AUG 2 6 1996

ENGINEERING DATA TRANSMITTAL

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2. To: (Receiving Organization)	3. From: (Originating Organization)	4. Related EDT No.:
Evaporator Project	TWRS Equipment Engineering	N/A
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AW Ventilation Upgrade/N2169	D.J. Minteer	N/A
8. Originator Remarks:		9. Equip./Component No.:
ETN 95-0031		N/A
		10. System/Bldg./Facility:
		241-AW
11. Receiver Remarks: THIS IS A BASELINE DOCUMENT		12. Major Assm. Dwg. No.:
		H-2-85614
		13. Permit/Permit Application No.:
		N/A
		14. Required Response Date:

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(A) Item No.	(B) Document/Drawing No.	(C) Sheet No.	(D) Rev. No.	(E) Title or Description of Data Transmitted	(F) Approval Designator	(G) Reason for Transmittal	(H) Originator Disposition	(I) Receiver Disposition
1	WHC-SD-WM-ABU-017	N/A	0	ACCEPTANCE OF 241-AW TANK INLET AIR CONTROL STATIONS FOR BENEFICIAL USE	SQ	2	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 4. Review 2. Release 5. Post-Review 3. Information 6. Dist. (Receipt Acknow. Required)	1. Approved 4. Reviewed no/comment 2. Approved w/comment 5. Reviewed w/comment 3. Disapproved 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	(J) Name	(K) Signature	(L) Date	(M) MSIN	(G) Reason	(H) Disp.
1	1	Cog.Eng. DJ Minteer	DJ Minteer	7-10-96	S2-24	TF Eng. LD Rakestraw	LD Rakestraw	7-11-96	S5-09	1	
1	1	Cog. Mgr. WW Jenkins	WW Jenkins	7/19/96	S2-24	TF Maint. DP Kerwick		8/2/96	R2-88	1	
1	1	QA CA Sams	C.A. Sams	7-19-96	S5-13	Des. Auth. JR Kriskovich			R1-56	1	
1	1	Safety SU Zaman	S.E. Zaman	8/2/96	R3-08	JE Geary			S5-07	3	
		Env.				RJ Nicklas			R1-43	3	
1	1	TF Ops. JL Foster		8/20/96	S5-14	WC Miller			R1-56	3	
1	1	TF Eng. KA White		8/13/96	S5-13						

18.	19.	20.	21. DOE APPROVAL (if required) Ctrl. No. N/A
DJ Minteer DJ Minteer 7-10-96 Signature of EDT Originator / Date	Authorized Representative for Receiving Organization / Date 8/22/96	WW Jenkins Cognizant Manager / Date 7/16/96	[ ] Approved [ ] Approved w/comments [ ] Disapproved w/comments

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ACCEPTANCE OF 241-AW TANK INLET AIR CONTROL STATIONS FOR BENEFICIAL USE

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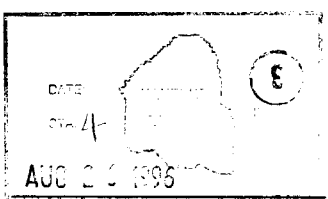
Key Words: AW, VENT, FILTER, ABU, TURNOVER

Abstract: This document provides reference to the Acceptance for Beneficial Use (ABU) documentation and effects turnover of the AW tank inlet air control stations from TWRS Equipment Engineering to Evaporator Project.



Release Approval Date Release Stamp

Approved for Public Release

ACCEPTANCE OF 241-AW TANK INLET AIR CONTROL STATIONS FOR BENEFICIAL USE

July 8, 1996

Author

D.J. Minteer

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ACCEPTANCE OF 241-AW TANK INLET AIR
CONTROL STATIONS FOR BENEFICIAL USE

1.0 INTRODUCTION

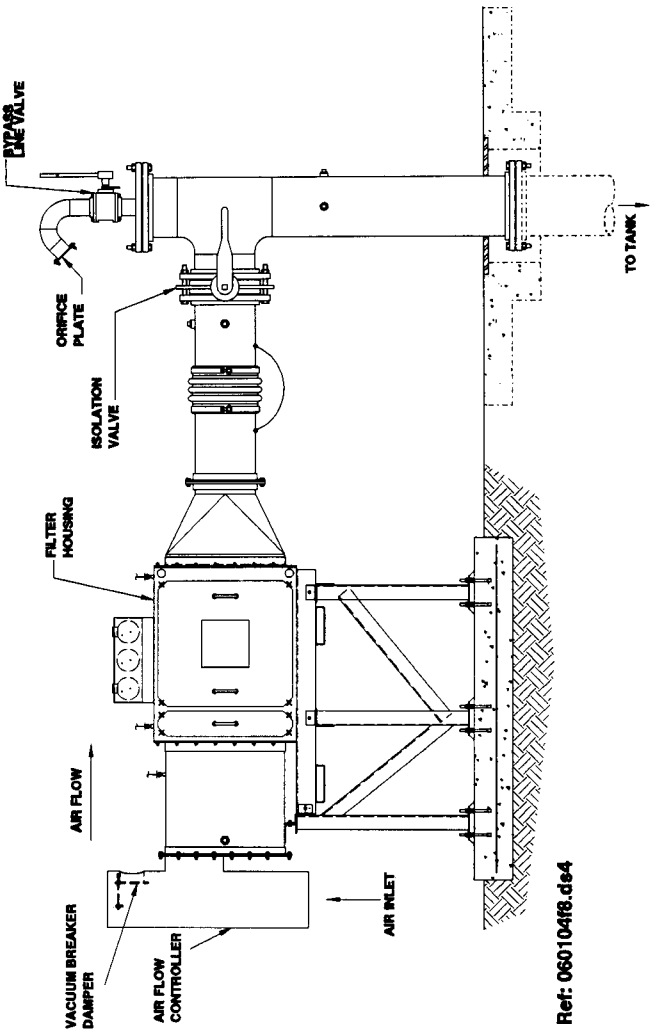
Flammable gas is continually produced in most of the Hanford radioactive waste tanks. There are six such tanks in the 241-AW tank farm. In addition, two of the AW tanks (101 and 104) exhibit the characteristics and tendency to store and suddenly release larger quantities of gas. Waste tank ventilation is necessary to, among other things, prevent flammable gas build up in the tank vapor spaces and reduce flammable gas concentrations as quickly as possible after a sudden gas release.

The AW primary waste tanks are ventilated by a common exhaust system. The system was not originally designed to allow adequate control of individual tank flow rates. Air would enter each tank primarily through penetrations in the pump and valve pit cover blocks (valve handles, cover plates, seams, edge cracks) and then through the leaking, misaligned, or removed pit drain plugs and/or other pit apertures. Metalized tape used on the cover block edges/seams was virtually the only "hardware" which could offer a means of proportioning tank air flows. Balancing air flow in this manner, however, would be laborious and ineffectual considering that work activities and/or weather could quickly negate the efforts.

A tank inlet air control station was installed on each 241-AW primary tank in January 1996. Acceptance testing was completed in February 1996. On March 21, 1996 the Operational Test Procedure was performed and all six units were subsequently placed into service. The air control stations, intended to be the primary air paths into the waste tanks, provide a new capability for maintaining an easily set and verifiable air flow rate into each waste tank. The air control stations can also be used to manipulate tank vacuum levels. In addition, each station acts as a filtered, pressure relief for the tank air space. See Figure 1.

Each station is designed to accommodate flow rates up to 500 scfm, which, times six tanks, exceeds the capabilities of the current ventilation system. Primary components of each air control station include, in order of inward flow, an air flow controller (keeps flow constant, indicates whether the known set flow is occurring, and defaults to its open position during a flow reversal), a pre-filter, a HEPA filter (to reduce the consequences of air flow reversals should tank pressures exceed atmospheric pressure due to loss of active ventilation or a large gas release from the waste), and a 12" isolation butterfly valve (normally open). Differential pressure gages are provided to support evaluation of filter condition. A vacuum breaker is connected in parallel with the flow controller to limit tank vacuum in

FIGURE 1 - TANK INLET AIR CONTROL STATION



the event that the flow control capability is lost. The air flow controller and vacuum breaker are system-operated devices, requiring no electrical power or control instrumentation. An alternate tank air inlet line, or bypass line, containing an orifice plate and isolation valve (normally closed) is connected in parallel with each air control station for use during station maintenance or in the event that the normal air path through the air control station becomes obstructed.

2.0 SCOPE

This document provides reference to the documentation required for Acceptance for Beneficial Use (ABU) which was identified in WHC-SD-WM-ETP-141, *Engineering Task Plan for 241-AW Ventilation Improvements*, Rev 1 (the ABU checklist is provided herein as Appendix A). Any deviations from the ABU checklist are noted in Section 3.0 and are accepted by approval of this document.

Approval of this document indicates agreement that the ABU documentation listed in Section 3.0 is sufficient to effect official turnover of the AW tank inlet air control stations from TWRS Equipment Engineering to Evaporator Project, which occurs upon the release of this document.

3.0 ACCEPTANCE FOR BENEFICIAL USE (ABU) DOCUMENTATION

The following list identifies the Acceptance for Beneficial Use (ABU) documentation which allows turnover of the AW tank inlet air control stations from TWRS Equipment Engineering to Evaporator Project.

Engineering Task Plan

WHC-SD-WM-ETP-141, *Engineering Task Plan for 241-AW Ventilation Improvements*, Rev 0 (released 8/22/95), Rev 1 (released 10/27/95)

Safety Equipment List Changes

Engineering Change Notice (ECN) 604846 to WHC-SD-WM-SEL-026, *Double Shell Tank Interim Safety Equipment List*, Rev 1 (ECN released 10/27/95)

Unreviewed Safety Question (USQ) Screenings/Evaluations

USQ Evaluation TF-95-0083, *AW Tank Farm Air Flow Control Assembly Installation, Operation, and Maintenance*, (dated 8/31/95)

USQ Evaluation TF-95-0041, *AW Tank HEPA-Filtered Air Inlet Station Installation, Operation, and Maintenance*, Rev 0 (dated 8/31/95), Rev 1 (dated 10/13/95), Rev 2 (dated 4/11/96), Rev 3 (dated 5/21/96)

USQ Screening TF-96-0012, *Pressure Decay Test for AW Air Inlet Station Filter Housing/Duct Assemblies*, (dated 2/8/96)

USQ Screening TF-96-0083, *Operational Test Procedure (OTP) for 241-AW Tank Inlet Air Control Stations*, (dated 3/21/96)

Interim Safety Basis/Safety Analysis Report Changes

Engineering Change Notice (ECN) 631718 to WHC-SD-WM-ISB-001, *Hanford Site Tank Farm Facilities Interim Safety Basis*, Volume 2: Design Description, Rev 0-J, and WHC-SD-WM-SAR-016, *Double Shell Tank Safety Analysis*, Rev 1 (ECN released 6/27/96)

Design Bases Documents

WHC-SD-WM-DB-030, *Design Basis for Inlet Filters and Flow Control Devices in 241-AW Tank Farm*, Rev 0 (released 9/12/95)

Acceptance Test Procedures/Reports (ATP/ATR)

WHC-SD-WM-ATP-154, *Acceptance Test Procedure, Flow Controller and Vacuum Breaker Assemblies*, Rev 1 (released 1/16/96)

WHC-SD-WM-ATR-154, *Acceptance Test Report, Flow Controller and Vacuum Breaker Assemblies*, Rev 0 (released 2/6/96)

Job Control System work package 2E-96-00103/M, *Pressure Decay Test - AW Air Inlet Station Housing/Duct Assemblies*, TWRS East Tank Farms

WHC-SD-WM-ATR-169, *Acceptance Test Report, 241-AW Air Inlet Filter Station Pressure Decay Test*, Rev 0 (released 2/21/96)

Operational Test Procedures/Reports (OTP/OTR)

WHC-SD-WM-OTP-195, *Operational Test Procedure for 241-AW Tank Inlet Air Control Stations*, Rev 0 (released 2/20/96)

WHC-SD-WM-OTR-195, *Operational Test Report for 241-AW Tank Inlet Air Control Stations*, Rev 0 (released 7/3/96)

Stress/Seismic/Design Analyses

WHC-SD-WM-DA-210, *241AW Air Intake System Analysis*, Rev 0 (released 1/25/96)

Final Design Drawings and Engineering Change Notices (ECNs)

Drawing H-2-85614, *HEPA Filtered Inlet*, Rev 0 (released 12/13/95) with supplemental ECNs 624508, 624511, 624512, 624514, 624515, 624518

Drawing H-2-85608, *Airflow Controller*, Rev 0 (released 12/13/95) with supplemental ECNs 624509, 624510, 624523

Installation Drawings and/or Engineering Change Notices (ECNs)

ECN 614867 against H-2-70337 to install concrete pads (ECN released 11/17/95)

ECN 625020 against HVAC/vent piping drawing H-2-70337 to install air control stations/piping (ECN released 12/13/95)

ECN 624519 against dome penetration schedule drawing H-14-010502 Sheet 2 (ECN released 2/27/96)

ECN 624513 against flow diagram H-2-70336 (ECN released 1/22/96), air control station component diagram also incorporated into drawing H-14-020102, *Ventilation Tank Primary System (VTP) O & M System P & ID* (released 4/96)

Validation and Verification Records (besides ATRs and OTR)

Independent Design Review checklist documented in installation ECN 625020 (released 12/13/95)

WHC-SD-WM-TRP-247, *Test Report, Constant Air Flow Control Device for 241-AW Tank Farm*, Rev 0 (released 12/18/95)

QC/QA material and fabrication verifications and shop test data sheets evidenced in Job Control System work packages 2H-9500917/F and 2H-9501031/F

The Certificate of Conformance for the HEPA filters and housings, and HEPA filter test data (for tests performed prior to delivery), are archived as quality records under purchase order WBJ-XDV-388581

Training to Operating Crews

Operator continuing training given to shifts A, B, C, D, and T between 4/10/96 and 5/1/96 (cycle 96-7), incorporating training bulletin #TRP-2.A.16, *AW Inlet Ventilation Upgrade*.

Operating Procedures

Procedure Change Authorization ETF-96-081 to Tank Farm Plant Operating Procedure TO-060-104, *Operate the 241-AW Primary Tank Ventilation System*, revised 3/27/96

Procedure Change Authorization 242-A-96-076 to Tank Farm Operator Round Sheets TF-OR-A-03, *AP, AW Tank Farms and LERF*, revised 4/01/96

Procedure Change Authorizations ETF-96-074 through -079 to Tank Farm Alarm Response Procedures ARP-T-231-00101 through -00196, *Respond to Panel Alarms at 271-AW*, revised 3/22/96

Surveillance Procedures

Given the simplicity of the air control station design, the revisions to the ventilation system operating procedure and operator round sheets (above) provide sufficient detail to perform the necessary surveillance activities. Thus, no actual Surveillance Procedures, as such, were needed.

Preventative Maintenance Procedures

Revision 0 Change 0 to 6-TF-156, Waste Tank Plant Maintenance, Appendix TW, *241-AW Tank Inlet Filter Aerosol Test Data Sheets*, revised 3/27/96

NOTE: Given the simplicity of the air control station design, there are no expected preventative maintenance needs which are not already addressed via existing operating and maintenance procedures (above) and planned periodic testing and calibration of station components (below). Thus, no actual Preventive Maintenance Procedures, as such, were needed.

CBRS (PM/S) Data Sheets

All differential pressure gages and HEPA filters on the air control stations have been set up in the Job Control System (JCS) for periodic calibration or testing. See drawing H-14-020102, *Ventilation Tank Primary System (VTP) O & M System P & ID*, for component numbers.

Vendor Information File

Except for a few standard components, the air control stations were designed and fabricated on-site. The crucial tests on the final assemblies were performed on-site. Released design media, testing reports and validation records (above) adequately document

pertinent material and equipment information. There is no remaining vendor information which is significant enough to warrant the expense of generating and maintaining a separate vendor information file.

Spare Parts List

A recommended spare parts list is shown on drawing H-2-85614, *HEPA Filtered Inlet*, Sheet 2

Spare Parts In Stock

Spare pre-filters and HEPA filters were ordered under Purchase Requisitions 451201 and 462969, respectively. The pre-filters will be stored in the 2101M warehouse (200E Area). The HEPA filters are stored in 2101M convenient storage under stock number 7900-4629-6901.

A spare vacuum breaker and air flow controller were built under fabrication work package 2H-9501031/F and are stored in 2101M (200E Area) convenient storage as stock number 9900-4269-0001.

4.0 CONCLUSIONS

The air control stations meet the functional requirements for flow (settable from 50 to 500 cfm), tank vacuum (allow tanks to remain within the operating range of -0.5 to -4 IN WG), and accuracy (+/- 10%) as specified in WHC-SD-WM-DB-030, *Design Basis for Inlet Filters and Flow Control Devices in 241-AW Tank Farm*, Rev 0.

As reported in WHC-SD-WM-OTR-195, *Operational Test Report for 241-AW Tank Inlet Air Control Stations*, Rev 0, with all six air flow controllers set between 70 and 125 cfm, tank vacuum levels remained at approximately 1.5 IN WG. The OTR also reported that unidentified sources of tank air inleakage still exist, and recommended that attempts be made to locate and further reduce this inleakage to allow full benefit of the air control stations' capabilities (i.e., allow higher vacuum levels and/or higher flow settings). As a result of the currently achieved tank vacuum levels, an operational problem (i.e., low tank vacuum) may occur during tank farm/evaporator transfer operations. As reported in the OTR, however, isolating one or more of the air control stations (i.e., to increase tank vacuum) prior to transfer activities will reduce the magnitude of this problem by allowing the primary ventilation system to operate closer to its full capabilities.

APPENDIX A

ACCEPTANCE FOR BENEFICIAL USE CHECKLIST (FROM WHC-SD-WM-ETP-141 REV 1)

DOCUMENTATION REQUIRED for ACCEPTANCE FOR BENEFICIAL USE

Program/Project Title: AW Ventilation Upgrades ETN: 95-0031

Deliverables		Responsibility for Completion	Completion Date	Document No.
ENGINEERING				
• Engineering Task Plan (ETP)	[X]	WW Jenkins		
• Interim Safety Basis - update	[ ]			
• Safety Assessment (SA)	[ ]			
• Safety Equipment List ECN	[X]	WW Jenkins		
• USQ Screening/Evaluation	[X]	WW Jenkins		
• Safety Basis Document ECNs, as required	[X]	WW Jenkins		
• Design Basis Document	[X]	WW Jenkins		
• Functional Requirements Document	[ ]			
• Conceptual Design Report (CDR)	[ ]			
• System Design Description (SDD)	[ ]			
• Test Plan/Specifications	[ ]			
• Acceptance Test Procedures (ATPs) and Final Test Report	[X]	WW Jenkins		
• Operational Test Procedures (OPTs) and Final Test Report	[X]	WW Jenkins		
• Environmental Impact Statement	[ ]			
• Environmental Report	[ ]			
• Environmental Permit	[ ]			
• Hazardous Waste Disposal Plan/Procedures	[ ]			
• Solid Waste Disposal Plan/Procedures	[ ]			
• Stress/Seismic/Design Analysis	[X]	WW Jenkins		
• Design Specifications	[ ]			
• Equipment Specifications	[ ]			
• Procurement Specifications	[ ]			
• Construction Specifications	[ ]			
• Final Design Drawing(s) and ECN(s)	[X]	WW Jenkins		
• Installation Drawing(s) and/or ECN(s)	[X]	WW Jenkins		
• Interface Control Drawing(s) and/or ECN(s)	[ ]			
• IEFD Drawing(s) and/or ECN(s)	[ ]			
• Systems Drawing(s) and/or ECN(s)	[ ]			
• Drawing Tree	[ ]			
• Validation and Verification Records	[X]	WW Jenkins		
TRAINING				
• Training Plan	[ ]			
• Training Manuals	[ ]			
• Training to Operating Crews	[X]	MP Baka		
• Training to Maintenance Crews	[ ]			
• Training Mock-Up	[ ]			
OPERATIONS/MAINTENANCE				
• Operating and Maintenance Manuals	[ ]			
• Operating Procedures	[X]	RJ Shupe		
• Surveillance Procedures	[X]	RJ Shupe		
• Calibration Procedures	[ ]			
• Preventative Maintenance Procedures	[X]	EG Staples		
• Repair/Maintenance Procedures	[ ]			
• Functional Check Procedures	[ ]			
• CBRS (PM/S) Data Sheets	[X]	WW Jenkins		
PROCUREMENT ACTIVITIES				
• Vendor Information Files	[X]	WW Jenkins		
• Comprehensive Equipment List	[ ]			
• Spare Parts List	[X]	WW Jenkins		
• Spare Parts in Stock	[X]	WW Jenkins		

DISTRIBUTION SHEET

To	From	Page 1 of 1
Distribution	TWRS Equipment Engineering, 74F10	Date 7/3/96
Project Title/Work Order		EDT No. EDT-613031
TWRS/Ventilation System Upgrades/N2169		ECN No.

Name	MSIN	Text With All Attach.	Text Only	Attach./ Appendix Only	EDT/ECN Only
J.E. Geary	S5-07	X			
W.W. Jenkins	S2-24	X			
G.D. (Jerry) Johnson	S7-15	X			
D.P. Kerwick	R2-88	X			
J.R. Kriskovich	S2-24	X			
J.W. Lentsch	S7-15	X			
D.J. Minteer	S2-24	X			
R.J. Nicklas	R1-43	X			
L.D. Rakestraw	S5-05	X			
K.A. White	S5-13	X			
C.M. Winkler	S5-14	X			
J.F. Thompson	H5-57	X			
Central Files A3-88 ~~18-04~~		X			