SOLICITATION, OFFER AND AWARD

1. THIS CONTRACT IS A RATED ORDER UNDER DPAS (15 CFR 700) — RATING

2. CONTRACT NUMBER	3. SOLICITATION NUMBER	4. TYPE OF SOLICITATION	5. DATE ISSUED	6. REQUISITION/PURCHASE NUMBER
DE-AC28-08RW09002	DE-RP28-07RW12398	☐ SEALED BID (IFB) ☒ NEGOTIATED (RFP)	07/11/2007	08RW09002.000

7. ISSUED BY — CODE

Department of Energy, OCRWM
1551 Hillshire Drive
Las Vegas, NV 89134

8. ADDRESS OFFER TO (If other than Item 7)

NOTE: In sealed bid solicitations "offer" and "offeror" mean "bid" and "bidder".

SOLICITATION

9. Sealed offers in original and 0 copies for furnishing the supplies or services in the Schedule will be received at the place specified in Item 8, or if handcarried, in the depository located in See Section L until 17:00 (Hour) local time 08/24/2007 (Date)

CAUTION - LATE Submissions, Modifications, and Withdrawals: See Section L, Provision No. 52.214-7 or 52.215-1. All offers are subject to all terms and conditions contained in this solicitation.

10. FOR INFORMATION CALL:	A. NAME	B. TELEPHONE (NO COLLECT CALLS) AREA CODE	NUMBER	EXT.	C. E-MAIL ADDRESS
	Patricia Benson	702	794-5455		patricia.benson@ymp.go

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OFFER (Must be fully completed by offeror)

NOTE: Item 12 does not apply if the solicitation includes the provisions at 52.214-16, Minimum Bid Acceptance Period.

12. In compliance with the above, the undersigned agrees, if this offer is accepted within 270 calendar days (60 calendar days unless a different period is inserted by the offeror) from the date for receipt of offers specified above, to furnish any or all items upon which prices are offered at the price set opposite each item, delivered at the designated point(s), within the time specified in the schedule.

13. DISCOUNT FOR PROMPT PAYMENT (See Section I, Clause No. 52.232-8)	10 CALENDAR DAYS (%)	20 CALENDAR DAYS (%)	30 CALENDAR DAYS (%)	CALENDAR DAYS (%)

14. ACKNOWLEDGMENT OF AMENDMENTS (The offeror acknowledges receipt of amendments to the SOLICITATION for offerors and related documents numbered and dated):	AMENDMENT NO.	DATE	AMENDMENT NO.	DATE
	A001 7-12-07 A003	8/17/07	A005	3/25/08
	A002 8-7-07 A004	2/26/08	A006	3/26/08

15A. NAME AND ADDRESS OF OFFEROR — CODE — FACILITY

NAC International, Inc
3930 E. Jones Bridge Road, Suite 200
Norcross, GA 30092

16. NAME AND TITLE OF PERSON AUTHORIZED TO SIGN OFFER (Type or print)

Craig K. Seaman, Sr. Vice President

15B. TELEPHONE NUMBER AREA CODE	NUMBER	EXT.	15C. CHECK IF REMITTANCE ADDRESS IS DIFFERENT FROM ABOVE - ENTER SUCH ADDRESS IN SCHEDULE.	17. SIGNATURE	18. OFFER DATE
678	328-1221		☐	Craig K. Seaman	5/20/08

AWARD (To be completed by Government)

19. ACCEPTED AS TO ITEMS NUMBERED	20. AMOUNT	21. ACCOUNTING AND APPROPRIATION
CLINs 001 to 006	$6,545,000.00	See Page 2

22. AUTHORITY FOR USING OTHER THAN FULL AND OPEN COMPETITION: ☐ 10 U.S.C. 2304(c) ( ) ☐ 41 U.S.C. 253(c) (3)

23. SUBMIT INVOICES TO ADDRESS SHOWN IN (4 copies unless otherwise specified) — ITEM: See J. 2.

24. ADMINISTERED BY (If other than Item 7) — CODE

SAME AS BLOCK 10

25. PAYMENT WILL BE MADE BY — CODE

26. NAME OF CONTRACTING OFFICER (Type or print)

Reggie R. James

27. UNITED STATES OF AMERICA (Signature of Contracting Officer) Reggie R. James

28. AWARD DATE 5/20/08

IMPORTANT - Award will be made on this Form, or on Standard Form 26, or by other authorized official written notice.

1. Block 21. ACCOUNTING AND APPROPRATION (Continued)
   02800.2008.01.100298.61000000.25200.2823626.0000000.0000000.0000000.000000

2. Incorporated into and made apart hereof are:
   a) Amendments A001 through A006
   b) NAC International, Inc.'s Final Proposal Revision submitted March 31, 2008

3. The following changes have been made to the solicitation:
   a) The deliverable due dates indicated in **C.7 Summary of Deliverables** are changed as follows:

Base Contract	**Delivery Dates**
Prepare and Deliver the Draft Plan to Complete Option 1	7/18/2008
Briefing/Presentation on Design Status	11/14/2008
Prepare and Deliver Intermediate 10 CFR Part 71 SAR	12/19/2008
Prepare and Deliver Intermediate 10 CFR Part 72 SAR	12/19/2008
Identify and Contract with a Utility Entity	12/19/2008
Aging Configuration Intermediate Final Design Report	12/19/2008
Update and Deliver the Final Plan to Complete Option 1	1/2/2009
Option One	
Final Design of TAD Canister in Aging Configuration	
Briefing/Presentation on Aging Configuration Design Report	4/10/2009
Aging Configuration Information Packet	4/10/2009
Aging Configuration Final Design Report	4/10/2009
TWPS Design and Engineering Report	4/10/2009
Safety Analysis Report Completion and Delivery	
10 CFR Part 71 SAR Completed and Delivered to DOE	6/26/2009
10 CFR Part 72 SAR Completed and Delivered to DOE	6/26/2009
Briefing/Presentation on Final SAR	7/10/2009
Part 71/72 SAR Information Packet	7/10/2009
Safety Analysis Report Submission	
10 CFR Part 71 SAR Submitted to NRC	9/11/2009
10 CFR Part 72 SAR Submitted to NRC	9/11/2009
TAD Operational Demonstration Plan	
Draft TAD Operational Demonstration Plan to DOE	10/28/2009
Safety Analysis Report Docketing	
10 CFR Part 71 SAR docketed by NRC	12/18/2009
10 CFR Part 72 SAR docketed by NRC	12/18/2009
Option Two	
TAD System Performance Demonstration at Utility Site	
Submit Final Operational Demonstration Plan	8/10/2012
Receive NRC CoC for 10 CFR Part 71	12/30/2011
Receive NRC CoC for 10 CFR Part 72	12/30/2011
Operational Demonstration Complete	5/3/2013
Final Operational Demonstration Report	5/3/2013
Periodic Briefings and Presentations on SAR Development	As Requested

   b) The text in clause **F.2 TERM OF CONTRACT** is deleted and replaced by the following:
      - BASE PERIOD: The base period of performance for this fixed price contract shall be from June 2, 2008 through January 2, 2009.
      - If exercised, the period of performance for Option 1 will be January 3, 2009 through December 18, 2009.
      - If exercised, the period of performance for Option 2 will be December 19, 2009 through May 3, 2013.

   c) In clause **H.11 KEY PERSONNEL (DEC 2000)** Names from the Final Proposal Revision have been added to the clause.

d) The following clause is incorporated into and made a part hereof:

Lobbying Restriction (Energy and Water Development and Related Agencies Appropriations Act, 2008)

The contractor agrees that none of the funds obligated on this award shall be expended, directly or indirectly, to influence congressional action on any legislation or appropriation matters pending before Congress, other than to communicate to Members of Congress as described in 18 U.S.C. 1913. This restriction is in addition to those prescribed elsewhere in statute and regulation.

(End of Clause)

e) Deliverables shall be accepted under the version of LP-7.5Q-OCRWM -- ESTABLISHING DELIVERABLE ACCEPTANCE CRITERIA AND REVIEWING DELIVERABLES that is in effect on the date the deliverable is submitted.

f) Reference G.1 CCORRESPONDENCE PROCEDURES, Paragraph (c). SUBJECT LINE(S) Replace the text with "All correspondence shall contain a subject line commencing with the following: Contract Number DE-AC28-08RW09002."

g) Reference SECTION I – CONTRACT CLAUSES, Section I.1, the second paragraph indicates a web site for the Department of Energy Regulations. The correct web site is http://www.management.energy.gov/DEAR.htm

PART I – THE SCHEDULE
SECTION C

STATEMENT OF WORK

FOR

TRANSPORTATION, AGING AND DISPOSAL CANISTER-BASED SYSTEMS

TRANSPORTATION, AGING AND DISPOSAL CANISTER-BASED SYSTEM FINAL DESIGN, NRC CERTIFICATION, AND DEMONSTRATION

STATEMENT OF WORK

Transportation, Aging and Disposal Canister-based System Final Design, NRC Certification, and Demonstration

C.1 Mission Statement

C.2 Background

C.3 Statement of Need

C.4 Statement of Work

C.4.1 Base Contract – Begin TAD System SAR Preparation

C.4.2 Option One – Complete TAD System SAR and Submit to NRC

C.4.3 Option Two – NRC Certification and Operational Demonstration

C.5 DOE Limited Use License and Protection of Proprietary Information for TAD System Design

C.6 Quality Assurance

C.7 Summary of Deliverables (Amendment A004)

C.1 MISSION STATEMENT

The Office Of Civilian Radioactive Waste Management (OCRWM) is responsible for implementation of the Nuclear Waste Policy Act (NWPA), P.L. 97-425, as amended, 42 U.S.C. 10101 et seq. The NWPA provides for the development of a repository for the permanent disposal of high-level radioactive waste and spent nuclear fuel (SNF), including development of transportation capabilities in a manner that fully protects the health and safety of the public and the quality of the environment.

C.2 BACKGROUND

The NWPA clearly documented the need for the Civilian Radioactive Waste Management System (CRWMS). The CRWMS mission need was re-affirmed by the Secretary of Energy, the President and the Congress in 2002, with the approval of the Site Recommendation for the Yucca Mountain Repository. This approval has been recognized as the official Critical Decision-0 (Approval of Mission Need) for the CRWMS major system projects, as required by Department of Energy (DOE) Order 413.3, *Program and Project Management for the Acquisition of Capital Assets*. This includes responsibility for construction and operation of a geologic repository at the Yucca Mountain Site in Nevada, as well as a transportation system and attendant infrastructure to move these materials from their present storage locations to the repository. The Acquisition Executive conditional approval of Critical Decision-1, Approve Alternative Selection and Cost Range, was issued on July 7, 2004.

Commercial spent nuclear fuel (CSNF) from electricity production at nuclear power plants will be disposed at the Yucca Mountain Repository. Ultimate disposition of these materials will involve preparing them at the commercial sites, packaging the materials for transport and finally preparing them for disposal at the Yucca Mountain Repository.

The DOE is developing a Transportation, Aging and Disposal (TAD) canister-based system to simplify and standardize operations throughout the CRWMS. The TAD canister will be the key component that facilitates various TAD-based system functions envisioned for temporary storage of CSNF at utility sites (as necessary), transport to the repository, aging at the repository, and ultimate disposal when placed into a waste package. As such, components of a TAD canister-based system shall comply with the regulatory requirements of Title 10 Code of Federal Regulations Part 50 (10 CFR Part

50), 10 CFR Part 71, 10 CFR Part 72, and 10 CFR Part 63, as applicable. DOE requires the design, licensing and demonstration of a TAD canister-based system for CSNF.

The Statement of Work takes precedence over the Statement of Need.

C.3 STATEMENT OF NEED

Contractor(s) shall be responsible for design and NRC certification of one or more TAD canister-based systems. The contract will require the Contractor(s) to:

- Develop, design and obtain NRC Certificates of Compliance (CoC) for a TAD canister-based system in accordance with 10 CFR Part 71 and 10 CFR Part 72;
- Provide DOE appropriate rights for use of the TAD canister-based system design and NRC CoC. These rights include, but are not limited to:
  - DOE ownership or unlimited rights in intellectual property first produced under the DOE contracts;
  - Free license rights to a successor Contractor(s), if any, in Contractor(s) background intellectual property, for use in TAD canister-based design or NRC CoC, in the event of Contractor(s) default;
  - Free license rights in Contractor(s) background intellectual property, as necessary for DOE demonstration of the designs, or as necessary for NRC CoC;
  - Limited license rights, for compensation as may be appropriate, in Contractor(s) background intellectual property, for Government use, including NRC CoC, as necessary for use or operation of the Yucca Mountain repository.
- Deliver for demonstration a fabricated and operational TAD canister-based system certified for use under 10 CFR Part 72.

The TAD canister will be utilized to transport SNF to the Yucca Mountain repository. Therefore, the TAD canister and transportation overpack shall be certified under 10 CFR Part 71. The Contractor(s) will prepare an intermediate level safety analysis report (SAR) for 10 CFR Part 71 for review by DOE and prepare a Final SAR for 10 CFR Part 71 to the NRC for docketing and evaluation. At a minimum, an intermediate level of design for SAR development shall consist of the following information: (1) Preliminary drawings that show maximum envelope dimensions of primary components, (2)

estimated gross weights of primary components and anticipated materials of construction, (3) annotated outline of the SAR and (4) expected CSNF loading envelope. The design requirements for integration of a TAD canister with other utility system components are not included as part of this acquisition.

The TAD canister-based system may be utilized at a nuclear utility dry SNF storage facility. Therefore, the TAD canister-based system shall be certified under 10 CFR Part 72 for use as part of the utilities independent spent fuel storage installation (ISFSI). The Contractor(s) will prepare an intermediate level safety analysis report (SAR) for 10 CFR Part 72 for review by DOE and prepare a Final SAR for 10 CFR Part 72 to the NRC for docketing and evaluation. At a minimum, an intermediate level of design for SAR development shall consist of the following information: (1) Preliminary drawings that show maximum envelope dimensions of primary components, (2) estimated gross weights of primary components and anticipated materials of construction, (3) annotated outline of the SAR and (4) expected CSNF loading envelope. The design requirements for integration of a TAD canister with other utility system components are not included as part of this acquisition.

The development and demonstration strategy for the TAD system requires that the Contractor(s) team with one or more nuclear utility entity(ies)[1] who will agree to participate in an operational demonstration of the TAD canister-based system and other site-specific components required to operate the TAD system at a site(s) after the Contractor(s) has obtained the required 10 CFR Part 71 and Part 72 certificates.

The Contractor(s) will provide engineering, analytical support and other descriptive or operational information to address aspects of the 10 CFR Part 63 licensing of the TAD aging overpack, whose performance is dependent on the TAD canister design. These data will support completion of the design for the repository SNF Aging System and provide necessary TAD canister-based system inputs to the 10 CFR Part 63 License Application (LA) being prepared by DOE.

Additional supporting analyses will be required to address the 10 CFR Part 63 licensing considerations related to various TAD system components as they will be used within the geologic repository operations area (GROA). These analyses will focus on the

[1] *Nuclear Utility Entity denotes a Utility that holds a contract with DOE for the disposal of its SNF.*

interactions of the TAD canister-based system components with the various requirements of the Yucca Mountain site, operational systems, and site specific environmental conditions. These analyses will support development of additional technical information to allow DOE to respond to requests for additional information (RAIs) or contentions as part of the ongoing NRC evaluation of the LA.

C.4 STATEMENT OF WORK

The Contractor(s) shall satisfy the following requirements for a TAD canister-based system.

C.4.1 BASE CONTRACT – BEGIN TAD SYSTEM SAR PREPARATION

Objective: The Contractor(s) shall develop the TAD canister-based system designs to an intermediate level as defined below.

Under the Contract the Contractor(s) shall:

(1) **Prepare and Deliver the Draft Plan to Complete Option 1** - Develop and submit a draft plan for final design of the TAD canister-based system in accordance with the schedule cited in Section C.7, *Summary of Deliverables*. The plan shall detail work to complete activities and deliver all products through the end of Option 1, if so authorized by DOE.

(2) **Prepare and Deliver Intermediate 10 CFR Part 71 SAR** - Complete development of the SAR to an intermediate level for the TAD canister-based system in accordance with 10 CFR Part 71, *Packaging and Transportation of Radioactive Materials*. The TAD canister-based system shall meet requirements of *Transportation, Aging and Disposal Canister System Performance Specification* shown in Section J, Attachment 1. This SAR shall be prepared in accordance with NRC Regulatory Guide 7.9 (*Standard Format and Content of Part 71 Applications for Approval of Packages for Radioactive Material*). At a minimum, an intermediate level of design for SAR development shall consist of the following information: (1) Preliminary drawings that show maximum envelope dimensions of primary components, (2) estimated gross weights of primary components and anticipated materials of construction, (3) annotated outline of the SAR and (4) expected CSNF loading envelope. The Contractor shall forward a copy of this

intermediate SAR to DOE for review in accordance with the schedule cited in Section C.7, *Summary of Deliverables*.

(3) **Prepare and Deliver Intermediate 10 CFR Part 72 SAR** - Complete development of the SAR to an intermediate level for the TAD canister-based system in accordance with 10 CFR Part 72 *Licensing Requirements for the Independent Storage of Spent Nuclear Fuel, High-Level Radioactive Waste, and Reactor-Related Greater than Class C Waste*. The TAD canister-based system shall meet requirements of the *Transportation, Aging and Disposal Canister System Performance Specification* shown in Section J, Attachment 1. This SAR shall be prepared in accordance with NRC Regulatory Guide 3.61 (*Standard Format and Content for a Topical Safety Analysis Report for a Spent Fuel Dry Storage Cask*). At a minimum, an intermediate level of design for SAR development shall consist of the following information: (1) Preliminary drawings that show maximum envelope dimensions of primary components, (2) estimated gross weights of primary components and anticipated materials of construction, (3) annotated outline of the SAR and (4) expected CSNF loading envelope. The Contractor(s) shall forward a copy of this intermediate SAR to DOE for review in accordance with the schedule cited in Section C.7, *Summary of Deliverables*.

(4) **Aging Configuration Intermediate Final Design Report** - Complete development of a Final Design Report to an intermediate level for the TAD canister-based system in an aging configuration that meets requirements of *Transportation, Aging and Disposal Canister System Performance Specification* shown in Section J, Attachment 1. The Final Design Report for the TAD canister-based system in an aging configuration shall contain information and format analogous to that identified NRC Regulatory Guide 3.61 (*Standard Format and Content for a Topical Safety Analysis Report for a Spent Fuel Dry Storage Cask*). At a minimum, an intermediate level of design for SAR development shall consist of the following information: (1) Preliminary drawings that show maximum envelope dimensions of primary components, (2) estimated gross weights of primary components and anticipated materials of construction, (3) annotated outline of the SAR and (4) expected CSNF loading envelope. The Contractor shall forward a copy of this intermediate Final Design Report to DOE for review in accordance with the schedule cited in Section C.7, *Summary of Deliverables*. Dose rate calculations completed during this period of performance shall consist of two

(2) separate calculations for the TAD canisters in an aging configuration. These calculations shall be performed in accordance with neutron flux-to-dose conversion factors per 10 CFR Part 20 (*i.e.*, International Commission on Radiation Protection (ICRP)-26) and ICRP-60.

(5) **Briefings/Presentation on Design Status** - Participate in a design update meeting at DOE's Las Vegas, NV office in accordance with schedules cited in the Summary of Deliverables section of this SOW. Design update shall address overall project design status with primary focus on demonstrating compliance with requirements of *Transportation, Aging and Disposal Canister System Performance Specification* shown in Section J, Attachment 1.

(6) **Update and Deliver the Final Plan to Complete Option 1** - Subsequent to the design update meeting described above, the Contractor(s) shall develop and submit a final plan for final design of the TAD canister-based system in accordance with the schedule cited in Section C.7, *Summary of Deliverables*. The plan shall detail work to complete activities and deliver all products through the end of Option 1, if so authorized by DOE.

(7) **Identify and Contract with a Utility Entity** - Identify and contract with a utility entity (or entities) who will participate in obtaining a CoC for the TAD canister-based system as part of a 10 CFR Part 72 ISFSI and provide documentation of such to DOE. The utility entity is expected to host and participate in an operational demonstration of the TAD canister-based system after certification under 10 CFR Part 72. Although not required, it is encouraged that the utility entity participates in design update meetings and final design summary briefing.

C.4.2 OPTION ONE – COMPLETE TAD SYSTEM SAR, SUBMIT TO NRC FOR REVIEW, AND DOCKET WITH NRC

Objective: The Contractor(s) shall complete final engineering, design and preparation of the SARs/Final Design Report for TAD canister-based system and, after approval by DOE, submit SARs to NRC for docketing.

Under Option One of this Contract the Contractor(s) shall:

(1) **10 CFR Part 71 SAR Delivered to DOE** - Complete development of a SAR for

docketing with the NRC a TAD canister-based system that meets requirements of 10 CFR Part 71. The TAD canister-based system shall also meet requirements in *Transportation, Aging and Disposal Canister System Performance Specification* shown in Section J, Attachment 1. Design and engineering documents submitted to DOE shall contain a table or matrix showing compliance with individual requirements in the *Transportation, Aging and Disposal Canister System Performance Specification* shown in Section J, Attachment 1.

(2) **10 CFR Part 72 SAR Delivered to DOE** - Complete development of a SAR for docketing with the NRC a TAD canister-based system that meets requirements of 10 CFR Part 72. The TAD canister-based system shall also meet requirements in *Transportation, Aging and Disposal Canister System Performance Specification* shown in Section J, Attachment 1. The requirements for integration of the TAD canister-based system with utility systems and ISFSI will be provided by others. Design and engineering documents submitted to DOE shall contain a table or matrix showing compliance with individual requirements in the *Transportation, Aging and Disposal Canister System Performance Specification* shown in Section J, Attachment 1.

(3) **Aging Configuration Final Design Report** - Complete engineering and design for the TAD canister-based system in an aging configuration that meets requirements of *Transportation, Aging and Disposal Canister System Performance Specification* shown in Section J, Attachment 1. Provide technical and descriptive information for overpack structural design, thermal performance and dose analysis for both normal and off-normal conditions when exposed to specified environmental conditions. Prepare and submit to DOE a Final Design Report for the TAD canister-based system in an aging configuration with information and format analogous to that provided in the 10 CFR Part 72 SAR (i.e., NUREG-1536 "*Dry Cask Storage Systems*"). The information in this Final Design Report is intended to be used to develop design inputs for the Yucca Mountain Repository LA. Design and engineering documents submitted to DOE shall contain a table or matrix showing compliance with individual requirements in the *Transportation, Aging and Disposal Canister System Performance Specification* shown in Section J, Attachment 1. Dose rate calculations completed during this period of performance shall consist of two (2) separate calculations for the TAD canisters in an aging configuration. These calculations shall be performed in accordance with neutron

flux-to-dose conversion factors per 10 CFR Part 20 (*i.e.*, ICRP-26) and ICRP-60.

(4) **TWPS Design and Engineering Report** - Complete and deliver detailed design and construction drawings of the TAD waste package spacers (TWPS). Design shall be accompanied by engineering calculations necessary to show compliance with the *Transportation, Aging and Disposal Canister System Performance Specification* shown in Section J, Attachment 1.

(5) **Briefing/Presentation on Aging Configuration Final Design Report and Submission of Aging Configuration Information Packet** - Participate in a final design briefing at DOE's offices in Washington, DC in accordance with the schedule cited in Section C.7, *Summary of Deliverables*. Briefing shall address final designs with a primary focus on demonstrating compliance with requirements of *Transportation, Aging and Disposal Canister System Performance Specification* for TAD canister-based system in an aging configuration. The Contractor(s) shall submit a design packet that presents an overview of TAD canister-based systems operational functions and constraints. The packet shall not contain any proprietary information.

(6) **Briefing/Presentation on Final SAR and Submission of Part 71/72 SAR Information Packet** - Prior to submittal of either SAR to the NRC for the TAD canister-based system configuration, the Contractor(s) shall present a final design summary briefing at DOE's offices in Las Vegas, NV in accordance with schedule cited in Section C.7, *Summary of Deliverables*. The presentation shall clearly demonstrate to DOE that the TAD canister-based system design meets all performance specifications. The Contractor(s) shall submit a 10 CFR Part 71 and a 10 CFR Par 72 SAR Information Packet.

(7) **10 CFR Part 71 SAR Submitted to NRC** - After approval by DOE, submit TAD canister-based system SAR to NRC for docketing and safety evaluation under 10 CFR Part 71.

(8) **10 CFR Part 72 SAR Submitted to NRC** - After approval by DOE, submit TAD canister-based system SAR to NRC for docketing and safety evaluation under 10 CFR Part 72.

(9) **10 CFR Part 71 SAR and 10 CFR Part 72 Docketed by NRC** - Provide DOE with confirmation of NRC's docketing of 10 CFR 71 and 10 CFR 72 SAR.

(10) **Draft TAD Operational Demonstration Plan to DOE** - Develop and submit draft TAD canister-based system Operational Demonstration Plan. The Operational Demonstration Plan shall show compliance with applicable provisions of 10 CFR Parts 50 and 72 and demonstrate ability to complete:

- Empty TAD canister handling in the fuel pool.
- Loading of at least one TAD canister with CSNF in the utility entity's pool.
- Installation of the canister closure assembly, closure welding, canister drying and closure leak testing.
- Transfer of a TAD Canister loaded with CSNF to the dry storage configuration.

The Contractor(s) shall receive a notice from NRC of docketing of the TAD canister-based system SAR under 10 CFR Part 71 and 10 CFR Part 72.

C.4.3 OPTION TWO - NRC CERTIFICATION AND OPERATIONAL DEMONSTRATION

Objective: The Contractor(s) shall obtain NRC certification of the TAD canister-based system under 10 CFR Parts 71 and 72, and complete operational demonstration of the TAD canister-based system at a utility site.

Under Option Two of this Contract the Contractor(s) shall;

(1) **Receive NRC CoC for 10 CFR Part 71** - Provide engineering and analytical services to complete NRC CoC process for the TAD canister-based system (including the TAD canister) under 10 CFR Part 71.

This includes, but is not limited to:

- Responding to NRC RAIs.
- Revising the SAR as needed.
- Performing any required testing.
- Responding to DOE data requests to support Yucca Mountain licensing activities and facility interface design or operations planning needs.

(2) **Receive NRC CoC for 10 CFR Part 72** - Provide engineering and analytical services to complete NRC CoC process for the TAD canister-based system under

10 CFR Part 72.

This includes, but is not limited to:

- Responding to NRC RAIs
- Revising the SAR as needed
- Performing any required testing
- Responding to DOE data requests to support Yucca Mountain licensing activities

(3) **Submit Final Operational Demonstration Plan** - Prepare and submit to DOE for approval a final TAD Operational Demonstration Plan. The operational demonstration shall meet the following objectives by demonstrating, in accordance with applicable provisions of 10 CFR Parts 50 and 72:

- Empty TAD canister handling in the fuel pool.
- Loading of at least one TAD canister with CSNF in the utility entity's pool.
- Installation of the canister closure assembly, closure welding, canister drying and closure leak testing.
- Transfer of a TAD Canister loaded with CSNF to the dry storage configuration.

DOE will advise the Contractor(s) team of specific activities DOE shall witness during the operational demonstration. Representatives from DOE and its Contractor(s) shall be permitted to witness the demonstrations. The Contractor(s)' utility entity shall advise of any specific requirements for the DOE and its Contractor(s) personnel for access to the demonstration site.

(4) **Periodic Briefings and Presentation** - Hold periodic design updates and briefings at DOE's office in Las Vegas, NV or Washington, DC. Updates shall:

- Include a series of 8 meetings (4 in each location identified above) to be held to address overall project status.
- Focus on NRC design certification process and RAIs, if applicable. DOE and Contractor(s) representatives shall be permitted to attend any public or closed meetings between Contractor and NRC during the certification process.
- Focus on equipment development, if appropriate.

(5) **Operational Demonstration Complete** - Perform an operational demonstration of

the TAD canister-based system in a storage configuration at the utility entity site. All equipment, including TAD canister, storage overpack, shielded transfer cask, on-site transporter and other auxiliary equipment necessary for use in and during the 10 CFR Part 72 storage system demonstration will be provided by the Contractor.

(6) **Final Operational Demonstration Report** - Prepare and submit a final operational demonstration report and final briefing. The briefing will be held at DOE's offices in Washington, DC. The report and briefing shall include:

- A description of the demonstration including video and photographic records made during the demonstration.
- Procedures used during the demonstration to handle, load, seal, dry, and test the TAD Canister.
- Procedures used for the transfer of the TAD to the storage configuration, including loading of the TAD canister into the storage overpack.
- Identify any technical or operational issues that were encountered during the demonstration, including any recommended corrective action.
- A list of special tools or fixtures required.
- A summary of the personnel exposure received during loading, closure, handling, transfer and storage activities.

C.5 DOE LIMITED USE LICENSE AND PROTECTION OF PROPRIETARY INFORMATION FOR TAD SYSTEM DESIGN

(1) Contractor(s) shall provide DOE with appropriate rights for use of TAD canister-based system design and NRC Certificate of Compliance (CoC). These rights include:

- DOE ownership or unlimited rights in intellectual property first produced under DOE contracts;
- Free license rights to a successor Contractor(s), if any, in Contractor(s) background intellectual property, for use in TAD canister-based design or NRC CoC, in the event of Contractor(s) default;
- Free license rights in Contractor(s) background intellectual property, as necessary for DOE demonstration of the designs, or as necessary for NRC CoC;
- Limited license rights, for compensation as may be appropriate, in Contractor(s)

background intellectual property, for Government use, including NRC CoC, as necessary for use or operation of the Yucca Mountain repository.

(2) For any engineering, design or analytical work, including information contained in the SAR, or intended for use by DOE in developing inputs for the Repository LA, the Contractor(s) shall clearly identify and mark as "Limited Rights Data" or "Restricted Computer Software", any relevant information developed at private expense outside of this proposed contract, that shall be withheld from public disclosure.

C.6 QUALITY ASSURANCE

(1) The work done under this contract is classified as important to safety (ITS) and is subject to Office of Civilian Radioactive Waste Management (OCRWM) *Quality Assurance Requirements and Description (QARD),* DOE/RW-0333P[2]. The Contractor(s) shall have a documented Quality Assurance (QA) program that addresses appropriate requirements of the current version of the OCRWM QARD. As such, the Contractor(s) shall not commence quality affecting work until either:

a) It is determined that the Contractor(s) is already on the OCRWM Qualified Supplier List (QSL); or,

b) The Contractor(s)' NRC-approved QA program is submitted to and approved by DOE.

(2) QA records that support development of technical deliverables and demonstration will be submitted to OCRWM for retention. Records shall be identified and maintained in accordance with the Contractor(s)' approved QA program until turnover to OCRWM.

(3) There shall be no cost to OCRWM for termination of a contract based on the OCRWM determination that the Contractor(s)' QA program is unacceptable after the Contractor(s) has been given an opportunity to correct QA Program deficiencies.

(4) The Contractor(s) shall document planning techniques and processes to be used in

[2] QARD is available via OCRWM contracting representative.

fulfilling contract requirements after contract award. These techniques and processes shall be made available to OCRWM and Office of Quality Assurance (OQA) upon request.

(5) Conditions adverse to quality pertaining to Contractor(s) services (*i.e.*, activities) shall be identified, controlled, documented, reported to appropriate management, corrected and verified as corrected in accordance with Contractor(s)' NRC approved 10 CFR Part 71 or 72 QA program. The Contractor(s) shall submit a copy of any condition adverse to quality that impacts deliverables to OCRWM upon initiation and again at completion of the condition report.

(6) Changes to Contractor(s)' QA program shall be submitted to OCRWM for review and acceptance prior to implementing such changes in regard to OCRWM purchased services. Any work affecting OCRWM procured services, performed by the Contractor(s) prior to receipt of OCRWM documented approval of changes to the Contractor(s)' QA program shall be at the sole risk of the Contractor(s).

(7) The Contractor(s) shall incorporate appropriate QA requirements into any sub-tier Contractor-issued contract consistent with the Contractor's NRC-approved QA program.

(8) The Contractor(s) shall provide right-of-access to Contractor(s) and sub-tier Contractor facilities and records for surveillance or audit by OCRWM or OCRWM authorized personnel.

(9) OCRWM Office of Quality Assurance (OQA) verification activities, such as audits and surveillance, shall not relieve the Contractor of the responsibility for the verification of quality achievement.

(10) For each deliverable package identified in the Scope, the Contractor shall verify and document that all procurement document requirements have been satisfied. The Contractor shall forward verification document to DOE with the deliverable package.

C.7 SUMMARY OF DELIVERABLES

Copies of all deliverables shall be provided to DOE in PDF format. Calculation files associated with the development of the TAD System designs and SARs are to be retained and maintained by the Contractor(s) in accordance with their NRC approved QA program. DOE access to these calculations will be addressed in the limited license agreement.

The content and quality of the deliverables listed below shall be evaluated against the Requirements Section of this SOW.

Base Contract	**Delivery Dates**	**SOW Reference**
Intermediate Design of TAD Canister-Based System		
➢ Prepare and Deliver the Draft Plan to Complete Option 1	06/20/2008	C.4.1(1)
➢ Briefing/Presentation on Design Status	10/17/2008	C.4.1(5)
➢ Prepare and Deliver Intermediate 10 CFR Part 71 SAR	11/21/2008	C.4.1(2)
➢ Prepare and Deliver Intermediate 10 CFR Part 72 SAR	11/21/2008	C.4.1(3)
➢ Identify and Contract with a Utility Entity	11/21/2008	C.4.1.(7)
➢ Aging Configuration Intermediate Final Design Report	11/21/2008	C.4.1.(4)
➢ Update and Deliver the Final Plan to Complete Option 1	12/05/2008	C.4.1.(6)
Option One		
Final Design of TAD Canister in Aging Configuration		
➢ Briefing/Presentation on Aging Configuration Design Report	03/13/2009	C.4.2.(5)
➢ Aging Configuration Information Packet	03/13/2009	C.4.2.(5)
➢ Aging Configuration Final Design Report	03/13/2009	C.4.2.(3)
➢ TWPS Design and Engineering Report	03/13/2009	C.4.2.(4)

Safety Analysis Report Completion and Delivery

➢ 10 CFR Part 71 SAR Completed and Delivered to DOE	05/29/2009	C.4.2.(1)
➢ 10 CFR Part 72 SAR Completed and Delivered to DOE	05/29/2009	C.4.2.(2)
➢ Briefing/Presentation on Final SAR	06/12/2009	C.4.2.(6)
➢ Part 71/72 SAR Information Packet	06/12/2009	C.4.2.(6)

Safety Analysis Report Submission

➢ 10 CFR Part 71 SAR Submitted to NRC	08/14/2009	C.4.2.(7)
➢ 10 CFR Part 72 SAR Submitted to NRC	08/14/2009	C.4.2.(8)

TAD Operational Demonstration Plan

➢ Draft TAD Operational Demonstration Plan to DOE	09/30/2009	C.4.2.(10)

Safety Analysis Report Docketing

➢ 10 CFR Part 71 SAR docketed by NRC	NLT 11/20/2009	C.4.2.(9)
➢ 10 CFR Part 72 SAR docketed by NRC	NLT 11/20/2009	C.4.2.(9)

Option Two	**Delivery Dates**	**SOW Reference**
TAD System Performance Demonstration at Utility Site		
➢ Submit Final Operational Demonstration Plan	07/13/2012	C.4.3.(3)
➢ Receive NRC CoC for 10 CFR Part 71	TBD by Contractor NLT 12/02/2011	C.4.3.(1)
➢ Receive NRC CoC for 10 CFR Part 72	TBD by Contractor NLT 12/02/2011	C.4.3.(2)
➢ Operational Demonstration Complete	TBD Contractor NLT 04/05/2013	C.4.3.(5)
➢ Final Operational Demonstration Report	TBD by Contractor NLT 04/05/2013	C.4.3.(6)
➢ Periodic Briefings and Presentations on SAR Development	8 as Requested	C.4.3.(4)