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**PART V, CLOSURE UNIT GROUP 15 CONDITIONS**  
**241-CX TANK SYSTEM**

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**PART V, CLOSURE GROUP 15 CONDITIONS**

**241-CX TANK SYSTEM**

**UNIT DESCRIPTION**

The 241-CX Tank System is a treatment, storage, and/or disposal (TSD) unit containing three below-grade tanks (241-CX-70, 241-CX-71, and 241-CX-72) and associated ancillary equipment (mostly piping). The 241-CX Tank System is located in the 200 East Area close to what was known as the Hot SemiWorks Facility. The three tanks of this system operated from 1952 to 1958 to support the Reduction-Oxidation Plant (REDOX) and Plutonium-Uranium Extraction Plant (PUREX) process pilot studies. The tanks received liquid waste from the 201-C Process Building and Hot Shop of at the Hot SemiWorks Facility via underground piping. Tank 241-CX-70 operated for approximately one year during 1952 and 1953 supporting the REDOX process; tank 241-CX-71 operated from 1952 to 1957 supporting the REDOX process; and tank 241-CX-72 operated for approximately one year during 1957 and 1958 supporting the PUREX process. All of the 241-CX tanks received waste from the 201-C Process Building; only tank 241-CX-71 received liquid waste from Hot Shop sink drains. In 1967, the Hot Semiworks Facility (including the 201-C Process Building and Hot Shop) was permanently removed from service. The 241-CX tanks and waste transfer piping remain in place, but have been isolated physically by cutting and permanently sealing off the pipe ends. As a part of the Hot Semiworks Facility decommissioning, the tanks were verified as physically isolated as of 1985. Tank 241-CX-70 contains only waste residues, while tanks 241-CX-71 and 241-CX-72 contain waste overlain with grout that was added in 1986 for stabilization. A containment building currently exists over tank 241-CX-72.

The 241-CX-70 tank is a cylindrical concrete vessel, 6.1 meters (20 feet) outside diameter and 4.6 meters (15 feet) tall, constructed with 30.5 centimeters (12 inches) thick concrete walls and top, and a 0.6 meter (2 feet) thick bottom at the edges, tapering to 22.9 centimeters (9 inches) in the center. It is lined with 0.64 centimeter (1/4-inch) stainless steel. The design capacity of tank 241-CX-70 is 113,550 liters (30,000 gallons). The estimated annual quantity of waste stored in this tank was approximately 8,630 kilograms (19,000 pounds). The tank top is approximately 3.4 meters (11 feet) below grade, with nine vertical risers generally extending above grade, with a 106.7 centimeters (42-inches) manway having a concrete cover. Waste entered the tank through two horizontal 5 centimeters (2-inches) diameter stainless steel waste feed lines at the side of the tank. Waste was removed between 1987 and 1991; currently the tank contains only waste residues.

The 241-CX-71 tank is an underground, vertically placed, cylindrical vessel constructed of stainless steel. This tank is approximately 1.5 meters (5 feet) in diameter, approximately 2.1 meters (7 feet) high, and was constructed on a reinforced concrete foundation pad. The tank top is approximately 1.1 meters (3.5 feet) below grade. The design capacity of the tank is approximately 3,785 liters (1,000 gallons). The estimated annual quantity of waste neutralized in this tank was approximately 15,171 kilograms (33,400 pounds). The tank currently contains sludge and limestone overlain with a layer of low-density grout added in 1986 to stabilize the tank. The volume of waste and limestone beneath the grout is approximately 3,407 liters (900 gallons).

The 241-CX-72 tank is a vertical, cylindrical vessel made of 0.95 centimeter (3/8-inch) carbon steel. The tank measures 101.6 centimeters (40 inches) in diameter and approximately 10.7 meters (35 feet) long. The tank is enclosed in a 1.8 meters (6-feet) diameter caisson made of 1.27 centimeters (1/2-inch) carbon steel placed on a 30.5 centimeters (12-inches) thick reinforced concrete base pad. In addition to two 20 centimeters (8-inches) risers, a 7.2 centimeters (3-inches) test well is located at the periphery of the tank. Waste entered the tank through a 5 centimeters (2-inches) diameter stainless steel pipeline, which is buried alongside most of the pipeline to tank 241-CX-70 from the cut-off point near what was the Hot SemiWorks Facility. The design capacity is 8,860 liters (2,340 gallons). The estimated annual quantity of waste received by this tank was approximately 8,870 kilograms (19,530 pounds). The tank top is approximately 4.2 meters (14 feet) below grade. This tank was used as an experimental tank to study the

1 self-concentration of PUREX process waste by the application of heat. The waste in the tank was heated  
2 until nearly dry. In 1986, as a part of decommissioning the Hot SemiWorks Facility and to stabilize the  
3 tank, low-density grout was injected through the 20.3 centimeters (8-inches) risers over approximately 3.4  
4 meters (9.5 feet) of sludge (approximately 2,498 liters [660 gallons]), filling the remainder of the tank  
5 with grout. A 6.1 by 14.6 by 6.1 meters (20- by 48- by 20-feet) tall containment structure on a 6.7 by  
6 14.6 meters (22- by 48-feet) reinforced concrete pad was placed over tank 241-CX-72.

7 The nature and quantity of mixed waste managed by the 241-CX-70/71 tanks are known and identified on  
8 the Part A Form. Because these tanks have received a known final volume of dangerous waste, the unit  
9 will not receive any additional non-dangerous waste. These two tanks will be clean closed according to  
10 the requirements and schedules in the approved closure plan in this chapter of the Permit. However,  
11 sufficient information is not currently available to specify a closure pathway for tank 241-CX-72.  
12 Additional characterization data of the tank waste will be obtained in conjunction with the 200-IS-1 OU  
13 remedial investigation. The closure plan will be modified, before closure of this tank will occur.

14 The final closure of the 241-CX Tank System may be coordinated with the 200-IS-1 Operable Unit (OU)  
15 final remedy in the 200 Area. If groundwater cleanup is necessary, it will be coordinated with the 200-  
16 BP-5 OU in the manner outlined in the *Hanford Federal Facility Agreement and Consent Order*  
17 (HFFACO) Action Plan, Section 5.5, and in accordance with schedules in HFFACO Milestone M-037-10.

## 18 LIST OF ADDENDA

|    |            |   |
|----|------------|---|
| 19 | Addendum A | Part A Form                                 |
| 20 | Addendum B | Sampling and Analysis Plan – Reserved       |
| 21 | Addendum C | Process Information – Reserved              |
| 22 | Addendum D | Groundwater Monitoring Plan - Reserved      |
| 23 | Addendum E | Security Requirements - Reserved            |
| 24 | Addendum F | Preparedness and Prevention Plan – Reserved |
| 25 | Addendum G | Personnel Training                          |
| 26 | Addendum H | Closure Plan and Post-Closure Plan          |
| 27 | Addendum I | Inspection Schedule                         |
| 28 | Addendum J | Contingency Plan – Reserved                 |

## 29 DEFINITIONS

30 Reserved

## 31 ACRONYMS

32 Reserved

## 33 V.15.A COMPLIANCE WITH PERMIT CONDITIONS

34 The Permittees will comply with all permit conditions in this Chapter and its addenda  
35 with respect to the applicable requirements in Part I and Part II of the Hanford Facility  
36 Dangerous Waste Permit.

## 37 V.15.B CLOSURE

38 V.15.B.1 The Permittees will submit a revised closure plan and post-closure plan 180 days after the  
39 final permit is issued. As part of the closure plan, the Permittees will address contingent  
40 closure and contingent post-closure requirements. The contingent closure and post-  
41 closure section will include time frames of when detailed plans of a landfill cover would  
42 be submitted for Ecology review and approval and when the construction of the landfill

- 1 cover would begin once the Permittees have determined the unit cannot meet clean  
2 closure standards.
- 3 **V.15.B.1.a** The Permittees will submit site specific biological and cultural resources reviews 90 days  
4 before the beginning of the closure process. [[WAC 173-303-815](#)(2)(b)(i)]
- 5 **V.15.B.2** Once additional sampling/characterization on tank 241-CX-72 identifying adequate waste  
6 information is available, the Permittees will modify the Closure Plan in Addendum H to  
7 include this information, as well as providing an updated path forward for closure of the  
8 241-CX Tank System.
- 9 **V.15.B.3** The closure plan submitted pursuant to V.15.B.1 will specify dangerous constituents and  
10 corresponding closure performance standards to meet the requirements of [WAC 173-303-](#)  
11 [610](#)(2)(b)(i) for soils affected by the operations associated with this unit.
- 12 **V.15.B.4** Closure performance standards for soils will satisfy the most stringent (lowest) cleanup  
13 level or standard of [WAC 173-340](#), Model Toxics Control Act (MTCA) Cleanup  
14 Regulation. The numeric cleanup levels for soils will be calculated according to the  
15 MTCA cleanup methods described in [WAC 173-340-700](#) through [WAC 173-340-760](#).  
16 Selection of an appropriate MCTA cleanup method will be dependent on the specific  
17 cleanup actions required for this site.
- 18 **V.15.B.5** Once the closure plan is incorporated into Addendum H through the permit modification  
19 process the Permittees will close the 241-CX Tank System according to the requirements  
20 in Addendum H. [[WAC 173-303-610](#)(3)(a)]
- 21 **V.15.B.6** The closure plan and sampling and analysis plan will meet the applicable closure  
22 requirements of [WAC 173-303-610](#) and [WAC 173-303-640](#)(8) pursuant to the  
23 requirements of this Chapter.
- 24 **V.15.B.7** In conjunction with the revised closure plan, the Permittees will submit a revised  
25 sampling and analysis plan in accordance with Permit Condition II.D.3 and the schedule  
26 specified in HFFACO Milestone M-037-10, which are incorporated by reference herein  
27 under the terms of Permit Condition I.A.4.
- 28 **V.15.B.8** The revised sampling and analysis plan (noted in V.15.B.7) will include, but not be  
29 limited to:
- 30 **V.15.B.8.a** Methods for representative soil sampling
- 31 **V.15.B.8.b** Analysis parameters
- 32 **V.15.B.8.c** Analytical documentation
- 33 **V.15.B.8.d** Procedures for identifying contaminants
- 34 **V.15.B.8.e** Quality assurance/quality control project plan
- 35 **V.15.B.9** The Permittees will conduct all sampling and analysis of environmental media pursuant  
36 to the requirements of the sampling and analysis plan.
- 37 **V.15.C** **GENERAL WASTE MANAGEMENT REQUIREMENTS**
- 38 **V.15.C.1** All waste analysis required by this chapter will be conducted according to the approved  
39 sampling and analysis plan.
- 40 **V.15.C.2** Changes to the analytical methods used in this permit will require prior Ecology approval  
41 according to [WAC 173-303-830](#), Permit Changes.

1 **V.15.D RECORDKEEPING AND REPORTING**

2 The Permittees will place documentation of all work conducted pursuant to this Chapter  
3 including results of all monitoring, testing, or analytical work and associated quality  
4 assurance and quality control data in the Hanford Facility Operating Record, as required  
5 by Permit Condition II.I.2. [[WAC 173-303-380](#)]

6 **V.15.E SECURITY**

7 The Permittees will post signs at access points to the 241-CX Tank System stating the  
8 following (or an equivalent legend): Danger – Unauthorized Personnel Keep Out. These  
9 signs will be written in English, legible from a distance of 15.2 meters (50 feet), and  
10 visible from all angles of approach. The signs bear a legend which identifies the waste in  
11 a manner which adequately warns employees, emergency response personnel, and the  
12 public of the major risk(s) associated with the waste being stored or treated in the tank  
13 system(s). [[WAC 173-303-310\(2\)\(a\)](#) and [WAC 173-303-640\(5\)\(d\)](#)]

14 **V.15.F PREPAREDNESS AND PREVENTION**

15 Reserved

16 **V.15.G CONTINGENCY PLAN**

17 Reserved

18 **V.15.H INSPECTIONS**

19 **V.15.H.1** The Permittees will follow the inspection schedule in Addendum I and Permit Condition  
20 II.X until closure of the unit.

21 **V.15.H.2** In the event of any potential threats to human health or the environment, the Permittees  
22 will increase inspections to quarterly until the threats are removed.

23 **V.15.I TRAINING PLAN**

24 The Permittees will comply with the training requirements as described in Permit  
25 Condition II.C (Personnel Training), Permit Attachment 5 (Hanford Facility Personnel  
26 Training Plan), and Addendum G (Personnel Training).

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