National Spent Nuclear Fuel Program Strategy Meeting

August 8-9, 2007

Marriott Courtyard
Richland, WA

Meeting Summary

Written and Compiled by
Lori Braase

Idaho National Laboratory

National Spent Nuclear Fuel Program
Strategy Meeting
August 8-9, 2007
Richland, WA; Marriott Courtyard

AGENDA

Wednesday, August 8

8:30	Welcome / Introductions	Mark Arenaz, NSNFP
8:40	Key Initiatives	Ron Ramsey, DOE-EM
8:50	Actions from January 2007 Meeting	Phil Wheatley, NSNFP
9:00	Repository Program Update	Guy Martin, RW
10:00	*Break*	
10:15	ID-SR SNF Swap Update	Scott DeClue, SRS-EM
10:40	NSNFP Direction – FY-2008 Work Planning	Phil Wheatley, NSNFP
10:55	DOE EM License Support and Schedule LA Process and NSNFP Coordination	Jim Linhart, NSNFP
11:10	DOE-EM OST / Eng & Technology Roadmap	Terry Walton, PNNL
11:30	*Lunch*	
	<u>Site HLW Progress / Activities</u>	
1:00	• Hanford	Albert Kruger, DOE-ORP
1:30	• SRS	John Owen, WSRC
1:50	• INL / HIP Calcine	Jan Hagers, DOE-ID
2:30	*Break*	
	<u>Site SNF Progress / Activities</u>	
2:50	• Hanford	Sen Moy, DOE-RL
3:05	• SRS	Scott DeClue, DOE-SR
3:30	• INL	Barb Beller, DOE-ID
4:00	Melter 1 Removal From Service	John Owen
5:00	*Adjourn*	

Thursday, August 9

8:30	Opening Remarks	Mark Arenaz, NSNFP
8:35	Update on DOE SNF Transportation Topical Report	Tom Hill, NSNFP
9:00	Quality Assurance – EM Perspective	Don Armour, NSNFP QA
	<u>Miscellaneous SNF Issues</u>	
9:45	• NA-Bonded	Henry Loo, NSNFP
9:55	• ANA Development Update • Al Direct Disposal • Other Issues	Bill Hurt, NSNFP
10:15	Integrated Acceptance Schedule / Status	Bill Hurt, NSNFP
10:30	Meeting Summary / Actions	Mark Arenaz, NSNFP
11:00	*Adjourn*	
12:00	*Tour Hanford Facilities*	*Kruger for ORP Facilities* *McCormack for RL Facilities*
5:30	*Return to Hotel*	

ATTENDEES

Name	Phone	E-Mail	Organization
Arenaz, Mark R.	208-526-1510	arenazmr@id.doe.gov	DOE-ID / NSNFP
Armour, Don	208-526-3512	donald.armour@inl.gov	INL / NSNFP QA
Beckwith, Andy	208-526-1160	andrew.beckwith@icp.doe.gov	ICP / CWI
Beller, Barbara	208-526-0235	bellerba@id.doe.gov	DOE-ID / ICP
Birk, Sandra	208-526-1866	sandra.birk@inl.gov	INL / NSNFP
Black, Warren*	301-540-5944	warren.black@em.doe.gov	DOE EM-12
Braase, Lori	208-526-7763	lori.braase@inl.gov	INL / Sys Eng
Cato, Diane	208-351-9836	diane.cato@icp.doe.gov	ICP / CWI
Clark, Steve	702-821-8377	steven_clark@ymp.gov	Bechtel SAIC Co / YMP
Collins, John W.	208-526-3372	jcollins@icp.doe.gov	ICP / CWI
Connally, Michael	208-526-0238	michael.connally@inl.gov	INL
Daniels, Ray	202-694-7116	rayd@dnfsb.gov	DNFSB
DeClue, Scotty	803-557-6198	scott.declue@srs.gov	DOE-SR / NMPD
Dunsmuir, Michael D.	803-557-6107	michael.dunsmuir@srs.gov	SRS / WSRL / SFP
England, Jeff	803-725-4762	jeffery.england@srnl.doe.gov	SRNL
Hagers, Jan	208-526-0758	hagersj@id.doe.gov	DOE-ID / ICP
Hill, Thomas J.	208-526-1711	thomas.hill@inl.gov	INL / NSNFP
Hurt, Bill	208-526-7338	william.hurt@inl.gov	INL / NSNFP
Jain, Vijay	509-371-2751	vjain2@bechtel.com	WTP
Johnson, Wes	509-943-2526	wesley_a_johnson@fh.gov	Fluor Hanford
Keister, Marsha	208-526-0754	marsha.keister@inl.gov	INL / NSNFP
Kluk, Tony	301-903-3744	anthony.kluk@em.doe.gov	DOE EM-12
Koutsandreas, Denis*	301-903-7420	denis.koutsandreas@em.doe.gov	DOE EM-23

Name	Phone	E-Mail	Organization
Kruger, Albert A.	509-373-1569	albert_a_kruger@orp.doe.gov	DOE-ORP/WED
Linhart, Jim	702-821-8068	james_linhart@ymp.gov	Las Vegas NSNFP
Loo, Henry H.	208-526-3332	henry.loo@inl.gov	INL / NSNFP
Makenas, Bruce	509-376-5447	bruce_j_makenas@doe.rl	DOE-RL / SFP
Martin, Guy Jr.	702-295-4973	guy_martin@ymp.gov	SNL – Licensing
McCormack, Roger	509-376-7057	roger_l_mccormack@rl.gov	Fluor Hanford
Moy, Sen	509-376-8377	sen_k_moy@rl.gov	DOE-RL
Owen, John E.	803-208-7184	john.owen@srs.gov	WSRC HLW
Parsons, Gregory	509-372-3387	gregory_l_gregparsons@rl.gov	CH2M Hill Hanford Immobilized Waste
Ramer, Ron	208-526-3446	ronald.ramer@icp.doe.gov	ICP / CWI
Ramsey, Ron	208-526-1545	ramseyro@id.doe.gov	DOE-ID
Rohe, Rhonda D.	208-526-8352	rhonda.rohe@inl.gov	INL ATR Life Extension Project
Ross, Steven L.	202-488-6727	steven.ross@ym.rw.doe	DOE-HQ / BSC
Smith, Nancy L.	208-526-9195	nancy.smith@icp.doe.gov	ICP / CWI
Swift, Bill	803-557-6037	william.swift@srs.gov	WSRC
Van Camp, Scott	208-526-6503	vancamsg@id.doe.gov	DOE-ID
Vega, Samuel	509-373-1240	samuel_a_vega@orp.doe.gov	DOE-ORP
Walton, Terry L.	509-372-4548	terry.walton@pnl.gov	PNNL
Wheatley, Philip	208-526-9348	philip.wheatley@inl.gov	INL / NSNFP

**Participated via telecon*

ACTIONS

#	Action Item	Designee	Date Due
1	Input into the FY-08 Work Plan. Send Mark Arenaz a note with your suggestions for future work scope and he will try to incorporate it. (e.g., epoxy fuel and related issues need to be prioritized into the work scope. Discussion between the program and Gary Deleon. This is a future activity for the coming year.)	Applicable NSNFP Work Package Managers and SMEs.	
2	Resolve the application of 10 CFR Part 21 to the EM HLW and SNF programs.	Don Armour will forward the issue to EM & RW (Kriss Grisham Bob Toro)	Next NSNFP Strategy Mtg
3	Evaluate the application of the QARD to the SRS SNF program.	Don Armour will forward the issue to EM & RW (Kriss Grisham Bob Toro)	Next NSNFP Strategy Mtg
4	Send the Transportation Topical Report to the sites and RW for information.	NSNFP	November 2007
5	Issue the Meeting Summary to Tom Hill.	Lori Braase	August 24, 2007
6	Determine the date and location for the next Strategy Meeting.	NSNFP	
7	Ensure the Strategic Plan being prepared by EM addresses the assumptions to be used regarding on-going SNF generation. (Action from January 2007 NSNFP Strategy Meeting)	Gary Deleon, DOE-HQ	Pending
8	Confirm or identify the throughput being used for DOE SNF in the design of the CRCF and in the LA. This is tied to the IAS baseline. Throughput is identified in the CRD. (Action from January 2007 NSNFP Strategy Meeting)		IAS is still pending EM review

MEETING SUMMARY

(Associated presentation material will be available after September 1, 2007 on the NSNFP Website, http://NSNFP.INEL.Gov/Program/)

Welcome / Introductions

Mark Arenaz, DOE NSNFP

Mark Arenaz opened the meeting and initiated introductions.

Key Initiatives

Ron Ramsey, DOE HQ/EM

Ron Ramsey reviewed the DOE EM organization. He noted that both Dick Blaney and John Scorah retired the end of June. These positions will be posted by the end of the month.

Actions from January 2007 Meeting

Phil Wheatley, NSNFP

Action Item	*Status*
Ensure the Strategic Plan being prepared by EM addresses the assumptions to be used regarding on-going SNF generation.	Gary Deleon, DOE-HQ Pending. Review at the next NSNFP Strategy Meeting.
Confirm or identify the throughput being used for DOE SNF in the design of the CRCF and in the LA. This is tied to the IAS baseline. Throughput is identified in the CRD.	IAS is still pending EM review. Review at the next NSNFP Strategy Meeting.
Provide Gary DeLeon a status on the effectiveness of the review process of the LA sections at the completion of Phase I (if any changes are required).	Henry Loo / Jim Linhart Complete
Provide SRS a copy of the ORNL video on the use of the FSV cask for ORNL/INL SNF transfers.	Tom Hill Complete

Repository Program Update

Guy Martin, RW

Sandia National Laboratories/Lead Lab is responsible for the science side of the Yucca Mountain licensing effort. Bechtel SAIC, Inc., is responsible for integrating the licensing effort.

Status of the Surface Facility Design

- Transportation, Aging, Disposal (TAD) Canister
  - Commercial utilities that currently store their SNF in DPCs (at ISFSIs) will not use a TAD to transport to Yucca Mountain. Yucca will accept a sealed DPC; cut it open, remove the SNF; and place it into a TAD.
  - Some sites cannot handle a rail car and can only ship by truck.
  - DOE-SNF is not planned to be shipped in a TAD. The transport cask with standard canisters will unload at the Canister Receipt and Closure Facility (CRCF).
  - DOE spent nuclear fuel of a commercial origin will arrive "uncanistered" at Yucca Mountain and will be unloaded in the Waste Handling Facility (WHF).
  - CRCF will handle TADs and all other waste forms, except naval SNF.
  - DPCs will be handled in the WHF pool, which comes online later.

- The initial License Application will include four fundamental waste forms:
  - Commercial SNF
  - DOE SNF
  - HLW Glass
  - Naval SNF

- MOX and LaBs glass will be included in the initial LA but supporting analyses are not completed to support a license request to dispose of these waste forms.

Q: Cs/Sr capsules and untreated calcine are not mentioned in the LA. Can they go into the repository with an amendment?
A: Cs/Sr capsules were not mentioned because of the significant unknowns (radionuclides are not counted). Calcine is in the current LA as borosilicate glass from INL (radionuclide count is included).

Each canister has 5 MTHM (in general) for accounting purposes. For DOE, we have 9334 canisters allocated. West Valley is now under the commercial classification and included in the 63,000 MT case; it is not a part of the DOE MTHM limit.

Postclosure modeling shows the repository full with 15,500 HLW canisters. This volume discrepancy will have to be resolved. The HLW total is likely to increase.

According to Henry Loo, there is a draft RW Radiolysis Screening Argument paper currently in review showing that only about 7 grams of water (o.43 moles), would remain in the TAD after helium drying.

Burnup credit is not taken in preclosure criticality analysis; it has been decided that the WHF pool will be borated as an additional means to screen out preclosure criticality. RW has removed all references for burnup credit for preclosure. It was easier to borate the WHF pool water than it would be to obtain credit for burnup. Burnup credit is only being used for postclosure.

Waste Packages and TADs

Rev 1 of the TAD specification is posted on the OCRWM website.

Subsurface and Phased Construction

No changes to design since January 2007.

ID-SR SNF Swap Update

Scott DeClue, DOE-SR

No discussion items.

National Spent Nuclear Fuel Program Direction – FY-08 Work Planning

Phil Wheatley, NSNFP

Q: Can you look at sample data packages for SNF to be sent to repository (out year planning).
A: Data packages will be sent with the SNF to Yucca Mountain.

DOE EM License Support / Schedule / LA Process / NSNFP Coordination

Jim Linhart, NSNFP

No discussion items.

DOE-EM OST / Engineering and Technology Roadmap

Terry Walton, PNNL

Q: What is the mission of the Office of Engineering and Technology (OET / EM-20)?
A: Facilitate solving problems by reducing technical risks and uncertainty in the EM life-cycle.

Q: How is this accomplished?
A: OET has led the development of the DOE-EM Engineering and Technology Roadmap identifying the technical risks and uncertainties and the strategic initiative investment areas. These initiatives are taking a longer term look from a national perspective through the OET program.

It is anticipated that the next revision of the OET Roadmap will include initiatives in both Spent Nuclear Fuels and Nuclear Material Disposition. To that end, OET is seeking input on the technical risks and uncertainties related to Spent Nuclear Fuels. The OET point of contact is Steve Schneider.

NSNFP has been working with SRS to form the SNF portion of the roadmap.

SRS, ORNL, Hanford, and the INL met with the National Academy of Science. They will be visiting the sites as well.

Mark Arenaz and Phil Wheatley met with DOE-HQ to discuss FY-08 work planning. Steve Schneider was in the meeting, which was a good opportunity to understand NSNFP work scope.

Ray Krahn was just recently named the Director of Office of Waste Processing.

SITE HLW PROGRESS / ACTIVITIES

Hanford HLW – Office of River Protection

Albert A. Kruger – DOE-ORP

No discussion items.

Savannah River Site (SRS) HLW

John Owen, WSRC

The unmitigated case at SRS projects the production of 8,900 HLW canisters, with loading around 38wt% and the baseline at DWPF is 28wt%.

The mitigated case with the aluminum SNF projects 6300 HLW canisters.

The baseline to ship 130 canisters to Yucca Mountain is 2017. Glass storage #3 has just been entered into the baseline.

Cold crucible melter fabrication contract is with the Koreans, who have a pilot facility. They outbid the French.

Melter 4, planned for installation mid-year 2012, should be just like Melter 3. Melter 3 is scheduled to be installed next year.

Idaho National Lab (INL) HLW - Calcine Progress / Activities and HIP Process

Jan Hagers, DOE-ID

The Hot Isostatic Press (HIP) falls well below the EA limit. Conditional exemption from RCRA for direct disposal will be discussed with EPA and a petition submitted after the YMP license application is submitted to NRC.

The request to delist will be submitted when we settle on a treatment option. A delisting petition is required for any treatment alternative other than direct disposal.

There are 6600 estimated canisters of dry Calcine at the INL. If this Calcine is sent through steam reforming one time, it could increase this amount 2-3 times, and the product is still a granulated waste form.

Direct disposal would create half the number of canisters for disposal than vitrification. Repository allocation is assessed .5 MTHM per canister even though there are only 44 MTHM in the total 4400 M3 of calcine.

Suggestion: Procure large HIP equipment to increase the flexibility of the process. This equipment can process a variety of sizes of waste forms.

EM-20 is paying for this R&D effort.

The HIP is mature technology, but the keys are determining the right recipe of ingredients to obtain the product that meets the disposal requirements and verifying operability at production scale in a remote high rad environment.

Borosilicate glass must be single phase; however multiphase glass ceramic can perform as well or better. Again, requires amendment to the LA which now only addresses single phase borosilicate glass that has been delisted.

The HIP product has less than ½ % leakage, but how is this determined? Unsure.

SITE SNF PROGRESS / ACTIVITIES

Hanford SNF

Sen Moy, DOE-RL

Hanford's Cs/Sr waste is characteristic and cannot be delisted.

Around 11-12 shipments of sodium bonded fuel are expected to be shipped to the INL in late September 2007.

Savanna River Site (SRS) SNF

Scott DeClue, DOE-SR

SRS SNF Activities (One Transfer Bay)

Activities	2007	2008	2009	2010
# Casks Processed	23	41	33	50*
# Assemblies Managed	730	788	767	737*

*Includes the INL/SRS SNF Transfer

The NRC's Topical report on the standard canister should have the information SRS needs for repackaging requirements.

Enriched Uranium Disposition Project

- L-Area Deinventory
  - LTH Shipments (L-area to H-area).
  - SNF Transfer
  - Heavy Water Disposition

- Signed Project Charter to commit what we going to accomplish:
  - Cask Alternatives Study (process rates, shipping rates, facility size, etc.).
  - Value Engineering review (Mid-august). John Collins will be present for the review to validate the base metrics.
  - Acquisition Strategy (rent or purchase/build).
  - Risk Management Plan (included risks for the transfer).
  - Integrated Schedule and Integration Management Plan (SRS and Idaho).
  - Transportation Plan (Marsha Keister is developing the plan for this 10-year program).
  - Communication Plan (network from DOE to the Sites).
  - Security Plan.
  - Project Communication Plan.
  - QA Guide.
  - Readiness Assessment Plan.

Two Issues:

1. Scope Creep.
   - NNSA is working at bringing more “at risk” material back to the US. This material will challenge H-Canyon and may push the H-Canyon closure date. NNSA is not concerned with treatment issues.
   - NE-University Reactors (e.g., Worchester Polytechnic Institute) have 6 assemblies.
   - The Office of Science wants to add 30 more HFIR cores. (Throughput is 40 HFIR cores per dissolver per year in H-Canyon.)

2. Unknowns.

Idaho National Lab (INL) SNF

Barb Beller, DOE-ID

The INL Foster Wheeler Facility, which was cancelled, has an approved NRC license to repackage and provide interim storage for TRIGA, Shipping Port, and Peach Bottom SNF. The mission need was rolled into a new project, but DOE asked CWI if they could repackage the SNF in existing INL facilities. In July 2006, the Foster Wheeler funds ($155 M) were obligated to another DOE project.

FSFF Mission Need – CD Schedule; DOE would like to assign the path forward to the next contractor for either a new facility.

The 20-year NRC license for the 3 types of fuels would allow the use of the FW design and approved Safety Analysis to start construction. FW currently holds the license for DOE, but it should be transferred back. The mission need document was sent back for re-work July 16, 2007 to reduce the document to 10 pages to reflect the typical format of the mission need document.

Melter 1 Removal from Service

John Owens

No discussion items.

Update on DOE SNF Transportation Topical Report

Tom Hill, NSNFP

Q: Did you use HEU as the bounding number for basket loading?
A: Yes. To meet criticality limits, the following loading scenarios were used: 10 ATR SNF assemblies per basket (full) and 8 MURR assemblies per basket.

NSNFP is currently working to resolve the issue with drying Al-clad fuel. Requirements for drying should not be more stringent than they are for commercial SNF.

Q: What are the additional constraints? What do you have to do to load it?
A: Nothing. There are no additional inspections at the time of loading. That is what we are asking the NRC to approve for storage up to 50 years.

Q: Will the sites see the Transportation Topical Report for review? Who is on distribution for the report?

Issue: The DOE sites requested an opportunity to review and comment on the Transportation Topical Report before it is released. They may have input to what goes into the CofC. The Foster Wheeler basket design is different from the NSNFP design. The Topical Report reflects the one basket design (Type 1A, 18").

Additional addendums will cover other basket designs and the 24" canister. The path forward is to get NRC approval on one design before we go forward.

Q: Do you consider linear loading over the length of the fuel meat?
A: Probably over the fuel meat. This is not a homogenous loading. The cross section is homogenous.

Once it is packaged and sealed, configuration is not important. We are taking credit for moderator exclusion to mitigate criticality.

Q: What about a fully flooded canister?
A: We can demonstrate that in a fully loaded condition at time of loading. In addition, the canister can be surrounded by water in its full configuration and it will remain dry and subcritical.

Quality Assurance - EM-62 Oversight

Don Armour, NSNFP QA

There have been two revisions over a 12 month period. The sites have to expend resources to do the evaluation, which is a QARD requirement so they have to find the funding somewhere.

Q: What are the protocols on how to freeze the QARD at the site level?
A: Once you begin production, the operation falls under requirements of a specific revision. A good example is West Valley; they completed all their HLW treatment and used Rev 0. They now have their canisters in storage waiting for final storage in Yucca Mountain. An impact analysis is conducted for the revisions to determine applicability.

There are issues with 10 CFR 71 and acceptance of out-of-spec canisters.

The FY-08 EM/RW audit schedule has been issued and it currently in the review process. It may require additional audits (SRS SFP and Calcine Disposition Project) for projects that just received approval for mission need last June.

The graded approach to do audits on a 3-year cycle for HLW and SNF sites is being considered for some sites; however, a decision for the application of this approach has not been made.

Q: How will an EM/RW QA audit be performed for SRS SNF when they don't have an established QA program specific to invoking the QARD?
A: WSRC follows the QA plan for receiving fuel. However, SRS has not implemented a QARD compliant QA program for the storage and management of SNF. A formal determination will have to be made if a need exists for the application of such a program, and if so, what the depth of the QA program would be.

Since offsite fuel is received at DOE complexes, it is important to make sure the records are received, complete, and accurate to ensure we are getting the fuel and have the data. The right records must be received and/or retained with the fuel to make the transition to packaging for Yucca Mountain.

SRS is currently packaging according to the transportation SAR. They need to know if more information is needed.

The application of 10 CFR Part 21 to the EM HLW and SNF programs needs to be determined to ensure that reporting requirements are applied in a consistent manner.

Miscellaneous SNF Issues: NA-Bonded

Henry Loo, NSNFP

No discussion items.

Miscellaneous SNF Issues: ANA Development Update

Bill Hurt, NSNFP

An estimated 300,000 lbs of Advanced Neutron Absorber (ANA) material is needed for non-aluminum fuel. If we package aluminum fuel, then approximately 500,000 lbs of additional ANA material will be needed.

ANA material cost estimates are about $30 to $50 per pound.

The ability to weld the material into the baskets is the objective. ANA is needed for all aluminum fuel, LWBR, FFTF, and TRIGA. The Navy is using hafnium as their poison.

Integrated Acceptance Schedule

Bill Hurt, NSNFP

The DOE allocation of SNF is 2333 MTHM. There are issues with the right mix of fuel-to-glass. This total includes 65 tons of Navy SNF.

All DOE SNF is included in the 70,000 MTHM base case. The only issue is the amount of HLW glass that should be included.

Closing Remarks

Ron Ramsey, DOE-EM

Ron informed the group that this was Mark Arenaz's last NSNFP meeting. He thanked him for his service and long-term commitment to the program (Mark started in December 1998).

Ron also noted that Phil Wheatley was promoted to the Director of the Environmental and Natural Resource Management Division. Therefore, his position with the NSNFP will also be filled.

Meeting Summary / Actions

Mark Arenaz, NSNFP

See Actions.

ACRONYMS

ANA	Advanced Neutron Absorber
ATR	Advanced Test Reactor (INL)
BBWI	Bechtel BWXT Inc.
BSC	Bechtel SAIC Company
CFR	Code of Federal Regulations
CRCF	Canister Receipt and Closure Facility (Yucca Mountain)
CRD	Contractor Requirements Document
CSB	Canister Storage Building (SRS)
CWI	CH2M/Washington Group Idaho, LLC (ICP Contractor at INL)
DOE	U.S. Department of Energy
DTF	Dry Transfer Facility (YMP)
DWPF	Defense Waste Processing Facility (SRS glassification facility)
EA	Environmental Assessment
EIS	Environmental Impact Statement
EM	DOE Office of Environmental Management
EPA	Environmental Protection Agency
FAST	Fluorinel Dissolution Process and Fuel Storage (INTEC)
FFTF	Fast-Flux Test Facility (Hanford)
FHF	Fuel Handling Facility (YMP)
FRR	Foreign Research Reactor
FW	Foster Wheeler (Proposed packaging and storage facility at INL)
GROA	Geologic Repository Operating Area – Yucca Mountain. (Includes all area covered by the 10CFR63)
HEW	High Enriched Uranium
HFIR	High-Flux Isotope Reactor (ORNL)
HIC	High Integrity Canister (Proposed design for ‘cats & dogs’ SNF)
HIP	Hot Isostatic Press
HLW	High Level Waste
HQ	DOE Headquarters
IAS	Integrated Acceptance Schedule
ICP	Idaho Clean-up Project
IHF	Initial Handling Facility (Yucca Mountain)
IHLW	Immobilized High Level Waste (IHLW)
INL	Idaho National Laboratory
INTEC	Idaho Nuclear Technology and Engineering Center
LA	License Application (YMP)
LaBs	Lanthanide Borosilicate Glass
LANL	Los Alamos National Laboratory
LWBR	Light Water Boiling Reactor

MCO	Multipurpose Canister Overpack (Hanford)
MFC	Materials & Fuels Complex (INL - Formerly ANL-W)
MOA	Memorandum of Agreement
MOX	Mixed Oxide
MTHM	Metric Tons of Heavy Metal
MTRE	Material Test Reactor Equivalent
NAC-LWT	Nuclear Assurance Corporation-Legal Weight Truck
NNSA	National Nuclear Security Administration
NR	Naval Reactors
NRC	Nuclear Regulatory Commission
NSNFP	National Spent Nuclear Fuel Program
NWPA	Nuclear Waste Policy Act
OCRWM	Office of Civilian Radioactive Waste (RW) Management
OET	Office of Engineering and Technology
ORD	Office of Repository Development (DOE)
ORP	Office of River Protection (Hanford)
PNNL	Pacific Northwest National Lab (Richland)
QA	Quality Assurance
QARD	Quality Assurance Requirements Document
R&D	Research & Development
RCRA	Resource Conservation and Recovery Act
RERTR	Reduced Enrichment Research and Test Reactor
RH TRU	Remote-Handled Transuranic (waste)
ROD	Record of Decision
RW	See OCRWM
RWMC	Radioactive Waste Management Complex (INL)
SAR	Safety Analysis Report
SBW	Sodium Bearing Waste
SNF	Spent Nuclear Fuel
SRS	Savannah River Site
TAD	Transportation, Aging, and Disposal (Canister for commercial use)
TQAP	Transportation Quality Assurance Plan
TRU	Transuranic Waste
TSM	Total System Model
TSPA	Total System Performance Assessment
WAC	Waste Acceptance Criteria
WHF	Waste Handling Facility (Hanford)
WP	Waste Package (YMP)
WSRC	Westinghouse Savannah River Complex
WTP	Waste Treatment Plant (Proposed facility at Hanford)
YMP	Yucca Mountain Project