



STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

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July 22, 2020

20-NWP-117

Brian T. Vance, Manager
Office of River Protection
United States Department of Energy
PO Box 450, MSIN: H6-60
Richland, Washington 99352

Valerie McCain, Project Director
Bechtel National, Inc.
2435 Stevens Center Place, MSIN: MS19-A
Richland, Washington 99354

Re: Approval of 24590-LAW-PCN-ENV-19-008, Class ¹ Modification to the *Hanford Facility Resource Conservation and Recovery Act Permit, Dangerous Waste Portion, Revision 8C, for the Treatment, Storage, and Disposal of Dangerous Waste, Part III, Operating Unit Group 10, Waste Treatment and Immobilization Plant (WTP Permit), WA7890008967*

Reference: See page 2

Dear Brian T. Vance and Valerie McCain:

The Department of Ecology approves the referenced Class ¹ Modification. The approved Hanford Facility RCRA Permit Modification Notification Form is enclosed.

This modification updates seventeen and removes one (24590-LAW-M6N-LVP-00138 was deleted) Piping and Instrumentation Diagrams (P&IDs) for the Low-Activity Waste (LAW) Melter Processing (LMP) System, the LAW Secondary Offgas/Vessel Vent Process (LVP) System, and the LAW Radioactive Liquid Waste Disposal (RLD) System.

These changes are listed on the enclosure and replace the corresponding permit P&IDs in Appendix 9.2 of the WTP Permit.

If there are any questions, please contact Jeff Marusich, Permit Writer, at jeff.marusich@ecy.wa.gov or (509) 372-7990.

Sincerely,

Digitally signed
by Stephanie Schleif,
Stephanie (ECY)

Stephanie Schleif
Deputy Program Manager
Nuclear Waste Program

jm/ag
Enclosure

cc: See page 2

Reference: Letter 20-ECD-0029, dated June 9, 2020, "Submittal of Hanford Facility Resource Conservation and Recovery Act Permit Modification Notification Form 24590-LAW-PCN-ENV-19-008"

cc electronic w/enc:

Dave Bartus, USEPA
Dave Einan, USEPA
Mary Beth Burandt, USDOE-ORP
Tom Fletcher, USDOE-ORP
Roger Gordon, USDOE-ORP
Lori Huffman, USDOE-ORP
Gae Neath, USDOE-ORP
Delmar Noyes, USDOE-ORP
Bryan Trimberger, USDOE-ORP
Tony McKarns, USDOE-RL
Bob Haggard, BNI
Felice Presti, BNI
Brittany Sparks, BNI
Jon Perry, MSA
ERWM Staff, YN
Susan Leckband, HAB
Ken Niles, ODOE
Gail Laws, WDOH
Debra Alexander, Ecology
Jennifer Cantu, Ecology
Annette Carlson, Ecology

Nitya Chandran, Ecology
Suzanne Dahl, Ecology
Jay Decker, Ecology
Tracy Gao, Ecology
Mandy Jones, Ecology
Yoana Lucatero, Ecology
Jeff Marusich, Ecology
Dan McDonald, Ecology
Oliver Wang, Ecology
Nancy Ware, Ecology
NWP RIM Coordinators, Ecology
Environmental Portal
Hanford Administrative Record
Hanford Facility Operating Record
BNI Correspondence Control
EPA Region 10 Hanford Field Office
Correspondence Control
MSA Correspondence Control
USDOE-ORP Correspondence Control
USDOE-RL Correspondence Control

cc electronic w/o enc:

Mason Murphy, CTUIR
Jack Bell, NPT
Laurene Contreras, YN
Rex Buck, Jr., Wanapum

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Hanford Facility RCRA Permit Modification Notification Form
Part III, Operating Unit 10
Waste Treatment and Immobilization Plant

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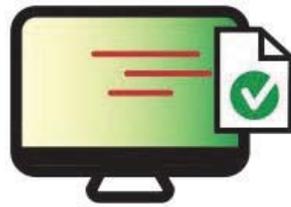
Page 2 of 3: Hanford Facility RCRA Permit, Part III, Operating Unit 10, Waste Treatment and Immobilization Plant

Modification to the Hanford Site RCRA / WTP Dangerous Waste Permit consisting of updates to Piping and Instrumentation Diagrams for the LAW Melter Feed Process System (LFP), LAW Secondary Offgas / Vessel Vent Process System (LVP), and Radioactive Liquid Waste Disposal System (RLD). Updates performed are in accordance to WAC 173-303-830, Appendix I Modification citation number: A.3., equipment replacement or upgrading with functionality equivalent components (e.g., pipes, valves, pumps, conveyors, controls).

Submitted by Co-Operator:

Reviewed by ORP Program Office:

*Robert Haggard*4/22/2020*Robert Haggard**Date**TF*Digitally signed by Thomas W.
Fletcher
Date: 2020.06.09 12:54:01 -07'00'06/09/2020*Thomas W. Fletcher**Date*



This document has been digitally signed using the Electrosign process.

Document for Signature

Document Number: 24590-LAW-PCN-ENV-19-008 **Rev:** 0

Participants	Signature	Completed	Status	Result	Comments
Final Approver	4/22/2020 2:37 PM				
Haggard, Robert		4/22/2020 2:44 PM	Completed	Approve	

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Hanford Facility RCRA Permit Modification Notification Form

Unit: Waste Treatment and Immobilization Plant	Permit Part: Part III, Operating Unit 10
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Description of Modification:

The purpose of this Class ¹ modification is to provide Piping and Instrumentation Diagrams (P&IDs) for the LAW Melter Feed Process System (LFP), LAW Secondary Offgas/Vessel Vent Process System (LVP), and Radioactive Liquid Waste Disposal System (RLD) for incorporation into Appendix 9.2 of the WTP RCRA permit:

LFP				
1	Replace:	24590-LAW-M6-LFP-00001004, Rev. 1	With:	24590-LAW-M6-LFP-00001004, Rev. 3
2	Replace:	24590-LAW-M6-LFP-00003001, Rev. 0	With:	24590-LAW-M6-LFP-00003001, Rev. 1
3	Replace:	24590-LAW-M6-LFP-00003002, Rev. 0	With:	24590-LAW-M6-LFP-00003002, Rev. 1
4	Replace:	24590-LAW-M6-LFP-00003003, Rev. 0	With:	24590-LAW-M6-LFP-00003003, Rev. 1
5	Replace:	24590-LAW-M6-LFP-00003004, Rev. 1	With:	24590-LAW-M6-LFP-00003004, Rev. 3
6	Replace:	24590-LAW-M6-LFP-00003005, Rev. 0	With:	24590-LAW-M6-LFP-00003005, Rev. 1
7	Replace:	24590-LAW-M6-LFP-00003006, Rev. 1	With:	24590-LAW-M6-LFP-00003006, Rev. 2
LVP				
8	Replace:	24590-LAW-M6-LVP-00001003, Rev. 1	With:	24590-LAW-M6-LVP-00001003, Rev. 2
9	Replace:	24590-LAW-M6-LVP-00002001, Rev. 1	With:	24590-LAW-M6-LVP-00002001, Rev. 2
10	Replace:	24590-LAW-M6-LVP-00002002, Rev. 1	With:	24590-LAW-M6-LVP-00002002, Rev. 2
11	Replace:	24590-LAW-M6-LVP-00002005, Rev. 0	With:	24590-LAW-M6-LVP-00002005, Rev. 1
12	Delete LAW-M6N-LVP-00138 from Appendix 9.2			
13	Replace:	24590-LAW-M6-LVP-00002007, Rev. 0	With:	24590-LAW-M6-LVP-00002007, Rev. 1
14	Replace:	24590-LAW-M6-LVP-00004001, Rev. 2	With:	24590-LAW-M6-LVP-00004001, Rev. 3
15	Replace:	24590-LAW-M6-LVP-00004002, Rev. 3	With:	24590-LAW-M6-LVP-00004002, Rev. 4
16	Replace:	24590-LAW-M6-LVP-00005002, Rev. 4	With:	24590-LAW-M6-LVP-00005002, Rev. 5
RLD				
17	Replace:	24590-LAW-M6-RLD-00001005, Rev. 0	With:	24590-LAW-M6-RLD-00001005, Rev. 1
18	Replace:	24590-LAW-M6-RLD-00002005, Rev. 0	With:	24590-LAW-M6-RLD-00002005, Rev. 1

1. Significant changes incorporated into the Piping and Instrumentation Diagram (24590-LAW-M6-LFP-00001004, Rev. 3) for Melter 1 Feed Vessel LFP-VSL-00002 of the LAW Melter Feed Process System are summarized below.
 - a. See 24590-LAW-M6-LFP-00001004, Rev. 2 for intervening revisions.
 - b. Addition of Note 19, Revision 2, incorporation of piping and instrumentation diagrams as well as revision to engineering impact evaluation to align with project requirements.
 - c. Addition of Note 20, Revision 3, Low-Low-Low alarm added onto instrument LI-1146A.

2. Significant changes incorporated into the Piping and Instrumentation Diagram (24590-LAW-M6-LFP-00003001, Rev. 1) for Melter 2 Feed Vessel LFP-VSL-00003 of the LAW Melter Feed Process System are summarized below.
 - a. Addition to Note 3, quality level and seismic category of vessel, nozzles, spare nozzles and manways is specified.
 - b. Note 11 updated, unnecessary worded comparison of required seismic category of LFP-VSL-00003 to that of anchorage is removed.
 - c. Addition of Note 13, stating the minimum distance between restriction orifices is 2 feet.
 - d. Addition of Note 14, Revision 1, listing of incorporated changed documents, deleted references, and revisions to references.
 - e. Reference 1 updated, inclusion of LAW concentrate receipt process (LCP) system and LAW melter feed process (LFP) system design descriptions.
 - f. Deletion of Reference 2, purchase order agreement of vendor-supplied skid.

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3. Significant changes incorporated into the Piping and Instrumentation Diagram (24590-LAW-M6-LFP-00003002, Rev. 1) for Melter 2 Feed Preparation Vessel LFP-VSL-00003 of the LAW Melter Feed Process System are summarized below.
 - a. Addition to Note 3, quality level and seismic category of vessel, nozzles, spare nozzles and manways is specified.
 - b. Addition of Note 16, Revision 1, incorporated documentation and revised equipment functions to satisfy project requirements.
 - c. Addition of Reference 1, design description of both 24590-LAW-3ZD-LFP-00001 and concentrate receipt process (LCP).
4. Significant changes incorporated into the Piping and Instrumentation Diagram (24590-LAW-M6-LFP-00003003, Rev. 1) for Melter 2 Feed Vessel LFP-VSL-00004 of the LAW Melter Feed Process System are summarized below.
 - a. Addition to Note 3, quality level and seismic category of vessel, nozzles, spare nozzles and manways is specified.
 - b. Note 9 updated, unnecessary worded comparison of required seismic category of LFP-VSL-00004 to that of anchorage is removed.
 - c. Addition of Note 11, Revision 1, incorporated documentation and revised references.
 - d. Addition of Reference 1, design description of both 24590-LAW-3ZD-LFP-00001 and concentrate receipt process (LCP).
5. Significant changes incorporated into the Piping and Instrumentation Diagram (24590-LAW-M6-LFP-00003004, Rev. 3) for Melter 2 Feed Preparation Vessel LFP-VSL-00004 of the LAW Melter Feed Process System are summarized below.
 - a. Addition of Note 19, specifies function of HS-214E from E-stop to local stop, aligning with project requirements, added in Rev. 2 of 24590-LAW-M6-LFP-00003004.
 - b. Addition of Note 20, specifies the addition of Low-Low alarm on instrument LI02146A in response to 24590-WTP-GCA-MGT-19-00347 in Rev. 3 of 24590-LAW-M6-LFP-00003004.
6. Significant changes incorporated into the Piping and Instrumentation Diagram (24590-LAW-M6-LFP-00003005, Rev. 1) for Melter 2 Feed Preparation and Feed Bulge LFP-BULGE-00002 of the LAW Melter Feed Process System are summarized below.
 - a. Addition of Note 14, Revision 1, incorporated documentation and revised references.
 - b. Addition of Reference 1, design description of both 24590-LAW-3ZD-LFP-00001 and concentrate receipt process (LCP).
7. Significant changes incorporated into the Piping and Instrumentation Diagram (24590-LAW-M6-LFP-00003006, Rev. 2) for Melter 2 Feed Preparation and Feed Bulge LFP-BULGE-00002 of the LAW Melter Feed Process System are summarized below.
 - a. Addition to Note 3, pressure boundary for double containment piping outside of C5V ventilated rooms and secondary containment is specified as quality level Q and seismic category SC-III.
 - b. Addition of Note 11, Revision 2, incorporated change document 24590-LAW-M6N-LFP-00063.
8. Significant changes incorporated into the Piping and Instrumentation Diagram (24590-LAW-M6-LVP-00001003, Rev. 2) for LAW Secondary Offgas/Vessel Vent Process System HEPA Filters are summarized below.
 - a. Addition of Note 13, pressure drop is to be minimized.
 - b. Deletion of Note 14.
 - c. Addition of Note 15, specified the quality level of the outside bird screen mesh may be CM.
 - d. Addition of Note 16, specified the LVP-V-72922 and -72923 pipe class and acceptance for use.
 - e. Addition of Note 17, Revision 2, incorporated documentation and revised references.
9. Significant changes incorporated into the Piping and Instrumentation Diagram (24590-LAW-M6-LVP-00002001, Rev. 2) for LAW Secondary Offgas/Vessel Vent Process System Caustic Scrubber Bypass are summarized below.
 - a. Addition of Note 7, PCV control lines specified to be connected to a straight run of pipe 3 to 5 pipe diameters downstream of the nearest flow disturbance (E.G., Tee, Elbow).
 - b. Addition of Note 8, specified a pressure drop is to be minimized.

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- c. Deletion of Note 9.
 - d. Addition of Note 10, specified the quality level of the outside bird screen mesh may be CM.
 - e. Addition of Note 11, PCV pipe direction and arrangement as required by vendor in reference 2 are specified.
 - f. Addition of Note 12, Revision 2, incorporated documentation and equipment revised.
 - g. Addition of Reference 2, design descriptions/drawings of the Pressure Reducing Regulator, 24590-QL-POA-JV05-07-00001, Rev. 00B.
10. Significant changes incorporated into the Piping and Instrumentation Diagram (24590-LAW-M6-LVP-00002002, Rev. 2) for LAW Secondary Offgas/Vessel Vent Process System Caustic Scrubber LVP-SCB-00001 are summarized below.
- a. Deletion of Note 11, pressure drop is to be minimized.
 - b. Deletion of Note 13.
 - c. Addition of Note 14, Revision 2, incorporated document 24590-LAW-M6N-LVP-00168 and updated ADR revision.
11. Significant changes incorporated into the Piping and Instrumentation Diagram (24590-LAW-M6-LVP-00002005, Rev. 1) for LAW Secondary Offgas/Vessel Vent Process System Transfer Pumps LVP-PMP-00002A/B are summarized below.
- a. Addition of Note 9, incorporated documentation and revised references.
 - b. Addition of Reference 1, system description document changed to 24590-LAW-3ZD-LOP-00001.
 - c. Addition of Reference 2, 24590-LAW-ADR-M-02-023 Rev 5, LAW Secondary Offgas Vessel Vent process System (LVP).
 - d. Addition of Reference 3, 24590-WTP-ADR-M-16-0001 Rev 4, ALARA Design Review for BOF DEP System.
12. Delete LAW-M6N-LVP-00138 from Appendix 9.2, Design Change Notice has been incorporated into Rev 1 of P&ID 24590-LAW-M6-LVP-00002005.
13. Significant changes incorporated into the Piping and Instrumentation Diagram (24590-LAW-M6-LVP-00002007, Rev. 1) for LAW Secondary Offgas/Vessel Vent Process System Stack Discharge Monitoring System are summarized below.
- a. Deletion of Note 10, connections to ISA to be confirmed by vendor design.
 - b. Deletion of Note 11, instrumentation by vendor.
 - c. Addition of Note 13, specified a section of tubing is to remain insulated and per thermal insulation guide 24590-WTP-GPG-M-021 is classified as "PG", adjustable to equipment requiring maintenance.
 - d. Addition of Note 14, specific tubing inside vendor box is specified as Bechtel supplied.
 - e. Addition of Note 15, Revision 1, incorporated documentation and revisions, as well as required energy act stamp.
14. Significant changes incorporated into the Piping and Instrumentation Diagram (24590-LAW-M6-LVP-00004001, Rev. 3) for LAW Secondary Offgas/Vessel Vent Process System Mercury Mitigation Equipment Bypass are summarized below.
- a. Addition of Note 9, Revision 3, 24590-WTP-FC-IN-18-0042 and CCN 308167 are incorporated.
 - b. Reference 1 updated, LOP and LVP grammar is changed.
15. Significant changes incorporated into the Piping and Instrumentation Diagram (24590-LAW-M6-LVP-00004002, Rev. 4) for LAW Secondary Offgas/Vessel Vent Process System Mercury Mitigation Equipment LVP-SKID-00001 are summarized below.
- a. Addition to Note 6, it is specified at least one continuous flow path shall have valves in open position to prevent blocking offgas system during operation.
 - b. Deletion to Note 11, instruments AE-0406 and -0425 are removed. The subject AEs were NO_x monitors that were originally proposed (early in the project design) to be utilized as part of feed forward control for the ammonia dilution skid (associated with the Thermal Catalytic Oxidizer - TCO). These monitors added significant complexity to the ammonia control system. This complexity reduced the overall reliability of the ammonia control. In addition to the added complexity, it was determined that there was insufficient response time to effectively utilize a feedforward scheme (i.e., the offgas reached the TCO too quickly after passing these analyzers). When the sample and response times were factored in, a feedforward control

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- scheme was determined to not be viable. The favored control strategy was determined to be a straightforward feedback system based on ammonia slip.
- c. Deletion of Note 16, simulant injection port flange adapter
 - d. Addition of Note 22, direction to see associated vendor references for details on some vendor supplied items.
 - e. Addition of Note 23, warning that inadvertent closure of valve locked open during analyzer operation may cause equipment damage.
 - f. Addition of Note 24, Revision 4, incorporated documentation and revisions.
 - g. Addition of Reference 2, 24590-QL-POA-JA03-00008-08-00007 drawing – TDLS co system tubing detail.
 - h. Addition of Reference 3, 24590-QL-POA-JA03-00008-08-00008 drawing – TDLS co system master tag list.
 - i. Addition of Reference 4, 24590-QL-POA-JA03-00008-08-00001 drawing – TDLS co system cabinet layout.
 - j. Addition of Reference 5, 24590-QL-POA-JA03-00008-08-00002 drawing – TDLS co system cabinet layout.
 - k. Addition of Reference 6, 24590-CD-POA-JA03-00007-07-00019 drawing – Analyzer LVP-AT-0439 LVP-PNL-00012 / sample system tubing schematic diagram.
 - l. Addition of Reference 7, 24590-CD-POA-JA03-00007-07-00022 drawing – Analyzer LVP-AT-0439 LVP-PNL-00012 / analyzer enclosure general arrangement drawing (exterior).
16. Significant changes incorporated into the Piping and Instrumentation Diagram (24590-LAW-M6-LVP-00005002, Rev. 5) for LAW Secondary Offgas/Vessel Vent Process System SCO/SCR Skid are summarized below.
- a. Addition of Note 16, specification that the instrument was provided by Bechtel.
 - b. Addition of Note 17, instruction to see associated vendor references for details for some vendor supplied items.
 - c. Addition of Note 18, warning that inadvertent closure of valve locked open during analyzer operation may cause equipment damage.
 - d. Addition of Note 19, Revision 5, incorporated documentation.
 - e. Addition of Reference 2, 24590-CD-POA-JA03-00007-07-00013 drawing – Analyzer LVP-AT-0522 LVP-PNL-00028 / NH3 calibration gas distribution manifold tubing schematic diagram.
 - f. Addition of Reference 3, 24590-CD-POA-JA03-00007-07-00008 drawing – Analyzer LVP-AT-0523 LVP-PNL-00027 / sample system tubing schematic diagram.
17. Significant changes incorporated into the Piping and Instrumentation Diagram (24590-LAW-M6-RLD-00001005, Rev. 1) for LAW Radioactive Liquid Waste Disposal System Plant Wash & SBS Condensate Collection RLD-BULGE-00004 are summarized below.
- a. Addition of Note 11, specified the pipe blind is pipe class S12C.
 - b. Addition of Note 12, Revision 1, incorporated documentation and revisions.
 - c. Addition of Reference 1, LAW facility radioactive liquid waste disposal (RLD) system design description 24590-LAW-3ZD-RLD-00001 is specified. 24590-LAW-3ZD-RLD-00001 supersedes, and has replaced, 24590-LAW-3YD-RLD-00001.
 - d. Addition of Reference 2, 24590-LAW-ADR-M-01-001 Rev 3, ALARA design review of LAW RLD system.
 - e. Addition of Reference 3, 24590-WTP-ADR-M-16-0001 Rev 4, ALARA design review of BOF DEP system.
18. Significant changes incorporated into the Piping and Instrumentation Diagram (24590-LAW-M6-RLD-00002005, Rev. 1) for LAW Radioactive Liquid Waste Disposal System C3/C5 Sumps RLD-SUMP-00010/11/28 are summarized below.
- a. Note 8 updated, location of the pump discharge flanged connections is changed from “south end” to “end” of melter pour caves one and two.
 - b. Addition of Note 10, specified the function converts sump level in inches to gallons.
 - c. Addition of Note 11, incorporated documentation and revisions.
 - d. Addition of Reference 1, LAW facility radioactive liquid waste disposal (RLD) system design description 24590-LAW-3ZD-RLD-00001 is specified. 24590-LAW-3ZD-RLD-00001 supersedes, and has replaced, 24590-LAW-3YD-RLD-00001.
 - e. Addition of Reference 2, 24590-LAW-ADR-M-01-001, Rev 3, design review of P&IDs including ALARA considerations for RLD system.
 - f. Addition of Reference 3, 24590-WTP-ADR-J-06-0001, Rev 2, radar level instrumentation.
 - g. Addition of Reference 4, 24590-WTP-ADR-J-14-0001, Rev 0, thermal connectivity level instrumentation.

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WAC 173-303-830 Modification Class:	Class 1	Class 11	Class 2	Class 3
Please mark the Modification Class:		X		

Enter relevant WAC 173-303-830, Appendix I Modification citation number: A.3.
 Enter wording of WAC 173-303-830, Appendix I Modification citation: Equipment replacement or upgrading with functionality equivalent components (e.g., pipes, valves, pumps, conveyors, controls).

Modification Approved/Concur: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> Denied (state reason below) Reason for denial:	Reviewed by Ecology: Digitally signed by <i>Stephanie Schleif</i> Schleif, Stephanie (ECY) <u>07/22/2020</u>
	S. Schleif Date