ADDENDUM C
PROCESS INFORMATION

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C PROCESS INFORMATION

C.1 UNIT DESCRIPTION

The Double-Shell Tank (DST) System Operating Unit Group consists of 28 double-shell tanks located in 6 tank farms and the 204-AR Waste Unloading Station. The SY Tank Farm is located in the 200 West Area of the Hanford Site and consists of 3 tanks that have a design capacity of approximately 1.2 million gallons (mg) each. The AN, AP, AW, AY and AZ tank farms are located in the 200 East Area. The AN Tank Farm consists of 7 tanks. Each tank has an approximate capacity of 1.2 mg each. The AP tank farm has the highest number of tank at 8 and the highest per tank capacity of approximately 1.27 mg. The AW Tanks farm consists of 6 tanks that have a capacity of 1.2 mg each. Both of the AY and AZ tank farms consist of 2 tanks each with an approximately capacity of 1 mg. The first DST, 241-AY-101, began operation in 1971 and the last tanks began operation in 1986 (AP Tank Farm).

The DST System also has various types of ancillary equipment including, but not limited to pipelines between tanks within a tank farm and between tank farms, the Cross Site Transfer System which includes the 6241 Vent Station located between the SY Tank Farm in the 200 West Area and the AP Tank Farm in the 200 East Area, as well as various pits, seal pots, pumps, valves, jumpers, and nozzles.

The DST System also includes the 204-AR Waste Unloading Station which includes a tank system that is operational, except for the pipeline, LIQW-702, connecting the 204-AR Waste Unloading Station to the DST System which is in deferred status. Transfers from the 204-AR Waste Unloading Station to the other parts of the DST System will not occur until Ecology determines that the 204-AR Waste Unloading System Tank System is in compliance with WAC 173-303. The 204-AR Waste Unloading Station is a 2-story structure that consists of an unloading canyon that receives tanker trucks and rail cars and a 1500-gallon waste catch tank. Waste is drained to the catch tank for chemical adjustment as needed to meet the DST System waste acceptance criteria. Some waste is stored in the 204-AR Waste Unloading Station tank system that consists of water to maintain the drain seals and ventilation condensate.

C.2 Double-Shell Tank System Leak Detection for Primary and Secondary Containment Structures

C.2.1 Leak Detection for 241-AN Tank- Farm Primary and Secondary Containment Structures

The 241-AN Tank Farm DST Waste Storage System includes three types of leak detection, as follows:

- Primary tank leakage Enraf[1]monitoring in annulus
- Primary tank leakage: Enraf level gauges that measure primary tank waste level changes
- Primary tank leakage: Manual Gauge
- Pit leak detection: Detected by conductivity probe located near the pit floors

In addition to installed leak detection equipment, administrative/operational controls can be used to detect leaks during transfers. These controls include Health Physics Technician (HPT) monitoring and maintaining material balances.

C.2.1.1 Primary Tank Leak Detection – Enraf Monitoring in Annulus

The primary tank leak detection in 241-AN Tank Farms consists of three equally spaced Enrafs installed in the annulus and designed to detect the presence of liquid in the annulus. The Enraf gauges are monitored by the Tank Monitor and Control System (TMACS).

[1] Enraf is a trademark of Enraf, Inc., Houston, TX

The Enraf Series 854 level gauge measurement principle is based on the detection of variations in the weight of a displacer suspended in the annulus or process fluid. The displacer is connected to a wire wound on a precision measuring drum. The measuring drum and associated electronics are mounted on a tank riser. A level change causes a change in the weight of the displacer, which will be detected by a force transducer. When used as a leak detector, the displacer rests on the bottom of the tank until enough liquid enters, causing the displacer weight to decrease to its specified interface set-point weight. The depth the liquid reaches at this point is referred to as the "immersion depth." The immersion depth is set at 0.25 inches and when liquid reaches this level the Enraf gauge reports a change in liquid level and a leak is detected. Response to a confirmed leak detected in a DST annulus is conducted according to the requirements in Addendum J, Emergency Pumping Guide.

C.2.1.2 Primary Tank Leak Detection—Waste Level Monitoring; Enraf Level Gauge

The Enraf level gauge is a supplemental measuring device. It is extremely accurate, measuring to 0.1 in., and is used for maintaining strict accountability of the waste. Each tank in the 241-AN Tank Farm has one Enraf gauge. All Enraf gauges are located in Riser-4 (R-4). The Enraf senses the liquid level in the tank and is polled by TMACS as suitable for the storage conditions. The Enraf sends a digital signal to a communications interface unit, which sends the signal to the TMACS modem in the 242-AN-271 Instrument Control Building. The signal is transmitted to the central TMACS server for data storage and processing.

C.2.1.3 Primary Tank Leak Detection—Manual Level Gauge

Each tank may have a manual level indicator as a backup to the Enraf level gauge. The manual level indicator has a tape on a reel with a plummet attached. The reel box is permanently attached to the tank riser, and a measuring tape with a plummet is attached to the reel. The tape and plummet are inserted through the hole in the riser flange. The plummet is lowered manually to the surface of the liquid waste until the plummet makes contact with the waste surface and an electric circuit is made that is detected by a portable direct-current meter attached to terminals on the reel box. The operator then manually reads and records the level indicated on the tape as observed through the glass window on the reel box. The zero reading on the manual tape represents the bottom of the tank or zero waste depth. Measurements are recorded to 0.25-in. depth increments.

C.2.1.4 Secondary Containment Structure Leak Detection—Pit Leak Detection

All pit leak detectors are the conductivity-probe type. Several variations of pit leak detectors are in use, and periodically they are modified and changed in the pits. With exception of the valve pits and central pump pits, the current style in use at the 241-AN Tank Farm is a combination leak detector and floor drain assembly that uses a spring-loaded check valve requiring liquid accumulation to a detectable depth before draining occurs. The floor drain is a removable assembly that includes a check valve and a conductivity leak-detector probe. A lifting bale is attached to the assembly body to allow it to be removed or replaced. The check valve prevents backflow from the riser into the pit. It is set for 0.125 lbf/in^2 cracking pressure (differential). Considering the negative pressure in the tank, which varies, the pit drainage will occur only when the liquid level in the pit reaches from 5 to 9 in. in depth. The floor drain assembly nozzle drops into a 3-in.-embedded fitting that is part of the drain pipe. If either the check valve or the leak-detection probe needs maintenance, the assembly can be removed by simply lifting the unit out after the probe electrical connection is unplugged.

The central pump pit and valve pit structures contain a leak detector that hangs from the cover block hard wired to a leak detection and power supervisor circuit which is connected to the Tank Farm Monitoring and Control System (TFMCS). When a leak or circuit failure is detected the local leak detection station (LDSTA) strobe annunciates and the TFMCS annunciates a graphic alarm and a text alarm. Pump shutdown is accomplished by Operator response to the local strobe or TFMCS annunciation. The hanging leak detector probe height is typically set up to within a ¼" of the pit floor, but due to pit slope and placement away from the pit drain, the leak detectors are credited with detecting a leak within 10% of

the pit volume as outlined in RPP-13909. If a leak occurs along the transfer line, the leaked liquid is contained within the pipe encasement. The valve and pump pits provide containment for leaks or accident spray releases in the structures. If the leak occurs in the buried portion of the transfer lines, the encasement piping provides containment until the liquid is drained to ensure that no leakage goes into the surrounding soil. This is the same as for other tank farm transfer systems. Other pit leak detectors are freestanding. They include an assembly to hold the probes and adjustable legs to set the probe height above the floor. On these units, unless the floor drain is equipped with a lip to cause liquid to build up before overflowing into the drain, the leak detector may not detect small amounts of leakage. In the annulus the probe height is maintained at 0.25 inches (± engineering tolerances) from the annulus floor for 241-AN.

C.2.2 Leak Detection for 241-AP Tank Farm Primary and Secondary Containment Structures

The 241-AP Tank Farm DST Waste Storage System includes three types of leak detection, as follows:

- Primary tank leakage: Enraf monitoring in annulus
- Primary tank leakage: Enraf Level Monitor
- Primary tank leakage: Manual Gauge
- Pit leakage (into) during process water transfers: Detected by conductivity probe leak detectors in pits

Only the Leak-Detection System in the leak-detection pit is part of the Waste Storage System. Pipe-encasement leak detection and leak detection in the central pump pit, transfer pump pit, and drain pit is considered part of the Waste Transfer System and is not included in this section. Leak detection in the annulus pump pit is considered part of the EAPS and is not included in this section.

In addition to installed leak detection equipment, administrative/operational controls can be used to detect leaks during transfers. These controls include Health Physics Technician (HPT) monitoring and maintaining material balances.

C.2.2.1 Primary Tank Leak Detection – Enraf Monitoring in Annulus

The primary tank leak detection in 241-AP Tank Farms consists of three equally spaced Enrafs installed in the annulus and designed to detect the presence of liquid in the annulus. The Enraf Gauges are monitored by the TMACS.

The Enraf Series 854 level gauge measurement principle is based on the detection of variations in the weight of a displacer suspended in the annulus or process fluid. The displacer is connected to a wire wound on a precision measuring drum. The measuring drum and associated electronics are mounted on a tank riser. A level change causes a change in the weight of the displacer, which will be detected by a force transducer. When used as a leak detector, the displacer rests on the bottom of the tank until enough liquid enters, causing the displacer weight to decrease to its specified interface set-point weight. The depth the liquid reaches at this point is referred to as the “immersion depth.” The immersion depth is set at 0.25 inches and when liquid reaches this level the Enraf gauge reports a change in liquid level and a leak is detected. Response to a confirmed leak detected in a DST annulus is conducted according to the requirements in Addendum J, Emergency Pumping Guide.

C.2.2.2 Primary Tank Leak Detection—Waste Level Monitoring Enraf Level Gauge

The primary liquid level measuring device used in the 241-AP Tank Farm is the Enraf series 854 advanced technology gauge.

C.2.2.3 Primary Tank Leak Detection—Manual Level Gauge

Each tank may have a manual level indicator as a backup to the Enraf level gauge. The manual level indicator has a tape on a reel with a plummet attached. The reel box is permanently attached to the tank

riser, and a measuring tape with a plummet is attached to the reel. The tape and plummet are inserted through the hole in the riser flange. The plummet is lowered manually to the surface of the liquid waste until the plummet makes contact with the waste surface and an electric circuit is made that is detected by a portable direct-current meter attached to terminals on the reel box. The operator then manually reads and records the level indicated on the tape as observed through the glass window on the reel box. The zero reading on the manual tape represents the bottom of the tank or zero waste depth. Measurements are recorded to 0.25-in. depth increments.

C.2.2.4 Secondary Containment Structure Leak Detection—Pit Leak Detection

Only the pit leak-detection systems in the two leak-detection pits are considered part of the 241-AP Tank Farm DST Waste Storage System. The leak-detection pit leak detectors are the freestanding, conductivity-probe type. They include an assembly to hold the probes and adjustable legs to set the probe height above the floor. The floor drain is equipped with a lip or a removable plug to cause liquid to build up and activate the leak detector. In 241-AP Tank Farm, all leak detection signals go back to a common enclosure in the 241-AP instrument building, where functional testing is performed.

In the pits the probe height is maintained at 0.25 inches (± engineering tolerances) from the annulus floor for 241-AP.

C.2.3 Leak Detection for 241-AW Tank Farm Primary and Secondary Containment Structures

The 241-AW Tank Farm DST Waste Storage System includes three types of leak detection, as follows:

- Primary tank leakage: Enraf monitoring in annulus
- Primary tank leakage: Enraf Level Monitor
- Primary tank leakage: Manual Gauge
- Pit leakage (into) during process water transfers: Detected by conductivity probe leak detectors in pits

In addition to installed leak detection equipment, administrative/operational controls can be used to detect leaks during transfers. These controls include Health Physics Technician (HPT) monitoring and maintaining material balances.

C.2.3.1 Primary Tank Leak Detection — Enraf Monitoring in Annulus

The primary tank leak detection in 241-AW Tank Farms consists of three equally spaced Enrafs installed in the annulus and designed to detect the presence of liquid in the annulus. The Enraf gauges are monitored by the TMACS.

The Enraf Series 854 level gauge measurement principle is based on the detection of variations in the weight of a displacer suspended in the annulus or process fluid. The displacer is connected to a wire wound on a precision measuring drum. The measuring drum and associated electronics are mounted on a tank riser. A level change causes a change in the weight of the displacer, which will be detected by a force transducer. When used as a leak detector, the displacer rests on the bottom of the tank until enough liquid enters, causing the displacer weight to decrease to its specified interface set-point weight. The depth the liquid reaches at this point is referred to as the “immersion depth.” The immersion depth is set at 0.25 inches and when liquid reaches this level the Enraf gauge reports a change in liquid level and a leak is detected. Response to a confirmed leak detected in a DST annulus is conducted according to the requirements in Addendum J, Emergency Pumping Guide.

C.2.3.2 Primary Tank Leak Detection—Waste Level Monitoring; Enraf Level Gauge.

The Enraf gauge is a primary level-measuring device. It is extremely accurate, measuring to 0.10 in. and is used for maintaining strict accountability of all the waste. Each tank in the 241-AW Tank Farm has one Enraf gauge. All Enraf gauges are located on Riser R-4 except in Tank 241-AW-102, where it is

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located on Riser R-020. The Enraf level gauge can sense waste level every 10 seconds every minute every hour as suitable for the storage conditions. The Enraf sends either a digital or an analog signal to a signal converter, which in turn sends the signal to the TMACS modem in the 241-AW-271 Instrument Control Building. The signal is transmitted to the central TMACS server for data storage and processing.

C.2.3.3 Primary Tank Leak Detection Manual Level Gauge

Each tank may have a manual level indicator that has a tape on a reel with a plummet attached. The reel box is permanently attached to the tank riser. The tape and plummet are inserted through the hole in the riser flange. The plummet is lowered manually to the surface of the liquid waste until the plummet makes contact with the waste surface and an electric circuit is made that is detected by a portable direct-current meter attached to terminals on the reel box. The operator then reads and manually records that level indicated on the tape as observed through the window on the reel box. The zero reading on the manual tape represents the bottom of the tank, or zero waste depth. Measurements are recorded to 0.25-in.-depth increments. The manual level indicator is located in riser RISER-002 on each tank.

C.2.3.4 Leak Detection for Secondary Containment—Pit Leak Detection

The central pump pit and valve pit structures contain a leak detector that hangs from the cover block hard wired to a leak detection and power supervisor circuit which is connected to the Tank Farm Monitoring and Control System (TFMCS). When a leak or circuit failure is detected the local leak detection station (LDSTA) strobe annunciates and the TFMCS annunciates a graphic alarm and a text alarm. Pump shutdown is accomplished by Operator response to the local strobe or TFMCS annunciation. The Central Pump Pit and Valve Pit structures contain a leak detector hard wired with relays and connected to the relay cabinet in the 271 AW Building and to the MPSS circuits in a relay panel in the 242 A Evaporator Building. When a leak is detected in a structure, the LDSTA transmits a hard wired alarm signal to the relay cabinet in the 271 AW to shut down the six 241 AW transfer pumps, automatically terminating the transfer.

In addition leak detectors from the supernate lines SN 274, 267, 268, 269, 270, 219, 220, slurry lines SL 167 and 168 and process drain lines DR 334, 335, 361, LDSTAs provide a hard wired signal to the 271 AW relay cabinet to shut down the six 241 AW transfer pumps, automatically terminating the transfer are wired in to annunciate at the TFMCS.

The hanging leak detector probe height is typically set up to within a ¼" of the pit floor, but due to pit slope and placement away from the pit drain, the leak detectors are credited with detecting a leak within 10% of the pit volume as outlined in RPP-13909. In the pits annulus the probe height is maintained at 0.25 inches (± engineering tolerances) from the annulus floor for 241-AW.

C.2.4 Leak Detection for 241-AY and 241-AZ Tank Farms Primary and Secondary Containment Structures

The 241-AY and 241-AZ Tank Farm DST System includes three types of leak detection, as follows:

- Primary tank leakage: Enraf monitoring in annulus
- Primary tank leakage: Enraf Level Monitor
- Primary tank leakage: Manual Gauge
- Pit leakage (into) during process water transfers: Detected by conductivity probe leak detectors in pits

In addition to installed leak detection equipment, administrative/operational controls can be used to detect leaks during transfers. These controls include Health Physics Technician (HPT) monitoring and maintaining material balances.

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C.2.4.1 Primary Tank Leak Detection- Enraf Monitoring in Annulus

The primary tank leak detection in 241 AY/241 AZ Tank Farms consists of three equally spaced Enrafs installed in the annulus and designed to detect the presence of liquid in the annulus. The Enraf gauges are monitored by the TMACS.

C.2.4.2 Primary Tank Leak Detection - Enraf Level Gauge

The Enraf gauge is a supplemental level-measuring device. It is extremely accurate, measuring to 0.1 in. The gauge provides data necessary to maintain strict accountability for all waste volumes. Each tank in the 241-AY/241-AZ Tank Farms has one Enraf gauge designed to provide liquid level readings. The Enraf level gauge can sense waste level in the tank every 10 seconds, every minute, or every hour, as suitable for the storage conditions. The Enraf gauges are monitored by the TMACS.

C.2.4.3 Primary Tank Leak Detection - Manual Level Gauge

Each tank may have a manual level indicator as a backup to the Enraf level gauge. The manual level indicator has a tape on a reel with a plummet attached. The reel box is permanently attached to the tank riser, and a measuring tape with a plummet is attached to the reel. The tape and plummet are inserted through the hole in the riser flange. The plummet is lowered manually to the surface of the liquid waste until the plummet makes contact with the waste surface and an electric circuit is made that is detected by a portable direct-current meter attached to terminals on the reel box. The operator then manually reads and records the level indicated on the tape as observed through the glass window on the reel box. The zero reading on the manual tape represents the bottom of the tank or zero waste depth. Measurements are recorded to 0.25-in. depth increments.

C.2.4.4 Leak Detection for Secondary Containment—Pit Leak Detection

Several variations of pit leak detectors are in use, and periodically they are modified and changed in the pits. A floor drain seal assembly normally plugs the drain requiring liquid accumulation to a detectable depth before draining occurs. The drain can be lifted to remove residual waste from the pit. A lifting rod is attached to the floor drain assembly body to allow it to be removed or replaced. The pump pit floor drain seal has a 0.5-in. hole in the center to allow flammable gas to vent into the pit. Because the drain lines are submerged into the waste, a hole was necessary to prevent gas pressure build up in the drain line. Some 241-AY/241-AZ Tank Farm pit leak detectors are freestanding. They include an assembly to hold the probes and adjustable legs to set the probe height above the floor. On these units, unless the floor drain plug is closed, the leak detector may not detect small amounts of leakage.

The hanging leak detector probe height is typically set up to within a ¼" of the pit floor, but due to pit slope and placement away from the pit drain, the leak detectors are credited with detecting a leak within 10% of the pit volume as outlined in RPP-13909. In the pits annulus the probe height is maintained at 0.125 inches (± engineering tolerances) from the annulus floor for 241-AY and 241-AZ.

C.2.5 Leak Detection for 241-SY Tank Farm Primary and Secondary Containment Structures

The 241-SY Tank Farm DST System includes three types of leak detection, as follows:

- Primary tank leakage: Detected by Enraf Level Monitor in annulus
- Primary tank leakage: Manual Gauge
- Pit leakage (into) during process water transfers: Detected by conductivity probe leak detectors in pits

In addition to installed leak detection equipment, administrative/operational controls can be used to detect leaks during transfers. These controls include Health Physics Technician (HPT) monitoring and maintaining material balances.

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C.2.5.1 Primary Tank Leak Detection– Enraf Level Gauge

The Enraf gauge is the primary level-measuring device. It is extremely accurate, measuring to 0.1 in. It is the primary tool for sensing any level changes (which could indicate leakage) and for providing data necessary to maintain strict accountability for all waste volumes. The Enraf level gauge can sense the waste level in the tank every 10 seconds, every minute, or every hour as suitable for the storage conditions. Two Enraf level gauges are located at Tank 241-SY-101 and one each is located at Tanks 241-SY-102 and 241-SY-103. The second Enraf level gauge was added at Tank 241-SY-101 during modifications for the mitigation and remediation of gas-release events. The surface of the waste in the tank was a crystallized salt cake layer, and the second Enraf level gauge confirmed the irregularity of the surface during concurrent readings of the two gauges.

The original 241-SY Tank Farm installation provided conductivity probes (one per tank) as the primary tank leak-detection sensors. Under an agreement with Ecology, three Enraf level gauges per tank were substituted for the conductivity probes during the modifications for the mitigation and remediation of gas-release events. The conductivity probes were disconnected and abandoned in place.

C.2.5.2 Primary Tank Leak Detection - Manual Level Gauge

Each tank may have a manual level indicator as a backup to the Enraf level gauge. The manual level indicator has a tape on a reel with a plummet attached. The reel box is permanently attached to the tank riser, and a measuring tape with the plummet is attached to the reel. The tape and plummet are inserted through the hole in the riser flange. The plummet is lowered manually to the surface of the liquid waste until the plummet makes contact with the waste surface and an electric circuit is made as detected by a portable direct current meter attached to terminals on the reel box. The operator then manually reads and records the level indicated on the tape as observed through the glass window on the reel box. The zero reading on the manual tape represents the bottom of the tank, or zero waste depth. Measurements are recorded to ¼-in.-depth increments.

C.2.5.3 Leak Detection for Secondary Containment—Pit Leak Detection

The central pump pit and valve pit structures contain a leak detector that hangs from the cover block hard wired to a leak detection and power supervisor circuit which is connected to the Tank Farm Monitoring and Control System (TFMCS). When a leak or circuit failure is detected the local leak detection station (LDSTA) strobe annunciates and the TFMCS annunciates a graphic alarm and a text alarm. Pump shutdown is accomplished by Operator response to the local strobe or TFMCS annunciation. Each valve pit and pump pit, including the prefabricated pump pit structure ENCL 350, contains a leak detector. Some leak detectors annunciate in the 271-SY Building and some annunciate in a relay panel in the 242-S Evaporator Building. Some relays are connected to the West Area MPS signal and will shut down pumps during transfers. When a leak is detected in a structure, the LDSTA automatically transmits a hard wired alarm signal to the relay cabinet in the 271-SY Building to shut down the 241-SY-102 transfer pumps or the 241-SY-101 cross site pump (P350). The transfer pump can be shut down by activating the manual shut down controls. Transfer pump 241-SY-102 and cross site pump 241-SY-101 (P350) automatic shut down is shared between the two pumps and is selected by switch SY271-WT-SS-350. Transfer pump 241-SY-103, which is disconnected, shares power with transfer pump 241-SY-102. The prefabricated pump pit at 241-SY-101 contains a freestanding conductivity probe style leak detector with only a local annunciator (strobe) to indicate a leak or loss of power. If a leak occurred along the transfer line, the leaked liquid would be contained within the pipe encasement. The valve and pump pits provide confinement for leaks or accidental spray releases in the structures. If the leak occurs in the buried portion of the transfer lines, the encasement piping ensures that no leakage goes into the surrounding soil.

All pits associated with the 241-SY DST Waste Storage System have leak detectors. Several variations of leak detectors are in use at the 241-SY Tank Farm. The annulus pump pits, and leak-detection pits have three-legged freestanding leak detectors. They include an assembly to hold the two conductivity probes and adjustable legs to set the probe height above the floor. The freestanding leak detectors are used in

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conjunction with floor-drain seal assemblies that prevent pit drainage. The drain seal assembly has an operator rod extended through the pit cover block to allow the seal to be manually lifted and the pit totally drained.

The waste pump pit at Tank 241-SY-102 has a cover-block-mounted leak-detector assembly with the leak-detector electrodes suspended individually into the pit through an opening in the cover block. The probe height is maintained at 0.25 inches (± engineering tolerances) from the annulus floor. The hanging leak detector probe height is typically set up to within a ¼" of the pit floor, but due to pit slope and placement away from the pit drain, the leak detectors are credited with detecting a leak within 10% of the pit volume.

C.2.6 Leak Detection for 204-AR Waste Unloading Station- Tank 01

There are three drains in the floor of the canyon which are routed to the 1,500 gallon stainless steel catch tank TK-1. Any liquid that may have spilled from the unloading vehicle, process piping, or decontamination solutions drained to the floor and was collected in the catch tank. The tank also collected floor drain liquids from the unloading room, the mechanical equipment room, and the operating gallery (on the second floor balcony). The TK-1 catch tank is located below the floor elevation in a stainless steel-lined concrete pit, which contains a sump. The pit is covered with a removable steel grating. Liquid removal equipment is provided for the catch tank and the catch tank pit sump in the event of a leak or overflow from the catch tank. The catch tank is equipped with liquid level instrumentation, an overflow line that drains to the sump in the pit, inlet connections for the drain lines and decontamination solution, and a pump out line. The bottom of the catch tank is sloped toward the pump out line.

The catch tank liquid was transferred periodically to the DST System. The TK-1 tank is still functional and collects floor drainage, ventilation condensate and continues to be monitored with liquid level instrumentation, and a 'high-level' alarm.

Small amounts of water are added to TK-1 currently during maintenance of the drain seal loops for the three floor drains in the canyon.

C.2.7 Leak Detection Equipment Testing and Calibration

Functional testing/calibration of level indicators, leak detector equipment installed in pits, DST annulus, and primary tanks must be completed annually. Functional testing/calibration of encasement leak detectors on transfer lines shall be verified prior to use. Testing must have been completed within 365 days of transfers planned completion, or testing of the leak detection system must be completed prior to transfer initiation. Testing must be performed when equipment is replaced or repaired prior to being placed back into service.

Frequency of testing is tracked using a work control system. Functional testing/calibration is performed in accordance with work packages and/or procedures.

C.2.8 Tanker Truck Loading and Unloading

Waste may be transferred to or from a tanker truck through an over ground temporary waste transfer line using a hose in sleeve method with the below described secondary containment, leak detection and removal of waste from secondary containment to meet WAC 173-303-395(4).

Connection points of the hose at the tanker truck, along the hose to another hose or a pump/valve skid, and at a riser of the sending/receiving tank shall be sleeved such that the sleeve encapsulates any non-welded joints. This may require sleeving to go over valves which require manual operation at the beginning and end of the transfer. In this case the valve at the receiving end may be placed in the open position prior to the sleeving being installed as long as the hose is installed and the sending valve is closed prior to beginning the transfer. Once the transfer is complete the sleeving may be pulled back to

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expose the sending valve for closure prior to the hose disconnect. Both valves must be encapsulated with sleeving during the transfer.

During disconnection of the hose at any threaded or quick disconnect point a liquid catch device under the connection point is required. This device must be able to contain the full volume of liquid expected during disconnect and may be plastic bag with absorbent material or drip pan placed on the ground underneath the connection point.

Secondary containment to fully enclose pump and/or valve skids used along the transfer path will be designed with a drip pan under the skid equipment able to hold the full volume of the hose transfer line and piping/filters/pump etc. equipment mounted on the skid. The sides and top of the skid shall also be encapsulated secondary containment such as a plastic bag/box of sufficient strength to stop a spray leak and direct the liquid to the drip pan.

Visual inspection of the hose and associated components including the connection points will be used as leak detection during the manned transfers. This includes stationing personnel at the feed valve or pump to stop the waste flow should a leak be detected in place of an automatic shutoff device. Should a leak occur, the transfer will be stopped and any liquid removed from both the primary and secondary containment.

Any liquid in the secondary containment is will be removed by either draining the sleeving holding waste to an approved container or absorbing the liquid with absorbent. If a drip pan is used, liquid in the pan will either be pumped to a waste container and disposed of at the originally designated receiving station or absorbed with absorbent and placed in a container. The absorbed waste will be handled as newly generated waste and disposed of in accordance with WAC 173-303 regulations.

C.2.9 DST System Drawings

Drawings listed in Table C.1 are categorized as essential or support drawings, and may reference other drawings not listed in the table. Drawings not listed are considered references and not part of this addendum. Essential drawings depict active unit (e.g., nuclear and chemical storage facilities) systems, structures, and components (SSCs) and are necessary to support emergency response actions. Support drawings provide engineering, maintenance, and operations the details necessary for plant operations. Essential and support drawings are revised using an engineering change notice (ECN) process. Timeliness of revision of drawings is based on drawing categorization. Drawings listed in Table C.1 may show equipment that is currently not in use including but not limited to deferred and emergency use equipment. For the current status of equipment refer to the current version of drawing H-14-107346, Sheets 1 through 7, DST Waste Transfer Piping Diagram.

Upon completion of a construction projects, as-built drawings of the project, which incorporate the design and construction modifications resulting from all project design change documentation and nonconformance documentation, as well as modifications, made pursuant to WAC 173-303-830. Drawings will be placed into the Hanford Facility Operating Record, DST System file within twelve (12) months of completing construction, or will be submitted annually to Ecology, for current revisions.

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TABLE C.1 DST System Engineering Drawings			
Item	Drawing Number	Sheet(s)	Title
H-2 Drawings			
1.	H-2-90542	1	Piping Hydraulic Diagram 241-AP Tank Farm
2.	H-2-90534	1	Tank Cross Section 241-AP Tanks
3.	H-2-90451	1	Structural Drain Pits Plans & Section
4.	H-2-90448	1 & 3	Structural 241-AP Valve Pit Plans & Section
5.	H-2-90447	1 & 3	Structural Central Pump Pits Plans & Section
6.	H-2-90446	1	Structural Annulus Pump Pits Plans & Section
7.	H-2-76462	1 &2	Structural 02D Pump Pit Plans
8.	H-2-73791	1	Structural Receiver Pit 241-AN-01D & -01E
9.	H-2-71985	1	Hydraulic Diagram 241-AN Tank Farm
10.	H-2-71975	1	Tank Cross Section, 241-AN Tanks
11.	H-2-71913	1-5	Structural Valve Pit 241-AN-A & -B
12.	H-2-71912	1	Structural Central Pump Pit 241-AN-01A Through -07A
13.	H-2-71911	1	Structural Annulus Pump Pit 241-AN-01B Thru -07B
14.	H-2-71160	1	Tank Cross Section, 241-AN-107 Tank
15.	H-2-70762	1	Hydraulic Diagram Transfer Piping 241-AX Valve Pit to 241-AZ Tanks
16.	H-2-70706	1	Piping Plan & Profile 204-AR to 241-A-A Valve Pit
17.	H-2-70761	1	Hydraulic Diagram Transfer Piping 241-AX Valve Pit to 241-AY Tanks
18.	H-2-70427	1	Hydraulic Diagram 241-AW Tank Farm
19.	H-2-70394	1	Tank Cross Section 241-AW Tanks

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TABLE C.1 DST System Engineering Drawings			
20.	H-2-70315	1	Structural Feed Pump Pits Plans & Section 241-AW-02E
21.	H-2-70314	1	Structural Plans & Section Drain Pit 241-AW-02D
22.	H-2-70313	1	Structural Valve Pit Plans & Section 241-AW-A & B
23.	H-2-70312	1	Structural Central Pump Pits Plans & Section 241-AW-01A Thru 06A
24.	H-2-70311	1	Structural Annulus Pump Pits Plans & Section 241-AW-01B Thru 06B
25.	H-2-68309	1	Structural Concrete Annulus Pump-Out Pits Plans, Section & Details
26.	H-2-68307	1	Structural Concrete Sluice Transfer Box Plans & Details
27.	H-2-68304	1	Structural Concrete Pump Pits Plans & Sections Tank 241-AZ-102 & 101
28.	H-2-67317	1	Tanks 101 & 102 Section & Details 241-AZ Tank Farm
29.	H-2-64449	1	Tank Elevation & Details
30.	H-2-64329	1	Structural Concrete Annulus Pump-Out Pits Plans & Sections
31.	H-2-64313	1 & 4	Structural Concrete Pump Pits Plans & Sections
32.	H-2-37772	1	Tank Cross Section, 241-SY Tanks
33.	H-2-37771	1	Hydraulic Diagram TK-101, 102 & 103
34.	H-2-37713	1	Structural Plans & Section Drain Pit 241-SY-02D General Notes
35.	H-2-37712	1	Structural Valve Pit Plans & Section 241-SY-A & B
36.	H-2-37711	1	Structural Pump Pits Plans & Section 241-SY-01A, 02A & 03A
37.	H-2-37710	1	Structural Annulus Pump Out Pits Plans & Section 241-SY-01B, 02B & 03B
38.	H-2-131090	1& 2	Piping Hydraulic Diagram 241-AY
H-14 Drawings			
39.	H-14-105742	1& 2	Piping Floor Drain Seal Assy Drain Pit 241-AP-03D

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TABLE C.1 DST System Engineering Drawings			
40.	H-14-103266	1& 2	Piping Floor Drain Seal Assembly Valve Pit 241-AZ-VP
41.	H-14-102962	2	Structural Cover Blk Plans & Sections Pump Pit AZ-01A
42.	H-14-102668	1	Structural Cover Blocks 241-AZ-02A Plans & Details
43.	H-14-102656	1& 2	Piping Floor Drain Seal Assembly Pump Pits 241-AY-01A & 02A
44.	H-14-102451	26	Piping/Instrument P&ID Raw Water System (RW)
45.	H-14-021831	1	Raw Water System (RW) O&M System P&ID
46.	H-14-021807	1	Raw Water System (RW) O&M System P&ID
47.	H-14-021806	1	Raw Water System (RW) O&M System P&ID
48.	H-14-021803	1	Raw Water System (RW) O&M System P&ID
49.	H-14-021802	1	Raw Water System (RW) O&M System P&ID
50.	H-14-021801	1	Raw Water System (RW) O&M System P&ID
51.	H-14-020831	1-4, 6 & 7	Waste Transfer System (WT) O&M System P&ID
52.	H-14-020808	3	LIQW
53.	H-14-020807	1-7 & 9	Waste Transfer System (WT) O&M System P&ID
54.	H-14-020806	1-5	Waste Transfer System (WT) O&M System P&ID
55.	H-14-020803	1-6	Waste Transfer System (WT) O&M System P&ID
56.	H-14-020802	1-6	Waste Transfer System (WT) O&M System P&ID
57.	H-14-020801	1-6	Waste Transfer System (WT) O&M System P&ID
58.	H-14-020631	1-3 &5	Waste Storage Tank System (WST) O&M System P&ID
59.	H-14-020203	3	Ventilation Tank Annulus System (VTA) O&M System P&ID
60.	H-14-020202	2	Ventilation Tank Annulus System (VTP) O&M System P&ID
61.	H-14-020201	3	Ventilation Tank Annulus System (VTP) O&M System P&ID
62.	H-14-020131	2& 3	Ventilation Tank Primary System (VTP) O&M System P&ID
63.	H-14-020107	3	Ventilation Tank Primary System (VTP) O&M System P&ID

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TABLE C.1 DST System Engineering Drawings			
64.	H-14-020103	2	Ventilation Tank Primary System (VTP) O&M System P&ID
65.	H-14-020102	2	Ventilation Tank Primary System (VTP) O&M System P&ID
66.	H-14-020101	3	Ventilation Tank Primary System (VTP) O&M System P&ID
67.	H-14-010531	1-3	Dome Penetration schedules (WST/WSTA) Tank 241-SY
68.	H-14-010507	1& 2	Dome Penetration schedules (WST/WSTA) Tank 241-AZ
69.	H-14-010506	1-4	Dome Penetration schedules (WST/WSTA) Tank 241-AY
70.	H-14-010503	1-8	Dome Penetration schedules (WST/WSTA) Tank 241-AP
71.	H-14-010502	1-6	Dome Penetration schedules (WST/WSTA) Tank 241-AW
72.	H-14-010501	1-7	Dome Penetration schedules (WST/WSTA)
73.	H-14-107346	1-7	DST Waste Transfer Piping Diagram

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