# Proposed Tri-Party Agreement Modifications and Reference Documents for

## Shutdown of the U.S. Department of Energy's Fast Flux Test Facility (M-81-02-01)

Public Comment Period
August 28 to October 14, 2002

Tri-Party Agreement

*Hanford Federal Facility Agreement and Consent Order (Tri-Party Agreement)*
Proposed Modifications and Reference Documents for

# Shutdown of the U.S. Department of Energy's Fast Flux Test Facility

# (M-81-02-01)

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*August 2002*

# Proposed Schedule for the Shutdown of Hanford's Fast Flux Test Facility

## Fact Sheet

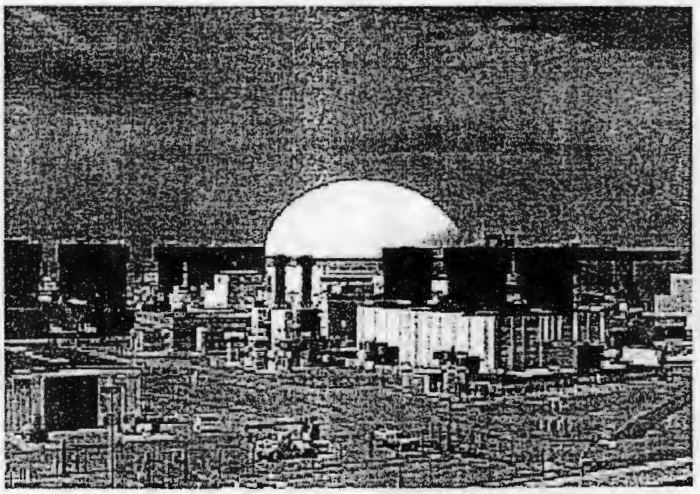
U.S. Department of Energy - Washington State Department of Ecology - U.S. Environmental Protection Agency

*The Tri-Party Agreement Agencies (the U.S. Department of Energy [USDOE], the U.S. Environmental Protection Agency and the Washington State Department of Ecology) are responsible for Hanford cleanup. We want your input on proposed changes to the Tri-Party Agreement. The proposed changes outline the plan and schedules for the deactivation (shutdown) of the Fast Flux Test Facility (FFTF) located on the Hanford Site in the 400 Area. The FFTF is a 400-megawatt thermal, liquid-metal (sodium) cooled nuclear test reactor surrounded by a number of support facilities.*

## Background

The FFTF was built in the 1970s and operated from 1982 to 1992 in support of the USDOE Liquid Metal Fast Breeder Reactor Program. The FFTF was the foundation for a number of nuclear fuels, materials, and component tests to see how these would react under nuclear operating conditons. The FFTF also produced a wide variety of radioisotopes for medical and industrial applications. In 1992 USDOE placed it in standby status and in 1994 began shutdown of the facility. In 1995 shutdown milestones were added to the Tri-Party Agreement and shut down of the FFTF continued until January 1997. At that time the Secretary of Energy made a decision to place the FFTF in standby to evaluate possible future missions. When the FFTF was placed in standby, the Tri-Party Agreement Agencies agreed to place unfinished activities associated with its deactivation in abeyance.

A National Environmental Policy Act (NEPA) Programmatic Environmental Impact Statement (PEIS) was initiated in August 1999 that evaluated the potential impacts of restarting the FFTF as a nuclear science research and irradiation services user facility. In December 2000, the "Programmatic Environmental Impact Statement for Accomplishing Expanded Civilian Nuclear Energy Research and Development and Isotope Production Missions in the United States, Including the Role of the Fast Flux Test Facility" was published (DOE/EIS-0310). The corresponding Record of Decision, issued January 26, 2001, included a decision that the FFTF would be permanently deactivated.



On April 25, 2001, the Secretary of Energy announced that the decision to permanently deactivate the FFTF had been suspended, pending a

## Public Comment

The Tri-Party Agencies want your feedback on the proposed schedule changes for the shutdown of the FFTF. The public comment period for the draft change package will be from August 28 through October 14, 2002.

Tri-Party Agreement

thorough and comprehensive review. On December 19, 2001, the Secretary of Energy announced that restart of the FFTF was impracticable and that the Department would proceed with deactivation of the facility. This decision resulted in previous milestones being reinstated.

## What are we proposing?

The Tri-Party Agreement Agencies completed negotiations on July 31, 2002 on the draft Tri-Party Agreement change package that establishes new milestones and target dates for shutdown of the FFTF. These proposed changes identify work activities and schedules to deactivate the FFTF and place it in a low cost surveillance and maintenance state over the next nine years. The major deactivation activities include:

- Begin to drain the sodium from the reactor heat transport system secondary loop by June 2003
- Complete reactor and heat transport system sodium drain by June 2005
- Complete fuel storage facility sodium drain by April 2007
- Complete fuel wash, offload and storage by March 2009
- Complete sodium drain by September 2009
- Complete shutdown by February 2011.

## How you can become involved

We will hold a 45-day public comment period on the proposed changes from **August 28 through October 14, 2002.** We want your feedback on these proposed schedule changes to the Tri-Party Agreement. The agencies will consider all comments relevant to the change package before the proposed changes are made final. To request a copy of the proposed changes or submit comments, please contact:

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## Public Meetings

Meetings are proposed for Richland and/or Yakima, Seattle, and Portland. Detailed information on these meetings will be mailed at a later date.

*Further information on the FFTF can be found on the web at http://www.fftf.org/.*

***The proposed changes are also available for review at the Public Information Repositories listed below and on the web at www.hanford.gov/tpa/changelist.htm.***

## Hanford Public Information Repository Locations

Portland
Portland State University
Branford Price and Millar Library
934 SW Harrison
Attn: Michael Bowman (503) 725-3690

Seattle
University of Washington
Suzzallo Library
Government Publications Division
Attn: Eleanor Chase (206) 543-4664

Richland
U.S. Department of Energy Public Reading Room
Washington State University, Tri-Cities
Consolidated Information Center, Room 101-L
2770 University Drive
Attn: Terri Traub (509) 372-7443

Spokane
Gonzaga University Foley Center
East 502 Boone
Attn: Sarah Nelson (509) 323-6548

If you are interested in receiving this and other Hanford materials electronically, rather than in the mail, please contact the Hanford cleanup line, 1-800-321-2008.

FFTF Fact Sheet
Department of Energy
P.O. 550 MSIN A7-75
Richland WA, 99352

**Hanford Federal Facility Agreement and Consent Order**

**Tentative Agreement**

# Shutdown of the U. S. Department of Energy's (DOE's) Fast Flux Test Facility (FFTF).

# Modification of HFFACO FFTF transition milestones and targets (M-81-00 series), and related HFFACO milestone M-20-29A

August 1 2002

**CONCLUSION OF NEGOTIATIONS AGREEMENT**
**REGARDING**
**SHUTDOWN OF THE U.S. DEPARTMENT OF ENERGY'S**
**FAST FLUX TEST FACILITY (FFTF)**

In accordance with the requirements of the Hanford Federal Facility Agreement and Consent Order (HFFACO), the State of Washington, Department of Ecology (Ecology), the U.S. Environmental Protection Agency (EPA), and the U.S. Department of Energy (USDOE) (the Parties) have concluded the negotiation of HFFACO requirements for FFTF transition activities pursuant to HFFACO Section 8 (Facility Decommissioning Process). Tentative Agreement has been reached as documented within the enclosed draft M-81-02-01 Change Request. On approval, these HFFACO requirements will govern the transition of reactor systems and facilities to a safe and environmentally sound condition.

Subject to public comment and revision as may be appropriate, finalization of the Parties' M-81-02-01 Change Request is anticipated by October 31, 2002.

The Parties will submit the proposed change package for a 45-day public comment period expected to run from early September, 2002 through mid-October 2002. Following conclusion of the public comment period, a response to comments document will be prepared and issued, and the Change Request will be modified as appropriate prior to approval by the Signatories.

Agreed-to this 31st day of July, 2002.

Al Farabee, Director
FFTF Project Office
U.S. Department of Energy
Richland Operations Office

Roger Stanley, Lead Negotiator
State of Washington
Department of Ecology

[redacted], Lead Negotiator
U.S. Environmental Protection
Agency, Region 10
David Bartus

| CHANGE NUMBER<br>M-81-02-01<br>(Draft) | FEDERAL FACILITY AGREEMENT AND CONSENT ORDER<br>Change Control Form<br>DO NOT USE BLUE INK TYPE OR PRINT USING BLACK INK. | DATE<br>7/31/2002 |
|---|---|---|

Originator: US DOE/Ecology

Phone:

Class of Change

[x] I – Signatories [ ] II – Executive Manager [ ] III – Project Manager

**Change Title**

Reestablish milestones and target dates for the shutdown (transition; Pursuant to Tri-Party Agreement Section 8) of the Fast Flux Test Facility (FFTF) (M-81-00 series and M-20-29A).

**Description/Justification of Change**

This Change Request establishes a revised set of M-81 series milestones and targets and revises the M-20-29A milestone associated with the transition of the FFTF to a deactivated state. Major transition activities consist of, but are not limited to: 1) dry cask storage of irradiated fuel, 2) dry storage of unirradiated and sodium bonded fuel, 3) sodium drain and storage, and 4) deactivation of the auxiliary plant systems. In implementing these transition activities, pursuant to Tri-Party Agreement Section 8, DOE will comply with all applicable federal and state laws and requirements, while maintaining worker and public safety. When transition is complete, the FFTF will be in a radiologically and industrially safe configuration with reduced risk to plant workers, the public, and the environment. After the FFTF transition is complete, the plant will be in a surveillance and maintenance mode and routinely monitored until decommissioning is completed.

**(Continued on page 2)**

Impact of Change

This change request establishes a revised set of M-81-00 series milestones and target dates and revises the M-20-29A milestone for the transition of the FFTF complex.

These milestones do not adversely impact other existing or contemplated (e.g., PFP deactivation) Tri-Party Agreement milestones. However, there are links between some of these milestones and other Tri-Party Agreement milestones (e.g., M-92-09 and –10 and the Office of River Protection's use of FFTF sodium converted to sodium hydroxide).

Affected Documents

The Hanford Federal Facility Agreement and Consent Order, as amended, and Hanford Site internal planning, work authorization, and budget documents (e.g., Project Management Plans, Baseline Change Control documents).

Approvals

| | | | |
|---|---|---|---|
| DOE | Date | ___ Approved | ___ Disapproved |
| EPA | Date | ___ Approved | ___ Disapproved |
| Ecology | Date | ___ Approved | ___ Disapproved |

FFTF was previously proceeding with transition in conjunction with Agreement Change number M-81-94-01. As a result of these activities major FFTF transition activities completed are 1) defueling the reactor vessel to the fuel storage and interim decay storage vessels, 2) design, procurement and receipt of 30 Interim Storage Casks (ISCs), 3) washing residual sodium and storing in above ground dry storage (ISCs) all the spent fuel with no potential future use (126 assemblies), 4) design and construction of the Sodium Storage Facility (SSF), and 5) deactivation of 23 of the approximately 100 plant operating systems.

In January 1997, the Secretary of Energy issued a Departmental decision to maintain FFTF in a standby condition while an evaluation was conducted of any future missions for the facility. On August 18, 1999, the Secretary decided to initiate the preparation of a National Environmental Policy Act (NEPA) Programmatic Environmental Impact Statement (PEIS) which included an evaluation of the potential impacts associated with restarting the FFTF as a nuclear science research and irradiation services user facility. In December 2000, the "Programmatic Environmental Impact Statement for Accomplishing Expanded Civilian Nuclear Energy Research and Development and Isotope Production Missions in the United States, Including the Role of the Fast Flux Test Facility" was published (DOE/EIS-0310, December 2000). The corresponding Record of Decision (ROD) was issued in the Federal Register on January 26, 2001, which included a decision that the FFTF will be permanently deactivated. On April 25, 2001, the Secretary of Energy announced a suspension of the decision to permanently deactivate FFTF to allow for additional evaluation. Following that review (on December 19, 2001) the Secretary of Energy confirmed the decision to decommission the reactor and announced that the Department was proceeding with deactivation of the facility.

As a result of FFTF being placed in standby, uncompleted activities associated with Agreement M-81-94-01 were placed in abeyance by Agreement Change M-81-98-01. As a result of the Secretary's decision to shutdown the reactor, this Agreement Change establishes revised FFTF transition milestones and targets.

Throughout the FFTF transition project, opportunities to implement waste minimization activities will continue to be assessed and implemented to the extent possible. Waste minimization activities during the project include the recycle, reuse or return to the original vendor of process fluids from the plant systems and auxiliary equipment (i.e., sodium, ethylene glycol, fuel oil, mobiltherm oil, and cooling tower chemicals). The following descriptive text documents actions necessary for the compliant management of PCB contaminated transformer oils.

**Management of polychlorinated biphenyl (PCB) bearing transformers:**

FFTF's fourteen Polychlorinated Biphenyl (PCB) electrical transformers will be disposed of following their removal from service as reactor transition proceeds. Management and disposal shall be in accordance with the requirements of the *Toxic Substances Control Act* (TSCA) and it's implementing requirements (40 CFR 761). Seven of FFTF's fourteen transformers will be drained, flushed and removed from FFTF within (30) days after being removed from service. Seven of the transformers, which are in areas difficult to obtain access to, will be drained, flushed, and removed from FFTF within nine (9) months of cessation of service to ensure their disposal within one year from start of storage. Cessation of service constitutes start of storage. 40 CFR 761 limits this storage and subsequent disposal to a one year period.

The milestones and targets identified in the following text document Agreement actions necessary to complete FFTF transition.

The following Agreement M-81-00A series milestones and target dates (reproduced below) replace the existing M-81-00 series, and are established on approval of this M-81-02-01 change request.

| Milestone | Description | Due Date |
|---|---|---|
| M-81-00A | Complete FFTF Facility Transition and initiate the surveillance and maintenance phase.<br><br>Completion of FFTF transition will include, but is not limited to the completion of: 1) dry cask storage of irradiated fuel, 2) dry storage of unirradiated and sodium bonded fuel, 3) sodium drain and storage 4) deactivation of the auxiliary plant systems. Work under this major milestone will be achieved by completing all activities necessary to achieve the end point criteria for placing the facility in a safe and stable surveillance and maintenance configuration. | 2/28/2011 |
| M-81-00-T01 | Complete Reactor Defueling.<br><br>At the completion of defueling, there will be 236 non-fueled components in the reactor vessel, 113 fueled components in the interim decay storage and 258 fueled components in the fuel storage facility. | 9/30/1995<br>Completed<br>4/19/1995 |
| M-81-00A-T02[1] | Complete transfer of unirradiated fuel to secure onsite storage.<br><br>Thirty two unirradiated fuel assemblies presently stored in the interim decay storage vessel will be transferred to the Interim Examination and Maintenance (IEM) cell for washing and drying, loaded into existing approved shipping containers, and transferred to secure onsite storage (Should DOEs Savannah River Site (SRS) become available for FFTF fuel storage, this fuel may be shipped directly to SRS pending approval of environmental documentation). | 3/31/2009 |

[1] The sequence of washing of unirradiated, irradiated and special fuel groups as identified in Target Dates M-81-00A-T02, M-81-00A-T03 and M-81-00A-T04 are dependent upon currently unknown external schedules (i.e. PFP shutdown schedule and INEEL (ANL-W) storage schedule), however, all the fuel will be washed and stored in time to meet the milestone date. Fuel washing operations for the fuel groups will be sequenced to accommodate storage schedules for each fuel group.

| Milestone | Description | Due Date |
|---|---|---|
| M-81-00A-T03[1] | Complete transfer of irradiated fuel to secure onsite storage.<br><br>Irradiated fuel assemblies and pin containers will be transferred from the interim decay storage vessel and the fuel storage facility to the IEM cell for residual sodium removal, loaded into a core component container, transferred to the reactor service building cask loading station for placement into an interim storage cask for dry storage, and transferred to secure Hanford site storage. | 3/31/2009 |
| M-81-00A-T04[1] | Complete transfer of special fuel to DOEs Idaho National Engineering Laboratory for consolidated storage.<br><br>Sodium-bonded irradiated metal and carbide fuel from assemblies cleaned in the IEM Cell will be loaded into existing, approved shipping casks, and transported to the Idaho National Engineering Laboratory (INEEL, ANL-W) in Idaho Falls, Idaho, for consolidated storage. Should the INEEL, ANL-W facility not be readily available, sodium bonded fuel will be loaded in Interim Storage Casks and transferred to a storage location on the Hanford Site (e.g., 200 or 400 Area Interim Storage Areas). One unirradiated metal fuel assembly will also be dispositioned in a similar manner. | 3/31/2009 |
| M-81-00A-T05 | Complete auxiliary plant systems deactivation.<br><br>A major portion of the plant auxiliary systems are required to support hot sodium circulation prior to draining the sodium. As these systems, and the balance of plant systems, become available for shutdown, they will be deactivated to a safe, stable condition. | 2/28/2011 |
| M-81-01 | Initiate sodium storage facility construction.<br><br>This milestone will be achieved when the construction contractor is issued the notice to proceed with construction by the contracting officer. | 2/28/1997<br>completed<br>10/09/1995 |

[1] The sequence of washing of unirradiated, irradiated and special fuel groups as identified in Target Dates M-81-00A-T02, M-81-00A-T03 and M-81-00A-T04 are dependent upon currently unknown external schedules (i.e. PFP shutdown schedule and INEEL (ANL-W) storage schedule), however, all the fuel will be washed and stored in time to meet the milestone date. Fuel washing operations for the fuel groups will be sequenced to accommodate storage schedules for each fuel group.

| Milestone | Description | Due Date |
|---|---|---|
| M-81-02 | Complete sodium storage facility startup.<br><br>This milestone will be achieved by completion of the sodium storage facility startup activities, which include final testing of the mechanical and electrical systems and confirmation that the facility is ready to receive sodium from FFTF. Construction of the new facility closely coupled to the FFTF complex is required to support sodium drain operations. This new facility will be designed, constructed and operated in compliance with RCRA and WAC 173-303 storage requirements. The facility will provide storage capacity for the 260,000 gallons of FFTF metallic sodium coolant. | 7/31/1998<br>completed<br>01/1997 |
| M-81-10-T01 | Submit final sodium disposition evaluation report<br><br>The Office of River Protection will use the Hanford Site radioactive sodium inventory (i.e., FFTF, Hallam and SRE sodium following conversion to sodium hydroxide) in the Waste Treatment Plant (WTP) for tank sludge pretreatment (i.e., caustic washing). A report will be prepared in concert with M-92-10 to: 1) determine where the sodium will be converted (i.e., an existing facility operated by Argonne National Laboratory – West (ANL-W) located within the INEEL site or at a new facility to be constructed adjacent to the Sodium Storage Facility) and 2) to establish need dates for delivery of the caustic to WTP. Following submittal of this report, appropriate milestones and/or target dates will be established for the final disposition of the sodium. | 09/30/2005 |
| M-81-11 | Submit FFTF End Point Criteria Document.<br><br>A document identifying the end point criteria necessary to place the FFTF in a safe and stable surveillance and maintenance configuration will be developed. This document will be provided to EPA and Ecology for review, and approval for the regulated units and/or hazardous substances proposed to remain at the facility after transition is complete. | 8/31/2005 |

| Milestone | Description | Due Date |
|---|---|---|
| M-81-12 | Initiate FFTF Sodium Drain.<br><br>This milestone will be complete when the drain of the first secondary loop is begun. Completion will be achieved when all the preparatory actions (i.e., procedures written and approved, plant configuration line-up, Operator training, facility startup review) have been completed and sodium is being transferred to in-plant tank T-44. | 6/30/2003 |
| M-81-13 | Complete reactor and heat transport system sodium drain.<br><br>Primary and Secondary heat transport systems, Reactor Vessel (including reactor vessel plenum), and supporting sodium systems will be drained to the sodium storage facility to the maximum extent practical. The sodium will be stored as product material in the sodium storage facility. Remaining sodium residuals (est. 3600 "gallons") will be solid in form (adhering to the surfaces of system components, small pockets inherent to the reactor design, and in heat transport system cold traps and valves). These residuals will be maintained under an inert gas blanket or passivated to minimize potential reactions during the long-term surveillance and maintenance phase. During final facility disposition, any regulated wastes generated from the cleaning or dismantlement of these systems will be managed in compliance with applicable regulatory requirements. | 6/30/2005 |
| M-81-14-T01 | Complete Fuel Storage Facility sodium drain.<br><br>The Fuel Storage Facility vessel will be drained to the sodium storage facility to the maximum extent practical. Sodium residuals will be maintained under an inert gas blanket or passivated to minimize potential reactions during the long-term surveillance and maintenance phase. During final facility disposition, any regulated wastes generated from the cleaning or dismantlement of these systems will be managed in compliance with applicable regulatory requirements. | 4/30/2007 |
| M-81-14-T02 | Initiate Interim Decay Storage Vessel sodium drain.<br><br>This milestone will be complete when sodium drain from the Interim Decay Storage Vessel is begun. Completion will be achieved when all the preparatory actions (i.e., procedures written and approved, plant configuration line-up, Operator training, facility startup review) have been completed and sodium is being transferred to in-plant tank T-43. | 6/30/2008 |

| Milestone | Description | Due Date |
|---|---|---|
| M-81-14 | Complete FFTF Sodium Drain.<br><br>This milestone will be complete when all sodium (with the exception of noted sodium residuals) has been drained from the FFTF reactor and its associated systems and the fuel storage vessels. | 9/30/2009 |
| M-81-15 | Submit FFTF Surveillance and Maintenance Plan.<br><br>DOE will develop a plan detailing S&M activities to occur at FFTF during the S&M phase. This plan will be provided to EPA and Ecology for review, and approval for the regulated units and/or hazardous substances proposed to remain at the facility. This plan will include documentation of lists of hazardous substances including dangerous wastes that remain in the FFTF Facility upon completion of transition because the hazardous substance: (1) contains non-dangerous waste components that are highly radioactive, (2) is part of the plant structure and/or (3) is an intact piece(s) of equipment. | 06/30/2010 |

The following M-20-29B interim milestone replaces existing milestone M-20-29A.

| Milestone | Description | Due Date |
|---|---|---|
| M-20-29B | Submit sodium storage facility and sodium reaction facility closure plan or request for procedural closure to Ecology as defined in Agreement section 6.3.3.<br><br>FFTF constructed the sodium storage facility (SSF) on the basis of providing RCRA and WAC 173-303 compliant storage for the sodium in the event it was determined not to be product material. The sodium reaction facility (SRF) was also included in the permit request, even though construction of the SRF was not planned at that time. The FFTF, Hallam and SRE sodium will be used as a product feedstock in the pretreatment at the Waste Treatment Plant (WTP). The sodium will be stored as product material in the sodium storage facility. Therefore, a request for procedural closure as defined in section 6.3.3 of the Agreement will be submitted for the SSF and SRF units. | 06/30/2003 |