4.0 PROCESS INFORMATION
[WAC 173-303-806(4)(b) – (c), 630 through 670]

This section describes the physical management of containerized wastes handled at the Dangerous Waste Storage Facility (DWSF) and liquid wastes handled in the Component Chemical Waste Tank (CCWT).

4.1 CONTAINERS

Container storage subject to permitting under WAC 173-303 Dangerous Waste Regulations is limited to the Dangerous Waste Storage Facility (DWSF), located in the southeast corner of the fenced facility.

4.1.1 Description of Containers

All containers used to store wastes are U.S. Department of Transportation approved containers for the phase of waste stored (i.e., liquid or solid matrix). The container material is selected to be compatible with the waste contained. Containers used to store wastes which contain free liquids (e.g., acids or bases) are made of high density polyethylene (HDPE), which is compatible with the waste stored. Wastes may be stored in new, used, or reconditioned containers from 5 to 55 gallons or steel boxes of up to 96 cubic feet capacity. All containers are visually inspected prior to use to ensure container integrity.

4.1.2 Container Management Practices

Protocols for management of containers at the DWSF are documented in site procedures which describe the operational steps required to assure safe and effective handling and storage of dangerous wastes and mixed wastes at the

AREVA facility (see figures 1-4 in Section 1.0 of this permit application). AREVA's procedures assure compliance with the requirements as included in WAC 173-303-630(2) – (7).

All containerized dangerous/mixed waste generated at this facility is ultimately stored at the DWSF, which has a maximum capacity of ~4500 55-gallon containers when stacked three high, two wide, with a minimum of 30 inch aisle spacing. Typically, the largest capacity storage container used on a regular basis is 55 gallons. However, if necessary, a 55 gallon container may be placed into a 70 gallon overpack to meet specific shipping requirements or as containment for a leaking container. AREVA has a procedure which requires a form to be completed and kept on file for the required weekly DWSF inspections.

Routinely generated waste is managed in satellite waste containers which are located throughout the facility. AREVA has a site procedure which serves as a facility-wide tool for managing and accumulating all dangerous wastes that are collected in satellite containers. Non-routine waste generation is handled on a case-by-case basis. Both routinely generated waste containers (satellite) and non-routine type waste containers are moved to the DWSF within three days. All mixed waste is packaged for storage in the Volume Reduction Facility (VRF) prior to storage at the DWSF. A listing of waste types which are stored at the DWSF is included in the Waste Analysis Plan, which is included in Section 3.0 of this permit application.

4.1.3 Container Labeling

AREVA has a procedure to ensure that containers are labeled properly for both onsite storage and offsite shipments. Container labeling meets the requirements as included in WAC 173-303-806(4)(b)(iii), 395(6), and 630(3). Labeling of dangerous and/or mixed waste is performed by trained technicians that are knowledgeable of the Ecology and Department of Transportation labeling and marking requirements. Site procedures also include criteria for removing or otherwise destroying labels and markings from empty containers.

4.1.4 Containment Requirements for Storing Containers

All containers with free standing liquids are stored under the covered portion of the DWSF on secondary containment pallets. Secondary containment pallets meet the requirements as included in WAC 173-303-630(7). Per AREVA procedure, only compatible wastes may be stored on the same secondary containment pallet.

Containers managing wastes which do not contain free-standing liquids are placed on wooden or plastic pallets. Per procedure, only compatible waste types may be stored on the same pallet.

4.1.5 Secondary Containment System Design

All containers with free standing liquids are stored on secondary containment pallets capable of containing the volume of the largest container or ten percent of the volume of all containers stored on the pallet. Secondary containment for the DWSF itself is not required since each drum containing free liquids will be placed on a secondary containment pallet.

4.1.6 Control of Run-on

The asphalt pad at the DWSF slopes away from the covered area to prevent stormwater run-on as required in WAC 173-303-640(7)(b). Furthermore, all containers managed at the DWSF which do not contain free liquids and are not under the covered area are stored on wooden pallets. The approximate 4" elevation of the pallets eliminates contact with any storm water runoff.

4.1.7 Removal of Liquids from Secondary Containment

All drums placed on secondary containment pallets are stored under the covered portion of the DWSF, therefore no storm water will accumulate in these pallets. Any liquids detected in secondary containment pallets will be pumped or otherwise collected within 24 hours of detection per site procedure. The remaining contents of the defective container will be pumped or poured into the same container used to collect liquid from the secondary containment pallet if there is sufficient capacity. All liquid collected will be managed per the requirements of Ecology's Dangerous Waste Regulations (WAC 173-303).

4.1.8 Prevention of Reaction of Ignitable, Reactive, and Incompatible Wastes in Containers

AREVA does not generate or store reactive waste.

4.1.9 Design of Areas to Manage Incompatible Wastes

On an infrequent basis incompatible wastes (primarily acids, bases) are stored at the DWSF. These waste types and any other incompatible wastes are stored on separate containment pallets in different rows of the DWSF. All waste is stored in accordance with the Uniform Fire Code.

4.2 COMPONENT CHEMICAL WASTE TANK (CCWT)

4.2.1 Design Requirements

The Component Chemical Waste Tank (CCWT) is a 2,000 gallon capacity, high-density cross-linked polyethylene, double containment vessel (see Attachment 4.1). The inner tank is 7'5" O.D. and 7'2" high, while the outer tank is

10' O.D. Per applicable American Society for Testing and Materials (ASTM) - 1998-91 standards at the time the tanks were manufactured, the minimum wall thickness of either tank is 0.187". Shell thickness of high-density cross-linked polyethylene is not expected to diminish during the lifespan of the tank. The outer tank is constructed of two sections which are mated together above the containment level using a bolted flange. The tanks are fabricated as seamless, one-piece construction with no linings or coatings. Because the tanks and ancillary equipment are non-metallic, corrosion protection is not required.

The foundation is a 6-inch thick, cast-in-place, reinforced concrete monolithic slab with a thickened edge. The design is in accordance with the requirements of the Uniform Building Code (UBC) and the American Concrete Institute. The foundation is located on rocky, granular, sandy soils that are free-draining and not susceptible to frost heave.

The concrete foundation is designed for the following loads:

- Wind — 80 mph, Exposure "C"
- Snow — 25 psf
- Seismic — UBC Zone 2B
- Vessel Operating Weight — 17,670 lbs

The tank vessel is anchored to the foundation to prevent sliding during a seismic event. Piping systems attached to the vessel are flexible to prevent a leak or rupture from any lateral movements that may result from a seismic event.

CCWT wastes are derived from the pickling process, a chemical process applied to stainless steel components to remove any free iron from the component surfaces and impart a corrosion resistant oxide coating. The pickling solution is a combination of deionized water, nitric acid (1-2 M), oxalic acid (~5%), and an organic surfactant/wetting agent(<1%). Batches of spent pickling solution (~27 gallons ea.) are pumped from the process dip tank to the CCWT approximately every 2-3 weeks. Between batches the dip tank is rinsed with water, with the rinsate also routed to the CCWT.

Liquid wastes from the CCWT are periodically transferred to an offsite vendor for ultimate treatment and disposal.

The manufacturer's literature for these tanks documents their design and fabrication standards as well as certifies their chemical resistance to the waste solutions contained.

4.2.2 Integrity Assessments

A written assessment certified by an independent professional engineer attesting to adequate tank design and integrity of the tanks and ancillary equipment is included as Attachment 4.2.

A schedule for additional integrity assessments over the intended life of the tank is also provided in Attachment 4.2.

4.2.3 Additional Requirements for Existing Tanks

Tank shell thickness, as stated in section 4.2.1, is a minimum of 0.187", which is based on ASTM 1998-91. Because the tank and ancillary piping are non-metallic, corrosion prevention is not required. The tank assessment, performed by an independent, certified, professional engineer, found the tank to be suitable for its intended purpose.

4.2.4 Secondary Containment and Release Detection for Tank Systems

The CCWT is actually a tank-within-a-tank system; the outer, secondary containment tank is also constructed of high density cross-linked polyethylene. The outer tank is designed for pressure gradients, climatic conditions, and the stress of daily operations. The electronic leak detection system probe is located between the walls of the two tanks on ground level, with the alarm panel located inside the adjacent component etch/pickle work area. The leak detection system was designed to detect the failure of the primary containment tank and will detect the presence of any release of liquid within 24 hours as required. The secondary containment tank is enclosed and sealed to prevent precipitation from entering. The design of the tank precludes any release from the inner tank from directly contacting the environment. All ancillary piping is of compatible material, above ground, and is visually inspected each operating day. The CCWT meets the secondary containment requirements as included in WAC 173-303-640(a)(b)(c)(d).

Any leaked or spilled liquid is either pumped into the inner tank or in other appropriately sized collection containers (portable tanks, drums, etc.) pending final disposal.

4.2.5 Tank Management Practices

Due to operational controls and the fact that the CCWT is hard-piped to the waste generating process, the probability that incompatible wastes will enter the CCWT is minimal.

The CCWT is equipped with a continuous electronic level detection system that is set to alarm when the tank reaches 80% of capacity. Additionally, each day the component pickling/etching process is in operation, the CCWT tank level is visually inspected.

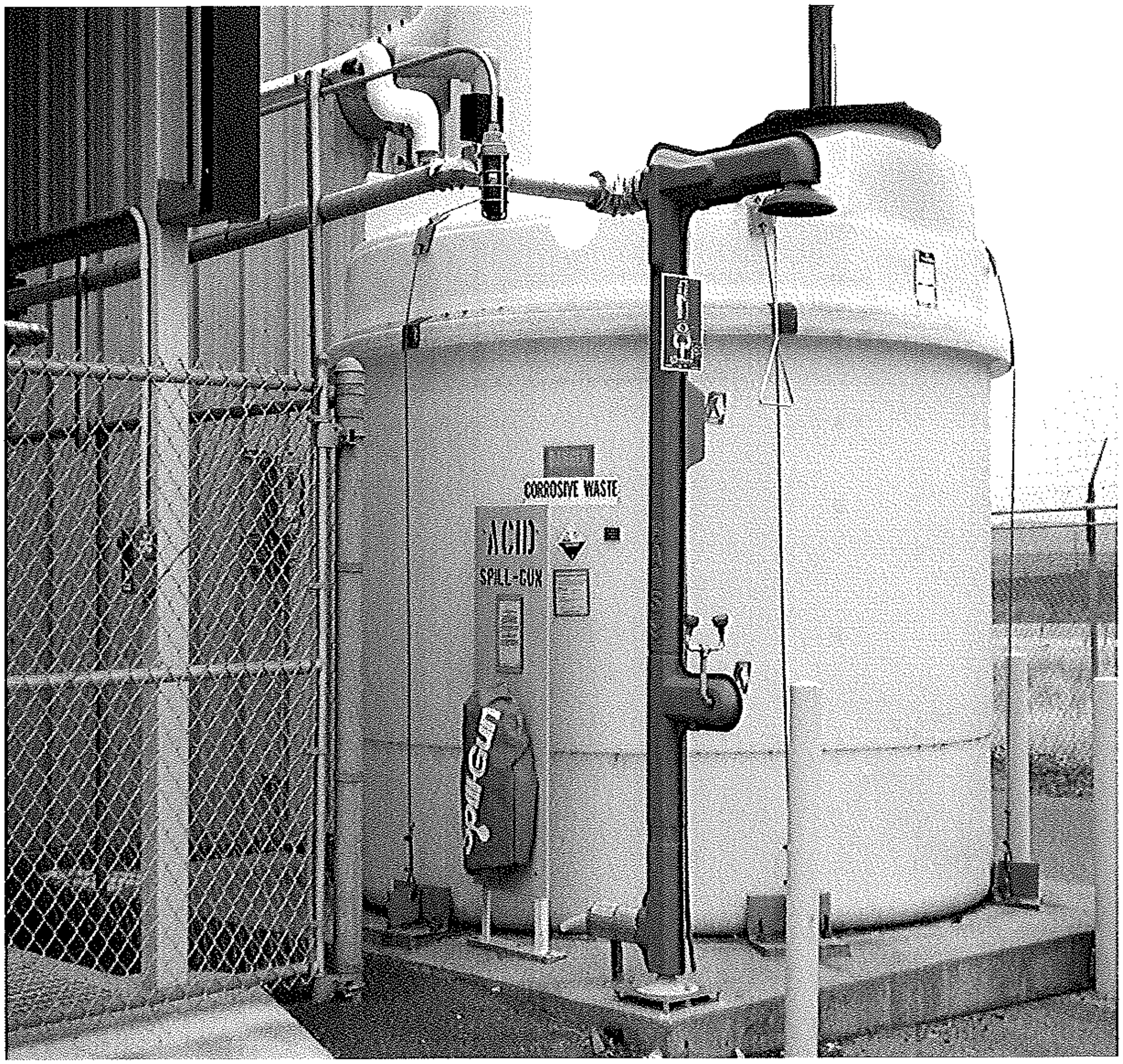
4.2.6 Tank Labels or Signs

The CCWT is labeled to identify the waste contained and major risks associated with the contents of the tank (see Attachment 4.1) as required per 173-303-640(5)(d).

4.3 WASTE MINIMIZATION

AREVA has an Ecology approved Pollution Prevention Plan in the form of an ISO 14001 Environmental Management System. A report will be submitted to Ecology annually fulfilling the requirements WAC 173-307, Pollution Prevention Planning.

Attachment 4.1 Component Chemical Waste Tank



Attachment 4.2 CCWT Integrity Assessment

VISTA
ENGINEERING TECHNOLOGIES

November 19, 2008

AREVA NP Inc.
2101 Horn Rapids Road
Richland WA, 99354
Attn: Jim Perryman

Subject: Tank Integrity Assessment Report for Areva Component Chemical Waste Tank System

Dear Mr. Perryman:

Vista Engineering Technologies, LLC is pleased to submit the attached Tank Integrity Assessment Report for Areva Component Chemical Waste Tank System prepared per the requirements of WAC 173-303-640, Tank Systems.

The attached report details the inspections conducted during the week of 9/22/08 on the subject tank, and provides the independent assessment and certification statement for the tank system pursuant to WAC 173-303-810(13)(a) per our service agreement.

If you have any questions, please do not hesitate to call me directly at (509) 737-1377.

Sincerely,

11/19/08
James T. Lovelady, PE
Senior Engineer

VISTA ENGINEERING TECHNOLOGIES, L.L.C.
1355 Columbia Park Trail • Richland, WA 99352 • (509) 737-1377 • Fax (509) 737-1383 • www.vistaengr.com

VET-1583-RPT-001

Tank Integrity Assessment Report for Areva Component Chemical Waste Tank System

Summary:

The results of the independent Tank Integrity Assessment performed by Vista Engineering Technologies, LLC on behalf of Areva are presented below. Results of the assessment demonstrate that the Component Chemical Waste Tank System (inner and outer tank assemblies) is structurally sound with required seismic restraints and protective bollards present and in good repair. Full capacity leak tests demonstrate that there are no leaks within either of the tank assemblies or from any tank wall thru-fittings. Interfacing equipment, piping, and supports are adequately designed to prevent inadvertent loads into the Polyethylene tank assemblies. The indication and alarm systems are verified as operative and in current calibration. The Component Chemical Waste Tank System satisfies the requirements of WAC 173-303, and the installation will continue to satisfy those requirements for a two year period prior to re-examination, assuming the procedures, processes and stored chemicals associated with the containment system remain unchanged during that period.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

JTL 11/19/08
James T. Lovelady, PE

JAMES TRACY LOVELADY
STATE OF WASHINGTON
36142
REGISTERED
PROFESSIONAL ENGINEER
EXPIRES 10/17/2010

VISTA ENGINEERING TECHNOLOGIES

1355 Columbia Park Trail
Richland, WA 99352
(509) 737-1377
www.vistaengr.com

Existing Containment Tank Design:

The Component Chemical Waste Tank System inspected during this independent assessment has been in place and in use since October 1994. The double containment on-ground system consists of two high density cross-linked polyethylene tanks produced by Poly Cal Plastics, in accordance with ASTM D1998-91. The inner tank is identified as stock number 09-U, (7'-5" OD, 7'-2" H) with a capacity of 2000 gal. The outer tank is constructed of two sections using stock number SP-882-XL (10'-0" OD). The two sections are mated together above the containment level using a bolted flange.

The dual tanks are secured to an outdoor 6" thick reinforced concrete slab on grade. Six embeds are installed equally spaced around the bottom of the outer tank to prevent lateral movement during a seismic event. Seismic restraint cables are attached to the embeds on the bottom end, and join together at a common ring which rests on the center of the tank top.

Bollards are installed around the slab to protect the tank and exterior piping from inadvertent damage from factory traffic on the adjacent paved areas.

The tank vent is adequately sized and free flowing. The vent is connected to a scrubber system, such that fresh air is drawn continuously into the tank, with the vent gasses processed through the scrubber. The system is constructed to prevent positive pressure in the tank.

Dangerous Characteristics of the Waste(s):

The vessel is used for temporary storage of process effluent. The components of the effluent are dilute Nitric acid, dilute Ammonium Nitrate, and dilute Hydrochloric Acid.

Corrosion Resistance:

The containment system is constructed of cross-linked polyethylene. Industry standards and Manufacturer recommendations confirm that the tank material is appropriate for the waste contained. Pipes and fittings connected to the vessel are either stainless steel or polypropylene.

Integrity Assessment:

WAC 173-303-640 of the Washington Administrative Code points to the Washington State Department of Ecology Publication No. 94-114, "*Guidance for Assessing and Certifying Tank Systems that Store and Treat Dangerous Waste,*" as a reference for conducting independent assessments of Tank systems. This document was used to develop the following sequence of inspections to satisfy the requirements of the WAC.

1. Visual Inspection:

   Due to the age of the polyethylene tank, greater than 10 years, the obvious concern was to examine the tank for environmental stress cracking due to UV exposure and the chemical makeup of the typical contents stored in the tank. The inner tank and interstitial were first pumped out and flushed with fresh water and pumped as dry as possible. The method used to identify environmental stress cracking (surface crazing) was to use a water based, felt tip marker to stain selected 2-3 sq in areas for detailed inspection. The applied "stain" is wiped off the surface prior to drying, leaving any stress cracking highlighted. Tank manufacturers specify this method be used when sacrificial coupons are not installed during the initial tank installation, and it is standard industry practice.

   Efficacy of the method was verified on the outer tank top prior to proceeding: since the exterior tank lid has been exposed to the environment since the system was installed, it was expected to show signs of ultraviolet degradation. While the inspection did demonstrate evidence of environmental stress cracking on the tank top surface, it was mild based on experience inspecting similar tank installations. The surface remains smooth and there is minimal discoloration. Once validated, the same procedure was used to inspect the tank walls, the tank bottoms, areas near fittings or outlets, any edges or seams, and areas of concern exposed during the gross visual inspection.

   Entry into the inner tank was not an option due to the geometry of the installation. The inspection method described above was repeated on a total of twelve locations on the inner tank surface using a boroscope/video system to examine the stained surface for stress cracking (four at the tank bottom, two at the bottom radius, two at tank seams, and four random locations on vertical tank walls). No chemical stress cracking or degradation was identified. The top of the inner tank was accessible with no extraordinary means. Examination of four separate locations on the inner tank top showed no signs of chemical or environmental degradation. This is an expected result due to the inner tank being effectively shaded by the outer tank.

   Access to the interstitial was arranged for examination of the outer wall of the inner tank and the inner wall of the outer tank. Eight locations on each of these walls were stained and inspected with no stress cracking found. Four locations on the outer tank bottom (bottom of the interstitial) were examined, with no anomalies noted.

   The exterior surface of the outer tank walls were examined in detail--since the outer tank lid showed signs of stress cracking, it was likely that the vertical walls of the outer tank would be similarly impacted from environmental exposure. Sixteen separate areas were examined, and no indication of cracking, crazing, or degradation was noted. A single surface anomaly at the upper seam (5'-8") on the side of the tank nearest the Component Center Fan Room did absorb stain, but it was determined to be a result of the manufacturing process. Examination of this location from the interstitial side showed a virgin surface. Subsequent leak testing showed no change in appearance of the anomaly and no indication of any leakage.

2. Leak test

The inner tank was filled to 100% full (77" above tank bottom) with fresh water and allowed to sit over night. Since the interstitial was rinsed and pumped dry prior to filling the inner tank, it would capture any leakage from the inner tank providing positive indication of a pass or fail condition. No leaks were indicated during the test, and there was no localized bulging of the tank walls confirming structural integrity of the inner tank.

With the inner tank still filled, the interstitial was filled with fresh water to just below the fill level of the inner tank (74" above tank bottom) to prevent compressive loads on the inner tank. The tanks were again allowed to sit over night to allow any leaks to accumulate and be noticed. No leaks were indicated during the test, and no localized bulging of the outer tank was noted, confirming structural integrity of the outer tank/secondary containment vessel. The contained volume within the tank system during the leak test sequence equates to an additional 1600 gallons of fluid, or 80% above the design capacity of 2000 gallons for the primary tank.

3. Level / Leak Indication Systems

The leak test of the inner tank allowed for a practical test of the tank level indication system. With the tank in the 100% full condition, the indication system indicated 87% full, with the audible alarm set to trigger at 85%. Investigation into the anomaly showed that the capacitive liquid level probe was corroded due to prolonged exposure to the chemical contents of the tank. A replacement probe was subsequently installed and calibrated correcting the condition. A copy of the new calibration sheet was provided as evidence of the repair after the new probe was installed and verified.

During inspection of the interstitial, a checkout of the leak indication system was performed. The leak system has two separate channels, with the as-found condition demonstrating that only one channel was operating. The reason for the failure of the second channel was corrosion of the probe wire. The condition was corrected and both channels were verified as indicating a "leak" independently prior to exiting the interstitial.

4. Mechanical Connections:

   a.) Seismic restraints, foundation attachments, and wear plates between the restraint cables and the outer tank top were all intact and in satisfactory condition.
   b.) The concrete pad is in good condition with only typical surface cracking present. There are no indications of uneven settling.
   c.) There is no evidence of leakage of the interfacing piping system.
   d.) The vent system is clear and free flowing. The system is adequately designed to prevent positive pressure within the tank system.
   e.) All connections to the tank are "flexible" and do not introduce loads into the tank.

Conclusions:

The Component Chemical Waste Tank is structurally sound and capable of safely storing the effluent from the Areva Component Center Processes. The chemical constituents of the effluent are dilute enough that there is no physical evidence of degradation of the inner (primary) storage tank. The primary tank is totally contained with the outer (secondary containment) tank, and is adequately protected from environmental degradation. If the conditions and processes used at the Component Center remain unchanged, and the effluent remains similar to its historical make up, the primary tank can be expected to remain adequate for another two years, after which reassessment is recommended.

The tank top of the secondary containment vessel is beginning to show signs of UV degradation. At this point in time, stress cracking is minor, with very little or no stain being drawn into surface imperfections. The surface remains smooth with very little discoloration. Since the tank top is not part of the secondary containment system (it serves as a cover preventing rain from entering the interstitial and is attached via a non-fluid tight bolted flange connection to the tank) it is not an issue for containment. The underside surface of the outer tank top remains a virgin surface. The outer tank walls of the secondary containment vessel show no signs of chemical or environmental degradation. The outer tank was filled to 180% of the primary tank containment volume during the leak test procedure confirming structural integrity of the vessel. The secondary containment vessel can be expected to remain adequate for another two years, after which reassessment is recommended, with particular emphasis on the condition of the outer tank top due to environmental exposure.

The tank level indicator has been recently replaced due to corrosion effects, so it is recommended that the unit be examined closely during its periodic calibrations to address corrosion issues and ensure proper operation. Likewise, the leak detector wires are subject to corrosion, so it is an obvious recommendation to initiate a scheduled activity to check these probes for corrosion during periodic maintenance.

The Areva Component Chemical Waste Tank satisfies all Washington State Department of Ecology requirements specified in WAC 173-303. Any change in the Component Center processes producing effluent stored in this tank or in the chemical makeup of the effluent should prompt an internal Areva review to determine its potential impact on the containment system. It is recommended that the inspection interval be placed at two years for this tank system due to the age of the system.

References:

1. WAC 173-303, Dangerous Waste Regulations.
2. Publication No. 94-114, *"Guidance for Assessing and Certifying Tank Systems that Store and Treat Dangerous Waste,"* Washington State Department of Ecology, 1994.
3. ASTM D1998-94, "Standard Specification for Polyethylene Upright Storage Tanks," American Society for Testing and Materials, 1994.