular need date, NNPP will promptly inform YMSCO and the parties will determine what schedule changes, if any, are feasible.

- d. Keeping NNPP apprised of any interactions which YMSCO has with the NRC concerning matters covered under this Agreement or potentially affecting NNPP's responsibilities and obligations under this Agreement.
4. Information Exchange Protocols: To facilitate meeting the provisions of paragraphs 2 and 3 above, the following applies:
    - a. YMSCO and NNPP will hold periodic meetings to review matters covered in this Agreement. Such meetings will be held approximately quarterly, or more often if deemed necessary by both parties.
    - b. YMSCO will keep NNPP apprised of schedules for working group meetings in areas of interest to NNPP and agrees with NNPP participation in such meetings if NNPP desires to attend.
    - c. YMSCO and support contractor personnel with appropriate clearances may visit the Naval Reactors Facility (NRF) at INEEL and the Bettis Atomic Power Laboratory, as appropriate, for purposes of understanding naval SNF management and containerization, and observing naval SNF containerization to verify that repository disposal criteria are being met, including necessary quality assurance requirements.
  5. Contractor Liaison: To facilitate execution of the provisions of this Agreement, direct liaison between the Bettis Atomic Power Laboratory (for NNPP) and the YMSCO contractors (for YMSCO) is encouraged. Bettis and the YMSCO lead contractor will each identify principal points of contact for this purpose.
  6. Information Security Requirements: Visits to NRF and Bettis to review naval SNF management and containerization matters will require appropriate security clearances. Specifically, personnel will need to be U. S. citizens and technically qualified, and will need to hold DOE "L" or DOE "Q" clearances, or the equivalent clearances granted by other government agencies. Additionally, any classified information pertaining to naval spent fuel conveyed to YMSCO or their support contractors will also require recipients to be U. S. citizens and hold such clearances.
  7. Duration: This Agreement will remain in effect for as long as both parties desire. Changes to the Agreement may be made with the concurrence of both parties.

## **Appendix E**

### ***Coordination and Implementation of Quality Assurance Activities Associated with Naval Spent Nuclear Fuel***

#### **Purpose**

This Agreement delineates the coordination and implementation of quality assurance (QA) activities between the NNPP and the RW associated with preparation of the naval SNF for acceptance in an RW-managed, NRC-licensed storage or disposal facility. This Agreement further defines the roles and responsibilities in coordinating and implementing the NNPP QA Program.

#### **Agreement**

The overall goal and objective of this Agreement is to achieve and maintain acceptance of naval SNF by RW for disposal in a geologic repository, or temporary storage if necessary.

RW has reviewed and found the NNPP QA Program to be acceptable for work conducted by, or under the direction of, the NNPP in support of RW acceptance of naval SNF. This acceptance is documented in a letter from Dwight E. Shelor (DOE) to J.T. Greeves (NRC) dated March 8, 1999 and entitled "OCRWM Review and Acceptance of the NNPP QA Program."

The requirements of the NNPP QA Program shall continue to be defined and administered solely by the NNPP in accordance with the statutory requirements of Presidential Executive Order 12344, enacted as Public Law 98-525 (42 USC 7158), and Public Law 106-65 (50 USC 2406). Data generated in accordance with the requirements of the NNPP QA Program and used to support the acceptance of naval SNF for storage or disposal is considered qualified data.

Formal interface for the NNPP QA Program will be between the Director, NNPP, and the Director of the Office of Civilian Radioactive Waste Management, RW-1. Routine communications and interfacing activities are between the Director or Deputy Director, RW-3 and the NNPP QA Director.

This interface will provide for:

- a. Coordination of QA activities associated with the development and evaluation of naval SNF technical requirements.
- b. Clarification and interpretation of QA requirements.
- c. Coordination of NNPP QA activities for the purpose of RW acceptance and disposal of naval SNF.

**RW roles shall include:**

- a. In cooperation with NNPP, conduct periodic reviews and information exchanges supplemented by other activities mutually agreed upon, as necessary, to ensure the NNPP QA program effectively supports the acceptance of naval SNF and that the QA Program and its implementation remain acceptable to RW. When deemed necessary, independently assess the effectiveness of the control of quality of naval SNF, focusing on areas of interest. This assessment may be a review similar to the review performed by RW to initially accept the NNPP QA Program.
- b. Provide NNPP drafts of any proposed revisions or changes to the QARD for review and concurrence prior to issue.
- c. Provide NNPP and its contractors with current controlled copies of the QARD and controlled copies of all revisions to the QARD as they are issued.
- d. Obtain NNPP assistance in representing the NNPP QA Program to other agencies.
- e. Maintain documents resulting from the implementation of this MOA in a manner which meets the requirements for lifetime records in accordance with OCRWM Administrative Procedure 17.1Q, *Record Source Responsibilities for Inclusionary Records*.

**NNPP roles shall include:**

- a. As necessary, inform RW of changes in NNPP QA Program requirements and practices and provide any information needed to ensure that acceptability has been maintained.
- b. Support RW, as required, in reviews by other agencies of QA as related to the disposal of naval SNF.
- c. Conduct all oversight for activities related to the acceptance of naval SNF. NNPP will inform RW of opportunities to participate in such oversight activities and as a minimum will review with RW, on an annual basis, the QA program activities.

These actions will provide a high degree of confidence that the naval SNF will meet the established technical requirements for acceptance in an RW-managed, NRC-licensed storage or disposal facility.

**Observers**

Subject to explicit agreement by both NNPP and RW on an individual case basis, representatives of the NRC, affected units of state and local government, Indian tribes, or other groups or individuals with a legitimate interest may be permitted, consistent with security access and personnel safety requirements, to observe QA program reviews or similar activities associated with the acceptance of naval SNF by a geologic repository.

## **Commencement, Amendment, and Termination**

This Agreement forms a part of the MOA between RW and NNPP, shall be deemed effective upon signature of the MOA by RW and NNPP, and shall remain in effect until modified or terminated by mutual agreement.

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