U.S. Department of Energy
Office of River Protection
P.O. Box 450
Richland, Washington 99352

0060391

MAY 2 2 2003

03-TPD-048

Mr. Michael A. Wilson, Program Manager
Nuclear Waste Program
State of Washington
Department of Ecology
1315 W. Fourth Avenue
Kennewick, Washington 99336

RECEIVED
SEP 2 4 2003
EDMC

Dear Mr. Wilson:

TRANSMITTAL OF DELIVERABLE FOR MILESTONE M-45-03D COMPLETE TANK 241-S-112 DESIGN AND MILESTONE M-45-05B COMPLETE TANK 241-S-102 DESIGN

References:

1. U. S. DOJ and ORP letter from M. J. Zevenbergen and S. D. Stubblebine, to J. E. Shorin, Ecology, "State of Washington, Dep't of Ecology v. United States Dep't of Energy (E.D. Wash.) No. CT-99-5076-EFS," mjz, 90-7-3-05143, dated, April 18, 2003.

2. Ecology letter from J. E. Shorin to Michael J. Zevenbergen, and S. D. Stubblebine, U.S. DOJ and ORP, "State of Washington, Department of Ecology v. United States Department of Energy, USDC Eastern District of Washington No. CT-99-5076-EFS, dated, April 18, 2003.

The U.S. Department of Energy, Office of River Protection is informing the Washington State Department of Ecology that the final designs for Tanks 241-S-102 and 241-S-112 have been completed per the requirements documented in the Referenced letters. The designs for both tanks have been approved for fabrication and construction, and fabrication is underway for Tank 241-S-112 Retrieval System. Therefore, the requirements of Milestone M-45-03D and M-45-05B have been met.

Attachments 1 and 2 contain tables of the released drawings and one set each of the Piping and Instrumentation Diagrams for Tanks 241-S-102 and 241-S-112, respectively. Because the same technology will be used to retrieve both tanks, many of the retrieval system drawings contained in the Tank S-112 drawing list also apply to Tank S-102. Therefore, the drawing list for Tank S-102 is less extensive, and contains only those components necessary to interface the retrieval system to Tank S-102. Attachments 3 and 4 contain the Leak Detection Mitigation and Monitoring strategy to be used for Tanks S-102 and S-112, respectively.

If you have any questions, please contact me (509) 376-2247, or your staff may contact Jim Thompson, Tank Farms Programs and Projects Division, (509) 373-9757.

Sincerely,

James E. Rasmussen

James E. Rasmussen, Director
Environmental Division

TPD:JFT

Attachments
1. Piping and Instrumentation Diagrams Tank 241-S-102
2. Piping and Instrumentation Diagrams Tank 241-S-112
3. Leak Detection Mitigation and Monitoring for Tank S-102
4. Leak Detection Mitigation and Monitoring for Tank S-112

cc w/attachs:
K. E. Carpenter, CHG
S. B. Fowler, CHG
M. N. Jarayssi, CHG
T. L. Hissong, CHG
J. J. Lyons, Ecology
TPA Administrative Record

INCOMING CORRESPONDENCE COVERSHEET

Author	Addressee	Correspondence No.
J. E. Rasmussen/ORP	M. A. Wilson/DOEC	0302084 DOE-ORP: 03-TPD-048

Subject: TRANSMITTAL OF DELIVERABLE FOR MILESTONE M-45-03D COMPLETE TANK 241-S-112 DESIGN AND MILESTONE M-45-05B COMPLETE TANK 241-S-102 DESIGN

DISTRIBUTION

Name

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ATTACHMENT 1

Tank 241-S-102 Table of Released Drawings and One Set Piping and Instrumentation Diagrams (P&ID)

S-102 Project Engineering Documentation Summary (5-21-03)

Document #	RPP/Dwg #	Title	Date Released
EDT's Releasing RPPs			
EDT-625592	RPP-7512	Tank 241-S-102 Waste Retrieval System Level 2 Specification	7/30/2001
EDT-631789	RPP-10604	Ex-Tank LDMM Technology Assessment and Down Select Report	5/08/2002
EDT-633273	RPP-10901	Hanford Federal Facility Agreement and Consent Order Milestone M-45-05-T-16: S-102 Initial Waste Retrieval Functions and Requirements	8/13/2002
EDT-634038	RPP-16298	Ninety Percent Design Review Report for S-102 Waste Retrieval Project	5/14/2003
EDT-634318	RPP-10904	Ex-Tank LDMM Performance Evaluation Test Specification	8/08/2002
EDT's Releasing Drawings			
EDT-634040	H-14-106149 Sh 1-4	Piping & Instrumentation Diagram	5/19/2003
*	H-14-030033 Sh 33	Electrical (EDS) One-Line Diagram	*
*	H-14-030033 Sh 34	Water Dist Skid Panel Board Schedule	*
*	H-14-030033 Sh 35	Field Electrical Skid Panel Board Schedule	*
*	H-14-106146 Sh 1	Drawing Tree	*
*	H-14-106-146 Sh 2	Calculation List	*
*	H-14-106147 Sh 1	Process Flow Diagram	*
*	H-14-106148 Sh 1	Ventilation Process Flow Diagram	*
*	H-14-106150 Sh 1	Active Ventilation P&ID	*
*	H-14-106151 Sh 1	Civil Site Plan	*
*	H-14-106151 Sh 2	Enlarged Site Plan	*
*	H-14-106151 Sh 3	Civil Ste Plan Remote Water Distributor Installation	*
*	H-14-106151 Sh 4	Civil Ste Plan Central Water Distributor Installation	*
*	H-14-106151 Sh 5	Enlarged Site Plan Water Hose Installation	*
*	H-14-106152 Sh 1	Electrical Site Plan	*
*	H-14-106152 Sh 2	Enlarged Electrical Site Plan	*
*	H-14-106154 Sh 1-2	Riser Extension Assembly	*
*	H-14-106154 Sh 3	Riser Extension Sections and Details	*
*	H-14-106154 Sh 4-5	Riser Extension Details	*
*	H-14-106155 Sh 1-7	Manifold Assembly	*
*	H-14-106156 Sh 1-2	Flex Jumper Assemblies	*
*	H-14-106157 Sh 1-3	Pump Pit Cover Plate Assembly	*
*	H-14-106158 Sh 1	Pump Pit Heat Trace Junction Box Assembly	*
*	H-14-106158 Sh 2	Pump Pit Heat Trace Wiring Diagram	*
*	H-14-106161 Sh 1	Inlet Filter Cover Plate	*
*	H-14-106161 Sh 2	Inlet Filter Cover Plate Sections and Details	*
*	H-14-106162 Sh 1	Ventilation Installation Details	*
*	H-14-106162 Sh 2	Demister Installation Details	*
*	H-14-106162 Sh 3	Demister Support Stands Installation	*
*	H-14-106162 Sh 4	Ventilation Inlet Filter Installation	*
*	H-14-106167 Sh 1	Water Dist Skid Conduit & Wire Run List4	*

* Release of Drawing Pending Completion of Fabrication

Document #	RPP/Dwg #	Title	Date Released
*	H-14-106170 Sh 1	Water Dist Skid Piping & Instrumentation Diagram	*
*	H-14-106174 Sh 1	Field Electrical Skid Conduit Schedule & Wire Run List	*
*	H-14-106182 Sh 1-2	Conduit Schedule and Wire Run List	*
*	H-14-106183 Sh 1	Electrical Grounding Diagram	*
*	H-14-106184 Sh 1	Heat Trace Cable Schedule	*
*	H-14-106187 Sh 1	Control System Architecture	*
*	H-14-106188 Sh 1	Communication Loop Diagram	*
*	H-14-106188 Sh 2	Communication Cable Layout	*
*	H-14-106188 Sh 3	Communication Cable Assemblies	*
Engineering Change Notices			
ECN-672607	RPP-7512, Rev. 1	Tank 241-S-102 Initial Waste Retrieval System Level 2 Specification	7/08/2002
ECN-720223 R0	RPP-7512, Rev. 2	Tank 241-S-102 Initial Waste Retrieval System Level 2 Specification	3/10/2003

* Release of Drawing Pending Completion of Fabrication

Ltr. 4

MAY 19 2003

ENGINEERING DATA TRANSMITTAL

1. EDT 634040

2. To: (Receiving Organization) Distribution	3. From: (Originating Organization) Tank Farms Engineering	4. Related EDT No.: N/A
5. Proj./Prog./Dept./Div.: S-102	6. Design Authority/Design Agent/Cog. Engr.: GP Janicek	7. Purchase Order No.: N/A
8. Originator Remarks: The following are new system drawings for the S-102 Project. Designator for these drawings is Q.		9. Equip./Component No.: N/A
		10. System/Bldg./Facility: 241-S-102
		12. Major Assm. Dwg. No.: N/A
11. Receiver Remarks:	11A. Design Baseline Document? ☒ Yes ☐ No	13. Permit/Permit Application No.: N/A
		14. Required Response Date: May 2003

15. DATA TRANSMITTED

(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	H-14-106149	1	0	Piping & Instrumentation Diagram	Q	1	1	1
2	H-14-106149	2	0	Piping & Instrumentation Diagram	Q	1	1	1
3	H-14-106149	3	0	Piping & Instrumentation Diagram	Q	1	1	1
4	H-14-106149	4	0	Piping & Instrumt. Diagram	Q	1	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

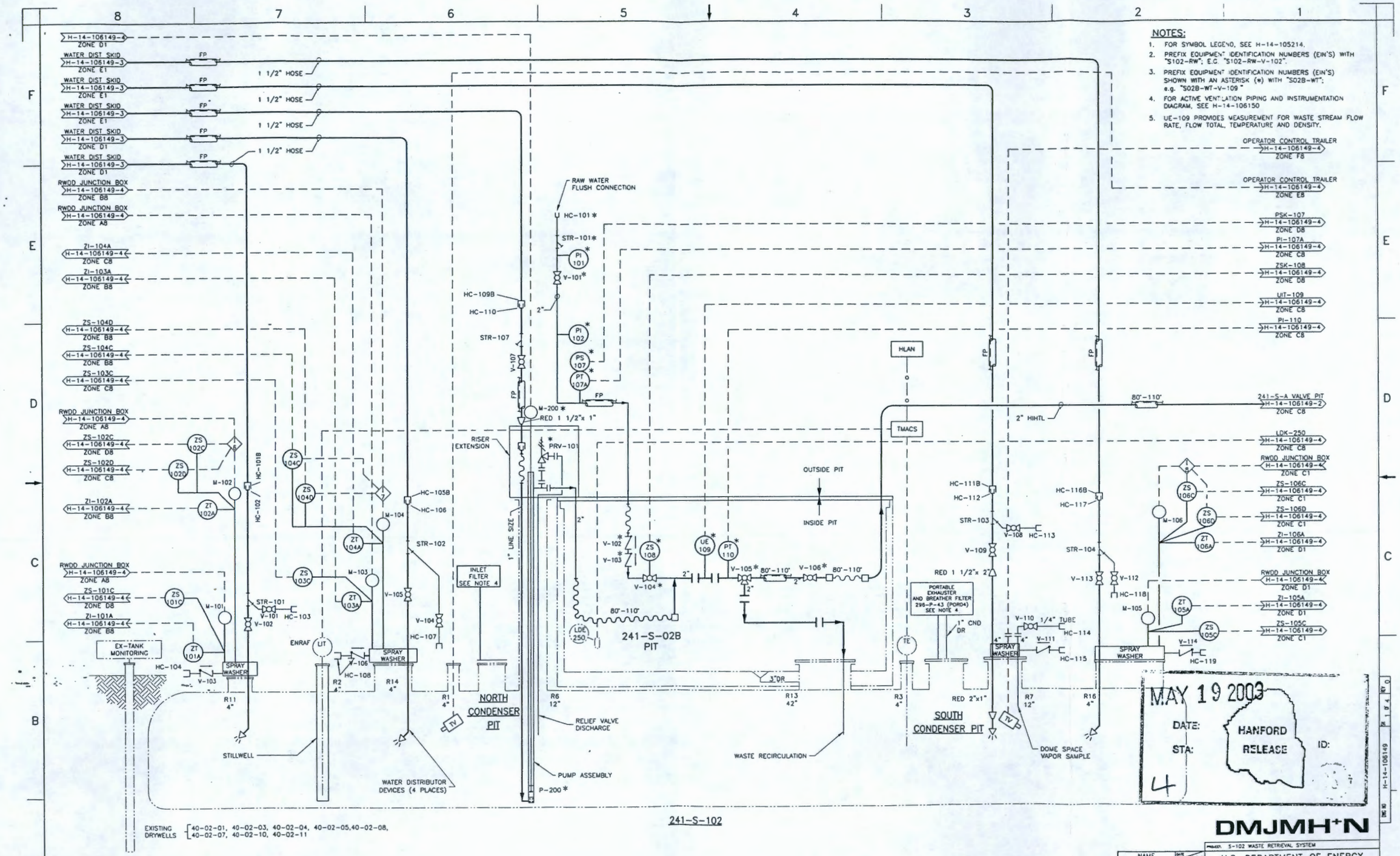
17. SIGNATURE/DISTRIBUTION (See Approval Designator for required signatures)

(G) Reason	(H) Disp.	(J) Name	(K) Signature	(L) Date	(M) MSIN	(G) Reason	(H) Disp.	(J) Name	(K) Signature	(L) Date	(M) MSIN
1	1	Design Authority GP Janicek		5/16/03	S7-12	1	1	RE Bauer		5/16/03	
1	1	Design Agent J-K Luey		5/16/03	H0-56	1	1	JN Doeler		5/16/03	T4-07
1	1	Cog. Eng. CE Hanson		5/16/03	S7-66	1	1	JF Renholds		5/16/03	S7-24
1	1	Cog. Mgr. WT Thompson		5-16-03	S1-70						
1	1	QA JF Bores		5/16/03	R2-87						
		Safety									
		Env.									

18.	19.	20.	21. DOE APPROVAL (if required)
TE Rainey Signature of EDT Originator Date: 5/16/03	RE Bauer Authorized Representative for Receiving Organization Date: 5/16/03	GP Janicek Design Authority/ Cognizant Manager Date: 5/16/03	Ctrl No. _____ ☐ Approved ☐ Approved w/comments ☐ Disapproved w/comments

NOTES:

1. FOR SYMBOL LEGEND, SEE H-14-105214.
2. PREFIX EQUIPMENT IDENTIFICATION NUMBERS (EIN'S) WITH "S102-RW"; E.G. "S102-RW-V-102".
3. PREFIX EQUIPMENT IDENTIFICATION NUMBERS (EIN'S) SHOWN WITH AN ASTERISK (*) WITH "S02B-WT"; e.g. "S02B-WT-V-109 "
4. FOR ACTIVE VENTILATION PIPING AND INSTRUMENTATION DIAGRAM, SEE H-14-106150
5. UE-109 PROVIDES MEASUREMENT FOR WASTE STREAM FLOW RATE, FLOW TOTAL, TEMPERATURE AND DENSITY.



EXISTING DRYWELLS {40-02-01, 40-02-03, 40-02-04, 40-02-05, 40-02-08, 40-02-07, 40-02-10, 40-02-11}

241-S-102

DMJMH+N

NAME	DATE
NP FOX	04/30/03
DA KING	04/30/03

PROJECT: S-102 WASTE RETRIEVAL SYSTEM

U.S. DEPARTMENT OF ENERGY
Office of River Protection

PIPING & INSTRUMENTATION DIAGRAM

SIZE F | BLDG NO 24-S | PROJ NO 7004 | DWG NO H-14-106149 | REV 0

SCALE NONE | EIN 634040 | SHEET 1 OF 4

20612

DWG NO	TITLE
H-14-106150	ACTIVE VENTILATION P&ID

DRAWING TRACEABILITY LIST

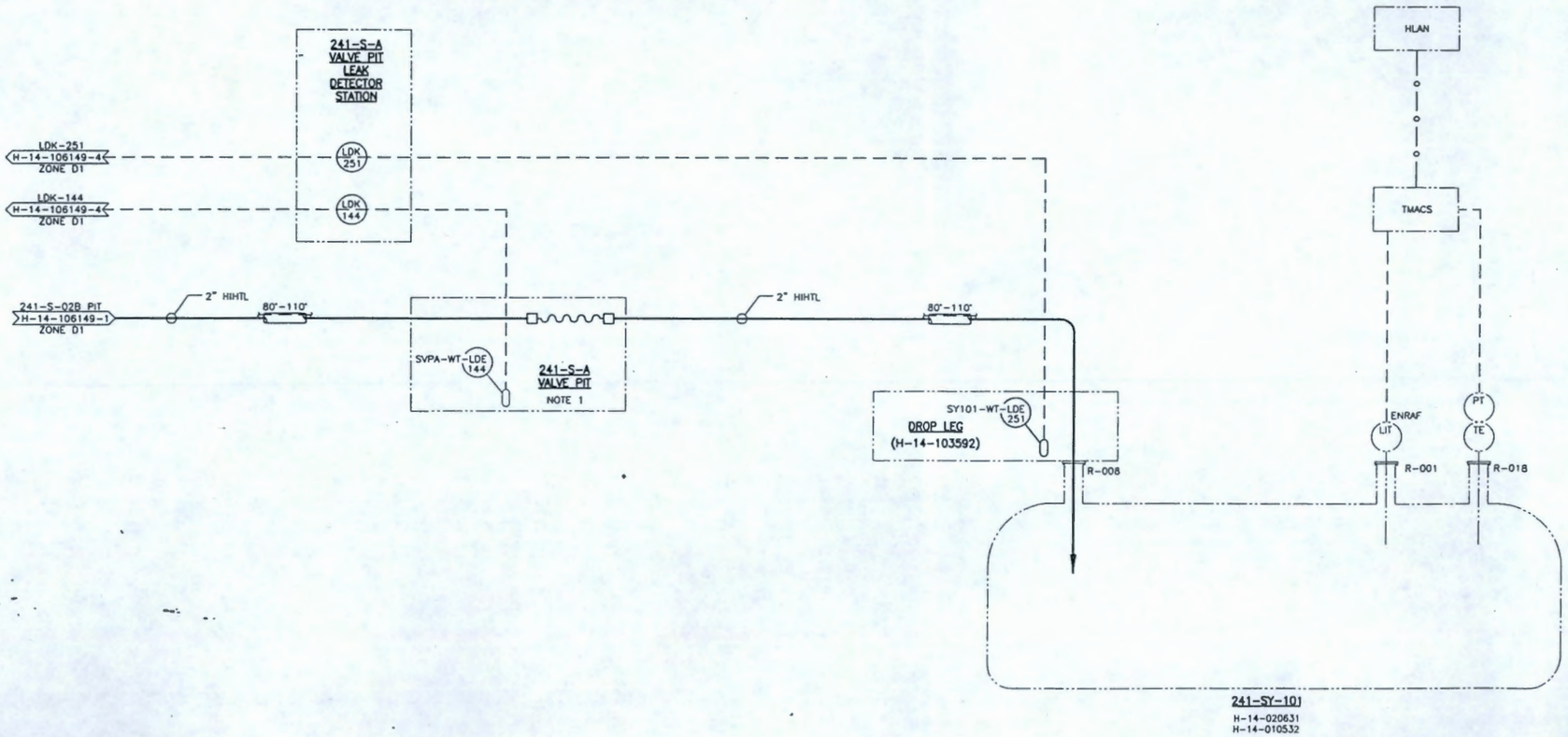
REFERENCES	
REF NUMBER	TITLE
H-14-105214	SYMBOL LEGEND
H-14-106146	DRAWING TREE

NEXT USED ON END ITEM

REVISIONS

REV NO	DESCRIPTION	REQ BY	DATE	COMPANY
0				

NOTE:
1. FOR CURRENT PIT WASTE ROUTING CONFIGURATION, SEE H-14-104176.



MAY 19 2003
DATE:
STA: 4
HANFORD RELEASE
ID: 21

DMJMH+N

H-14-103592	RAPID MITIGATION ASSD		
H-14-010532	DOME PENETRATION SCHED TANK 241-SY-101	H-14-105214	SYMBOL LEGEND
H-14-104176	200W ROUTING BOARD	H-14-106146	DRAWING TREE
H-14-020631	WASTE STORAGE TANK P&ID	REF NUMBER	TITLE
DWG NO	TITLE	REFERENCES	
DRAWING TRACEABILITY LIST		NEXT USED ON END ITEM	

REVISIONS

NAME	DATE	COMPANY
NP FOX	04/03	
DA KING	04/03	

PROJECT: S-102 WASTE RETRIEVAL SYSTEM

U.S. DEPARTMENT OF ENERGY
Office of River Protection

PIPING & INSTRUMENTATION DIAGRAM

SIZE	BLDG NO	INDEX NO	DWG NO	REV
F	241S 241SY	7004	H-14-106149	0

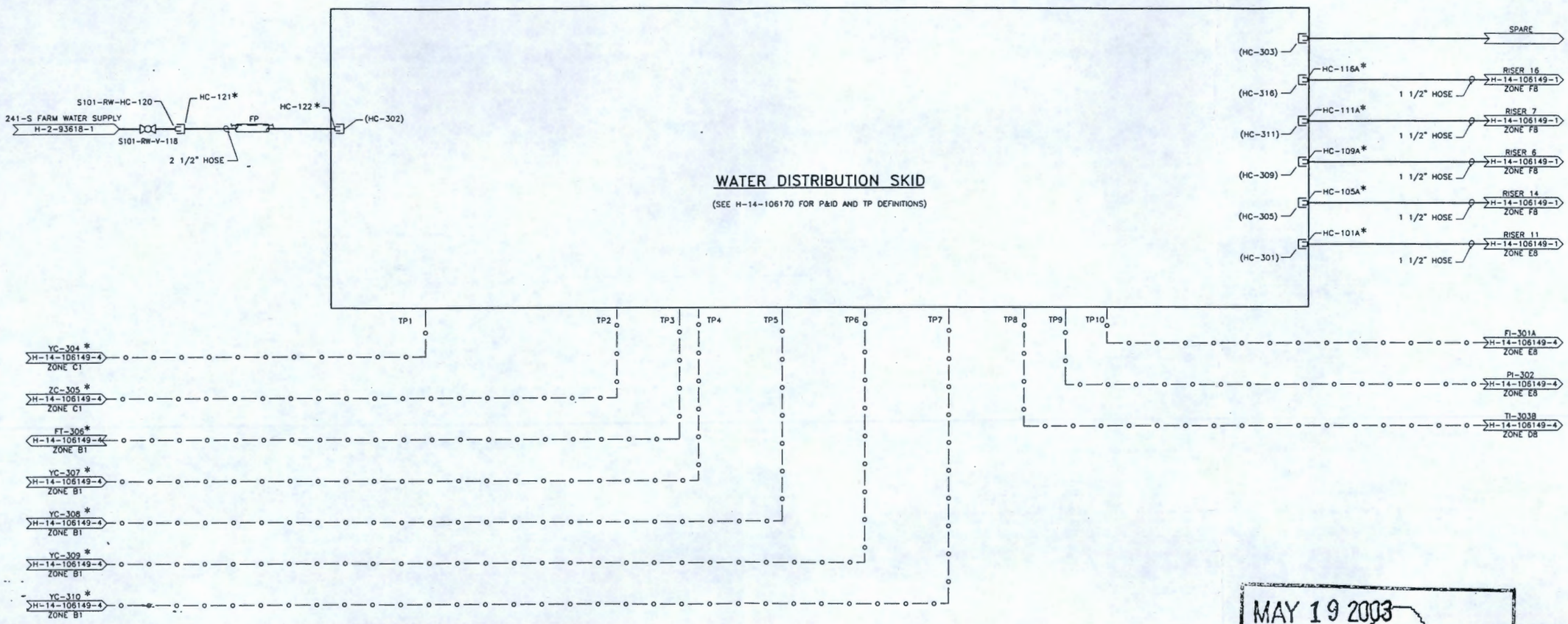
SCALE NONE | EDF 634040 | SHEET 2 OF

11718

DWG NO H-14-106149 | SH 2 OF | REV 0

NOTE:

1. PREFIX EQUIPMENT IDENTIFICATION NUMBERS (EIN'S) SHOWN WITH AN ASTERISK (*) WITH "S102-RW"; E.G., "S102-RW-HC-248".



MAY 19 2003
DATE:
STA: 4
HANFORD RELEASE
ID: 21

DMJMH+N

PROJECT: S-102 WASTE RETRIEVAL SYSTEM

U.S. DEPARTMENT OF ENERGY
Office of River Protection

PIPING & INSTRUMENTATION DIAGRAM

NAME	DATE
DRAWN BY NP FOX	04/03
CHECK DR. KING	04/03

DWG NO	TITLE
H-14-106170	WDS P&ID

DRAWING TRACEABILITY LIST

REF NUMBER	TITLE
H-14-105214	SYMBOL LEGEND
H-14-106146	DRAWING TREE

REFERENCES

NEXT USED ON END ITEM

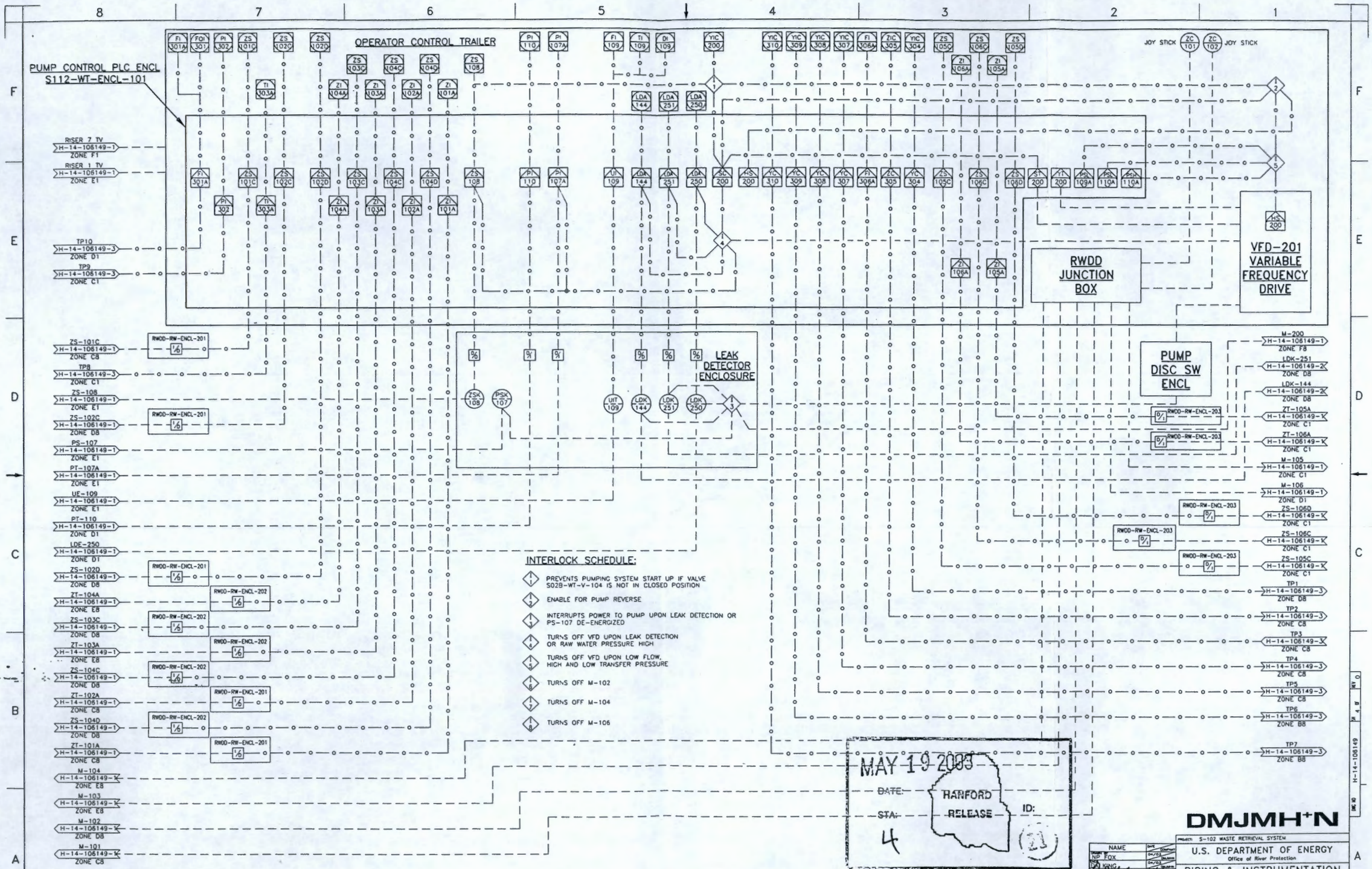
REVISIONS

SIZE	BLDG NO	INDEX NO	DWG NO	REV
F	241S	7004	H-14-106149	0

SCALE NONE | EDT 634040 | SHEET 3 OF

25699

DWG NO H-14-106149 | SH 3 OF | REV 0



OPERATOR CONTROL TRAILER
PUMP CONTROL PLC ENCL
S112-WT-ENCL-101
JOY STICK
RWDD JUNCTION BOX
VFD-201 VARIABLE FREQUENCY DRIVE
LEAK DETECTOR ENCLOSURE
PUMP DISC SW ENCL
RISER 7 TV
RISER 1 TV
TP10
TP9
ZS-101C
TP8
ZS-108
ZS-102C
PS-107
PT-107A
UE-109
PT-110
LDE-250
ZS-102D
ZT-104A
ZS-103C
ZT-103A
ZS-104C
ZT-102A
ZS-104D
ZT-101A
M-104
M-103
M-102
M-101
M-200
LDK-251
LDK-144
ZT-105A
ZT-106A
M-105
M-106
ZS-106D
ZS-106C
ZS-105C
TP1
TP2
TP3
TP4
TP5
TP6
TP7
RWDD-RW-ENCL-201
RWDD-RW-ENCL-202
RWDD-RW-ENCL-203
INTERLOCK SCHEDULE:
1 PREVENTS PUMPING SYSTEM START UP IF VALVE S02B-WT-V-104 IS NOT IN CLOSED POSITION
2 ENABLE FOR PUMP REVERSE
3 INTERRUPTS POWER TO PUMP UPON LEAK DETECTION OR PS-107 DE-ENERGIZED
4 TURNS OFF VFD UPON LEAK DETECTION OR RAW WATER PRESSURE HIGH
5 TURNS OFF VFD UPON LOW FLOW, HIGH AND LOW TRANSFER PRESSURE
6 TURNS OFF M-102
7 TURNS OFF M-104
8 TURNS OFF M-106
MAY 19 2003
DATE:
STA: 4
HANFORD RELEASE
ID: 21
DMJMH+N
PROJECT: S-102 WASTE RETRIEVAL SYSTEM
U.S. DEPARTMENT OF ENERGY
Office of River Protection
PIPING & INSTRUMENTATION DIAGRAM
NAME
NP FOX
DO KING
SIZE F
BLDG NO 241S
INDEX NO 7004
DWG NO H-14-106149
REV 0
SCALE NONE
EDT 634040
SHEET 4 OF
H-14-105214 SYMBOL LEGEND
H-14-106146 DRAWING TREE
REF NUMBER
TITLE
REFERENCES
NEXT USED ON END ITEM
DWG NO
TITLE
DRAWING TRACEABILITY LIST
REVISIONS

ATTACHMENT 2

Tank 241-S-112 Table of Released Drawings and One Set Piping and Instrumentation Diagrams (P&ID)

S-112 Project Engineering Documentation Summary

Document #	RPP/Dwg #	Title	Date Released
EDT's Releasing RPPs			
EDT-623258	RPP-14684	System and Software Verification and Validation Test Report for Portable Exhauster, POR-008	4/02/2003
EDT-624337	RPP-7526	Preliminary Engineering Report for the S-112 Saltcake Waste Retrieval Technology Demonstration Project	3/21/2001
EDT-625306	RPP-10760	Assessment of Sampling and Characterization Needs for Retrieval of Single Shell Tank 241-S-112	6/13/2002
EDT-627963	RPP-10135	S-112 Project Engineering Evaluations	5/06/2002
EDT-627971	RPP-8791	Project Execution Plan for Tank S-112 Saltcake Waste Retrieval Technology Demonstration	9/25/2001
EDT-628433	RPP-7010	Test Objectives for the Saltcake Dissolution Retrieval Demonstration	9/22/2000
EDT-630296	RPP-13801	Radiological Design Review Screening – S-Complex Hose-In-Hose Transfer System for Interim Stabilization and Retrieval Projects	3/05/2003
EDT-630510	RPP-10303	S-112 Project Data and Instrumentation Requirements	4/03/2002
EDT-631013	RPP-7757	Data Quality Objectives to Support the Saltcake Dissolution Retrieval Demonstration in Tank 241-S-112	3/19/2001
EDT-631789	RPP-10604	Ex-Tank LDMM Technology Assessment and Down Select Report	5/08/2002
EDT-632307	RPP-7598	Tank 241-S-112 Waste Retrieval System Level 2 Specification	8/13/2001
EDT-632902	RPP-7825	Single-Shell Tank S-112 Full Scale Saltcake Waste Retrieval Technology Demonstration Functions and Requirements	11/02/2001
EDT-632731	RPP-9014	Process Hazard Evaluation for the S-112 Saltcake Waste Retrieval Technology Demonstration Project Preconceptual Design	2/11/2002
EDT-633376	RPP-10437	S-112 Project Data Management Plan	7/25/2002
EDT-633377	RPP-10884	S-112 Project Proof-of-Principle Test Plan/Procedure for Cold Test Facility	6/13/2002
EDT-633378	RPP-11697	Procurement Specification for the S-112 Hose-in-Hose	8/27/2002
EDT-633386	RPP-11885	Calculations for S-112 Retrieval	9/30/2002
EDT-633401	RPP-12160	Specification for 241-S 500 kVA Pad-Mounted Transformer	12/19/2002
EDT-633405	RPP-10562	System Design Description for the S-112 Saltcake Waste Retrieval Technology Demonstration Project	4/01/2003
EDT-633406	RPP-15298	S-112 Project WRS Component Vulnerability Assessment	4/04/2003
EDT-634024	RPP-14137	Product Definition Specification for S-Farm Project Waste Retrieval System Monitor & Control System	1/16/2003
EDT-634025	RPP-14214	Product Quality Assurance Plan for S-Farm Waste Retrieval System Monitoring and Control System	1/23/2003
EDT-634031	RPP-10413	Tank S-112 Saltcake Waste Retrieval Demonstration Project Leak Detection, Monitoring and Mitigation Strategy	2/19/2003
EDT-634032	RPP-14604	Ninety Percent Design Review Report for S-112 Saltcake Waste Technology Demonstration Project Accelerated Waste Retrieval System	1/29/2003
EDT-634033	RPP-14606	Performance Assessment of HRR-SCRT, ERT-PET, and ERT-LET Resistivity Ex-Tank Leak Detection Methods – Fiscal Year 2002-2003	3/25/2003
EDT-634680	RPP-10520	Utility Assessment for the S-112 Saltcake Waste Retrieval Technology Demonstration Project	6/28/2002
EDT-634318	RPP-10904	Ex-Tank LDMM Performance Evaluation Test Specification	8/08/2002
EDT-634348	RPP-12588	S-112 Saltcake Waste Retrieval Technology Demonstration Project Risk Management Plan	9/30/2002
EDT-634349	RPP-14629	Construction Specification for S-112 Project Infrastructure Upgrades	2/18/2003
EDT-634681	RPP-11521	Decommissioning Plan for S-112 Saltcake Waste Retrieval Technology Demonstration Project	7/31/2002
EDT-635923	RPP-12743	Design Description of Environmental Compliance Features – Hose-in-Hose Transfer Lines for 244-AR Interim Stabilization	12/10/2002

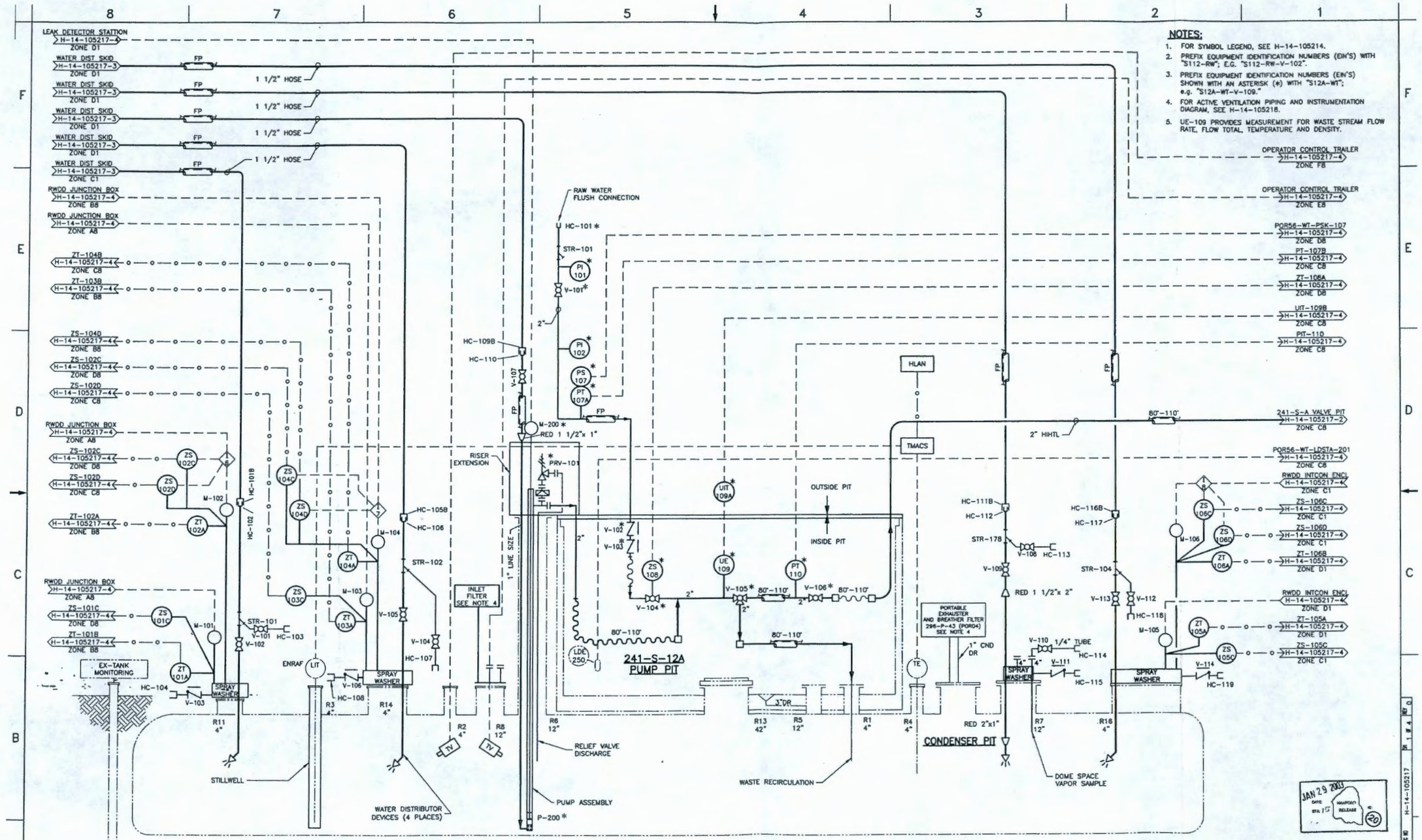
Document #	RPP/Dwg #	Title	Date Released
EDT-635924	RPP-12711	Temporary Waste Transfer Line Management Program Plan	12/10/2002
EDT-635928	RPP-14078	Failure Analysis of the S/SX Inter-farm Hose-in-Hose Transfer Line	12/31/2002
EDT-635930	RPP-13369	Spec For Hose in Hose Transfer Lines for 241S FARM Retrieval Program	12/18/2002
EDT-636504	RPP-15449	White Paper – Ex-Tank Resistivity LDM Performance Testing and Strategy for Single-Shell Tank Deployment Demonstration	3/25/2003
EDT-636506	RPP-14685	Software Design Description for Tank Farm Retrieval Operation Primary Ventilation System (POR-03, POR-04, POR-008)	4/02/2003
EDT-636529	RPP-15693	ANSI N13.1 Compliance Matrix for POR04 Exhauster	4/23/2003
EDT-636761	RPP-15841	Set Point Analysis Report for S-112 Waste Retrieval Operations	4/24/2003
EDT-636803	RPP-15085	Process Control Plan for Saltcake Dissolution Retrieval Demonstration in Tank 241-S-112	5/05/2003
EDT's Releasing Drawings			
EDT-632508	H-14-105793 Sh 1-2 H-14-105794	S Farm Camera Installation Details Piping & Instrumentation Diagram – S Farm Video Equipment	4/14/2003
EDT-633404	H-14-105473	Infrastructure Conduit Schedule & Wire Run List	3/06/2003
EDT-633407	H-14-105232 Sh 1-2 H-14-105221 Sh 1-2 H-14-105500 Sh 1-2	Central Electrical Distribution Skid Skid Base Assemblies Central Elec Dist Skid Instrument Enclosure	5/05/2003
EDT-633408	H-14-105222 Sh 1-2 H-14-105230	Central Water Distributor Central Spray Washer Assembly	5/05/2003
EDT-633409	H-14-105227 Sh 1-2	4" Spray Washer	4/30/2003
EDT-633410	H-14-105229 Sh 1-2	Condenser Pit Cover	5/05/2003
EDT-633411	H-14-105225	Stilling Well Assembly	5/05/2003
EDT-633412	H-14-105249	Dome Vapor Space Sample Port Assembly	5/05/2003
EDT-633417	H-14-105491	Valve Handle Assemblies	5/05/2003
EDT-633418	H-14-105480 Sh 1-2	Pump Pit Cover Plate Assembly	5/19/2003
EDT-633419	H-14-105235 Sh 1 H-14-105236 Sh 1-2 H-14-105498 Sh 1-2 H-14-105499 Sh 1-2	Operator Control Trailer Drawings	5/14/2003
EDT-633420	H-14-105482 Sh 1	Pump Recirculation Assembly	5/13/2003
EDT-633421	H-14-105233 Sh 1-3	Water Distributor Support Stand Assembly & Details	5/14/2003
EDT-634030	H-14-105213 Sh 1-2 H-14-105214 Sh 1-2 H-14-105215 H-14-105216 H-14-105217 Sh 1-4 H-14-105218 H-14-105231 Sh 1-5 H-14-105234 H-14-105237 Sh 1-3 H-14-105239 Sh 1-3 H-14-105240 Sh 1-2 H-14-105241 Sh 1-2	Drawing Tree Symbol Legend Process Flow Diagram Ventilation Process Flow Diagram Piping & Instrumentation Diagram Active Ventilation P&ID Civil Site Plan Control System Architecture Communication Loop Diagram Transformer Pad Layout and Elevation Leak Detection Elementary Diagrams 120VAC Electrical Site Plan	1/29/2003

Document #	RPP/Dwg #	Title	Date Released
	H-14-105242 H-14-105243 Sh 1-2 H-14-105476 H-14-105487 H-14-105488	Heat Trace Cable Schedule Power Pole Elevations New Pole S-A Valve Pit Mini Power-Zone Support Assembly Electrical Grounding Diagram Electrical Duct Bank Sections & Details	
EDT-636763	H-14-105474	Disconnect Switch Support Assembly (S-112 Control Trailer)	5/08/2003
*** EDT/Drawing Release Pending Completion of Fabrication**			
*	H-14-105223 Sh 1-11	Remote Water Distributor Assembly	*
*	H-14-105489 Sh 1-2	Remote Water Distr Device Enclosure Assembly	*
*	H-14-105489 Sh 3	Remote Water Distr Device Elementary and Wiring Diagrams	*
*	H-14-105219 Sh 1-4	Water Distribution Skid Assembly	*
*	H-14-105485 Sh 1	Water Distribution Skid Instrument Enclosure Assembly	*
*	H-14-105485 Sh 2	Water Distribution Skid Instrument Enclosure Wiring Diagram	*
*	H-14-105485 Sh 3	Water Distribution Skid Instrument Enclosure Elementary Diagrams	*
*	H-14-105485 Sh 4	Water Distribution Skid Instrument Enclosure Field Wiring Diagrams	*
*	H-14-105486 Sh 1	Water Distribution Skid POR51 Heat Trace Enclosure Assembly	*
*	H-14-105486 Sh 2	Water Distribution Skid POR51 Heat Trace Enclosure Wiring Diagram	*
*	H-14-105486 Sh 3	Water Distribution Skid POR51 Heat Trace Elementary Diagram	*
*	H-14-105226 Sh 1	Demister Installation Plan	*
*	H-14-105226 Sh 2	Demister Installation Details	*
*	H-14-105226 Sh 3	Demister Support Stands Installation	*
*	H-14-105251 Sh 1-4	Portable Demister Assembly	*
*	H-14-105220 Sh 1-3	Ventilation Inlet Filter Assembly	*
*	H-14-105483 Sh 1	Field Instrument Electrical Skid Assembly	*
*	H-14-105483 Sh 2	Field Instrument Electrical Skid Weldment	*
*	H-14-105484 Sh 1-2	Leak Detection Enclosure Assembly	*
*	H-14-105484 Sh 3-5	Leak Detection Enclosure Wiring Diagram	*
*	H-14-105490 Sh 1	Pump Disconnect Switch Assembly and Wiring Diagram	*
*	H-14-105250 Sh 1	Field Instr Elec Skid POR56 Heat Trace Enclosure Assembly	*
*	H-14-105250 Sh 2	Field Instr Elec Skid POR56 Heat Trace Enclosure Wiring Diagram	*
*	H-14-105250 Sh 3	Field Instr Elec Skid POR56 Heat Trace Elementary Diagram	*
*	H-14-105228 Sh 1-6	Manifold Assembly	*
*	H-14-105252 Sh 1-2	Flex Jumper Assemblies	*
*	H-14-105481 Sh 1	Riser Extension Assembly	*
*	H-14-105481 Sh 2	Riser Extension Details & Sections	*
*	H-14-105481 Sh 3-4	Riser Extension Details	*
*	H-14-105479 Sh 1	Pump Pit Heat Trace Junction Box Support Assembly	*
*	H-14-105501 Sh 1	Pump Pit Heat Trace Junction Box Assembly	*
*	H-14-105501 Sh 2	Pump Pit Heat Trace Junction Box Wiring Diagram	*
*	H-14-105224 Sh 1	Water Distribution Hose Assemblies	*
*	H-14-105472 Sh 1-2	HVAC Duct and Condensate Pipe Assemblies	*

Document #	RPP/Dwg #	Title	Date Released
Engineering Change Notices			
ECN-665993	RPP-8791, Rev. 1	Project Execution Plan for Tank S-112 Saltcake Waste Retrieval Technology Demonstration	12/13/2001
ECN-665994	RPP-7526, Rev. 2	Preliminary Engineering Report for the S-112 Saltcake Waste Retrieval Technology Demonstration Project	12/13/2001
ECN-666038	H-14-103955	Hose in Hose Transfer Line (HIHTL) Connection from TK S-112 to SC Pit	10/05/2001
ECN 666041	H-14-030033 Sh 23 H-14-103951 Sh 1-3	Electrical (EDS) Panelboard Schedule HIHTL Electrical	10/25/2001
ECN-668491	RPP-7534, Rev. 1	Project Definition Criteria for 241-S-112 Saltcake Dissolution and Retrieval Demonstration	9/27/2001
ECN-668492	RPP-7526, Rev. 1	Preliminary Engineering Report for the S-112 Saltcake Waste Retrieval Technology Demonstration Project	9/27/2001
ECN-669238	RPP-7757, Rev. 1	Data Quality Objectives to Support the Saltcake Dissolution Retrieval Demonstration in Tank 241-S-112	9/12/2001
ECN-671000	RPP-7825, Rev. 0A	Single-Shell Tank S-112 Full Scale Saltcake Waste Retrieval Technology Demonstration Functions and Requirements	12/18/2001
ECN-672841	RPP-7598. Rev. 1	Tank 241-S-112 Waste Retrieval System Level 2 Specification	8/20/2002
ECN-672951	RPP-6711, Rev. 1 Supplemental	Supplemental Change to RPP-6711-R1 of Evaluation of Hose in Hose Transfer Line (HIHTL) Service Life for Interim Stabilization	4/03/2003
ECN-673102	RPP-7086, Rev. 0 Supplemental	Supplemental Change to RPP-7086-R0 for Integrity Assessment of Hose in Hose Transfer Line (HIHTL)	4/02/2003
ECN-673640	RPP-7598, Rev. 2	Tank 241-S-112 Waste Retrieval System Level 2 Specification	11/27/2002
ECN-673641	RPP-7825, Rev. 1	Single-Shell Tank S-112 Full Scale Saltcake Waste Retrieval Technology Demonstration Functions and Requirements	1/08/2003
ECN 673642	H-14-030033 Sh 29-32	Electrical (EDS) One-Line Diagram Panelboard Schedule	2/11/2003
ECN-674429	RPP-11697, Rev. 1	Procurement Specification for the S-112 Hose-in-Hose [CANCELLED PER ECN-674429]	12/18/2002
ECN 674289	H-2-73183 Sh 1-2 H-14-102597 Sh 1-3	Portable Exhauster (POR04) Removal From S-102/103/106	1/28/2003
ECN 674290	H-2-73688 Sh 2 H-2-820778 Sh 5-7 H-2-46477 Sh 1	Portable Exhauster (POR04) Removal From S-102/103/106	1/28/2003
ECN 674295	H-2-37535 Sh 1-2 H-2-46163 Sh 1 H-2-46189 Sh 1 H-2-73191 Sh 1 H-2-86268 Sh 6 H-2-817853 Sh 1, 3 H-2-817854 Sh 1 H-2-820783 Sh 2 H-2-820778 Sh 7 H-14-010633 Sh 2 H-14-020633 Sh 2 H-14-024033 Sh 7 H-14-030033 Sh 1, 13	SHMS Removal	2/18/2003
ECN 675250	H-2-46189 Sh 1 H-2-46148 Sh 7	Install Pump and Riser Extension	2/13//2003

Document #	RPP/Dwg #	Title	Date Released
	H-2-73191 Sh 1 H-14-010633 Sh 2 H-14-104176 Sh 1		
ECN 675253	H-2-73191 Sh 1 H-14-010633 Sh 2 H-14-020633 Sh 2	Remove LOW/Install Vent Inlet	2/13/2003
ECN 675257	H-2-37535 Sh 1 H-2-46189 Sh 1 H-2-73191 Sh 1 H-2-829117 Sh 1 H-14-020633 Sh 1 H-14-100867 Sht 1, 4 – 7 H-14-100869 Sh 5 H-14-102597 Sh 1-2 H-14-105218, Sh 1	Install Portable Exhauster POR04	2/26/2003
ECN 675258	H-2-73191 Sh 1 H-14-010633 Sh 2 H-14-020633 Sh 2 H-2-817634 Sh 5-7	Install ENRAF Stilling Well	2/13/2003
ECN 675259	H-2-73191	Replace Condenser Pit Cover	2/13/2003
ECN 675260	H-2-73191 Sh 1 H-14-010633 Sh 2	Install Water Distributors	2/13/2003
ECN 675261	H-2-93618 Sh 1 H-2-822350 Sh 1 H-2-822409 Sh 1 H-2-822220 Sh 1 H-2-822352 Sh 3 H-2-822500 Sh 2 H-2-822502 Sh 4 H-2-822503 Sh 1	Extend Water Supply Line	2/18/2003
ECN 675262	H-2-44511 Sh 46	Install Control Trailer	2/13/2003
ECN 720023 R0	RPP-13554, Rev. 0 RPP-13369, Rev. 0	Change Test Pressure for 4" hose of Hose-in-Hose Transfer Lines. Affects RPP-13554, Rev. 0, and RPP-13369, Rev. 0	1/29/2003
ECN 720057 R0	H-14-100867 Sh 4-5, 19 H-14-100868 Sh 1,3, 5,7 H-14-100869 Sh 1-4, 6 H-14-100870 Sh 1,3 H-14-102597 Sh 1,4 H-14-105218 Sh 1.	Modify Portable Exhauster POR04	5/02/2003
ECN 720126 R0	H-2-37535 Sh 1 H-2-73191 Sh 1	New S-112 Breather Filter	3/12/2003

Document #	RPP/Dwg #	Title	Date Released
	H-2-90718 Sh 9, 13 H-14-010633 Sh 2 H-14-020633 Sh 2 H-14-100879 Sh 4 H-14-100886 Sh 9		
ECN-720231 R0	RPP-12711, Rev. 1	Temporary Waste Transfer Line Management Program Plan	4/01/2003
ECN-720358 R0	RPP-12715, Rev. 2	Atmospheric Breather Filter Test Plan for SST Farms Y-Adapter Assemblies	4/14/2003
ECN-720371 R0	ECN 672792 H-2-34965 Sh 4 H-2-46477 Sh 1 H-14-103951 Sh 1-2 H-14-103951 Sh 5 H-14-105240 Sh 1-2	Drawing Corrections for HIHTL Heat Trace and Leak Detection	4/16/2003
ECN-720374 R0	RPP-14629, Sup.	Construction Specification for S-112 Project Infrastructure Upgrades	2/18/2003
ECN-720375 R0	H-14-105239 Sh 1-3 H-14-105241 Sh 1 H-14-105243 Sh 1-2 H-14-105488 Sh 1 H-13-000279 Sh 7	S Farm (S-112) Infrastructure Upgrades	4/15/2003
ECN-720385 R0	H-14-105231 Sh 1-2 H-14-105217 Sh 1 & 4 H-2-73191 Sh 1 H-14-010633 Sh 2	S Farm Retrieval Camera Installation	4/16/2003
ECN-720477 R0	H-2-46162 Sh 1 H-2-46163 Sh 1 H-14-030033 Sh 32 H-14-103951 Sh 1,2,5 H-14-105476 Sh 1	Jumper (Heat Traced) at S-A Valve Pit	5/08/2003
ECN-720488 R0	H-2-822350 H-2-822352	Specify Rigid Insulation for Rigid Pipes	4/29/2003
ECN-720552 R0	H-14-105229 Sh 1-2	This ECN corrects errors in the issued EDT 633410 that released drawings.	5/07/2003



NOTES:

1. FOR SYMBOL LEGEND, SEE H-14-105214.
2. PREFIX EQUIPMENT IDENTIFICATION NUMBERS (EIN'S) WITH "S112-RW"; E.G. "S112-RW-V-102".
3. PREFIX EQUIPMENT IDENTIFICATION NUMBERS (EIN'S) SHOWN WITH AN ASTERISK (*) WITH "S12A-WT"; e.g. "S12A-WT-V-109."
4. FOR ACTIVE VENTILATION PIPING AND INSTRUMENTATION DIAGRAM, SEE H-14-105218.
5. UE-109 PROVIDES MEASUREMENT FOR WASTE STREAM FLOW RATE, FLOW TOTAL, TEMPERATURE AND DENSITY.

EXISTING DRYWELLS 40-09-05, 40-09-06, 40-11-08, 40-11-09, 11-12-02, 40-12-04, 40-12-06, 40-12-07, 40-12-09

241-S-112

JAN 29 2003 DATE STA. 15 HANFORD RELEASE 20

DMJMH+N

PROJECT: S-112 ACCELERATED WASTE RETRIEVAL SYSTEM

U.S. DEPARTMENT OF ENERGY
Office of River Protection

PIPING & INSTRUMENTATION DIAGRAM

SIZE	BLDG NO	INDEX NO	DWG NO	REV
F	241S	7004	H-14-105217	0

SCALE NONE | 634030 | SHEET 1 OF 4

DWG NO	TITLE
H-14-105218	ACTIVE VENTILATION P&ID

DRAWING TRACEABILITY LIST

REF NUMBER	TITLE
H-14-105214	SYMBOL LEGEND
H-14-105213	DRAWING TREE

REFERENCES

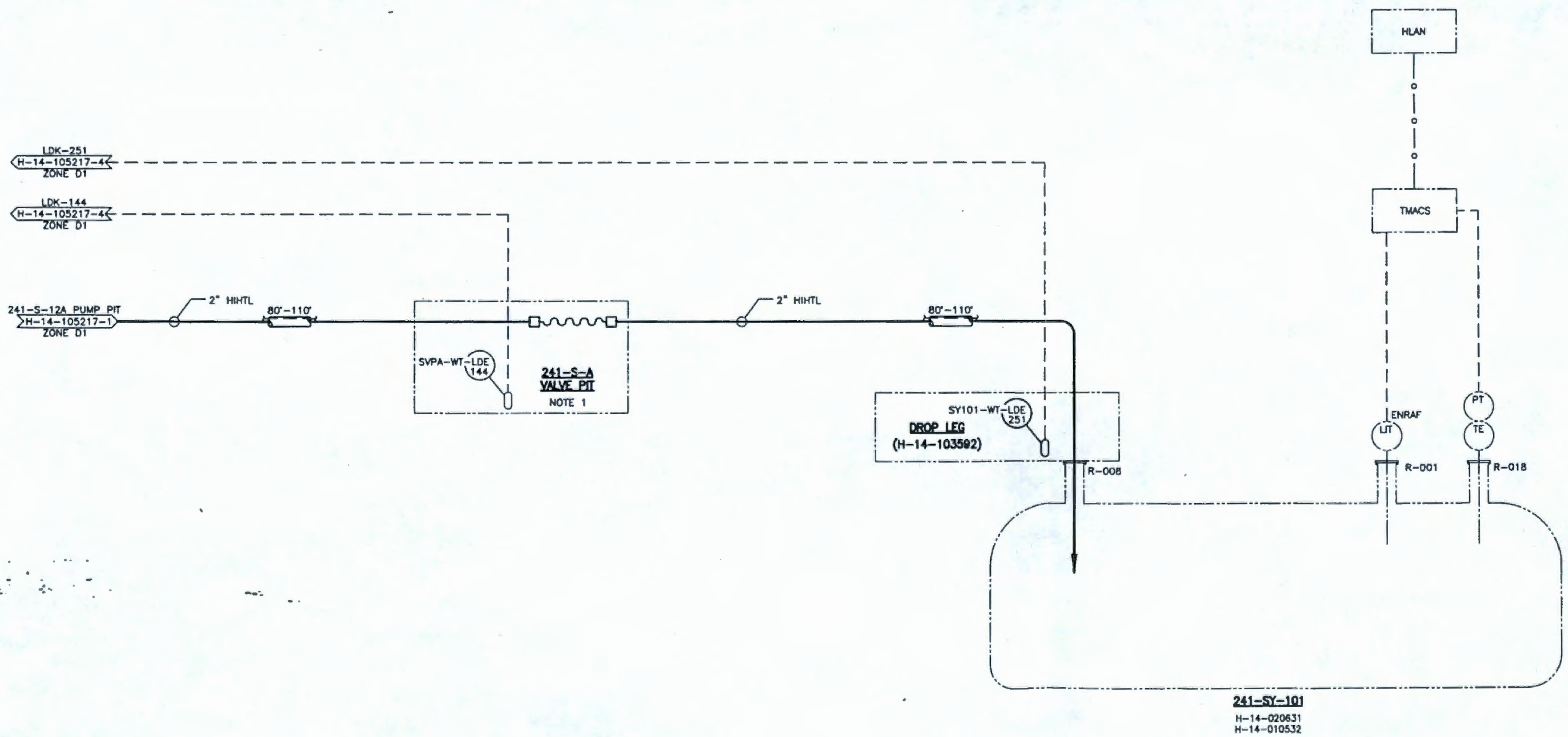
NEXT USED ON END ITEM

REVISIONS

24592

NOTE:

1. FOR CURRENT PIT WASTE ROUTING CONFIGURATION, SEE H-14-104176.



DWG NO	TITLE
H-14-103592	RAPID MITIGATION ASSD
H-14-010532	DOME PENETRATION SCHED TANK 241-SY-101
H-14-104176	200W ROUTING BOARD
H-14-020631	WASTE STORAGE TANK P&ID

DRAWING TRACEABILITY LIST

REF NUMBER	TITLE
H-14-105214	SYMBOL LEGEND
H-14-105213	DRAWING TREE

REFERENCES

NEXT USED ON H-14-105217-1

REVISIONS

JAN 29 2003 DATE: HANFORD RELEASE ID: 20

DMJMH+N

S-112 ACCELERATED WASTE RETRIEVAL SYSTEM

U.S. DEPARTMENT OF ENERGY
Office of River Protection

PIPING & INSTRUMENTATION DIAGRAM

NAME	
NP FOX	

SIZE	BLDG NO	INDEX NO	DWG NO	REV
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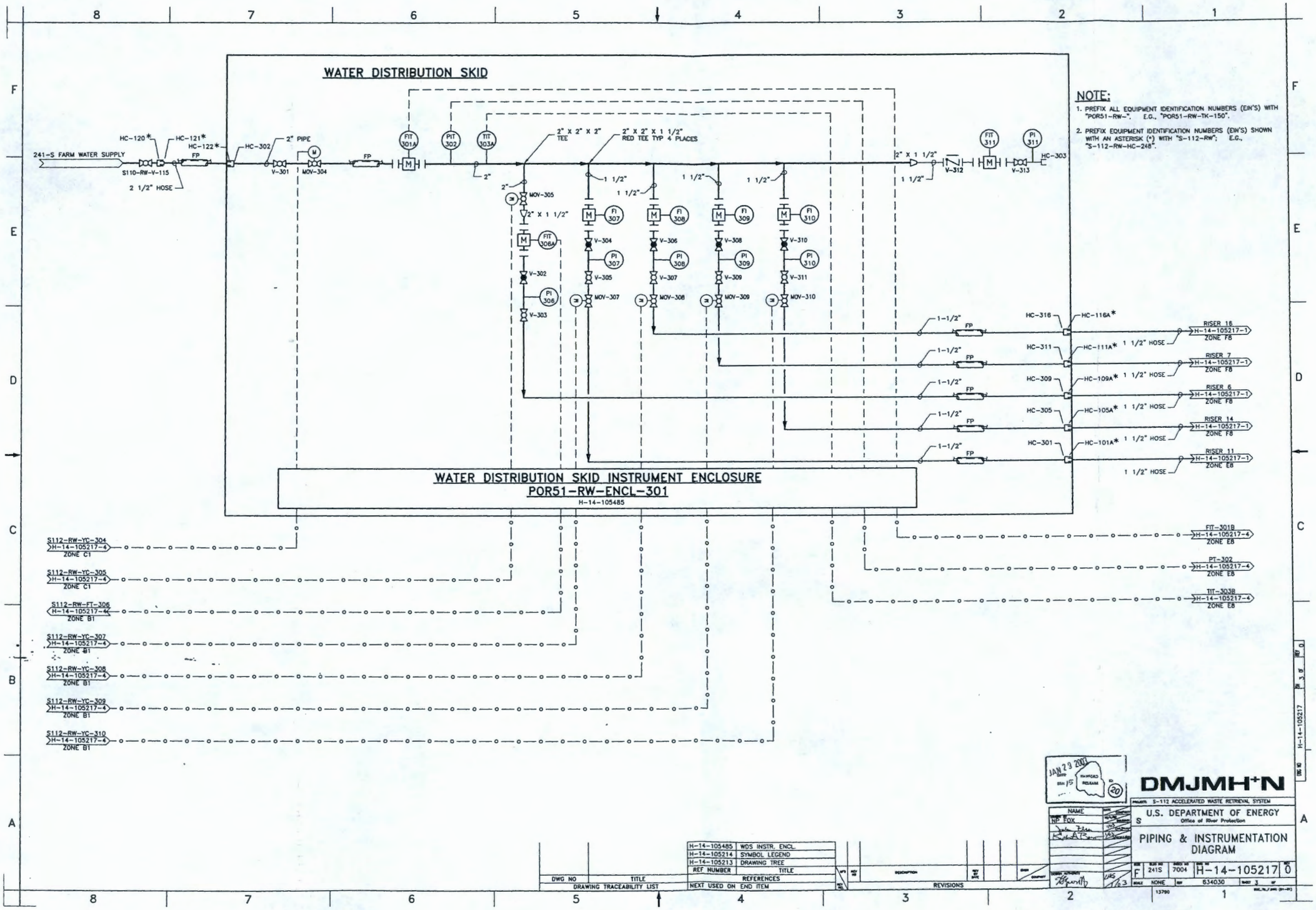
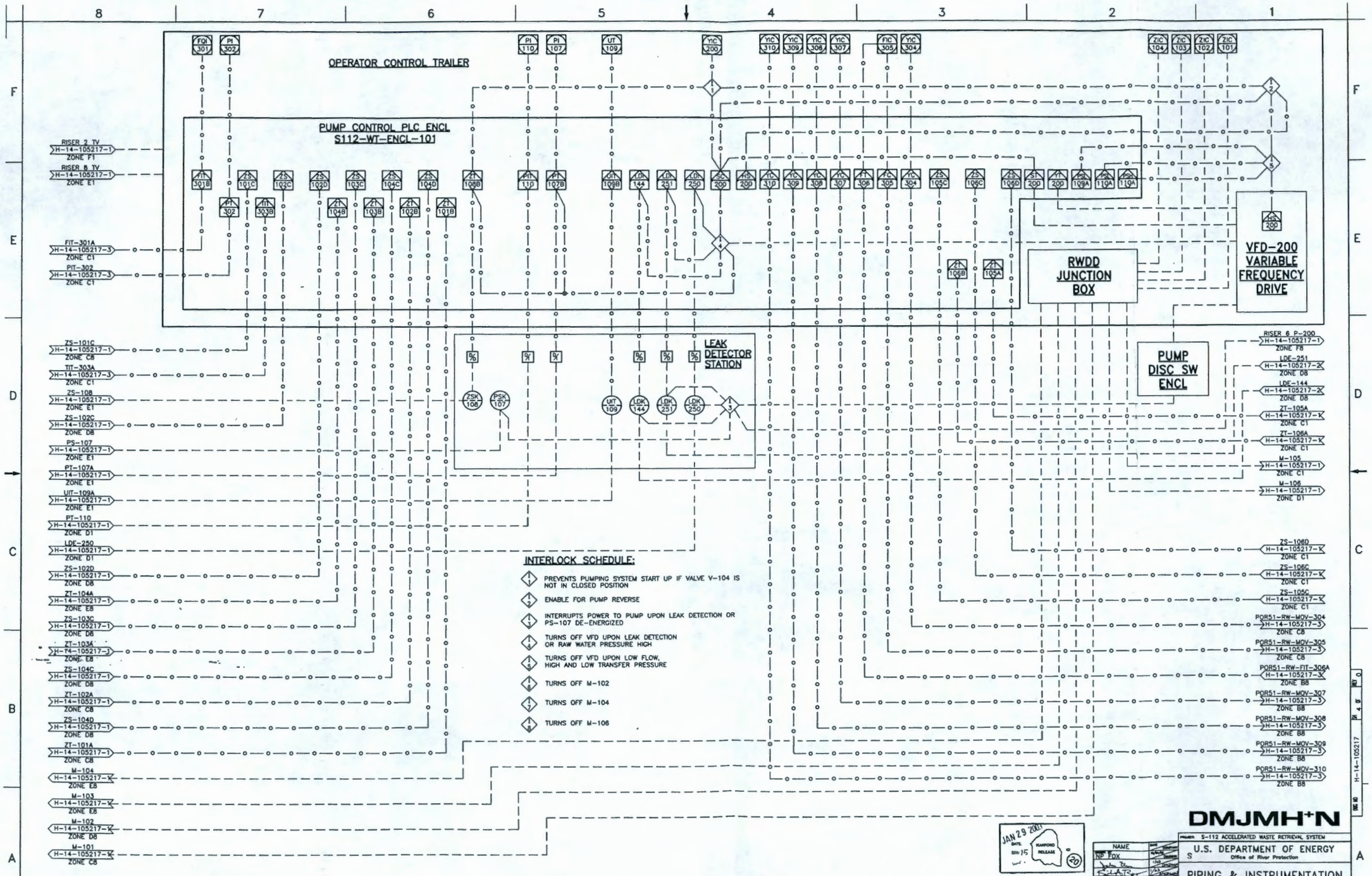
SCALE NONE | 634030 | SHEET 2 OF

28288

H-14-105217 SH 2 OF REV 0


WATER DISTRIBUTION SKID
WATER DISTRIBUTION SKID INSTRUMENT ENCLOSURE
POR51-RW-ENCL-301
H-14-105485
241-S FARM WATER SUPPLY
S110-RW-V-115
2 1/2" HOSE
HC-120*
HC-121*
HC-122*
HC-302
2" PIPE
V-301
MOV-304
FIT 301A
PIT 302
TIT 303A
2" X 2" X 2" TEE
2" X 2" X 1 1/2" RED TEE TYP 4 PLACES
MOV-305
2" X 1 1/2"
FIT 306A
V-302
PI 306
V-303
FI 307
V-304
PI 307
V-305
MOV-307
FI 308
V-306
PI 308
V-307
MOV-308
FI 309
V-308
PI 309
V-309
MOV-309
FI 310
V-310
PI 310
V-311
MOV-310
V-312
FIT 311
PI 311
V-313
HC-303
HC-316
HC-116A*
HC-311
HC-111A*
HC-309
HC-109A*
HC-305
HC-105A*
HC-301
HC-101A*
1 1/2" HOSE
RISER 16 H-14-105217-1 ZONE F8
RISER 7 H-14-105217-1 ZONE F8
RISER 6 H-14-105217-1 ZONE F8
RISER 14 H-14-105217-1 ZONE F8
RISER 11 H-14-105217-1 ZONE E8
FIT-301B H-14-105217-4 ZONE E8
PT-302 H-14-105217-4 ZONE E8
TIT-303B H-14-105217-4 ZONE E8
S112-RW-YC-304 H-14-105217-4 ZONE C1
S112-RW-YC-305 H-14-105217-4 ZONE C1
S112-RW-FT-306 H-14-105217-4 ZONE B1
S112-RW-YC-307 H-14-105217-4 ZONE B1
S112-RW-YC-308 H-14-105217-4 ZONE B1
S112-RW-YC-309 H-14-105217-4 ZONE B1
S112-RW-YC-310 H-14-105217-4 ZONE B1
NOTE:
1. PREFIX ALL EQUIPMENT IDENTIFICATION NUMBERS (EIN'S) WITH "POR51-RW-". E.G., "POR51-RW-TK-150".
2. PREFIX EQUIPMENT IDENTIFICATION NUMBERS (EIN'S) SHOWN WITH AN ASTERISK (*) WITH "S-112-RW"; E.G., "S-112-RW-HC-248".
DMJMH+N
S-112 ACCELERATED WASTE RETRIEVAL SYSTEM
U.S. DEPARTMENT OF ENERGY
Office of River Protection
PIPING & INSTRUMENTATION DIAGRAM
F 241S 7004 H-14-105217 0
NONE 634030
13790
H-14-105485 WDS INSTR. ENCL.
H-14-105214 SYMBOL LEGEND
H-14-105213 DRAWING TREE
REF NUMBER TITLE
REFERENCES
NEXT USED ON END ITEM
DWG NO TITLE
DRAWING TRACEABILITY LIST
REVISIONS
JAN 29 2003
NAME
NP FOX


OPERATOR CONTROL TRAILER
PUMP CONTROL PLC ENCL
S112-WT-ENCL-101
RWDD JUNCTION BOX
VFD-200 VARIABLE FREQUENCY DRIVE
LEAK DETECTOR STATION
PUMP DISC SW ENCL
INTERLOCK SCHEDULE:
1 PREVENTS PUMPING SYSTEM START UP IF VALVE V-104 IS NOT IN CLOSED POSITION
2 ENABLE FOR PUMP REVERSE
3 INTERRUPTS POWER TO PUMP UPON LEAK DETECTION OR PS-107 DE-ENERGIZED
4 TURNS OFF VFD UPON LEAK DETECTION OR RAW WATER PRESSURE HIGH
5 TURNS OFF VFD UPON LOW FLOW, HIGH AND LOW TRANSFER PRESSURE
6 TURNS OFF M-102
7 TURNS OFF M-104
8 TURNS OFF M-106
RISER 2 TV H-14-105217-1 ZONE F1
RISER 8 TV H-14-105217-1 ZONE E1
FIT-301A H-14-105217-3 ZONE C1
PIT-302 H-14-105217-3 ZONE C1
ZS-101C H-14-105217-1 ZONE C8
TIT-303A H-14-105217-3 ZONE C1
ZS-108 H-14-105217-1 ZONE E1
ZS-102C H-14-105217-1 ZONE D8
PS-107 H-14-105217-1 ZONE E1
PT-107A H-14-105217-1 ZONE E1
UIT-109A H-14-105217-1 ZONE E1
PT-110 H-14-105217-1 ZONE D1
LDE-250 H-14-105217-1 ZONE D1
ZS-102D H-14-105217-1 ZONE D8
ZT-104A H-14-105217-1 ZONE E8
ZS-103C H-14-105217-1 ZONE D8
ZT-103A H-14-105217-1 ZONE E8
ZS-104C H-14-105217-1 ZONE D8
ZT-102A H-14-105217-1 ZONE C8
ZS-104D H-14-105217-1 ZONE D8
ZT-101A H-14-105217-1 ZONE C8
M-104 H-14-105217-1 ZONE E8
M-103 H-14-105217-1 ZONE E8
M-102 H-14-105217-1 ZONE D8
M-101 H-14-105217-1 ZONE C8
RISER 6 P-200 H-14-105217-1 ZONE F8
LDE-251 H-14-105217-2 ZONE D8
LDE-144 H-14-105217-2 ZONE D8
ZT-105A H-14-105217-1 ZONE C1
ZT-106A H-14-105217-1 ZONE C1
M-105 H-14-105217-1 ZONE C1
M-106 H-14-105217-1 ZONE D1
ZS-106D H-14-105217-1 ZONE C1
ZS-106C H-14-105217-1 ZONE C1
ZS-105C H-14-105217-1 ZONE C1
POR51-RW-MOV-304 H-14-105217-3 ZONE C8
POR51-RW-MOV-305 H-14-105217-3 ZONE C8
POR51-RW-FIT-306A H-14-105217-3 ZONE B8
POR51-RW-MOV-307 H-14-105217-3 ZONE B8
POR51-RW-MOV-308 H-14-105217-3 ZONE B8
POR51-RW-MOV-309 H-14-105217-3 ZONE B8
POR51-RW-MOV-310 H-14-105217-3 ZONE B8
DMJMH+N
S-112 ACCELERATED WASTE RETRIEVAL SYSTEM
U.S. DEPARTMENT OF ENERGY
Office of River Protection
PIPING & INSTRUMENTATION DIAGRAM
H-14-105217
H-14-105214 SYMBOL LEGEND
H-14-105213 DRAWING TREE
REF NUMBER TITLE
REFERENCES
NEXT USED ON H-14-105217-1
DWG NO TITLE
DRAWING TRACEABILITY LIST
REVISIONS
JAN 29 2003
NAME
NP FOX
F 2415 7004 H-14-105217 0
SCALE NONE
634030
27421

ATTACHMENT 3

Leak Detection Mitigation and Monitoring (LDMM) strategy to be used for Tank S-102

ATTACHMENT 4

Leak Detection Mitigation and Monitoring (LDMM) strategy to be used for Tank S-112