0042635

Change Number	Federal Facility Agreement and Consent Order Change Control Form	Date
M-42-95-01	Do not use blue ink. Type or print using black ink.	May 25, 1995

Originator

D.D. Wodrich/M.A. McLaughlin

Phone

(509)376-6550/376-4084

Class of Change

( ) I - Signatories ( ) II - Project Manager ( ) III - Unit Manager

Change Title

Change Milestone M-42-00. Provide Additional Double Shell Tank Capacity

Description/Justification of Change

The M-42-00 milestones and target dates which have not been completed to date are as follows:

M-42-00	Provide Additional Double-Shell Tank Capacity.	12/31/98
M-42-01	Initiate "Hot" Operations of the MWTF 200W Area Tanks.	2/28/98
M-42-01-T02	Initiate Construction of the MWTF 200W Area Tanks.	9/30/94
M-42-02	Complete Construction of the MWTF 200E Area Tanks.	9/30/98
M-42-02-T01	Initiate Construction of the MWTF 200E Area Tanks.	2/28/95
M-42-02-T02	Complete the Detailed Design of the MWTF 200E Area Tanks.	1/31/96

(cont. p. 2)

Impact of Change

This change will result in phasing out work leading to construction of the MWTF 200W and 200E Area double-shell tanks (Project W-236A.) Future decisions on acquisitions of additional double-shell tanks will be addressed as provided under Milestone M-46-01. There is no impact to the completion date for the Cross Site Transfer Line (W-058) Project Milestone M-43-07.

Affected Documents

Hanford Federal Facility Agreement and Consent Order, Appendix D, Work Schedule

Approvals

DOE	6/19/95	✓ Approved	___ Disapproved
Ecology	11/30/95	✓ Approved	___ Disapproved
Ecology EPA	12/1/95	✓ Approved	___ Disapproved

Date

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Description/Justification (cont.)

Change the M-42-00 Milestone as follows:

M-42-00 Provide additional Double Shell Tank Capacity. TBD

Delete all other remaining M-42 Interim Milestones and Target Dates which have not been completed.

Current waste volume projections for the Hanford double-shell tanks (DST) lead to the conclusion that additional DSTs will not be needed to manage Tank Waste Remediation activities until fiscal year 2004 or later. Accordingly, it is proposed that the MWTF Project be phased out and that the date for Milestone M-42-00 be changed to "TBD." The remaining target and interim milestones are deleted.

Future decisions on tank acquisition beyond the MWTF project are provided for under Milestone M-46-01B through M-46-01Z, Concurrence of Additional Tank Acquisition. M-46-00B through M-46-00Z provide for annual updates to the DST Space Evaluation, followed by a decision to acquire additional tanks if needed. If new tanks are needed, the Department of Energy, Ecology and EPA will utilize the M-42-00 milestone to define new interim and target milestones to support the construction of the tanks.

The major technical reasons for changes in the waste volume projections and the need for additional double-shell tank space are as follows:

1. Safety Issue Mitigation

   The flammable gas tanks, e.g., 241-SY-101, can be safely mitigated with mixer pumps and do not require retrieval and dilution to maintain safe storage. Except for the high heat tank 241-C-106, the other safety issue tanks can be mitigated in-tank and do not require additional storage capacity.

2. Lower Waste Volume Projections

   Waste minimization efforts have resulted in reduced waste volumes from the waste generators.

3. More Conservative Estimates of Single-Shell Tank Liquid Volume and Evaporator Waste Volume Reduction

   The more conservative estimates increase confidence that the amount of waste to be stored is accounted for.

4. Improved Tank Space Utilization

   It has been shown feasible to change past waste segregation practices and combine some similar wastes in fewer tanks.

5. Reduced Contingency and Spare Tank Space

   A tank previously held as contingency space will be utilized and unused space in evaporator feed and receipt tanks will be considered as part of the spare space needed should a DST leak.

6. Double Shell Tank Integrity

It is unlikely that a DST will leak during the next ten years.

Description/Justification (cont.)

7. Operational Flexibility in the 200 West Area

With two of the three DSTs in the 200-W area on the safety watch list and a significant amount of single-shell tank liquid yet to be pumped, the lack of tank capacity and the questionable integrity of the existing cross-site transfer line hamper operations. However, almost all single-shell tank liquid removal and transfer to tanks in the 200-E area must be accomplished with the existing tank system, as new tanks would not be available until near the end of the pumping schedule. Effort is underway to determine how the DST 241-SY-102 can continue to be used as the cross-site transfer pump tank; to test the existing cross-site transfer lines; and to accelerate the new cross-site transfer lines project.

8. TWRS Privatization Initiative

The TWRS Phase 1 Privatization Initiative concept currently under consideration does not require additional DST capacity and in time will free up tank space. If additional storage capacity is needed, it will be provided as part of the initiative.

9. Future Tank Needs Evaluation

The current evaluation of storage capacity needs shows the ability to meet those needs until fiscal year 2004 or later. Approximately seven years lead time is needed to provide additional storage tanks. Therefore, a decision on additional storage capacity can be delayed at least two years when more will be known about requirements of the waste retrieval, treatment and immobilization programs.

Efforts are underway to forecast the need for additional DST storage capacity beyond fiscal year 2003. The next revision (Revision 21) of the Operational Waste Volume Projection Report, which will be issued in September 1995 as required by Milestone M-46-008, will extend the projection through 2015. Also, a TWRS reference operational scenario (WHC-EP-0856, "Tank Waste Remediation System Operational Scenario," M. E. Johnson, May 1995) has been developed which defines a waste retrieval, pretreatment and immobilization sequence. This scenario indicates that the 28 DSTs would provide adequate storage space, but that single-shell tank waste retrieval by sluicing will require additional smaller tanks (50-100,000 gal.) located near the tank farm complexes.

Additional details of the technical basis for the changes are provided in "Multi-Function Waste Tank Facility Phase-Out Basis, WHC-SD-W236A-ER-021." This document also addresses the waste management actions needed to manage the waste with the existing storage tank capacity.

As outlined in Article X. SCHEDULE of the Agreement, the TWRS critical path schedule has been analyzed to assure that cancellation of the MWTF project will have no impact to critical end points as shown in Attachment I.

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ATTACHMENT I

TWRS CRITICAL PATH INTEGRATED SCHEDULE ANALYSIS

IMPACT OF DELETING PROJECT W-236A

A TWRS critical path integrated schedule analysis was conducted to determine the impact of deleting the Multi-Function Waste Tank Facility(MWTF), Project W-236A from the program. None of the critical milestones were impacted as shown on the following pages which are as follows:

- Page 2 is a summary of the key points found in the analysis

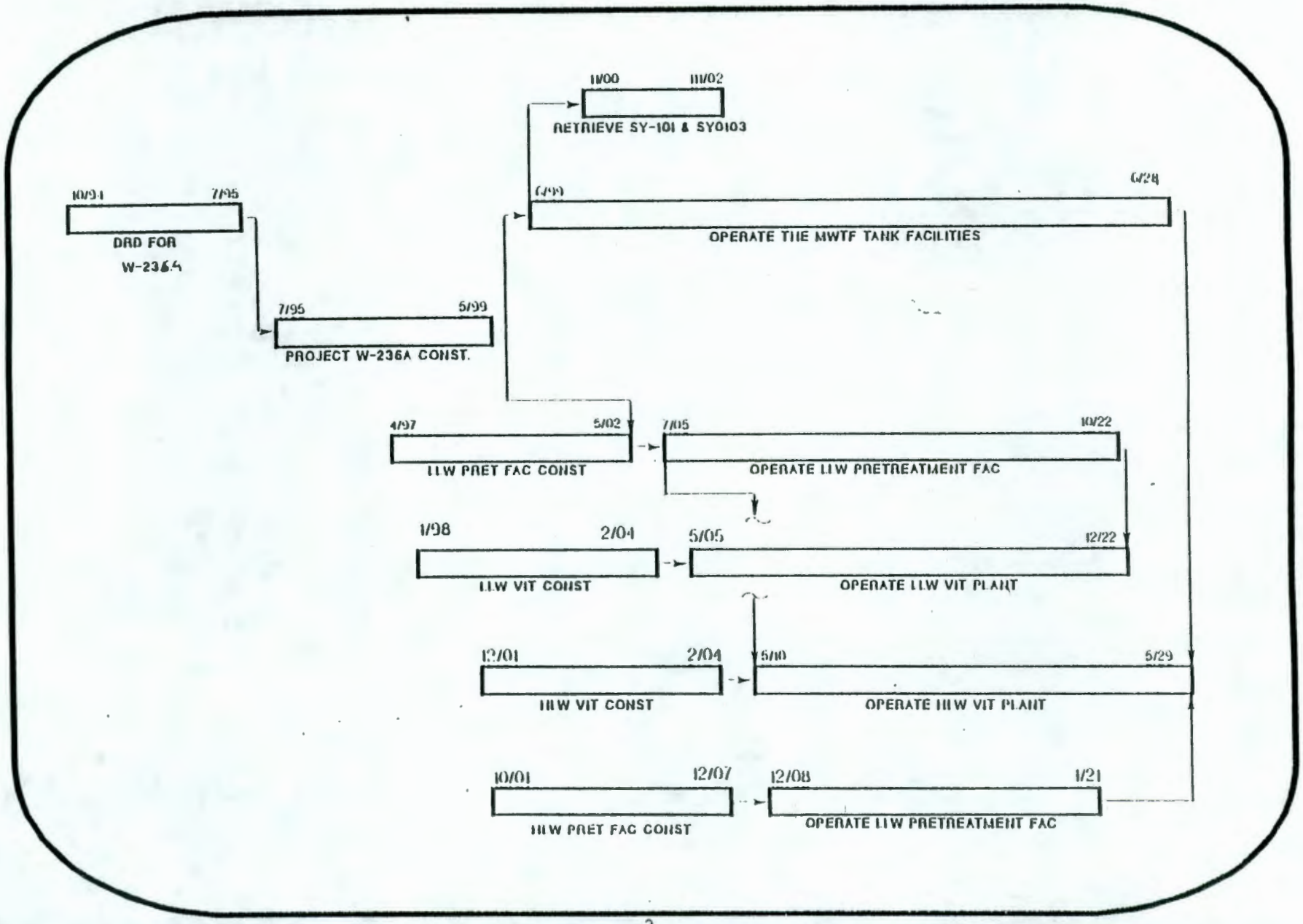
- Page 3 is a simple graphic of the logic ties for the MWTF.

- Pages 4-6 list all the TWRS Tri-Party Agreement milestones. The column entitled "BEFORE CR DATES" lists the Agreement milestones as they are currently in the schedule. The column entitled "AFTER CR DATES" lists the Agreement milestones in the schedule as they would be affected by deleting the MWTF, Project W-236A. The blank space in this column is from deleting the MWTF. The critical milestones are underlined and as can be seen, deleting the MWTF did not change any of these dates.

Critical Path Integrated Schedule
Impact of Deleting Project W-236A

- W-236A is logically tied in the schedule as follows:
  - Completion of W-236A to completion of LLW Pretreatment Facility
  - Start of operations of the new West Tank Farm Facility to the start of activity to retrieve SY-101 and SY-103
  - Completion of W-236A to Tank Farm Operations activities to operate the new tank facilities
  - Design Requirements Document (DRD) to start of W-236 construction
- 6 M-42-00 series TPA Milestones were deleted
- Remaining TPA Milestone dates were not affected by deleting W-236A
  - W-236A completion in May, 1999
  - Logically tied to pretreatment in May, 2002
  - Therefore no schedule driven impact
  - Decision driven by waste volume projection beyond 2004 not reflected in a schedule environment.

TWRS
MWTF LOGIC TIES



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MWTF SCHEDULE IMPACTS TO TPA MILESTONES
WBC - TWRS

MWTF TPA MILESTONE REPORT — TWRS INTEG SCHED - APRIL STATUS

ACTIVITY ID	DESCRIPTION	BEFORE CR DATES	AFTER CR DATES
SS0D602	M-40-00 Mit/Res Tank Sfty Iss_El Pri WL Tnks	05NOV02	05NOV02
N2C340B18	M-40-02 UPGR TEMP MONITOR CAPBLTY FeCN TKS	29SEP95	29SEP95
N2C340B16	M-40-02B INSTL 2 OF 7 NEW TC TREES	12APR95A	12APR95A
N2E810A21	M-40-03 COMP VAP HEADSPACE CHAR OF FeCN WL TNKS	10JUN98	10JUN98
N2E570C22	M-40-04 COMPL REM ORG LAYER FROM C-103	31DEC96	31DEC96
N2E570C21	M-40-04-T01 RECE DECIS TO INT STAB/REM ORG.C-103	15MAY95	15MAY95
N2E570C20	M-40-04-T02 COMP TRANS OF C-103 ORG LAY TO DST	31JUL96	31JUL96
N2F610A31	M-40-05 COMPL SA TEST & DOC RPT FOR PUBLIC REL	29SEP95	29SEP95
N2E820D21	M-40-07 COMMENCE OPER OF VAP TREAT SYS IN C-103	30JUN95	30JUN95
N2E810A22	M-40-08 COMP VAP HEADSPACE CHAR OF ORG WL TNKS	10JUN98	10JUN98
SS0D207	M-40-09 Close all USQs for SST & DDTs	30MAR99	30MAR99
N2D420A38	M-40-10 COMPL VAP SP MONITORL FLAM GAS	31JAN97	31JAN97
SS0J106	M-40-12 Resolve Nuclear Critical Safety Iss	30SEP99	30SEP99
S005275A	M-41-00 COMPLETE SST INTERIUM STAB.	02OCT00	02OCT00
N1E510A080	M-41-01-T02 COMP IS BY-102,109 & C-102,107,110	30NOV95	30NOV95
N1E530A005	M-41-02 EMERGENCY LEAK RESPONSE	01MAR95A	02MAR95A
N1E530A003	M-41-02-T3 DETAILED PROC. FOR EM PPG. TO ECO/EPA	01MAR95A	02MAR95A
N1E530D002	M-41-02-T4 RESTORE 244-U DCRT TO COMP OF CONDIT.	01MAR95A	02MAR95A
N1E530K024	M-41-03B DELIVERY OF MOBILE ELLW CASK	31JAN96	31JAN96
N1E510G004	M-41-07 COMPLETE WATCH LIST SAFETY STUDY	30DEC94A	31DEC94A
N1E510B042	M-41-08 START IS ON 1 N-WLT IN U-FARM	02SEP96	02SEP96
N1E510B044	M-41-08-T1 COMPL IS ON 1 N-WLT IN U-FARM	30APR97	30APR97
N1E510D034	M-41-09 START IS ON 7 N-WLT IN S FARM	31JAN96	31JAN96
N1E510D185	M-41-09-T01 COMPL. IS ON 7 N-WLT IN S-FARM	30APR97	30APR97
N1E510E045	M-41-10 START IS OF 2 FG WLT IN A-AX FARM	30APR96	30APR96
N1E510E055	M-41-10-T01 COMPL IS OF 2 FLM. GAS WLT IN A-AX	31DEC98	31DEC98
N1E510B084	M-41-11 START IS ON 4 FG WLTs U-FARM	30AUG96	30AUG96
N1E510B086	M-41-11-T1 COMPL IS ON 4 FG TANKS U-FARM	30SEP97	30SEP97
N1E510KJ02	M-41-12 START IS OF 4 FeCN TANKS IN BX/BY FARM	30AUG95	30AUG95
N1E510KD85	M-41-12-T1 COMPL IS 4 FeCN TANKS IN BX/BY FARM	26FEB98	26FEB98
N1E510B039	M-41-13 START IS OF 3 ORG. WLT IN U-FARM	02SEP96	02SEP96
N1E510B041	M-41-13-T01 COMPL IS OF 3 ORG. WLT IN U-FARM	02FEB98	02FEB98
N1E510L015	M-41-14 START IS OF 7 FG WLT IN S/SX FARM	30JUN97	30JUN97
N1E510L050	M-41-14-T1 COMPL IS 7 FG WLT IN S/SX FARM	30NOV99	30NOV99
N1E510M002	M-41-15 START IS OF 2 ORG WLT IN S/SX FARM	30JUN97	30JUN97
N1E510M006	M-41-15-T1 COMPL IS 2 ORG WLT IN S/SX FARM	31MAR99	31MAR99
N1E510N010	M-41-16 START IS OF 1 NON-WLT IN T FARM	31MAR98	31MAR98
N1E510N025	M-41-16-T1 COMPL IS ON 1 NON-WLT IN T FARM	31AUG98	31AUG98
N1E550A002	M-41-16A-T01 T-111 EMERGENCY PUMPING COMPLETE	28FEB95A	01MAR95A
N1E510N030	M-41-17 START IS ON 1 FeCN TANK IN 241-T	02APR98	02APR98
N1E510N050	M-41-17-T1 COMP IS OF 1 FeCN TANK IN 241-T	04MAY98	04MAY98
N1E510N035	M-41-18 START INTERIM STAB. ON 1 FG TANK IN 241	02APR98	02APR98
N1E510N055	M-41-18-T1 COMP. IS OF 1 FG TANK IN 241-T	27JUL98	27JUL98
N1E510A100	M-41-19 START IS ON 1 ORG TANK IN 241-C	18SEP98	18SEP98
N1E510A115	M-41-19-T1 COMP. IS OF 1 ORG TNK IN 241-C	01MAR99	01MAR99
SP0304X	M-42-00 Provide Additional DST Capacity (MWTF)	05MAY99	
SP0304AF	M-42-01 Initiate "Hot" Operations Of MWTF (W)	03NOV98	
D81010P0M	M-42-01-T02 Initiate Construction of MWTF 200W	05JUL95	
D810116M	M-42-02 Complete Const Of The MWTF 200E	08FEB99	
D81010P1M	M-42-02-T01 Initiate Construction of MWTF 200E	05JUL95	
D81010P2M	M-42-02-T02 Complete Detail Dsgn of MWTF 200E	31JAN96	
SP0399X	M-43-00 Tank Farm Upgrades Complete	17NOV05	17NOV05
N3G24F3M	M-43-01 Complete Project W-030 TK Farm Vent Upgr	24JAN97	24JAN97
N3G24E1M	M-43-01A START CONST FOR W-030	21OCT94A	21OCT94A
N3G24E3M	M-43-01B COMPLETE CONSTRUCTION FOR W-030	31OCT96	31OCT96
N3G24F4M	M-43-01C BEGIN OPERATION FOR W-030	24JAN97	24JAN97
SP0313X	M-43-02 Proj W-314b DST Ventilation Complete	30AUG02	30AUG02
N3F710L010	M-43-02-T06 Receive DOE-HQ Validation W-314B	31MAY96	31MAY96
N3F720X00	M-43-02-T07 Start Definitive Design W-314B	31JAN97	31JAN97
SP0313EA	M-43-02-T08 Definitive Design Complete (W-314b)	01FEB99	01FEB99
SP0313J	M-43-02-T09 Start Construction (W-314b)	30MAR99	30MAR99
N3F710E04M	M-43-02A WDOE CDR W-314B	31MAY96	31MAY96
SP0313JB	M-43-02B Construction Complete (W-314b)	28DEC01	28DEC01
SP0313LA	M-43-02C Operation (W-314b)	27JUN02	27JUN02
N3K990BM	M-43-03 W-230: SST VENTILATION UPG NEEDS ASSESS	31MAR97	31MAR97
SP0307AZ	M-43-04 Proj W-314a TF Int Inst Sys Upg Complete	02JUL02	02JUL02
N3F710L01N	M-43-04-T05: Receive DOE-HQ Proj Validation 314A	31MAY96	31MAY96
N3F720W00	M-43-04-T06.Start Def Dsg For W-314A TF Instr Up	31JAN96	31JAN96
SP0307AJ	M-43-04-T07 Complete Definitive Design (W-314a)	30NOV98	30NOV98

MWTF SCHEDULE IMPACTS TO TPA MILESTONES
WBC - TWRS

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TWRS INTEG SCHED - APRIL STATUS

ACTIVITY ID	DESCRIPTION	BEFORE CR DATES	AFTER CR DATES
SP0307AK	M-43-04-T08 Start Construction (W-314a)	31DEC98	31DEC98
N3F710E05M	M-43-04A WDOE CDR W-314A	31MAY96	31MAY96
SP0307AM	M-43-04B Provide L3 Schedule -TF Int Inst Sys U	31DEC98	31DEC98
SP0307AP	M-43-04C Construction Complete (W-314a)	03JAN02	03JAN02
SP0307AT	M-43-04D Operation (W-314a)	02JUL02	02JUL02
SP0314Z	M-43-05 Project W-314c Transfer Sys Upg Complete	30JUN04	30JUN04
N3F710A02	M-43-05-T02 Provide WDOE F&R For Proj W-314C	08FEB95A	09FEB95A
N3F710A06	M-43-05-T03, Prov WDOE PCD SOW For W-314C	30JUN95	30JUN95
N3F710L01P	M-43-05-T06, Receive DOE-HQ Validation W-314C	28JUN96	28JUN96
SP0314DD	M-43-05-T07 Initiate Definitive Design (W-314c)	30JAN98	30JAN98
SP0314EA	M-43-05-T08 Definitive Design Complete (W-314c)	30NOV00	30NOV00
SP0314ED	M-43-05-T09 Initiate Construction (W-314c)	31MAR00	31MAR00
N3F710E06M	M-43-05A Provide WDOE CDR W-314C	31MAY96	31MAY96
SP0314FA	M-43-05B Construction Complete (W-314c)	31DEC03	31DEC03
SP0314GA	M-43-05C Operation Of Proj W-314c	01JUN04	01JUN04
SP0308X	M-43-06 Proj W-341d Tank Farm Elect Upg Complete	30JUN05	30JUN05
N3F710A03	M-43-06-T01 Provide WDOE ES/Scope For Proj W314D	28FEB96	28FEB96
N3F710A04	M-43-06-T02 Provide WDOE F&R For Proj W-314D	30APR96	30APR96
N3F710A09	M-43-06-T03, Prov WDOE PDC SOW For W-314D	28JUN96	28JUN96
N3F710L01R	M-43-06-T06, Receive DOE-HQ Validation W-314D	30JUN97	30JUN97
SP0308E	M-43-06-T07 Start Definitive Design (W-314d)	29JAN99	29JAN99
SP0308EB	M-43-06-T08 Complete Definitive Design (W-314d)	29OCT01	29OCT01
SP0308K	M-43-06-T09 Start Construction (W-314d)	02APR01	02APR01
N3F710E07M	M-43-06A Provide WDOE CDR W-314D	28JUN96	28JUN96
SP0308KB	M-43-06B Complete Construction (W-314d)	31DEC04	31DEC04
SP0308W	M-43-06C Start Operation (W-314d)	30JUN05	30JUN05
SP0311TZ	M-43-07 Repl of X-Site Xfer Line Compl (W-058)	22SEP98	22SEP98
N3H26PCM	M-43-07-T01 Complete Def Dsg Of Proj W-058	29MAR96	29MAR96
N3H26PGM	M-43-07A Start Construction (W-058)	26JUN96	26JUN96
N3H26PLA	M-43-07B, Complete Construction Of Proj W-058	27MAR98	27MAR98
SP0311TB	M-43-07C System Operational (W-058)	22SEP98	22SEP98
C00E367	M-44-00 Issue Tank Characterization Reports	21OCT99	21OCT99
N4ES7B01A	M-44-01B Prepare Dft TWAP FY96 Update (5/31/95)	31MAY95	31MAY95
N4ES7B03A	M-44-01C Prepare Dft TWAP FY97 Update (5/31/96)	31MAY96	31MAY96
N4ES7B05A	M-44-01D Prepare Dft TWAP FY98 Update (5/31/97)	30MAY97	30MAY97
N4ES7B02A	M-44-02B Prepare Fnl TWAP FY96 Update (8/31/95)	31AUG95	31AUG95
N4ES7B04A	M-44-02C Prepare Fnl TWAP FY97 Update (8/31/96)	30AUG96	30AUG96
N4ES7B06A	M-44-02D Prepare Fnl TWAP FY98 Update (8/31/97)	29AUG97	29AUG97
N4ES4A01A	M-44-08 Issue 30 TCRs (9/30/95)	29DEC95	29DEC95
N4ES4A02A	M-44-09 Issue 40 TCRs (9/30/96)	30SEP96	30SEP96
N4ES4A03A	M-44-10 TPA Issue 40 TCRs (9/30/97)	30SEP97	30SEP97
C00E355	M-44-11 Issue 30 Tank Char Reports	11JUN98	11JUN98
C00E365	M-44-12 Issue 14 Tank Char Reports	11JUN99	11JUN99
R00234A	M-45-00 Complete Closure of SSTs	13MAR25	13MAR25
R00100B	M-45-02 Submit Annual SST WR Sequence Document	27NOV17	27NOV17
R00100A	M-45-02A Submit Initial SST WR Doc for Ecology	30SEP96	30SEP96
R00100C	M-45-02B Submit Annual SST WR Update_02B-V, FY17	30SEP97	30SEP97
R00100E	M-45-02C SUBMIT ANNUAL SST WR SEQ DOC TO ECOLOGY	30SEP98	30SEP98
R00100D	M-45-02D SUBMIT ANNUAL SST WR SEQ DOC TO ECOLOGY	30SEP99	30SEP99
R00225B	M-45-03-T01 Complete SST WR Demo	12MAR04	12MAR04
R00225A	M-45-03-T02 Initiate Final WR Demo of C-106	01JUL02	01JUL02
05P3A	M-45-03A - Initiate Sluicing of C-106	30DEC96	30DEC96
R00227D	M-45-04-T01 Provide Initial SST WR Systems	01DEC03	01DEC03
R00227B	M-45-04-T02 Cmplt Design of Initial SST WR Sys	02JAN01	02JAN01
R00227C	M-45-04-T03 Cmplt Construct. Initial SST WR SYS	30JUN03	30JUN03
R00227A	M-45-04A Complete Initial SST WR System CDR	31JUL97	31JUL97
R00232I	M-45-05 Retrieve Waste from all Remaining SSTs	13MAR19	13MAR19
R00229A	M-45-05-T01 Initiate WR From One SST	14JUN04	14JUN04
R00229B	M-45-05-T02 Initiate WR from 2 Additional SSTs	14MAR05	14MAR05
R00229C	M-45-05-T03 Initiate WR from 3 Additional SSTs	13MAR06	13MAR06
R00229D	M-45-05-T04 Initiate WR from 4 Additional SSTs	13MAR07	13MAR07
R00229E	M-45-05-T05 Initiate WR from 5 Additional SSTs	12MAR08	12MAR08
R00229F	M-45-05-T06 Initiate WR 5 Additional SSTs	13MAR09	13MAR09
R00232A	M-45-05-T07 Initiate Tank WR from 7 Add SSTs	15MAR10	15MAR10
R00232B	M-45-05-T08 Initiate Tank WR from 8 Add SSTs	14MAR11	14MAR11
R00232C	M-45-05-T09 Initiate Tank WR from 10 Add SSTs	12MAR12	12MAR12
R00232D	M-45-05-T10 Initiate Tank WR from 12 Add SSTs	13MAR13	13MAR13
R00232E	M-45-05-T11 Initiate Tank WR from 14 Add SSTs	13MAR14	13MAR14
R00232F	M-45-05-T12 Initiate Tank WR from 17 Add SSTs	13MAR15	13MAR15

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TWRS INTEG SCHED - APRIL STATUS

ACTIVITY ID	DESCRIPTION	BEFORE CR DATES	AFTER CR DATES
R00232G	M-45-05-T13 Initiate WR from 20 Additional SSTs	14MAR16	14MAR16
R00232H	M-45-05-T14 Initiate Tank WR from 20 Add SSTs	13MAR17	13MAR17
R00232J	M-45-05-T15 Initiate Tank WR from 20 Add SSTs	13MAR18	13MAR18
R00234B	M-45-06 Complete Closure of SST TF	13MAR25	13MAR25
R00316A	M-45-06-T01 Submit Drft Close Plan 1st Tnk Farm	30NOV04	30NOV04
R00316B	M-45-06-T02 Issue Final Approved Closure Plan	02OCT06	02OCT06
R00236A	M-45-06-T03 Init Closure Actions on Op Unit	11SEP12	11SEP12
R00236B	M-45-06-T04 Cpml Closure Actions on Op Unit	12SEP14	12SEP14
R00312B	M-45-07 Cmplt Eval/Demo Test Small Scale Barrier	01DEC98	01DEC98
R00311A	M-45-07-T01 Establish/Perform Criteria/Test Spec	01SEP95	01SEP95
R00311B	M-45-07-T02 Initiate Demo Testing	30AUG96	30AUG96
R00312A	M-45-07-T03 Cmplt Eval Barrier Demo Test Results	28AUG97	28AUG97
R00312C	M-45-07-T04 Decision to Proceed with Barriers	01DEC98	01DEC98
R00310A	M-45-07B Make Decision to Proceed with Demo	30JUN95	30JUN95
R00311C	M-45-07C Esthlsh New Milestone Barrier Implmntn	01DEC98	01DEC98
N1F660H26	M-46-00B DOUBLE SHELL TANK SPACE EVALUATION	29JUN95	29JUN95
N1F660H626	M-46-00C DOUBLE SHELL TANK SPACE EVALUATION	30SEP96	30SEP96
N1F660H726	M-46-00D DOUBLE SHELL TANK SPACE EVALUATION	30SEP97	30SEP97
D81010P11	M-46-01A Concurrence Of Addtnl Tx Acquisition	23NOV94A	23NOV94A
D81010P12	M-46-01B Concurrence of Addtnl Tx Acquisition	30NOV95	30NOV95
D81010P6M	M-46-01C Concurrence of Addtl Tx Acquisition	27NOV96	27NOV96
PLW0240A	M-50-00 Comp Pret Processing of Bant Tank Waste	19OCT22	19OCT22
PDW0634A	M-50-01 Start Constr of LLW Pret Fac - Mod 1	07APR97	07APR97
PSW04093A	M-50-01-T01 Iss Rpt on Cs Rem Perf of RF/CS-100	21DEC94A	22DEC94A
PDW32105A	M-50-01-T02 CNCPTL DSN & INIT DFNTV DSN LLW PTM	28APR97	28APR97
PLW0101A	M-50-02 Start Hot Operations of LLW Pret Fac	28JUL05	28JUL05
PDW0635A	M-50-02-T01 Compl Construction of LLW Pret Fac	31MAY02	31MAY02
PSW04429A	M-50-03 Comp Eval of ESW to Det Adv Sldg Sep Pro	11NOV98	11NOV98
PSW04390B	M-50-03-T01 Iss Rpt Stat of Tx Wst Enh Sldg Wash	26OCT94A	27OCT94A
PSW04730A	M-50-03-T2A - Subt Rpt Sum the Testing of ESW	28SEP95	28SEP95
PSW04760A	M-50-03-T2B - Subt Rpt Sum the Testing of ESW	27SEP96	27SEP96
PSW04790A	M-50-03-T2C Subt Rpt Sum the Testing of ESW	29SEP97	29SEP97
PSW04390A	M-50-03A Define Add'l Sludge Washing Milestones	30SEP94A	01OCT94A
PHW0100A	M-50-04 Start Hot Operations of HLW Pret Fac	30DEC08	30DEC08
PHW09160A	M-50-04-T01 Submit Conc Design of HLW Pret Fac	23OCT98	23OCT98
PDW0409A	M-50-04-T02 Init. Defin Design HLW Pretreat Fac	01JUN99	01JUN99
PDW0439A	M-50-04-T03 Start Construction of HLW Pret Fac	25OCT01	25OCT01
HL03018C	M-51-00 HLW Vitrification Complete	25MAY29	25MAY29
SDW9991	M-51-01 (TSC-95-100) Alternative Concepts Report	28DEC94A	29DEC94A
MSW2000	M-51-02 (TSC-98-102) Cmpt Melter Tests/Sel Ref	22DEC98	22DEC98
HL03018B	M-51-03 Initiate Hot Operations	21MAY10	21MAY10
HL05033B	M-51-03-T01 Submit Conceptual Design	04FEB99	04FEB99
HL05038A	M-51-03-T02 Initiate Definitive Design	09APR99	09APR99
HL05041A	M-51-03-T03 Initiate HLW Facility Construction	13DEC01	13DEC01
HL05041B	M-51-03-T04 Complete HLW Facility Construction	19OCT07	19OCT07
L0S0306B	M-60-00 Complete LLW Vitrification	19OCT22	19OCT22
L0TCZ01C	M-60-02:TSB-96-100:Sel.LL.Ref.Melt.Est.Glas.Form	30JUL96	30JUL96
L597MS26	M-60-03 Submit CDR & Initiate Def D	26NOV96	26NOV96
L0EC504A	M-60-04 Start LLW Vit Facil Construction	27JAN98	27JAN98
L0S0306A	M-60-05 Initiate LLW Hot Vit Fac Ops	01JUN05	01JUN05
L0EC504B	M-60-05-T01 Comp LLW Vit Facil Construction	14FEB04	14FEB04

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Distribution	N. G. Awadalla	Date 06/09/95
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Multi-Function Waste Tank Facility, Phase Out Basis		ECN No. 623904

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ENGINEERING CHANGE NOTICE

Page 1 of 2

1. ECN № 623904

Proj. ECN

2. ECN Category (mark one)	3. Originator's Name, Organization, MSIN, and Telephone No.	3a. USQ Required?	4. Date
Supplemental [ ] Direct Revision [X] Change ECN [ ] Temporary [ ] Standby [ ] Supersedure [ ] Cancel/Void [ ]	C. E. Jensen, 74400, R1-30, 373-5058	[] Yes [X] No	06/09/95
	5. Project Title/No./Work Order No. Multi-Function Waste Tank Facility	6. Bldg./Sys./Fac. No. N/A	7. Approval Designator N/A
	8. Document Numbers Changed by this ECN (includes sheet no. and rev.) WHC-SD-W236A-ER-021, Revision 2	9. Related ECN No(s). N/A	10. Related PO No. N/A

11a. Modification Work	11b. Work Package No.	11c. Modification Work Complete	11d. Restored to Original Condition (Temp. or Standby ECN only)
[] Yes (fill out Blk. 11b) [X] No (NA Blks. 11b, 11c, 11d)	N/A	Cog. Engineer Signature & Date	Cog. Engineer Signature & Date

12. Description of Change

Total rewrite of document

13a. Justification (mark one)

Criteria Change	[X]	Design Improvement	[]	Environmental	[]	Facility Deactivation	[]
As-Found	[]	Facilitate Const	[]	Const. Error/Omission	[]	Design Error/Omission	[]

13b. Justification Details

Revisions made to incorporate comments

14. Distribution (include name, MSIN, and no. of copies)

See attached.

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ENGINEERING CHANGE NOTICE

1. ECN (use no. from pg. 1): 623904

15. Design Verification Required	16. Cost Impact N/A						17. Schedule Impact (days) N/A	
	ENGINEERING			CONSTRUCTION				
[] Yes	Additional	[]	$	Additional	[]	$	Improvement	[]
[X] No	Savings	[]	$	Savings	[]	$	Delay	[]

18. Change Impact Review: Indicate the related documents (other than the engineering documents identified on Side 1) that will be affected by the change described in Block 12. Enter the affected document number in Block 19.

SDD/DD	[]	Seismic/Stress Analysis	[]	Tank Calibration Manual	[]
Functional Design Criteria	[]	Stress/Design Report	[]	Health Physics Procedure	[]
Operating Specification	[]	Interface Control Drawing	[]	Spares Multiple Unit Listing	[]
Criticality Specification	[]	Calibration Procedure	[]	Test Procedures/Specification	[]
Conceptual Design Report	[]	Installation Procedure	[]	Component Index	[]
Equipment Spec.	[]	Maintenance Procedure	[]	ASME Coded Item	[]
Const. Spec.	[]	Engineering Procedure	[]	Human Factor Consideration	[]
Procurement Spec.	[]	Operating Instruction	[]	Computer Software	[]
Vendor Information	[]	Operating Procedure	[]	Electric Circuit Schedule	[]
OM Manual	[]	Operational Safety Requirement	[]	ICRS Procedure	[]
FSAR/SAR	[]	IEFD Drawing	[]	Process Control Manual/Plan	[]
Safety Equipment List	[]	Cell Arrangement Drawing	[]	Process Flow Chart	[]
Radiation Work Permit	[]	Essential Material Specification	[]	Purchase Requisition	[]
Environmental Impact Statement	[]	Fac. Proc. Samp. Schedule	[]	Tickler File	[]
Environmental Report	[]	Inspection Plan	[]	N/A	[]
Environmental Permit	[]	Inventory Adjustment Request	[]		[]

19. Other Affected Documents: (NOTE: Documents listed below will not be revised by this ECN.) Signatures below indicate that the signing organization has been notified of other affected documents listed below.

Document Number/Revision	Document Number/Revision	Document Number Revision
n/a		

20. Approvals

OPERATIONS AND ENGINEERING	Signature	Date
Cog. Eng. N. G. Awadalla	N G Awadalla	6-8-95
Cog. Mgr. J. D. Thomson	J D Thomson by N G Awadalla	6-8-95
QA		
Safety		
Environ.		
Other		

ARCHITECT-ENGINEER	Signature	Date
PE		
QA		
Safety		
Design		
Environ.		
Other		

DEPARTMENT OF ENERGY

Signature or a Control Number that tracks the Approval Signature

ADDITIONAL

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RELEASE AUTHORIZATION

Document Number:	WHC-SD-W236A-ER-021, REV 2
Document Title:	Multi-Function Waste Tank Facility Phase Out Basis
Release Date:	6/8/95

This document was reviewed following the procedures described in WHC-CM-3-4 and is:

APPROVED FOR PUBLIC RELEASE

WHC Information Release Administration Specialist:

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June 8, 1995

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SUPPORTING DOCUMENT

1. Total Pages 44

2. Title	3. Number	4. Rev No.
Multi-Function Waste Tank Facility Phase Out Basis	WHC-SD-W236A-ER-021	2

5. Key Words	6. Author
Multi-Function Waste Tank Facility MWTF Phase Out Basis	Name: N. G. Awadalla N G Awadalla 6/8/95 Signature Organization/Charge Code 74400/N3099

7. Abstract

Additional double-shell tank storage capacity is not needed until FY 2004 or later. The waste volume in the current baseline program can be managed within the existing tank capacity. However, this requires implementation of some risk management actions and significant investment in software and hardware to accomplish the actions necessary to maximize use of existing storage tank space.

8. RELEASE STAMP

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RECORD OF REVISION	(1) Document Number WHC-SD-W236A-ER-021	Page 1

(2) Title
MULTI-FUNCTION WASTE TANK FACILITY PHASE OUT BASIS

CHANGE CONTROL RECORD

(3) Revision	(4) Description of Change - Replace, Add, and Delete Pages	Authorized for Release (5) Cog. Engr.	(6) Cog. Mgr. Date
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1	Total Rewrite 4/20/95	NG Awadalla	JD Thomson
RS 2	General Editorial Corrections ECN-623904 **Page 3:** Added discussion on OWVP uncertainties **Page 8:** Added discussion on characterization sampling sequence of storage tanks **Page 12:** Added discussion on TPA requirements needing changes and meetings with Ecology **Page 14:** Revised discussion on the Demobilization Plan **Appendix 1, page 3:** Added information and expanded discussion on the January 1995 Recommendation Letter **Appendix 1, page 6:** Revised discussion on operational risks **Appendix 2, page 2:** Clarified discussion on the cross site transfer line and added the date of the completed pressure test of the line **Appendix 3:** Added updated OWVP	NG Awadalla NG Awadalla	JD Thomson JD Thomson/by NG Awadalla

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MULTI-FUNCTION WASTE TANK FACILITY
PHASE OUT BASIS

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APPENDIX 1 BACKGROUND INFORMATION

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1.0 EXECUTIVE SUMMARY

On January 13, 1995, Westinghouse Hanford Company (WHC) recommended to the U.S. Department of Energy, Richland Operations Office (RL) that Project W-236A, Multi-Function Waste Tank Facility (MWTF), should be phased out (Reference 1). The most recent information shows that wastes in the Tank Waste Remediation System (TWRS) current baseline can be managed within the existing waste tank capacity through fiscal year (FY) 2003. Additional double-shell tank storage capacity is not needed until FY 2004 or later.

As planning for the retrieval, pretreatment, and immobilization programs further matures during FY 1996-1998, as well as planning for privatization initiatives, specific needs for additional waste storage capacity will be clarified. Managing the present and projected wastes within the existing double-shell tank system requires accepting increased risk, and implementing several new waste management actions. The primary objective of these actions is to ensure that the projected waste volume will not exceed the available waste storage capacity. Additional funding will be required to implement these actions because none of the actions are presently in the TWRS baseline. As a minimum, these funds are needed for the present FY (1995) and for each of the two following FYs (1996 and 1997). The level of funding for each of these fiscal years will vary depending on the option selected and implementation schedule.

The basis for the recommendation centers around the most recently updated Operational Waste Volume Projection (OWVP) as shown in Appendix 3. The key factors considered in the projection include, but are not limited to, the following:

- Active mixing pump mitigation of the flammable gas safety issue in tank 241-SY-101 with no passive mitigation needed for the other flammable gas watch list tanks
- Reduced waste volume generation by the Hanford Site facilities
- Improved tank space use
- Elimination of the contingency space
- Capability to manage waste in 200 West Area without two new tanks
- No anticipated additional storage needs from TWRS privatization initiative
- Unlikelihood that any existing double-shell tank will leak during the next 10 years
- Increased waste inventory estimates due to increased single-shell tank porosity estimates
- Decreased waste volume reduction factors for evaporator operations
- Concentration of waste to the specific gravity operating limit in all future evaporator campaigns
- Revised waste segregation requirements

This document contains further details that address the above basis. In addition, risk management issues, description of waste management actions, and implementation plans are included. Consequences of this recommendation including impact on TWRS programs, TWRS integrated schedule, and the Hanford Federal Facility Agreement and Consent Order (Tri-Party Agreement) milestones are also discussed.

2.0 BACKGROUND

The Justification of Mission Need for the Multi-Waste Remediation Facility, which included the MWTF, was approved by the U.S. Department of Energy Under Secretary on January 19, 1993 as a line item Major System Acquisition project. The present MWTF scope includes six waste tanks to be used primarily for dilution and storage of waste from tanks such as 241-SY-101 with priority safety issues.

Since the inception of the project, progress in the waste tank safety program has concluded that waste mixing is a preferable alternative to dilution for tank 241-SY-101. Also, the Hanford Site facilities made significant progress in reducing their waste generation rates and projected demand on the existing waste tank capacity. In late 1994, increased emphasis was placed on examining the OWVP annual report and challenging its assumptions. Numerous new factors came together to affect the projections sufficiently so that the need for new waste storage capacity could no longer be demonstrated. (For details, see Appendix 1).

3.0 SUMMARY CONCLUSION

Additional double-shell tank storage capacity is not needed until FY 2004 or later. The waste volume in the current baseline program can be managed within the existing tank capacity. However, this requires implementing some risk management actions and significant investment in software and hardware to maximize the use of existing storage tank space.

Adequate storage capacity can be obtained through several avenues. These include combining the existing neutralized current acid wastes (NCAW) and, separately, combining the neutralized cladding removal wastes (NCRW); designating the evaporator feed and receiver tanks as spare storage; and using the existing and new cross-site transfer lines.

4.0 ASSUMPTIONS

The successful implementation of several key waste management actions will be necessary to accommodate phasing out the MWTF project. The fundamental need for the success of these actions is the availability of adequate funding. The major assumptions providing the basis for the recommendation to phase out the MWTF project are described in Appendix 2.

5.0 OPERATIONAL WASTE VOLUME PROJECTION

The OWVP is a system simulator of the evaporator, the 28 double-shell tanks and their transfer systems, and the inputs and processes that take place in the system. Its purpose is to project tank space needs for storage of waste under base case and alternative 200 Area operational scenarios. The OWVP simulator accounts for the chemistry, mass, and evaporation of the waste, the operational logistics necessary for the system to operate, and the segregation rules associated with different waste types.

The OWVP is updated on an annual basis by September of each year. Revision 20 of the OWVP (Reference 3) was issued in 1994, and was based on data available July 1994. A special review team updated the information of Revision 20 on January 4, 1995, which prompted new inquiries into the historic segregation rules and the possibility of managing tank wastes within existing waste tanks. Further review of projection assumptions and possible initiatives for reducing tank space requirements resulted in a new special update of the projection.

The OWVP provides a current status and future projection of the waste volumes to be generated and stored. Using this information, scenarios can be developed to evaluate the impact of proposed actions on waste volumes. Key decisions may be developed for strategies to change the required waste volumes. Segregation of wastes, evaporator operations, and control of waste generation can be evaluated for their effect on waste volume. The OWVP is located in Appendix 3. Uncertainties associated with the OWVP are handled with an annual review and inputing revised data to the annual OWVP update. Annual evaluation of the waste volume status provides adequate lead time to respond if the OWVP indicates tank space shortage.

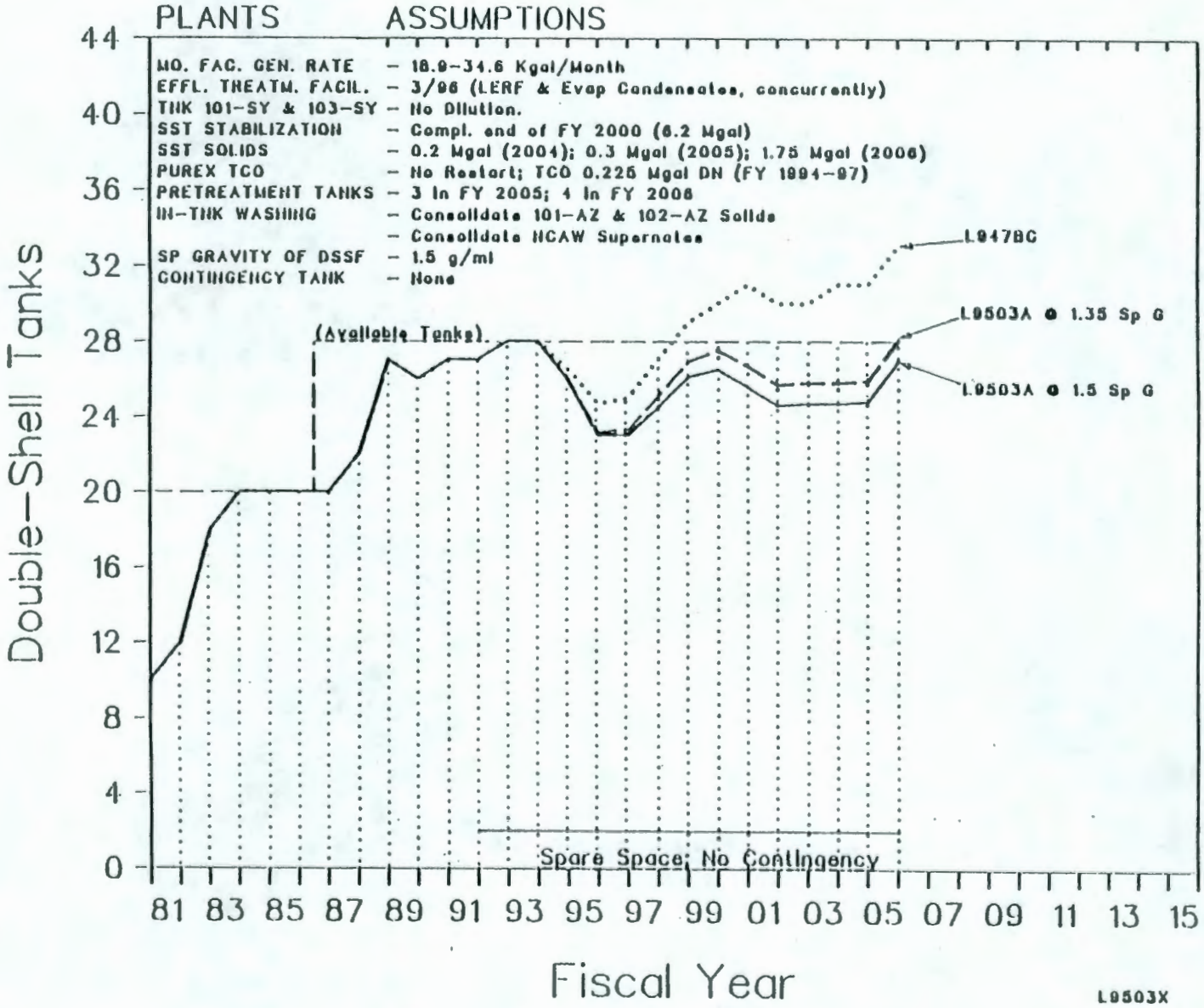
The results of the special OWVP are illustrated in Figure 1. The dotted line labeled L947BC represents the base case projection shown in OWVP, Revision 20. The dashed line is the planning base that results from the changes in waste management practices and updated information resulting from the studies discussed in Appendix 1. The solid line indicates the incremental additional space savings available, if a technical basis is developed that will allow concentration of the wastes to historic levels without causing new watch list tanks to be created. The changes in required storage volumes are influenced by the following factors.

Tanks such as 241-SY-101 and -103 can be safely mitigated without retrieval and dilution for safe storage. This is due to active mixing pump mitigation of flammable gas. Other watch list tanks can be safely mitigated in a similar manner. Therefore, no additional tank space for the mitigation of these tanks is required. This results in a reduction of the number of required tanks by two.

Waste minimization efforts by Hanford site facilities have resulted in a reduction of waste generation which further reduces the need for additional tank space. The projected waste flows have been reduced from previous projections of 93,000 gallons/month to the range of 18,900 to 34,600 gallons/month.

Figure 1

L9503A (3/95 DOE SPECIAL) VS 7/94 BASE CASE



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Changing the waste segregation practices of the past, such as combining similar wastes, results in additional reductions. Retrieval of some double-shell tank solids may be necessary during FY 1996-1998 to ensure that sufficient spare tank capacity is available. Moving the contents of one NCRW tank and combining with the other NCRW tank will free up one tank or approximately 980,000 gallons. Moving the contents of one NCAW tank to the other NCAW tank will free another tank, or approximately 980,000 gallons.

Using the evaporator feed and receiver tanks (241-AW-102 and -106) for additional space may be necessary. This space is currently used for evaporator operation. This action would free up 720,000 gallons of tank space for emergency use.

Additional space for operational flexibility in the 200 West Area tank farms could be provided if additional actions can be taken. The primary issue is the use of tanks in the 241-SY tank farm. Tanks 241-SY-101 and -103 are flammable gas watch list tanks which prohibit the use of their unused capacity. Tank 241-SY-102 is the current single staging point for 200 West Area transfers to 200 East Area. This tank has limited use due to questions concerning the compatibility of the transuranic (TRU) solids in the heel of the tank and organic wastes now stored in some of the single-shell tanks. Resolving the compatibility issue will offer more flexibility for waste transfers in 200 West Area.

The current projection of storage needs extends through FY 2004 when the retrieval, treatment, and immobilization programs will be initiated. Approximately seven years lead time is required to provide additional storage tanks, should they be needed. Consequently, a decision to add storage capacity can be delayed until 1997. This would allow time to provide additional storage capacity for the retrieval, treatment, and immobilization programs. In addition, annual evaluations and decisions on additional storage capacity are required by the M-46 series Tri-Party Agreement milestones.

6.0 IMPACTS

Impact Management

Implementing the recommendation to phase out the MWTF project requires diligent management of the waste volume, and entails potential financial and programmatic impacts. The approach will be to manage the impacts using a systems engineering methodology and developing two tools: a risk management list and an action logic chart.

Initially, a risk assessment will be performed as part of the decision/risk analysis waste management action (see Section 7.0). The known risks will be compiled into a risk management list as will any risks discovered during the assessment. The risk management list will contain impacts, degree of risk, actions to be taken to reduce or mitigate the risk, and the responsible manager's name. The list will be a living document and will be managed as part of the waste management action plan until the actions are completed, and then managed as part of the OWVP process.

A functional flow chart will be prepared as part of the plans for fall back positions waste management action (Section 7.0) that includes all of the credible undesirable events that could occur. The flow chart will be used as a guideline in selecting the appropriate predetermined contingency actions for immediate implementation if required. The functional flow chart and risk management list will be compared to ensure that all risks are appropriately considered.

Expected Impacts on TWRS and Other Site Facilities

The impact of the deletion of Project W-236A, MWTF, was evaluated by performing a TWRS critical path integrated schedule analysis. None of the critical milestones were impacted prior to FY 2004. Other impacts, not affecting milestones, are discussed below.

- Project W-058, Cross-Site Transfer Line

  The phasing out of the MWTF project will require Project W-058 to reincorporate provisions for infrastructure needs like a control room, diversion boxes, power, and water. These elements have been removed from the existing project baseline. A detailed evaluation of these impacts, including the projected cost for reincorporation, is in development. Preliminary results show that the net changes are zero.

  These impacts should not affect the Systems Engineering work for Project W-058 because the project specific Design Requirements Document (DRD) will focus on Manage Tank Waste requirements.

- Projects W-211, Initial Tank Retrieval System, and Project W-151, Tank 241-AZ-101 Waste Retrieval System

  These retrieval-related projects will be minimally affected if the necessary changes are directed within an adequate time frame. The only changes should be which waste tanks are planned for retrieval and the small design modifications to support that plan. These changes are part of the necessary waste management actions (Section 7.0) required to support the MWTF project phase out. The impact could escalate if the time frame for the needed retrievals is pushed forward.

- Waste Generators

  Waste generators both within and outside TWRS have been successful in reducing waste output. The results of these efforts have already been incorporated in the OWVP included within this document. Any impact to waste generators will most likely be related to terminal cleanouts of excess facilities. For these future activities, such as decommissioning and decontamination, reducing the generated waste and continuing waste minimization efforts should be followed. If, however, available storage capacity is inadequate to support the activities of waste generators, additional actions will be considered, for example, immobilizing and/or disposing of the waste at the source.

- TWRS Operations

  TWRS Operations support will be required for the retrievals and transfers that are part of the waste management actions (Section 7.0). Operational procedures, operational safety limits, and the operational safety document will require revision. Other safety basis documents may require revision as well. Suitable preparations must be made to support these actions.

- Waste Characterization Program

  The waste characterization program schedule will require revision to support the MWTF phase out. The consolidation of NCAW and NCRW wastes will require revisions or additions to scheduled characterization activities. In addition, several 200 West Area single-shell tanks must be sampled on an expedited schedule in order to resolve the compatibility issues associated with the transfer of the single-shell tank wastes from the 200 West Area to the 200 East Area. These schedule changes will not impact the ongoing safety screening, characterization, or Tri-Party Agreement milestones.

Future Impacts on TWRS

From a systems engineering viewpoint, phasing out the MWTF project is not a declaration that no new tanks will ever be built. It is a statement that unless a comprehensive, technically defensible position is established that requires storage space beyond current capacity, no resources will be diverted for the purpose of building new waste tanks. "No new storage space" will serve as a constraint on the functions and interfaces both within and outside of TWRS until it can be shown that no other viable alternative is reasonably achievable.

To address future impacts, the first step will be to modify the TWRS Functions and Requirements Waste Storage System conceptual architecture. The enabling assumption concerning double-shell tank storage space will be changed to show the selection of the alternative to consolidate waste by blending and concentration, without new double-shell tanks, in place of the alternative to consolidate the tank waste and build new double-shell tanks. To accomplish this change, the requirements in the store waste function will need to be changed by removing the constraints which refer to the Tri-Party Agreement milestones about building new tanks. Note that the architectural selection will be retained as an enabling assumption until the ongoing studies have been accepted as complete. At that time, the studies will become the rationale for selection and the architectural choice will no longer be based on an enabling assumption. The formal decision/risk analyses, together with the updated waste volume projections, are expected to meet all or at least most of the needs for completing the required analyses.

The modified Waste Storage System conceptual architecture will then pass down a revised double-shell tank storage capacity to its daughter functions and architectures. The daughter functions and associated architectures are currently in development and will be part of the Technical Requirements Specifications. The limits of this revised capacity will then be shared with affected functions through controlled interfaces. This will require affected functions to consider conceptual architecture alternatives which allow the double-shell tank Waste Storage System to stay within its capacity. Interface negotiations will be used to determine the optimal use of existing capacity. The revised conceptual architecture is expected to meet the needs and performance requirements of the Manage Tank Waste function. The needs and performance requirements of the Process Waste function are not well enough defined at this time to make a defensible determination of the adequacy of the conceptual Waste Storage System for this function.

The Technical Requirements Specifications will then be used to allocate requirements and constraints into project Design Requirements Documents. The Design Requirements Documents then become part of the projects' design baselines, and in this way the design of all affected projects will reflect any constraint imposed by the decision to not build any new tanks.

Tri-Party Agreement Milestones

Several Tri-Party Agreement milestones are directly affected by the project phase out as shown in Table 1.

Presently, strategies are being developed to negotiate potential changes to these milestones. In addition, a Tri-Party Agreement Change Request and Tri-Party Agreement notification letters are being developed.

TABLE 1
Tri-Party Agreement Milestones Affected by Project Phase Out

Milestone #	Title	Date	Reason
Directly Affected			
M-42-00	Provide Additional Double-Shell Capacity	12/31/1998	These milestones are the MWTF Tri-Party Agreement milestones directly affected by the ultimate path forward (page D-77, Tri-Party Agreement milestone document, see Reference 20)
M-42-01	Initiate "Hot" Operations of the MWTF 200W Area Tanks	02/28/1998	
M-42-01-T02	Initiate Construction of the MWTF 200W Area Tanks	09/30/1994	
M-42-02	Complete Construction of the MWTF 200E Area Tanks	09/30/1998	
M-42-02-T01	Initiate Construction of the MWTF 200E Area Tanks	02/28/1995	
M-42-02-T02	Complete Detailed Design of the MWTF 200E Area Tanks	01/31/1996	

7.0 PLAN OF ACTION

Waste Management Actions

The projected waste volume inventory can be managed until FY 2004 or later without the additional double-shell tank storage capacity that would have been provided by Project W-236A. Although this position is technically feasible, several waste management actions are needed to mitigate the potential shortfall of storage capacity near the end of the decade (see Reference 1). The actions are separated into several categories. Several actions require retrieval operations and additional operational procedure limits. Other actions are technical and require the performance of engineering evaluations to validate operating limits. Some actions are a combination of both. The last two actions discussed below are included in the following but are administrative activities.

These waste management actions consist of the following:

7.1 Consolidate the neutralized current acid waste (NCAW)

Neutralized current acid waste is presently stored in two double-shell tanks. Tank 241-AZ-101 contains 791,000 gallons and tank 241-AZ-102 contains 434,000 gallons for a total of 1,225,000 gallons of NCAW (Reference 4). This total volume can be concentrated to allow storage in one tank. Therefore, combining NCAW into one tank would free up 980,000 gallons of space with an estimated 500,000 BTU/hour heatload in the resulting tank. This heatload may exceed current operating procedure limits. Both tanks containing NCAW are designed for significantly higher heatload than the anticipated heatload resulting from combining the waste. However, recent operating procedures limits require lower solids loading than the level that may result from waste consolidation. Feasibility evaluations and safety assessments will be prepared before initiating NCAW consolidation. To consolidate NCAW in one tank, Project W-211, Initial Tank Retrieval Systems, will be rebaselined on a schedule consistent with the technical basis of the projected waste volume inventory over the next decade.

7.2 Consolidate the neutralized cladding removal waste (NCRW)

Similar to NCAW, NCRW is stored in two double-shell tanks. Tank 241-AW-103 contains 487,000 gallons of NCRW solids, while tank 241-AW-105 contains 300,000 gallons of NCRW solids for a total of 787,000 gallons (Reference 4). Combining NCRW into one tank frees an additional tank. Another way of providing additional capacity is to store double-shell slurry feed (DSSF) on top of NCRW. Project W-211, "Initial Tank Retrieval Systems," has been initiated to provide the capability to mix, dilute, and remove waste stored in 10 of the 28 double-shell tanks. Tank 241-SY-101 was originally designated as the first tank to be retrieved. Project management has recently requested RL concurrence to proceed with Title I design for tank 241-AW-105 waste to be retrieved instead of tank 241-SY-101, thus achieving the consolidation of NCRW no later than FY 1998/1999 (Reference 5). As stated in Reference 2, safety issues, characterization, and environmental documentation will be performed concurrently with the design activities.

7.3 Validate waste Specific Gravity numerical limit

Waste specific gravity and dilution ratio are two interdependent factors in controlling waste chemistry and avoiding a specific chemistry condition that may result in enhanced gas retention capabilities within the waste. Investigations (Reference 6) show that a waste specific gravity limit of 1.35 would preclude gas retention characteristics of the waste. Waste concentration to specific gravity values higher than 1.35 may cause unacceptable gas retention capabilities followed by periodic episodic gas release events. However, higher waste specific gravity numbers may be found to be acceptable after further investigation. Waste volume projections are highly dependent on the degree at which the various types of wastes are concentrated through the evaporator (Reference 7). Because of the highly dependent relationship, a validated technical basis for the waste specific gravity is needed. Development of this technical basis would ensure close coupling between the evaporator performance and gas retention capabilities of the waste. Part of this technical basis includes consideration of process controls (e.g., instrument error bands) to ensure that the specific gravity limit is not exceeded. In turn, the technical basis would reduce the uncertainties in the future waste volume projections and validate the numerical limit for acceptable waste specific gravity.

7.4 Evaluate evaporator feed and receiver tanks as spares

To account for a potential shortfall in the existing waste storage capacity, the evaporator feed and receiver tanks may be considered as spares. Tanks 241-AW-102 and 241-AW-106 are the evaporator feed and receiver tanks respectively. Portions of these two tanks are available to store concentrated waste. These tanks could provide the required spare capacity in an emergency or upset condition (e.g., a postulated scenario where a flammable gas double-shell tank leaks). Evaporator operations, however, could not resume until space in these two tanks is recovered. The objectives of this task are to validate the feasibility of this action and identify operational constraints.

7.5 Resolve complexed/transuranic (TRU) waste in 200 West Area

Complexed waste was generated in the 1970s from the B Plant strontium recovery process and subsequently stored in single-shell tanks in 200 West Area. Recent estimates indicate that the pumpable liquid in west area single-shell tanks is approximately 3,600,000 gallons but may be as high as 4,400,000 gallons. Approximately 40% of this liquid waste (1,400,000 gallons) may be complexed (Reference 8). Tank 241-SY-102 is the only double-shell tank in 200 West Area designated as a staging tank to transfer the waste to 200 East Area. The other two tanks, 241-SY-101 and -103 are both flammable gas watch list tanks and could not readily be considered as staging tanks to transfer the waste from 200 West to 200 East Area. Reference 8 provides additional details on tanks 241-SY-101 and -103 and the reasons for considering tank 241-SY-102 as the only available staging tank in 200 West Area.

To reduce the amount of waste that requires more costly disposal options, complexed waste and TRU wastes have been segregated. The waste segregation was also accomplished to comply with DOE Order 5820.2a, "Radioactive Waste Management." Additionally, waste evaporation of the combined complexed and noncomplexed wastes may result in a significantly thick, viscous slurry affecting the resulting volume reduction factor and the waste volume projections (Reference 8). The objectives of this waste management action are to: 1) identify the 200 West Area single-shell tanks without compatibility concerns; 2) develop additional information required to evaluate compatibility issues of complexed and/or TRU wastes within the context of the only staging tank in 200 West Area (241-SY-102); 3) identify waste management actions to resolve this issue (these actions may range from cleaning and retrieving the TRU waste in tank 241-SY-102 to simply using it as a staging tank in its present condition); and 4) develop an emergency pumping and interim stabilization plan for the 200 West Area single-shell tanks with compatibility issues. Some tanks have not been sampled, the samples characterizing the waste must be obtained through the characterization program on a tank-by-tank basis.

The new 200 West Area tanks would not be operational in time to support resolution of this issue since they would not be available prior to FY 1999.

7.6 Perform a formal Decision/Risk Analysis

The objective of this action is to perform a formal decision/risk analysis in accordance with established Hanford Systems Engineering principles and procedures. The decision/risk analysis will address the overall impact of the MWTF project phase-out recommendation to the TWRS program (Reference 9). Decision analyses will be used as appropriate to develop action plans when needed to mitigate risks.

7.7 Perform OWVP Contingency Space Analysis

The contingency space equivalent to the volume of one double-shell tank was eliminated in calculating the current waste volume projection. The objective of this action is to assess the impact of not having the contingency space in the OWVP calculations.

7.8 Develop Plans for Fall Back Positions

Within this waste management action, identification and evaluation of alternative and fall back options will be addressed using the decision/ risk analyses. These options may be necessary should a shortage in waste tank storage capacity occur within the next 10 years. These options will be developed in a generic format and yet in sufficient detail to enhance mitigating the risks associated with potential waste storage shortfall in the future.

7.9 Additional Costs to Project W-058, Cross-Site Transfer System

Project W-058, Replacement Cross-Site Transfer System, has been initiated to replace the aging transfer pipe lines. This project and the MWTF project have been integrated in order to reduce overall cost. The integration of these two projects have been achieved by sharing common purpose facilities, such as power and control rooms. By phasing out the MWTF project, the new cross-site transfer system scope will be revised to provide these needed services independently of the MWTF project. Therefore, the purpose of this action is to perform a detailed estimate for the required additional costs that must be added to the baseline cost of the cross-site transfer system.

7.10 Tri-Party Agreement Milestones Negotiations

Several Tri-Party Agreement milestones are directly affected as a result of the project phase out (see Table 1). A Tri-Party Agreement Change Request has been drafted and is being negotiated with Ecology.

8.0 PROJECT DEMOBILIZATION

RL has authorized WHC to demobilize the MWTF project and initial actions are being implemented. Details regarding this MWTF demobilization are available in Reference 10.

Should a restart notification be issued, RL would assign RL and contractor staff to the effort to revive the MWTF project. Realistically, this effort would be similar to that of starting a new project; however, there would be some cost and schedule savings.

Cost and schedule savings include shortening the National Environmental Policy Act (NEPA) process due to the Safe Interim Storage Environmental Impact Statement (SIS-EIS) in process allowing for the construction of new tanks in the 200 East or West Areas as one alternative. Design documentation would be salvaged and completed provided the mission of the new tanks had not changed appreciably. Five design packages are 100 percent complete and five are in various stages of design completion from 0 to 90 percent.

The following MWTF project close-out activities are continuing, and will facilitate a project restart if necessary:

- Preparation of the SIS-EIS
- Approval of the Preliminary Safety Analysis Report
- Special studies related to the Cross-Site Transfer System
- Archiving of record documents

9.0 REFERENCES

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11. WHC-SD-W236A-ER-011, Revision 0, "Position Paper, Need for Additional Waste Storage Capacity and Recommended Path Forward for Project W-236A, MWTF," September 26, 1994.

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13. WHC-SD-W236A-015, Revision 0, "Waste Segregation Analysis for Saltwell Pumping in the 200 West Area," April 1995.

14. WHC-SD-W236A-ES-014, Revision 0, "Multi-Function Waste Tank Facility Path Forward Engineering Analysis Technical Task 3.6, Estimate of Operations Risk in the 200 West Area," April 1995.

15. WHC-SD-W236A-ES-013, Revision 0, "Passive Versus Active Mitigation Cost Analysis," April 1995.

16. WHC-SD-W236A-ES-011, Revision 0, "Retrieval Sequence," April 1995.

17. Operational Waste Volume Projects Work Group, "Double-Shell Tank Inventory and Available Space," Revision 0, December 27, 1994.

18. Multi-Function Waste Remediation Facility, Justification of Mission Need, January 14, 1993.

19. WHC-SD-WM-ER-432, Revision 0, "Life Management of 28 Double-Shell Tanks," April 1995.

20. 89-10, Revision 3, "Hanford Federal Facility Agreement and Consent Order Fourth Amendment," January 1994.

21. Letter, A. Hon to T. R. Sheridan, "Operational Waste Volume Projections - Current Data," January 4, 1995.

APPENDIX 1
BACKGROUND INFORMATION

Status

In March 1995, a Path Forward Task Team was formed to address necessary actions involved with the RL/WHC recommendation to phase out the MWTF project. This team is comprised of representatives from several TWRS organizations whose efforts are crucial in resolving the issues necessary for an orderly phase out. The primary team objectives are to:

- Document a clear technical basis for the project phase out
- Identify the Tri-Party Agreement milestones affected by the tanks decision
- Define what is required for, and begin the negotiation of, changes to the Tri-Party Agreement milestones
- Develop a detailed MWTF project phase out plan
- Plan and implement Waste Management Actions necessary to support the tanks decision
- Define the impact of the project phase out on other TWRS programs

Project History

1990-1993

In 1990, the MWTF was initiated to provide additional storage capacity through the design and construction of four new, double-shell 1,000,000 gallon tanks. This capacity was required to support continued tank farm operation, pretreatment, and disposal. The project was validated in 1991 as a 1993 Major System Acquisition with a scope of four tanks (and support facilities) at an estimated cost of $435,000,000. The scheduled completion date was 1999. Conceptual Design was completed in 1992.

Milestones were established in the Tri-Party Agreement under the M-31 series to complete up to four tanks by 1999. In December of 1992, direction was received to achieve maximum acceleration of the MWTF, and to also reduce scope associated with the support of pretreatment and the High-Level Waste Vitrification Project.

In February 1993, the revised Justification of Mission Need (JMN) (Reference 18) provided the basis for the additional four storage tanks. The primary purposes of these tanks are dilution and storage of waste from tanks with priority safety issues such as Tank 241-SY-101.

Subsequent to this direction, additional storage capacity needs were identified, which exceeded the proposed four new tanks. The additional needs, plus concerns for operational flexibility in the 200 West Area, led to a presentation in March 1993 to the U.S. Department of Energy-Headquarters (DOE-HQ), Director of Environmental Waste Management. This presentation proposed adding two tanks in 200 West Area, accelerating these two tanks to a 1998 completion, and reducing costs of the project through a series of

specified activities to maintain a total project cost of $435,000,000 for all six tanks.

A Baseline Change Proposal was prepared to document these changes, and direction to proceed on the six-tank concept was received from RL in September 1993. Following the concurrence with the six-tank concept, a change request to modify the Tri-Party Agreement milestones was initiated. This change request was rolled into the overall renegotiation of the Tri-Party Agreement, and resulted in the current milestones established under the M-42 series.

September 1994 Position

Reviews at this time raised several issues regarding the mission, scope, and schedule of the MWTF. The decision to build new tanks, and if so how many, must address several factors, such as operational risk and needs, the amount of waste that the site will generate in the future, safety, availability of existing double-shell tanks, and impact on other projects. Operational risk and flexibility must be managed such that any identified risk is reduced as soon as practicable, and additional needed tank capacity must be made available to support operations. The retrieval of waste from single-shell tanks and watch list tanks will require subsequent storage in a double-shell tank, and therefore, will add to the total amount of waste that must be stored. The aging condition of the existing 28 double-shell tanks becomes significant as time passes. Also, other projects depend on Project W-236A (e.g., integration and use of common utilities, systems, and support facilities).

Based on the above, a new path forward was developed (Reference 11) which recommended that two new tanks were needed for safe waste storage in the 200 West Area, and they should be constructed as soon as practicable. It was also recommended that the design should continue for the tanks in the 200 East Area with a decision made by September 1995 on whether to construct them. The construction of the cross-site transfer line should proceed as scheduled.

To implement this new path forward, the following steps were recommended:

- Revise W-236A and other project baselines as required.

- Complete the Environmental Impact Statement; revise the scope as necessary.

- Complete systems engineering to validate the need and requirements for the MWTF, Cross-Site Transfer Line, and their technical bases by September 1995. The work includes:
  - Obtaining approval of the Functions and Requirements Document from the U.S. Department of Energy (DOE).
  - Developing the Technical Requirements Baseline and obtaining approval from the DOE.
  - Developing a Design Requirements Document (DRD) for MWTF.
  - Comparing the MWTF DRD with the existing Functional Design Criteria.
  - Performing necessary trade studies. (These trade studies evolved into the 8 technical tasks discussed below).

Eight technical tasks were identified as part of a comprehensive strategy to provide a firm technical foundation for the MWTF recommendation (Reference 11). All of the eight tasks and results are summarized at the end of this appendix.

November 1994 OWVP Work Group

A joint work group was formed in November 1994, consisting of DOE, WHC and Ecology representatives, to review Revision 20 of the OWVP report (Reference 3). The group focused management attention on waste segregation rules and other assumptions built into the inventory management structure. The work group issued a special report on January 4, 1995 (Reference 17). The projections displayed in the report showed that projected Hanford wastes could be handled without new waste tanks, if certain compensatory actions were taken to maximize the use of available tank space. This included consideration of the success of mixing pump mitigation of the waste tank 241-SY-101 flammable gas issue and a pending safety program conclusion that active mitigation currently has less uncertainty than passive mitigation by dilution.

January 1995 Recommendation

TWRS was asked to reassess the need for additional double-shell storage space due to funding limitations for FY 1995 and outyears. Current waste volume projections, risk associated with not having additional tanks in FY 1999 and beyond, and waste management alternatives were considered in this assessment. Based on this assessment, WHC recommended to RL that the MWTF Project be phased out (see Reference 1). This phase out should be done in such a way that the project team can be reassembled and construction completed on the two 200 West Area tanks five years after a project restart decision is reached, if necessary.

Although management of the waste volume is technically feasible, this decision places some financial, programmatic, and safety risks on TWRS (see Reference 1). Key assumptions leading to this decision are provided in Appendix 2.

A comparison of existing waste volume capacity relative to the waste tank volume requirements indicates that the waste volume will overtake the space available in 1999 (see Reference 1). Therefore, waste management actions are necessary to accommodate current waste volume projections (see Section 7.0).

March 1995 RL Concurrence

On March 17, 1995, RL concurred with the WHC recommendation (Reference 9) by responding that recent changes and analyses indicate that double-shell tank storage capacity is not needed until FY 2004 or later. The waste volume in the current baseline program can be managed within the existing tank capacity until then, but with higher risks. RL directed WHC to proceed with the actions described in Reference 1 and to address the comments in attachment 2 of the RL Letter (Reference 9). RL also requested an action plan and change request to implement the recommended actions. In addition, RL directed WHC to make preparations for negotiation of changes to affected Tri-Party Agreement milestones.

Technical Task Summaries

The following are summaries of the eight technical tasks previously mentioned in the September 1994 Position:

- Optimum Safe Dilution Ratio and Specific Gravity

  The dilution ratio to prevent gas retention and allow waste transfer to 200 East Area was determined to be 1:1. The minimum safe specific gravity limit was determined to be approximately 1.35 for evaporator operation. Laboratory tests to validate these dilution ratios will be conducted by July 1995. See Reference 6.

- Evaporator System Performance

  The volume of slurry needing storage at a specific gravity (SpG) of 1.35 is 6,040,000 gallons. This compares with the upper bound of 5,440,000 gallons of slurry indicated in OWVP Revision 20 at the DSSF slurry limit (approximately a 1.5 SpG). A net increase of slurry volume needing storage in the double-shell tanks is realized because of the evaporator endpoint change from DSSF to a 1.35 SpG limit.

- Reference 7 includes waste volume reduction factors by stream; for slurry conditions of 1.2 SpG, 1.35 SpG, and DSSF (approximately 1.5 SpG). Operating uncertainties including instrument accuracy are addressed. Planned and actual waste volume reduction factors are shown for historic 242-A campaigns.

- Single-Shell Tank Liquid Contents

  Liquid to be pumped for stabilization of single-shell tanks is 4,300,000 gallons in 200 West Area and 1,800,000 gallons in 200 East Area. This is 2,000,000 gallons more than the amount shown in the OWVP, Revision 20.

  Flush water will also require interim double-shell tank storage of 1,600,000 gallons of water until volume reduction through the evaporator can be accomplished.

A review of pumping records back to the 1970s indicates that typically more liquid was pumped from tanks than would be predicted by saltcake porosity (interstitial liquid). The pure saltcake porosity does not account for liquid found in pockets or layers. A calculation was developed to account for liquid found in pockets or layers, using a "projection porosity". The data show the projection porosity of the saltcake in single-shell tanks to be on an average approximately .63 (see Reference 12).

- Waste Segregation Analysis

Current estimates of waste yet to be pumped in 200 West Area are 4,300,000 gallons. Up to 1,400,000 gallons may be complexed waste. The only double-shell tank farm in the 200 West Area is the 241-SY farm. Two of the tanks in that farm, 241-SY-101 and -103 are on the flammable gas watch list. This makes it impractical to be considered for receipt of the pumped waste. This leaves 241-SY-102 as the only double-shell tank that can receive waste in the 200 West Area. 241-SY-102 contains a layer of sludge in the bottom which has a high TRU content. Current rules, as outlined in the Waste Compatibility Program Plan, prohibit commingling complexed waste and TRU waste. The current strategy is to pump waste that can be commingled into 241-SY-102. Additional studies are being planned to decide on the best course of action for the complexed waste in the 200 West Area. See Reference 13.

- Life Management of Existing Double-Shell Tanks

A remaining-life assessment indicated that the double-shell tanks and their associated waste transfer pipelines should be able to maintain their integrity for the next ten years. This is based on the assumption that normal operational controls and limits are not exceeded and that adequate, periodic inspections and additional reinforced concrete analyses do not reveal any unexpected weaknesses. Available analyses do not thoroughly address either concrete creep effects or thermal-cycling effects.

Some double-shell tanks appear to be more sensitive to stress-corrosion cracking than others. This means that any future in-tank waste processing in those sensitive tanks must have adequate chemical corrosion inhibition controls maintained at all times. In addition periodic liner inspections are necessary to see if any aggravated crack growth-to-leakage damage could be occurring.

Constrictions exist in some facilities in that only one or two pipelines feed these sites; a single- or double-failure would preclude waste transfer until repair or replacement of the line. See Reference 19.

- Estimate of Operational Risk

  There is a good chance, if conditions remain the same, of experiencing difficulties in operating the 200 West Area tank farm in the next ten years related to lack of tank capacity. Success of 200 West Area operations is highly correlated to the success of the cross-site transfer line. There is a high likelihood of a leak in a complexed single-shell tank in the next four years. There is a very good chance, in the next four years, that some combination of leaks, facility upsets, and cross-site transfer line failures will require more space than is currently available in Tank 241-SY-102. There is an inherent uncertainty in waste volume projections in the range of 1,000,000 to 3,000,000 gallons as related to confidence level. Risks are of varying significance, but need to be managed to maintain a safe, clean, and stable operational environment. Reference 14 highlights several paths into the future and quantifies the risks and impacts for risk management consideration.

- Cost of Passive Versus Active Mitigation

  Without consideration of waste storage costs, passive mitigation appears to be slightly more cost effective than active mitigation. However, this cost advantage would change when waste storage costs are considered. For details see Reference 15.

- Waste Retrieval Sequence

  Reference 16 documents the waste retrieval study. The study found that the decision to phase out the MWTF project will not have a significant impact on the retrieval sequence.

APPENDIX 2
ASSUMPTIONS

The decision to phase out the MWTF project is based on the following assumptions:

1. Wastes in NCAW tanks can be consolidated.

   Combining NCAW into one tank frees up approximately 980,000 gallons tank capacity with an estimated heat load of 500,000 BTU/hour, possibly exceeding the current operating limits. The tanks were designed for significantly higher heat loads but current operating plans require lower solids loading.

2. Wastes in NCRW tanks can be consolidated.

   Combining the NCRW solids into one tank or storing concentrated DSSF on top of NCRW will provide 980,000 gallons additional tank capacity. The capability to transfer NCRW solids does not exist at this time. Capital upgrades would be required to provide this capability. This activity will be accomplished under the existing baseline funded Retrieval Project W-211. Some schedule adjustments are required and are being evaluated.

3. Active mitigation of flammable gas watch list tanks is acceptable.

   The ongoing active mitigation of 241-SY-101 and the contingency plan for installation of mixer pumps in 241-SY-103 and 241-AW-101 if required, must continue to be acceptable mitigation actions for this safety issue (Reference 2). No passive mitigation by dilution of any hydrogen safety issue will be required.

4. The evaporator operating tanks can be used for spare capacity.

   Tanks 241-AW-102 and -106, used to support the 242-A Evaporator operations, are the feed and receiver tanks. A portion of the feed and the receiver tanks is available to store concentrated waste material as long as evaporator operations are required.

   These tanks could provide additional emergency capacity for situations such as a flammable gas double-shell tank leak. The negative effect of this is no evaporator operations would be allowed until the tank space is made available.

5. The waste incompatibility issue for tank 241-SY-102 will be resolved allowing the pumping of complexed single-shell tank liquids.

Complexed waste liquid is considered incompatible with the high transuranic sludge in 241-SY-102 because it may dissolve the transuranics. If the complexed waste liquid dissolved the transuranics, it would increase disposal costs and could lead to processing problems in the evaporator. Waste sampling and an engineering study are required to determine which single-shell tanks contain complexed waste and evaluate the options for handling the complexed waste. Any tanks which are determined to contain complexed waste should first be evaluated for dissolution of transuranics from 241-SY-102 solids, and detrimental crystal behavior and high viscosity resulting from evaporation. Then the engineering study should evaluate the options and associated impacts for handling the complexed waste. These include complexed waste which does not dissolve the transuranics, accepting increased operating costs and risks from complexed waste which does dissolve the transuranics, and cleaning out 241-SY-102 before transferring any complexed waste. Determination of a complexed waste handling strategy will increase the capability of using 241-SY-102 for waste collection and transfers.

6. The existing cross-site transfer lines are adequate to transfer wastes from 200 West Area to 200 East Area until the replacement transfer line is operational in 1998.

Two of the original six cross-site transfer lines built in the 1950's remain in service. The two remaining lines will be tested this year for leaks. These lines are required to transfer 241-SY-102 waste as well as the single-shell tank pumpable liquid waste.

Failure of the existing cross-site transfer lines is moot relative to the decision to not build new waste tanks, the new tanks would not be available until 1999, while the new cross-site transfer system is scheduled for completion in 1998. One line of the existing cross-site transfer system successfully passed pressure testing in 1989 and again in May 1995. Transfer of waste from 200 West Area to 200 East Area is scheduled to begin shortly.

7. Waste management actions for reducing TWRS risk will be deemed adequate by the Tri-Party Agreement negotiating parties.

An agreement with the Washington State Department of Ecology, U.S. Environmental Protection Agency, and U.S. Department of Energy to eliminate the construction of additional tanks and to accept an increased level of programmatic risk is required to complete the shutdown of the MWTF project. It is assumed that the waste management actions for reducing TWRS risk will be deemed adequate by the negotiating parties.

8. No double-shell tank problems will occur that limit their use.

The life management activities for the double-shell tank waste storage system will ensure an adequate remaining life (minimum 10 years) for the double-shell tanks with no problems limiting their use. Any unexpected problems with the existing double-shell tanks could significantly increase the programmatic risk.

9. Adequate storage capacity will continue to exist in the 200 East Area.

Any actions needed to ensure adequate storage space in the 200 East Area to accept 200 West Area tank farm waste will be implemented. The continued operation of the 242-A Evaporator to reduce waste volumes and the potential use of the evaporator operating tanks as spare capacity are included in this assumption.

APPENDIX 3
SPECIAL WASTE VOLUME PROJECTION
IN SUPPORT OF THE MWTF CANCELLATION EVALUATION

Operational Waste Volume Projection, Revision 20 was issued in September 1994 (Reference 3). Since its issue, studies (Reference 1, 21) have been conducted to assess alternative scenarios for operating the tank farms, with special emphasis on operating without constructing new tanks at least through 2004. Reference 9 includes a request for a special long range waste volume projection that would incorporate the latest facility waste generation rates, draft information provided by the MWTF path forward tasks and many of the space saving actions proposed in Reference 1. This appendix presents the operational planning basis and graphics for the special waste volume projection completed in response to this request.

The Operational Waste Volume Projection (OWVP) system is a complex simulation which was developed to assist in managing the tank farms and identifying if new tanks were needed. It was relied heavily upon during the evaporator outage to assist in managing the generation and receipt of waste so that available space was not exceeded.

The OWVP system simulates the evaporator operation, the 28 double-shell tanks, and the associated transfer systems. It takes into account the effects of chemistry, mass, volume and operational logistics to evaluate various operational scenarios. Although any simulation is dependent upon the correctness of the input information, this projection is based upon the best estimates of waste generation and composition provided by the waste generators. The special OWVP has shown that it is possible to manage the double-shell tanks in such a way as to not require the construction of any new double-shell tanks before 2005. A specific set of actions is identified which will allow this to be done. These are discussed in the discussion planning basis section below.

Figure 1 presents an executive summary of the operational planning basis for DOE Special Projection L9503A. For comparison purposes, the basis used for the July 1994 Baseline Case (L947BC) has been included. Plans that have been changed between the projections have been shaded.

Figure 2 presents a detailed operational planning matrix comparing the plans used in DOE Special Projection L9503A with those used for the July 1994 Baseline Case. Flush factors and Waste Volume Reduction Factors (WVRFs) have been included in the table.

Figure 3 is the standard long range projection graphic for this special projection depicting tank needs through 2005. Tank needs are shown for both the 1.35 (estimated) and 1.5 specific gravity end points for evaporation.

Figure 4 is a bar graph showing waste inventory and available space for different waste categories. This presentation of the information was used in Reference 21 and has been found to increase understanding of the details of space usage. Numerical annotations and notes have been included with this graphic explaining inventory changes.

Figure 5 is a spreadsheet that shows the waste additions, evaporations, and losses that occur.

Figure 6 is a tabular representation of space usage similar to Figure 2 of Reference 1.

Discussion Planning Basis. Major planning changes are discussed below:

1. Combination of Partially Full Separate NCAW and NCRW Tanks.

   The in-tank washing scenario used in this projection assumed that the NCAW solids from Tanks 241-AZ-101 (35,000 gallons of solids) and 241-AZ-102 (95,000 gallons of solids) would be combined into Tank 241-AZ-102 after in-tank washing of the solids had been completed (FY 1999). The NCAW supernates and washes were assumed to be concentrated and combined into Tank 241-AY-101.

   The PFP TRU (PT) solids in Tank 241-SY-102 (143,000 gallons PT); the NCRW solids from Tank 103-AW (487,000 gallons); and the NCRW solids from Tank 241-AW-105 (300,000 gallons) were all consolidated into Tank 241-AW-103 during FY 1999. Tank 241-AW-103 contained 930,000 gallons of solids after the combinations had been completed which could complicate solids retrieval.

2. Mitigation of Watch List Tanks.

   Active mitigation of Tank 241-SY-101 was continued through FY 2006. In addition, it was assumed that passive mitigation of other watch list flammable gas double-shell tanks would not be necessary.

3. Spare Space.

   Operational space in Tanks 241-AW-102 and 241-AW-106 was used to provide 720,000 gallons of the required 2,000,000 gallons of spare space starting in FY 1999. This action was taken to decrease tank space needs. This action would require that special procedures be written to make certain that the required volume was being maintained and that proper sequence of operations would allow this space to be used should a leak occur in a double-shell tank.

4. Use of Tank 241-SY-102 for Pumping Complexed Salt Well Liquid.

Current salt well liquid (SWL) pumping practices require that a double-shell tank be available for receiving the liquid wastes pumped out of single-shell tanks. SWL pumping in the 200 West Area requires that one of the three tanks located in the 200 West Area be used as a receiver tank. Two of the tanks in 200 West Area (Tanks 241-SY-101 and -103) are on the flammable gas watch list and therefore cannot receive waste additions. This means that all SWL pumped in the 200 West Area will be routed through Tank 241-SY-102.

Tank 241-SY-102 contains a sludge layer of PT solids. Pumping non-complexed SWL to Tank 241-SY-102 with the PT solids in the bottom should not present a problem. However, complexed wastes and TRU solids have been segregated, both to minimize the expense of disposal and to comply with DOE Order 5820.2A, "Radioactive Waste Management." This required the solids in Tank 241-SY-102 be removed from the tank prior to pumping of complexed SWL in the 200 West Area (see item 1 for additional information). Questions about the reliability and/or plugging of current transfer lines and the long-lead time required for retrieval projects would delay the retrieval of the solids until December 1998. After consulting with retrieval organizations, this projection assumed that the retrieval of solids in Tank 241-SY-102 would start in December 1998 and be completed in one month using the new cross-site transfer line. The pumping of complexed SWL was started in January 1999. This date allows all SWL to be completed by the end of FY 2000. WHC is investigating accelerating 241-SY-102 retrieval and alternative methods of dealing with the 200 West Area SWL including sampling of the liquors to confirm their classification, relaxing of the segregation rules, and initiating transfers from smaller available tanks. The purpose of these studies is to advance the completion of SWL pumping as much as possible. By doing so, we are confident that SWL pumping can be completed before the end of FY 1999.

5. Cross-site Transfer Lines.

- The cross-site transfer system was assumed to be functional for this projection.

6. Contingency Space.

At the request of DOE and WHC upper management, previous operational waste volume projections have added one tank of contingency space in the long range portion (1999 on) to account for any inaccuracies in waste generation rates or in the determination of WVRFs. The contingency tank has been removed (References 1 and 9) from this projection.

7. SWL Volumes.

Based on preliminary information from the MWTF Path Forward Task Studies, this projection assumed that 6,200,000 gallons (previously 3,600,000 gallons) of single-shell tank wastes would be pumped from 1995-2000. Approximately 42% of this waste was assumed to be complexed resulting in 2,600,000 gallons of complexed SWL (previously 500,000 gallons). The newly revised WVRFs (to DSSF) was 55 for non-complexed SWL and 10 for complexed SWL. The revised WVRF for non-complexed SWL is based on an estimated SWL content in Tank 241-AN-101 and needs to be verified in the future when more single-shell tanks have been characterized.

8. Facility Generation Rates.

The total facility generation rate used in this projection varied from approximately 18,900 to 34,600 gallons/month (previously 93,000 gallons/month for the July 1994 Baseline Case).

9. Preliminary Multi-Function Waste Tank Facility (MWTF) Path Forward Tasks.

Preliminary information obtained from the MWTF Path Forward Tasks was included in these projections. The most significant of these items were increased SWL pumping volumes (see item 7) and new WVRFs (new values are included for appropriate waste streams in Attachment 2).

10. Privatization.

TWRS Program privatization concepts are not included in this study. However, it is currently believed to have no negative impact.

11. Pretreatment.

At the time this projection was started, final information had not been received designating which tanks of waste would be pretreated first. This projection assumed that pretreatment would begin with wastes that were at the desired 5-Molar Sodium concentration. This logic frees up tank space faster since the feed doesn't require dilution prior to pretreatment. Tanks 241-AN-106 and 241-AP-105 were pretreated in FY 2005.

As in the July 1994 Baseline Case projection, it was assumed that one Low Level Waste (LLW) receipt tank and one High Level Waste (HLW) receipt tank would be required in FY 2005.

12. Single-Shell Tank Solids Retrieval.

The amount of solids retrieved in FY 2004 and 2005 was the same as that used in the July 1994 Baseline Case projection: 200,000 gallons of solids in 2004 and 300,000 gallons of solids in 2005.

Discussion of Projection Results

The graphic shown in Attachment 3 indicates that tank space needs can be managed within the available tank space provided the consolidation of NCAW tanks and NCRW tanks can be completed as outlined in item 1 above. Because of the lead time for retrieval systems to allow consolidation of the waste and the needs of interim stabilization, there is a pinch point in 1999 which will have to be closely managed.

As currently modeled, all four aging waste tanks are filled with high-heat wastes during 1997 and 1998. There is no spare tank space for high-heat wastes in the event of a leak in one of these tanks. Scenarios to avoid this condition are being developed. A number of solutions from these scenarios will be developed to lower this risk.

This projection was completed before the MWTF special studies had been finalized and was completed with preliminary information. It is likely that planning changes will occur before the OWVP, Rev. 21 projection is completed:

1. The WVRF for non-complexed SWL provided on March 14, 1995 was 55. It is likely that this value will be changed to 47. This would increase tank space requirements by approximately a third of a tank by the end of 2000.

2. The retrieval of Tank 241-SY-102 solids was completed in December 1998. It is possible that this date could be pushed forward if funds were available.

Figure 1. Summary Comparing the 7/94 Baseline and DOE Special Projection Cases

Facility or Project	Baseline Case (L947BC) - Plans	DOE Special Case (L9503A) - Plans
Total Monthly Facility Generations	93 Kgal/month	18.9:34.6 Kgal/month
PUREX TCO	TCO FY94:97 (0.4 Mgal DSSF)	TCO FY94:97 (0.225 Mgal DSSF)
B Plant TCO	TCO FY97:01 (0.56 Mgal DN)	TCO FY97:01 (0.450 Mgal DN)
100 Area TCO	TCO FY95:99 (0.57 Mgal DSSF)	TCO FY95:99 (2 Mgal DN for 100K & 100N)
Evaporator Restart	04/1994; LERF 13 Mgal	04/1994; LERF 13 Mgal
Effluent Treatment Facility Startup Rate TOE	06/1995 150 gpm 70%	03/1996 Unofficial TPA change 150 gpm 70%
Single-shell tank Stabilization Porosity Complexed SWL, Kgal Volume Pumped	 35% 0.5 Mgal 3.6 Mgal by end of FY 2000	 65% (Delay West Area complexed) 2.6 Mgal 6.2 Mgal by end of FY 2000
PFP Stabilization Volume	561 Kgal	70 Kgal
Grout	No Restart--Use Grout Feed Tanks	No Restart--Use Grout Feed Tanks
Tank 101-SY Dilution (Date)	1:1 Dilution (FY 1998)	None
Tank 103-SY Dilution (Date)	1:1 Dilution (FY 2000)	None
Single-shell Tank Solids Retrieval 106-C solids (start; receiver tank) SST Solids Retrieval Start Rate SST Waste Retrieval Complete SST Site Closure Complete	 FY 1997; Tank 102-AY 09/2003 0.2 Mgal (0.8 Total) in FY 2004; 0.3 Mgal (1.2 Total) in FY 2005 FY 2018 FY 2024	 FY 1997; Tank 102-AY 09/2003 0.2 Mgal (0.8 Total) in FY 2004; 0.3 Mgal (1.2 Total) in FY 2005 FY 2018 FY 2024
LLW Pretreatment Facility startup	12/2004	12/2004
LLW Operational Tanks	3 in FY 2005; 4 in FY 2006	3 in FY 2005; 4 in FY 2006
LLW Vitrification	06/2005; 2 Mgal DSSF in 2005	06/2005; 2 Mgal DSSF in 2005
In-Tank Washing (FY 1995-2000)	Consolidate Washed 101-AZ & 102-AZ solids. Consolidate all NCAW supernates.	Consolidate Washed 101-AZ & 102-AZ solids. Consolidate all NCAW supernates.
HLW Enhanced Sludge Washing	06/2008	06/2008
HLW Vitrification startup	12/2009	12/2009
Evaporation Limit for Wastes--SpG	1.5	1.35 (estimated)
New Tanks in West Area	2 in 02/1998	None
New Tanks in East Area	4 in 12/1998	None
Contingency Tank	One starting FY 1999	None
Retrieve Tank 102-SY Solids Consolidate NCRW Solids	No No	Yes (12/1998) Yes (FY 1999)

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Figure 2. Operational Planning Matrix
Comparison of 7/94 OWVP Baseline Case & DOE Special Projection
(All Years are Fiscal Years)

	7/94 OWVP Baseline Case	DOE Special L9503A Case
Facility Generations		
Total Limit, Kgal/mo	93	18.9-34.6
PUREX		
Monthly Rate, Kgal/mo	0	0
TCO Scheduled	1994-1997	1994-1997
TCO Volume, Kgal	400 dDSSF	225 DN
Flush for TCO	10%	10%
WVRF for TCO (to DSSF)	65	99
UO_3 Facility		
Monthly Rate, Kgal/mo	0	0
B Plant		
Monthly Rate, Kgal/mo	23	5 (1995-2001)
Monthly Rate, Kgal/mo	N/A	0.5 (2002-2028)
Flush for misc. waste	5%	0%
WVRF for misc. waste (to DSSF)	91.5	99
TCO Scheduled	1997-2001	1997-2001
TCO Volume, Kgal DN	562	450
Flush for TCO	5%	10%
WVRF for TCO (to DSSF)	91.5	99
S Plant		
Monthly Rate, Kgal/mo	18	1.7 to 2.5
Flush for misc. waste	6%	22%
WVRF for misc. waste (to DSSF)	98	99
T Plant		
Monthly Rate, Kgal/mo	15	0.13 to 15
Flush for misc. waste	6%	22%
WVRF for misc. waste (to DSSF)	97	99
100 Area		
Monthly Rate, Kgal/mo	0	0
100-N		
TCO Scheduled	1995-1999	1995-1996
TCO Volume, Kgal	571 DSSF	1500 DN
100-K Basin Cleanout		
TCO Scheduled	None	1998
TCO Volume, Kgal	0	530
105-F & 105-H Basin		
Total in 1995-96, Kgal	225	225
Flush for ALL 100 Area Waste	44%	44%
WVRF for ALL TCO waste (to DSSF)	97	99

Figure 2. Operational Planning Matrix
Comparison of the 7/94 OWVP Baseline Case & DOE Special Projection
(continued)

	7/74 OWVP Baseline Case	DOE Special L9503A Case
300 Area		
Monthly Rate, Kgal/mo	5	1.6
Flush for misc. waste	44%	44%
WVRF for misc. waste (to DSSF)	98	94
400 Area		
Monthly Rate, Kgal/mo	1	0.5
Flush for misc. waste	44%	44%
WVRF for misc. waste	98	94
WSCF		
Monthly Rate, Kgal/mo	0.7	0.0
Tank Farms		
Monthly Rate, Kgal/mo	30	10
WVRF for flushes (to DSSF)	99	99
Solid Waste Mixed Waste Trench 31 Leachate		
Monthly Rate, Kgal/mo	0	0
WVRF (to DSSF)	95	99
Tank 107-AN Caustic Addition		
One Time Addition in 1995, Kgal	50	50
Salt Well Liquid Pumping		
Total Volume remaining, Mgal	3.6	6.2
West Area Receiver	Tank 103-SY	Tank 102-SY
Start Complexed SWL in 200W	1995	1999
Completion, FY	2000	2000
Meets TPA Milestones	Yes	No
Total Dilute Complexed SWL, Mgal	0.5	2.6
Porosity (apparent)	35%	65%
Flush for SWL Pumping	10%	25%
WVRF for non-complexed (to DSSF)	32	55
WVRF for complexed (to DSSF)	14	10
Single-Shell Tank Solids		
Tank 106-C Retrieval	1997	1997
SST Waste Retrieval Demo	2003	2003
Tank Farm Closure start	2018	2018
Retrieval Dilution Ratio	3:1	3:1
Vol. retrieved in 2004(Mgal)	0.2	0.2
Vol. retrieved in 2005(Mgal)	0.3	0.3
Meets TPA Milestones	Yes	Yes
No. SSTs Retrieved	149	149
Sludge Retrieved (Mgal)	12.2	12.2

Figure 2. Operational Planning Matrix
Comparison of the 7/94 OWVP Baseline Case & DOE Special Projection
(continued)

	7/94 OWVP Baseline Case	DOE Special L9503A Case
Low Level Waste (LLW) Pretreatment Facility		
Includes New Evaporator	Yes	Yes
Start Construction(mo/yr)	11/1998	11/1998
Constr. complete(mo/yr)	12/2003	12/2003
Hot Start	12/2004	12/2004
Complete processing(mo/yr)	12/2028	12/2028
TWRS completion date	2020	2020
Starting Feed	DSSF/SST Saltcake	DSSF/SST Saltcake
Rate(12/2004-6/2007),Mgal/yr	6	6
LLW Feed Tank (filled)	1	1
LLW Receipt Tanks; 2005	1	1
LLW Receipt Tanks; 2006 on	2	2
HLW Receipt Tanks; 2005 on	1	1
Saltcake Retrieved (Mgal)	23.4	23.4
LLW Vitrification Facility		
Start Construction(mo/yr)	12/1997	12/1997
Constr. complete(mo/yr)	12/2003	12/2003
Hot Start	06/2005	06/2005
Complete vitrification	12/2028	12/2028
Characterization time per tank	0.5 year	0.5 year
Rate (6/2005-6/2007),Mgal/yr	6	6
Vol. vitrified 2005, Mgal	2	2
In-Tank Washing		
Start	11/1994	9/1995
Scenario #	Case 2	Case 2
Basic description of solids combination.	Combine washed 101-AZ & 102-AZ solids.	Combine washed 101-AZ & 102-AZ solids.
High Level Waste (HLW) Pretreatment (Enhanced Sludge Washing)		
Start Construction(mo/yr)	06/2001	06/2001
Hot Start(enh. sludge wash)	06/2008	06/2008
Complete processing	12/2028	12/2028
HLW Vitrification Facility		
Start Construction(mo/yr)	06/2002	06/2002
Constr. complete(mo/yr)	12/2007	12/2007
Hot Start	12/2009	12/2009
Complete vitrification	12/2028	12/2028
Characterization time per tank	1.5 years	1.5 years
Production rate (metric ton/day)	20	20

Figure 2. Operational Planning Matrix
Comparison of the 7/94 OWVP Baseline & DOE Special Projection
(continued)

	7/94 OWVP Baseline Case	DOE Special L9503A Case
PFP Stabilization		
Start	1998 on	1995-2005
Volume, Kgal	561	70
Flush	6%	22%
WVRF	63	81
Evaporator		
Next Outage Date	>2005	>2005
Evaporation Product	DSSF	dDSSF
Evaporation Limit (g/ml)	1.52	1.35 (estimated)
LERF capacity (Mgal)	13	13
Gal. condensate/gal. WVR	1.3	1.3
Yearly evaporation of DN (i.e., maintain currency)	Yes	Yes
Liquid Effluent Treatment Facility		
Start date (mo/yr)	06/1995	03/1996 (requested TPA change; not official yet)
Rate	150 gpm	150 gpm
TOE	70 %	70 %
Watch List/Safety		
101-SY Dilution & date	1:1 (1998)	None
103-SY Dilution & date	1:1 (2000)	None
Spare/Contingency Space		
Spare Space, Mgal	2.28	2.28
Use Operational space in 106-AW as part of spare space	No	Yes (0.72 Mgal)
Contingency space, Mgal	1.14	None
-date	(1999 on)	N/A
Waste Segregation		
Loss of Waste Segregation	No	No
Store DSSF on NCRW solids	No	No
Segregate Complexed wastes	Yes	Yes
Loss of DST Space		
Number Tanks Removed from Service	None	None
Date Tank Removed	N/A	N/A
New DST Construction		
New West Area Tanks	2	None
Date Constructed	2/98	N/A
New East Area Tanks	4	None
Date Constructed	12/98	N/A

Figure 2. Operational Planning Matrix
Comparison of the 7/94 OWVP Baseline & DOE Special Projection
(continued)

	7/94 OWVP Baseline Case	DOE Special L9503A Case
DST Retrieval		
Retrieval of 102-SY solids to allow complexed SWL pumping	None	Yes (12/1998)
Consolidation of NCRW solids in 103-AW & 105-AW	None	Yes (9/1999)

Figure 3

L9503A (3/95 DOE SPECIAL) VS 7/94 BASE CASE

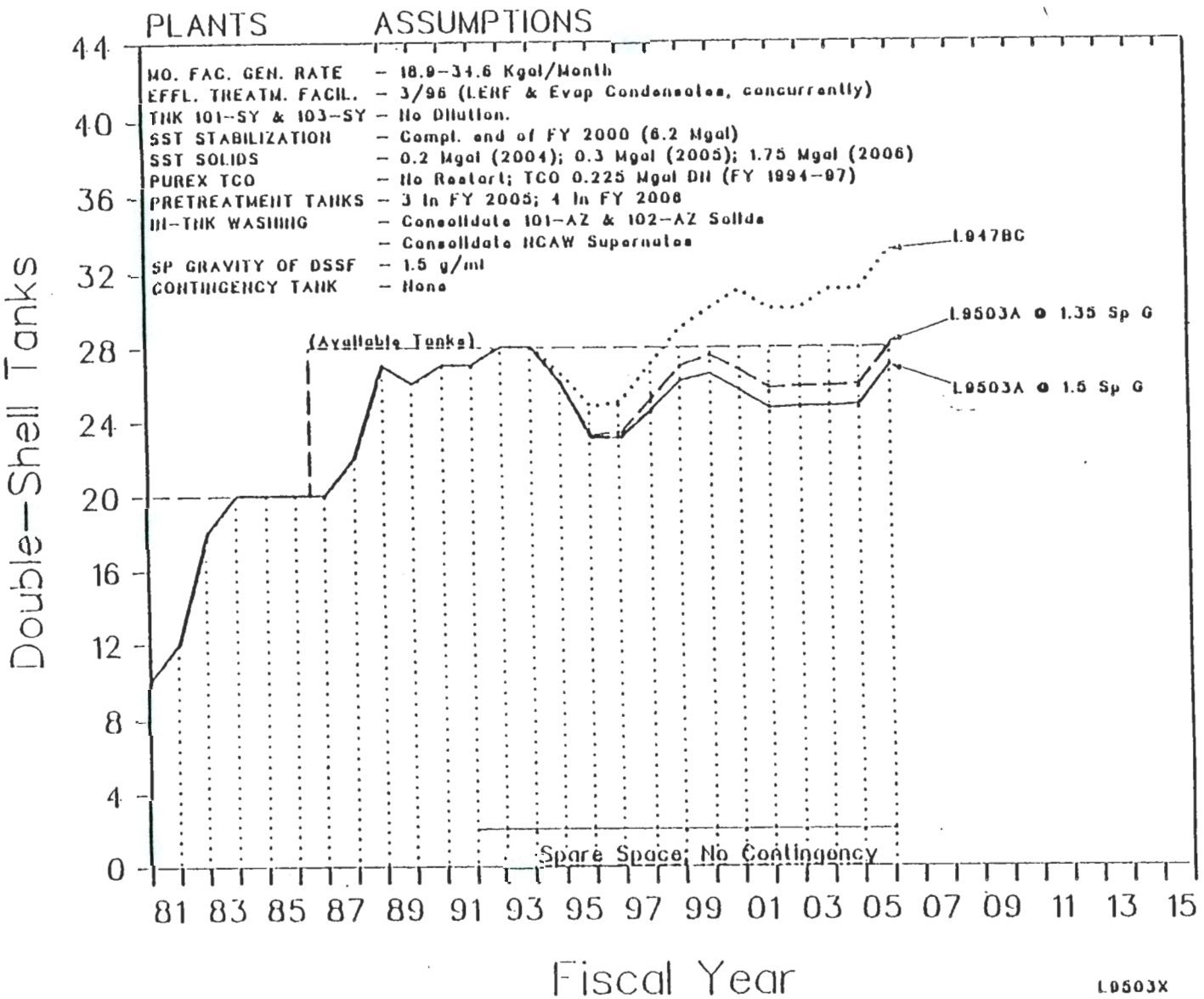
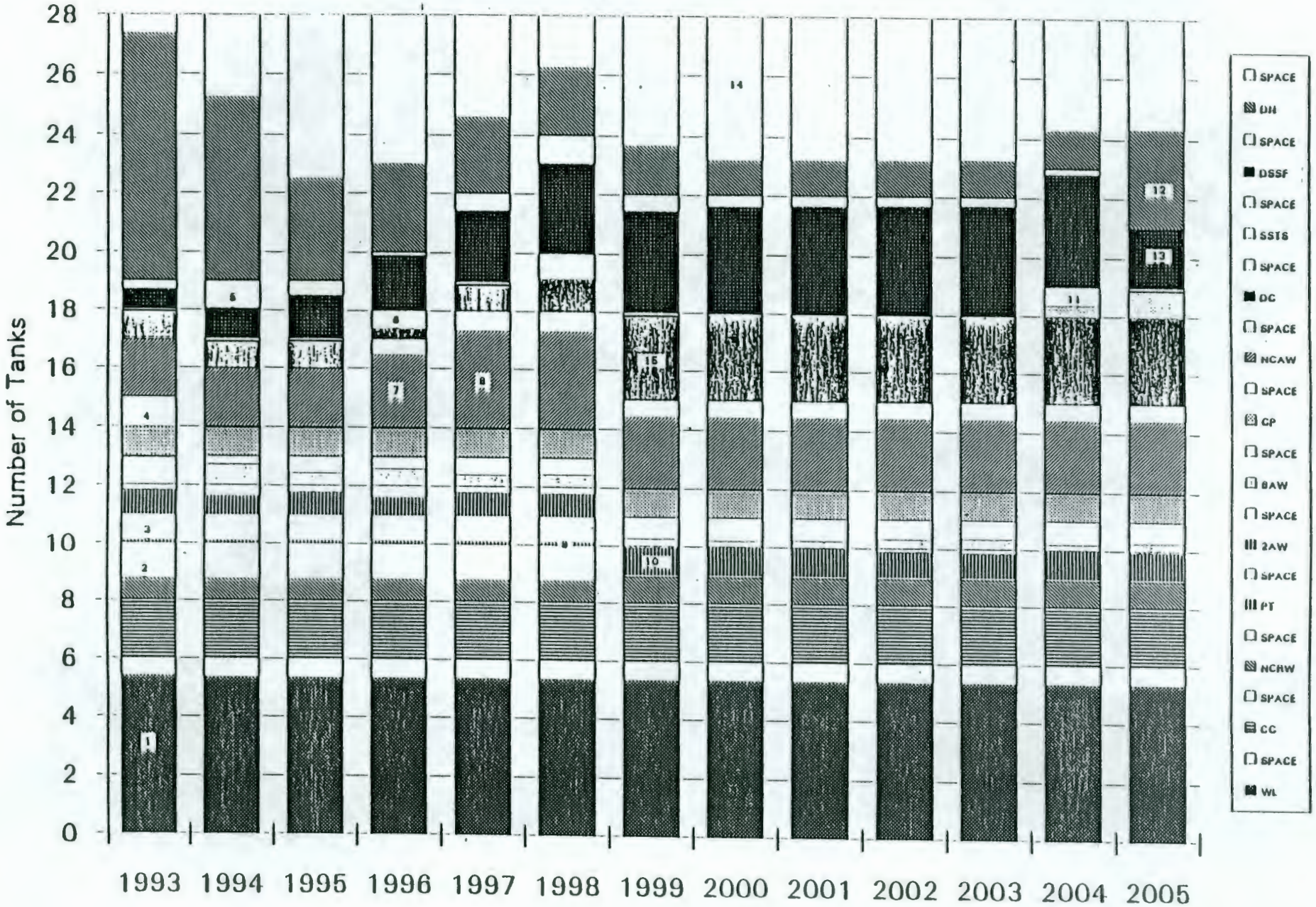


Figure 4
Tank Inventory and Space



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General Information for "Tank Inventory and Space" Graphic--L9503A (Figure 4)

This bar chart graphic is meant to show the increase and decrease in the various waste categories or waste types for DOE Special Projection L9503A. Tank space needs for "in-tank washing" have been included. Spare and pretreatment receipt tanks are not shown. Beginning in 1999, a portion of the evaporator operational space maintained in Tanks 241-AW-102 and -106 will also be considered as spare space to decrease tank space needs. Dilution of tanks 241-SY-101 and -103 are not included in this projection through FY 2006. Levels of dilute noncomplexed waste (DN) in the dilute receiver and evaporator tanks will vary with time. The bar for each year depicts the tank space needs for the end of that fiscal year.

Numbered Comments for "Tank Inventory and Space" Graphic

1. "Watch List" tank inventories are constant from 1995-2005. It is assumed that complexed saltwell liquid pumping in 200 West Area would be added to Tank 241-SY-102 after the PT solids were retrieved (see note 9).

2. Space above NCRW solids is routinely used to store DN waste. For clarity, the graph shows this DN inventory in with the other DN inventory toward the top of the graph (i.e., to ascertain "free" space, add the space shown in the NCRW group to that shown in the DN group).

3. Space above PT solids is used to store DN waste, (see note 2).

4. In 1994, there is a step change in the space in the Concentrated Phosphate (CP) group (two tanks). In 1993, the CP waste occupies part of two tanks. In 1994, the material is combined so that it occupies only one tank; the space freed is then added to the DSSF group in 1994. This represents a transfer of a small amount of CP waste from tank 241-AN-106 to tank 241-AP-102. In 1994, tank 241-AN-106 was used to store DSSF.

5. The DSSF group shows increases in available space over time (e.g., 1994). When a DSSF tank becomes full, a new tank must be added, which obviously has empty space in it. This is shown graphically year-to-year with step increases in the number of DSSF tanks and variations in the available space shown in the group. Increase in DSSF volumes occur due to SWL, evaporated dilute wastes, and terminal cleanout (TCO) wastes.

6. In 1996 there is an increase in space above the dilute complexed (DC) waste inventory. This results from pumping the DC waste from tank 241-AY-101 (980,000 gallons) to tank 241-AP-103 (1,140,000 gallons), thus creating more net headspace. Reduction in the DC waste inventory in 1996 is caused by an evaporation. Evaporation is necessary to prevent overfill of tank 241-AP-103. Projection L9503A included approximately 2,100,000 gallons of additional complexed SWL as compared to the previous projection for the July 1994 OWVP.

7. The increase in NCAW inventory and tank needs starting in 1996 were caused by in-tank washing of the NCAW solids. The final result of the operations were completed by the end of FY 1999 and included:
   - Washed NCAW solids from Tanks 241-AZ-101 and -102 were combined into Tank 241-AZ-102.
   - NCAW supernates and washes were evaporated and combined into Tank 241-AY-101.
   - Tank 241-AZ-101 was "freed up" by the end of FY 1999 and used as aging spare space/dilute receiver.

8. The increase in NCAW inventory in 1997 results from the retrieval of Tank 241-C-106 solids to Tank 241-AY-102. These are high-heat solids that have been added to the NCAW waste category (must be stored in aging waste tanks, e.g., Tank 241-AY-102).

9. The PT solids from Tank 241-SY-102 were cross-site transferred to Tank 241-AW-103 beginning December 1998. Therefore, the PT waste category and space are eliminated by the end of FY 1999.

10. NCRW solids from Tank 241-AW-105 were retrieved to Tank 241-AW-103 in FY 1999. This resulted in a decrease in NCRW tanks by one tank by the end of FY 1999. Tank 241-AW-103 would contain 930,000 gallons of solids after the solids in Tanks 241-AW-103, 241-AW-105, and 241-SY-102 have been consolidated.

11. Retrieval of single-shell tank solids was started in FY 2004 in TX tank farm. Initial single-shell tank solids will be stored in tank 241-SY-102.

12. The increase in stored DN in 2005 is caused by retrieval of single-shell tank solids with 3:1 retrieval water. Some of the retrieval water is being stored prior to evaporation.

13. Decrease in DSSF inventory in 2005 results from pretreatment and vitrification of 2,000,000 gallons of DSSF.

14. Decrease in watch list inventory and tank needs in 2006 results from pretreatment and vitrification of 3,300,000 gallons of DSSF from the watch list category (Tanks 241-AW-101, 241-AN-104, and 241-AN-105).

15. Years 2000-2004 appear nearly constant in DSSF and DN inventory and total waste inventory. By the end of FY 2000, all SWL pumping and Hanford facility terminal cleanouts have been completed. Only nominal volumes of very dilute waste are being received, which is reduced by the evaporator with little generation of DSSF.

16. The increase in DC inventory is caused by pumping of complexed SWL in 200 West Area after the solids have been moved out of tank 241-SY-102 (December 1998).

Figure 5

SECTION 3

T9503A1.HR1---created from T947BC1.HR1 (DOE SPECIAL)
04-May-95 2AZ IN--OTHER HEADSPACE NOT ACCOUNTED FOR
06:33 AM

FISCAL YEAR----->	9/30/93	9/30/94	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
BASELINE SPACE UTIL.													
STARTING INVENTORY	25507	22992	22992	20252.	20117.	21727.	22379.	23291.	23068.	23131.	23178.	23240.	23743.
SPARE SPACE	2280	2280	2280	2280	2280	2280	2280	2280	2280	2280	2280	2280	2280
CONTINGENCY SPACE		0	0	0	0	0	0	0	0	0	0	0	0
WATCH LIST TANK SPACE AVAIL.	673	726	726	726	726	726	726	726	726	726	726	726	726
SEGREGATED SPACE AVAIL.	1038	605	584	2094.7	1557.5	1405	581.75	447	447	447	447	447	447
PRIORITY/OPERATIONAL AVAIL.	1174	1641	2183	2117	2087	2251	2548	2891	1878	1854	1799	1399	3630
MISC. HEADSPACE AVAIL.	194	66											
NEW WASTE ADDITIONS													
PUREX MISC.			0	0	0	0	0	0	0	0	0	0	0
UO3			0	0	0	0	0	0	0	0	0	0	0
B PLANT			60	60	60	60	60	60	60	5	5	5	5
S PLANT			20	25	30	30	30	30	30	30	30	30	30
T PLANT			28	37	47	49	68	89	112	135	180	180	180
300 AREA			19.2	19.2	19.2	19.2	19.2	19.2	19.2	19.2	19.2	19.2	19.2
400 AREA			6	6	6	6	6	6	6	6	6	6	6
HSCF			0	0	0	0	0	0	0	0	0	0	0
TANK FARM (LINE, ALC)			120	120	120	120	120	120	120	120	120	120	120
EVAPORATOR FLUSHES			70	70	70	70	70	70	70	70	70	70	70
PFP LAB W/ SOLIDS			6	6	7	7	7	7	6	6	6	6	6
TK 101-SY DILN/RETRVAL			0	0	0	0	0	0	0	0	0	0	0
TK 103-SY DILN/RETRVAL			0	0	0	0	0	0	0	0	0	0	0
TK 106-C SOLIDS RETRVAL			0	0	800	0	0	0	0	0	0	0	0
PUREX TCO (94-97) W/ FLUSH			124.3	124.3	0	0	0	0	0	0	0	0	0
B PLANT TCO (97-2001) W/ FLUSH			0	0	99	99	99	99	99	0	0	0	0
100N TCO (95-99) W/ FLUSH			1241.2	1241.2	0	0	0	0	0	0	0	0	0
PFP STABILIZATION			0	0	0	0	0	0	0	0	0	0	0
SWL PUMPING W/O FLUSH			99	1432	1500	1428	1265	513	0	0	0	0	0
IN-TANK WASHING OF 101-AZ			0	0	0	0	1000	0	0	0	0	0	0
SST SOLIDS RETRVAL			0	0	0	0	0	0	0	0	0	800	1200
100 AREA F&H			112	112	0	0	0	0	0	0	0	0	0
107-AN CAUSTIC			50	0	0	0	0	0	0	0	0	0	0
FAC.GEN.+SWL+x-site FLUSHES			95	432	452	434	397	214	91	96	106	106	106
NEW WASTE ADDITIONS TOTAL			2050.7	3684.7	3210.2	2322.2	3141.2	1227.2	613.2	487.2	542.2	1342.2	1742.2
TOTAL WASTE BEFORE EVAP		22992	25042.	23937.	23327.	24049.	25521.	24518.	23681.	23618.	23720.	24583.	25485.
YEARLY CALC HVR FROM ABOVE													
CUM CALC HVR FROM ABOVE													
*** ACTUAL EVAP HVR *******			-4790	-3820	-1600	-1670	-2210	-1450	-550	-440	-480	-840	-960
*** CUM ACTUAL EVAP HVR ***			-4790	-8610	-10210	-11880	-14110	-15560	-16110	-16550	-17030	-17870	-18830
PRETREATMENT/VITRIF LOSS*			0	0	0	0	0	0	0	0	0	0	-2000
NET INVENTORY CHANGE			-2739.	-135.2	1610.2	652.2	911.2	-222.8	63.2	47.2	62.2	502.2	782.2
END OF YEAR INVENTORY	25507	22992	20252.	20117.	21727.	22379.	23291.	23068.	23131.	23178.	23240.	23743.	24525.
TOTAL CAPACITY	31280	28110	26025.	27335.	28378.	29041.	29426.	29412.	28462.	28485.	28492.	28595.	29608.
	28.0	25.4	23.4	24.5	25.5	26.0	26.4	26.4	25.5	25.5	25.6	25.6	26.5
	9/30/93	9/30/94	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005

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Figure 6

WASTE TANK VOLUME REQUIREMENTS IN MILLIONS OF GALLONS

WASTE TYPE AND NEEDS	FISCAL YEAR											
	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Concentrated Waste	14.8	15.2	16.1	17.5	18.3	17.9	18.0	18.1	18.1	18.2	18.7	17.1
Supernate Liquid	9.1	5.8	4.8	5.0	4.9	5.0	4.8	4.8	4.8	4.8	4.8	6.5
200W Receiver Tank	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
241-AW-102 and 241-AW-106 Evaporator Support	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
Spares	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
Impact of Evaporator Limits (Specific Gravity of 1.35 versus 1.5)	0.0	0.2	0.3	0.6	0.8	1.0	1.1	1.1	1.1	1.1	1.1	1.1
Segregated Space **	1.5	2.4	1.9	1.1	1.1	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Passive Mitigation 241-SY-101 and 241-SY-103	NO PASSIVE MITIGATION											
TOTAL *	31.20	29.40	28.90	30.00	30.90	30.40	30.40	30.50	30.50	30.60	31.10	31.20

* 28 double-shell tanks provide 31.28 million gallons of capacity
** Additional cost for hardware, safety analyses, and other impacts will be incurred

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