

sta 4. (2)
JUL 23 2003

ENGINEERING DATA TRANSMITTAL

Page 1 of 1
 1. EDT **634045**

2. To: (Receiving Organization) See Distribution	3. From: (Originating Organization) SST Engineering	4. Related EDT No.: N/A
5. Proj./Prog./Dept./Div.: System Health Report	6. Design Authority/Design Agent/Cog. Engr.: LS Krogsrud	7. Purchase Order No.: N/A
8. Originator Remarks: This EDT releases the System Health Report for T, TX, TY, and C Waste Tank Structures, Mixing and Monitoring		9. Equip./Component No.: N/A
11. Receiver Remarks:		10. System/Bldg./Facility: 241-T, TX, TY and C
11A. Design Baseline Document? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		12. Major Assm. Dwg. No.: N/A
		13. Permit/Permit Application No.: N/A
		14. Required Response Date: N/A

15. DATA TRANSMITTED					(F)	(G)	(H)	(I)
(A) Item No.	(B) Document/Drawing No.	(C) Sheet No.	(D) Rev. No.	(E) Title or Description of Data Transmitted	Approval Designator	Reason for Transmittal	Originator Disposition	Receiver Disposition
1	RPP-17359		0	System Health Report for T, TX, TY, and C Waste Tank Structures, Mixing and Monitoring	N/A	1	1	

16. KEY		
Approval Designator (F)	Reason for Transmittal (G)	Disposition (H) & (I)
E, S, Q, D OR N/A (See WHC-CM-3-5, Sec. 12.7)	1. Approval 2. Release 3. Information 4. Review 5. Post-Review 6. Dist. (Receipt Acknow. Required)	1. Approved 2. Approved w/comment 3. Disapproved w/comment 4. Reviewed no/comment 5. Reviewed w/comment 6. Receipt acknowledged

17. SIGNATURE/DISTRIBUTION (See Approval Designator for required signatures)											
(G) Reason	(H) Disp.	(J) Name	(K) Signature	(L) Date	(M) MSIN	(G) Reason	(H) Disp.	(J) Name	(K) Signature	(L) Date	(M) MSIN
		Design Authority				1	1	R. Heath		7/22/03	74-08
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		QA									
		Safety									
		Env.									

18. Signature of EDT Originator Date: 7/23/03	19. Authorized Representative for Receiving Organization Date: _____	20. Design Authority/Cognizant Manager Date: 7/23/03 8:20 AM	21. DOE APPROVAL (if required) Ctrl No. _____ <input type="checkbox"/> Approved <input type="checkbox"/> Approved w/comments <input type="checkbox"/> Disapproved w/comments
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System Health Report for T, TX, TY, and C Farm Structures, Mixing and Monitoring

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Richland, WA 99352

U.S. Department of Energy Contract DE-AC27-99RL14047

EDT/ECN: 634045

UC:

Cost Center: 7G500

Charge Code:

B&R Code:

Total Pages: 10

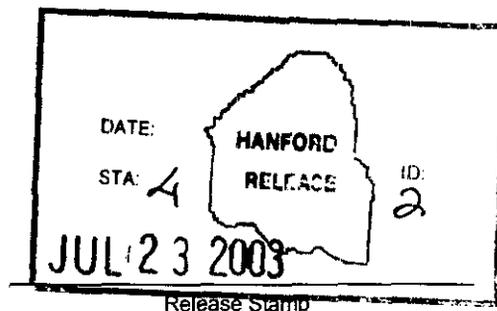
Key Words: SST, Health, System, Report, Monitoring, Structure, Enraf, LOW, SHMS, Temperature, Mixing, T, TX, TY, C, Waste, Tank

Abstract: This document describes System Health status for T, TX, TY, and C TANK STRUCTURES, MIXING AND MONITORING during the 2nd quarter of calendar year 2003.

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Leann Fol 7-23-03
Release Approval Date



Approved For Public Release

SYSTEM HEALTH REPORT FOR
T, TX, TY, AND C WASTE TANK STRUCTURES,
MIXING AND MONITORING
FOR 2nd QUARTER CY 2003

Prepared for CH2M Hill Hanford Group, Incorporated

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July 2003

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MIXING AND MONITORING
2nd QUARTER CY 2003**

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SYSTEM HEALTH REPORT FOR T, TX, TY, AND C WASTE TANK STRUCTURES, MIXING AND MONITORING

2nd QUARTER CY 2003

• EXECUTIVE SUMMARY

This quarter's system health report is the first one grouping together the T, TX, TY, and C tank farms. Previously, the T Complex farms were covered in RPP-9944, *System Health Report for T, TX, TY, and U Waste Tank Structures, Mixing and Monitoring*, while C farm was covered in RPP-9909, *System Health Report for A, AX, and C Farm Structures, Mixing, and Monitoring*. The change in grouping was made to remain consistent with recent changes in system engineering assignments. Information for each farm was extracted from previous reports to provide past quarter's data for comparison with this quarter.

The T, TX, TY, and C Waste Tank Structures, Mixing, and Monitoring System receives a **Good** rating with overall "**No Change**" trending this quarter. The primary components in this system functioned as expected and required with the exception of one ENRAF level gauge component failure. The primary components include the tanks themselves, ENRAF level gauges, thermocouple trees, and Liquid Observation Wells (LOW).

A special focus examination of equipment calibration was conducted during the quarter. No out of calibration equipment was found.

• OPERATIONS MISSION

The mission for T, TX, TY, and C Waste Tank Structures, Mixing and Monitoring System is to safely contain Hanford tank waste until the waste is stabilized according to the Hanford Tri-Party Agreement. Currently the support of Retrieval/Closure (R/C) at C Farm is a major focus of the system. Although the R/C organization is responsible for the installation, maintenance, and operation of the equipment, the activity requires considerable interfacing.

• OPERABILITY STATUS SUMMARY

There are no safety class or safety significant components within the T, TX, TY, and C Waste Tank Structures, Mixing and Monitoring System. The functional status of the system is described below.

The 241-T Tank Farm has achieved complete interim stabilization status for all tanks. The tank structures, mixing and monitoring systems are functional. The Vadose Project completed a sampling bore hole southwest of T-106 last quarter. An additional sampling bore hole was completed this quarter on the southeast side of T-106.

The 241-TX Tank Farm is in a controlled clean and stable condition and waste tank structures, mixing and monitoring systems are functional except for TX-116 Enraf that was removed temporarily for LOW installation. The water discovered in the 242-TA Vault is still required to be removed. No change in liquid level has been observed. The vault is expected to be pumped during the next quarter.

The 241-TY Tank Farm is in a controlled clean and stable condition and waste tank structures, mixing and monitoring systems are functional.

Major projects underway in the C Farm include retrieval of C-106 and retrieval of waste from the four 200 series tanks.

There were no operability evaluations requested or performed on this system this quarter.

• **AVAILABILITY**

Availability Rating: **GOOD**

The systems listed below support safe storage and retrieval of wastes.

Availability Goal: 95%

System/Component	2 nd Quarter 2003	1 st Quarter 2003	4 th Quarter 2002	3 rd Quarter 2002	Rating
Level Detection	97%	99%	99%	95%	Good
Temperature Indication	100%	100%	99%	99%	Good
LOW	95%	95%	95%	95%	Satisfactory
Tank Structures	97%	95%	95%	97%	Satisfactory
Overall System	98%	98%	98%	98%	Good

Notes:

The ENRAF level detection system at TX-116 was out of service during the quarter to support LOW installation. The LOW is identified here as failed because it was breached in 2002 to obtain a liquid sample. Since it has been removed from the tank, but the replacement failed during installation. The LOW availability rate therefore remains at 95%.

The ENRAF for C-103 has been out of service since April 29. The displacer and wire drum were replaced on July 8. An obstruction in the riser has, however, prevented the ENRAF from becoming operational. Efforts continue to return the ENRAF to operability.

No thermocouples failed during the quarter.

The 242-TA vault accumulation of rainwater discovery on 8/1/02 was a failure of the structure to protect the tank within it. The 242-TA contains tank TK-R1 which floated off of its supports. The TA-R1 tank is currently out of service but was the receiver tank for PFP transfers to the 242-T evaporator and for the High Level Salt Waste (HLSW) neutralization program until 1980. The remainder of the Tank Structures were able to contain the waste and were available for waste containment. A 3% reduction of the availability will be attributed to the intrusion.

An average availability for the overall system is 98%.

- **RELIABILITY**

Reliability Rating: **GOOD**

Component Failures Rating: **GOOD**

Component Failures Goal: ≤ 8 failed components

System/Component	2 nd Quarter 2003	1 st Quarter 2003	4 th Quarter 2002	3 rd Quarter 2002	Rating
T Farm	0	0	0	0	Good
TX Farm	0	0	0	0	Good
TY Farm	0	0	0	0	Good
C Farm	1	1	0	0	Good

Work Orders Open Trend: **↑**

Work Orders Open Goal: ≤ 50 Open Items

System/Component	2 nd Quarter 2003	1 st Quarter 2003	4 th Quarter 2002	3 rd Quarter 2002	Trend
T Farm	2	-	-	-	-
TX Farm	8	-	-	-	-
TY Farm	5	-	-	-	-
C Farm	9	14	15	22	↑

Due to the fact that this is the first quarterly System Health Report to tabulate the data for T complex by farm, historical data was not available to make comparisons for those farms. Previous information reported in RPP-9944 grouped T complex with U farm. Trending data will be available for the next report.

- CURRENT SYSTEM ISSUES**

Current System Issues Trend: **Improving**

Current System Issues Goal: ≤ 1 Significant PER open
 ≤ 15 Other PERs open

System/Component	2 nd Quarter 2003	1 st Quarter 2003	4 th Quarter 2002	3 rd Quarter 2002	Trend
T Farm	0 SIG 0 OTHER	0 SIG 2 OTHER	0 SIG 1 OTHER	0 SIG 2 OTHER	↑
TX Farm	0 SIG 2 OTHER	0 SIG 0 OTHER	0 SIG 1 OTHER	0 SIG 0 OTHER	↓
TY Farm	0 SIG 0 OTHER	0 SIG 0 OTHER	0 SIG 0 OTHER	0 SIG 0 OTHER	No Change
C Farm	0 SIG 0 OTHER	0 SIG 6 OTHER	1 SIG 15 OTHER	1 SIG 5 OTHER	↑

For each farm, a number of PERs were identified dealing with housekeeping issues or minor contamination discovered during routine surveys. No new were identified this quarter for waste structures, mixing, or monitoring.

PER Number	Significance Category	Description of Deficiency	Status of Resolution
PER-2002-4187	PER with Resolution	242-TA vault has water intrusion, which has floated tank TA-R1 off of its supports. Occurrence Report # RP—CHG-TANKFARM-2002-0083	Currently researching data for tank TA-R1 contents prior to removal of water from vault.
PER-2003-0964	PER with Resolution	Non-Compliance with Recovery Plan TX-116 LOW	Initial replacement to breached LOW was damaged during installation on 4/15/03. Recovery plan is to remove second LOW and replace.

- **OVERDUE MAINTENANCE**

Overdue Maintenance Trends: ↑

Overdue Corrective Maintenance Trend: ↑

Overdue Corrective Maintenance package is defined as package that is complete for field activities but has not worked for more than six months.

System/Component	2 nd Quarter 2003	1 st Quarter 2003	4 th Quarter 2002	3 rd Quarter 2002	Trend
T Farm	1	-	-	-	-
TX Farm	2	-	-	-	-
TY Farm	0	-	-	-	-
C Farm	9	15	14	21	↑

Note: As with the "Work Orders Open" indicator, historical data is not available to make comparisons, as this is the first quarterly System Health Report to tabulate the data for T complex by farm. Previous information reported in RPP-9944 grouped T complex with U farm. Trending data will be available for the next report.

Number reported do not include Corrective Maintenance Packages that have been placed in Retent/Inactive (RET-INA) status by Operations.

Overdue Preventive Maintenance Trend: No Change

System/Component	2 nd Quarter 2003	1 st Quarter 2003	4 th Quarter 2002	3 rd Quarter 2002	Trend
T Farm	0	0	0	0	No Change
TX Farm	0	0	0	1	No Change
TY Farm	0	0	0	1	No Change
C Farm	1	0	0	0	No significant change

- **OVERALL SYSTEM HEALTH RATING**

Overall System Health Rating: **GOOD** and "No Change" in trend indicated

The T, TX, TY, and C Waste Tank Structures, Mixing, and Monitoring System receives a Good rating with overall "No Change" trending this quarter. This "GOOD" rating is the same as that reported in both of the two previous system health reports that this present report replaces, RPP-9944 and RPP-9909. Indicators showed no significant overall change from last quarter. The primary components of this system functioned as expected and required with the exception of minor component failures. The primary components include the tanks themselves, Enraf level gauges, thermocouple trees, and Liquid Observation Wells (LOW).

- **REGULATORY ISSUES**

Regulatory Issue	2 nd Quarter 2003	1 st Quarter 2003	4 th Quarter 2002	3 rd Quarter 2002
Overdue Surveillances	0	0	0	0
Reportable Events	0	0	2	1
Facility Rep Reports	0	0	0	1
Environmental Issues	0	0	0	2

- **PREDICTIVE MAINTENANCE**

There are no lessons learned or actions planned as a result of Predictive Maintenance on this system.

- **DESIGN ISSUES / LONG RANGE RECOMMENDATIONS**

A Vadose demonstration project is planned for T-106. An impermeable above-ground barrier is being designed to minimize water intrusion to the soil surrounding tank T-106. Moisture monitoring equipment will be installed to provide long-term data. The barrier is expected to be a spray-on material that will cover an area out to ~100 foot radius from the tank center. One bore hole well was installed at T-106 to support the barrier demonstration. Samples of vadose material will be obtained as the wells are installed.

Additional bore hole wells are to be placed in TY Farm prior to the end of the 3rd Quarter of 2003.

Liquid Observation Wells are planned to be installed this fiscal year (FY) in TX-105, as well as replacing the failed LOW in TX-116. In FY 2004, installations are planned in T-101, TX-103, and TX-104. Installations of LOWs in C farm are on hold pending a decision on tank retrieval.

The 242-TA Vault was inspected in the 3rd Quarter of 2002 for the first time in at least 15 years. Water intrusion had occurred in the vault and was of sufficient quantity to cause the TA-R1 tank to float off of its base support. The water was analyzed to determine contents and the disposal options are being determined. Pumping to a tanker for transport to the LERF facility is the preferred option.

- **TEMPORARY MODIFICATION CURRENTLY INSTALLED**

There are no temporary modifications installed.

- **PERMANENT DESIGN MODIFICATIONS**

None.

- **SPECIAL FOCUS EVALUATION**

A special focus evaluation was conducted this quarter on instrument calibrations. Other than ENRAFs, the only equipment requiring calibration are items associated with the C-106 retrieval project and with the 244-TX DCRT. No equipment was found past its calibration date.

A comprehensive walkdown was conducted, focusing on the C Farm electrical system. Electrical drawings were walked down. No discrepancies were noted. The results of the walkdown are documented in the system notebook.

- **OTHER SIGNIFICANT FINDINGS / ISSUES / VULNERABILITIES**

None.