

RECEIVED

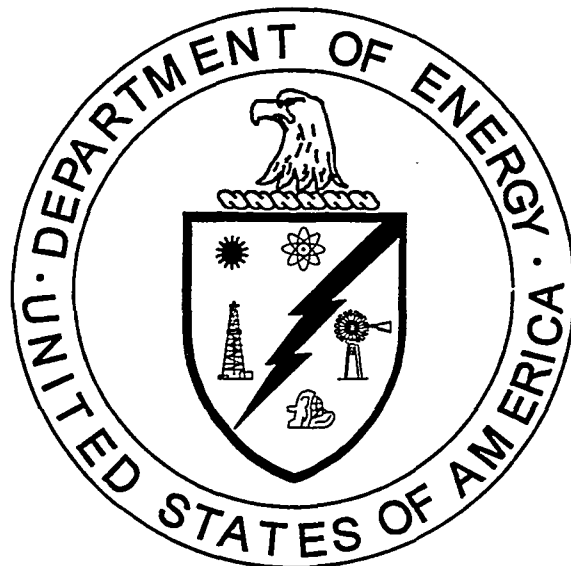
OCT 16 1995

OSTI

M-4842
DOE/OR/03-1418&D1

ORNL/M--4842

**Design Assessment for the Bethel Valley FFA Upgrades
at Oak Ridge National Laboratory
Under the Federal Facility Agreement,
Oak Ridge, Tennessee**



MASTER

DISCLAIMER

This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof.

DISTRIBUTION OF THIS DOCUMENT IS UNLIMITED

This report has been reproduced directly from the best available copy.

Available to DOE and DOE contractors from the Office of Scientific and Technical Information, P.O. Box 62, Oak Ridge, TN 37831; prices available from 615-576-8401 (fax 615-576-2865).

Available to the public from the National Technical Information Service, U.S. Department of Commerce, 5285 Port Royal Rd., Springfield, VA 22161.

Energy Systems Environmental Restoration Program
ORNL Environmental Restoration Program

**Design Assessment for the Bethel Valley FFA Upgrades
at Oak Ridge National Laboratory**

Date Issued - September 1995

Prepared for
U.S. Department of Energy
Office of Environmental Management
under budget and reporting code EW 20

Environmental Restoration and Waste Management Programs
Oak Ridge National Laboratory
Oak Ridge, Tennessee 37831-8169
managed by
LOCKHEED MARTIN ENERGY SYSTEMS, INC.
for the
U.S. DEPARTMENT OF ENERGY
under contract DE-AC05-84OR21400

PART I

BUILDING 3025E LLLW UPGRADE

AND

HOG POT UPGRADE

A. DESIGN ASSESSMENT

**UNITED STATES DEPARTMENT OF ENERGY
OAK RIDGE OPERATIONS**

**PROJECT ORDER 940001.01
Work Breakdown Structures 1.1 & 1.2**

**FFA COMPLIANCE CERTIFICATION
FOR
THE BETHEL VALLEY FFA UPGRADES**

THIS DOCUMENT IS THE PROPERTY OF THE DEPARTMENT OF ENERGY, PREPARED BY FOSTER WHEELER ENVIRONMENTAL CORPORATION UNDER CONTRACT NO. DE-AC05-91OR21928 FOR EXECUTION OR REVIEW OF THE ENGINEERING AND CONSTRUCTION OF THE SUBJECT PROJECT. THE ORIGINAL CERTIFICATIONS AND SUBSEQUENT REVISIONS THEREOF, WITH APPROVAL NAMES, INITIALS, DATES, AND WITH THE P.E. SEAL, ARE MAINTAINED IN THE FILES.

Prepared under the supervision of Peter Stanish
Tennessee PE Number 23435



Revision	Prepared by	Reviewed by	Approved by	Date	Pages Affected
0	C.S. med	P. Stanish	P. Stanish	9/8/95	All

**FOSTER WHEELER ENVIRONMENTAL CORPORATION
FEDERAL FACILITY AGREEMENT
APPENDIX F
COMPLIANCE CERTIFICATION
BETHEL VALLEY FFA UPGRADES PROJECT - WBS 1.1 & 1.2**

A. PROJECT SUMMARY

WBS 1.1 BUILDING 3025E LLLW UPGRADE

Facility 3025E is a general purpose research facility utilized by the Materials and Ceramic Division to conduct research on irradiated materials. The facility contains hot cells, glove boxes, hoods, etc. all dedicated to research missions conducted within the facility. Upgrades to the facility are intended to bring facility LLLW drains in compliance with the Federal Facility Agreement (FFA). The upgrades are described below.

- **Internal Piping:**
Above ground flanged horizontal runs of existing LLLW single-wall piping will be replaced with new welded single-wall piping. The upgrade will provide a 250 gallon intermediate collection tank (ICT) located in the northeast corner of the Hot Storage Room (room #A13) in Building 3025E. The tank will collect and retain effluent from the buildings' hot cell drains until such time as the facility management initiates a transfer of the contents. An air operated transfer pump shall be provided. The tank and the pump will be separated by a shield wall and the general room area shall be shielded from the tank. The tank shall have a secondary containment structure sized to contain the entire volume of the tank with a sump provided to allow monitoring and to provide a collection point for any tank leakage. The design shall have provisions to allow for the sump to be pumped back into the tank.

Both the tank and the hot storage room shall be ventilated and provided with equipment to maintain negative pressures. Ventilation paths shall be provided with inlet and exhaust HEPA filtration.

A transfer pipe from the collection tank shall be routed through the north wall, below grade, and run west to valve box 1A.

- **External Piping:**
A new double-wall pipe line will be installed to convey LLLW from the building to valve box 1A
- **Central Instrumentation:**
An alarm output, signifying a problem in the external drainage system handling the 3025E LLLW, will be added to the Waste Operations Control Center (WOCC), along with a pressure measurement and transfer valve position status indication.
- **Decontamination:**
The areas of Building 3025E that provide access to the drain piping undergoing modifications will be decontaminated prior to the start of work.

**FOSTER WHEELER ENVIRONMENTAL CORPORATION
FEDERAL FACILITY AGREEMENT
APPENDIX F
COMPLIANCE CERTIFICATION
BETHEL VALLEY FFA UPGRADES PROJECT - WBS 1.1 & 1.2**

A. PROJECT SUMMARY (cont,d)

WBS 1.2 HOG POT UPGRADE

The Hot Off Gas (HOG) Pot serves as a drain to the underground HOG ventilation system ductwork. The HOG Pot currently drains to LLLW Tank WC-9 which is scheduled to be removed from service in accordance with the FFA. The waste handled by the HOG Pot is primarily rainwater and is classified as process waste. This project will intercept the HOG ductwork upstream of the current HOG Pot and reroute the drain to a buried condensate tank, which when filled will be drained to the Process Waste System. All tank status signals will be interfaced to the WOCC via the DCS Process Control Unit located at the TWRF, Building 2649.

B. STANDARDS FOR DESIGN/INSTALLATION OF NEW OR REPLACEMENT TANK SYSTEMS

REQUIREMENT:

- 1(a) The design/installation assessment for each new or replacement tank system(s) design shall include, at a minimum, the design standards, including available as-built specifications, according to which tank(s) and/or ancillary equipment are constructed.

ASSESSMENT:

COMPLIANT - The specifications associated with the equipment (valves, tanks, etc.) and piping furnished with this project have been reviewed and include all of the codes, standards and design criteria necessary to meet the project requirements.

REQUIREMENT:

- 1(b) The design/installation assessment for each new or replacement tank system(s) design shall include, at a minimum, the hazardous characteristics of the hazardous and/or radioactive substance(s) to be handled (on a tank specific basis).

ASSESSMENT:

COMPLIANT - The characteristics of the LLLW fluid within the piping and tank included on this project were assessed. The fluid constituents being handled within the system included on this project consist of varying quantities of dilute solutions of Methyl Alcohol, Sulfuric Acid, Nitric Acid, Acetone, Ethyl Alcohol, Freon 113, Deionized Water, and household type cleaning products at relatively low temperatures (<100°F). A listing of some of the fluid properties

**FOSTER WHEELER ENVIRONMENTAL CORPORATION
FEDERAL FACILITY AGREEMENT
APPENDIX F
COMPLIANCE CERTIFICATION
BETHEL VALLEY FFA UPGRADES PROJECT - WBS 1.1 & 1.2**

B. STANDARDS FOR DESIGN/INSTALLATION OF NEW OR REPLACEMENT TANK SYSTEMS (cont'd)

1(b) (cont'd)

is included on the process flow diagrams. In addition to the identification of the constituents, the activity level of the radionuclides in the fluid being transferred was also identified. Based on this information, the materials of construction of the equipment and piping are acceptable for the application. The tank vault ceiling and wall thickness are provided in accordance with the dictates of health physics.

REQUIREMENT:

1(c)i The design/installation assessment for each new or replacement tank system(s) design shall include, at a minimum, for new or replacement tank system(s) in which the external shell of a metal tank or any external metal component(s) of the tank system(s) will be in contact with the soil, moisture, or other precipitation a determination by a corrosion expert of the factors affecting the potential for corrosion, including but not limited to:

- (A)** Soil moisture content;
- (B)** Soil pH;
- (C)** Soil sulfides level;
- (D)** Soil resistivity;
- (E)** Structure to soil potential;
- (F)** Influence of nearby underground metal structures (e.g., piping);
- (G)** Existence of stray electric currents;
- (H)** Existing corrosion-protection measures (e.g., coating, cathodic protection).

ASSESSMENT:

COMPLIANT - Cathodic protection is provided for all piping that comes in contact with the soil. The piping between Building 3025E and Valve Box 1A has a galvanic cathodic protection system consisting of two sacrificial zinc ribbon anodes which run parallel to the piping. The cathodic protection system has been designed by a corrosion expert taking into account as a minimum item A thru H of this section. It is also specified in the construction specification that a corrosion expert will oversee the installation of the cathodic protection system to verify compliance with the design drawings.

**FOSTER WHEELER ENVIRONMENTAL CORPORATION
FEDERAL FACILITY AGREEMENT
APPENDIX F
COMPLIANCE CERTIFICATION
BETHEL VALLEY FFA UPGRADES PROJECT - WBS 1.1 & 1.2**

B. STANDARDS FOR DESIGN/INSTALLATION OF NEW OR REPLACEMENT TANK SYSTEMS (cont'd)

REQUIREMENT:

- 1(c)ii** The design/installation assessment for each new or replacement tank system(s) design shall include, at a minimum, the type and degree of external corrosion protection that are needed to ensure the integrity of the tank system(s) during the use of the system(s), consisting of one or more of the following:
- (A)** Corrosion-resistant materials of construction such as special alloys, fiberglass reinforced plastic, etc.;
 - (B)** Corrosion-resistant coating (such as epoxy, fiberglass, etc.) with cathodic protection (e.g., impressed current or sacrificial anodes); and
 - (C)** Electrical isolation devices such as insulating joints, flanges, etc.

ASSESSMENT:

COMPLIANT - The tank and all associated piping are constructed of 304L stainless steel materials. A corrosion evaluation report was generated for the project based on the waste stream identified in Section B.1(b) which specified the use of 304L materials of construction for the ICT and piping. The pump/valve vault and the tank vault are each lined with 11 gauge 304L stainless steel on the floor and up the walls to an elevation that will contain the entire contents of the tank. In areas outside of the pump and tank vaults where LLLW drains are routed, epoxy coating will be applied to the floor and up the walls in accordance with Division 9, Volume I of the Construction Specification. All piping in contact with soil is protected as described in Section B.1(c)i above. Also, piping in contact with the soil that carries LLLW that penetrates Building 3025E and Valve Box 1A is provided with an isolation flange for electrical isolation.

REQUIREMENT:

- 1(d)** The design/installation assessment for each new or replacement tank system(s) design shall include, at a minimum, for underground tank system components that are likely to be adversely affected by vehicular traffic, a determination of design or operational measures that will protect the tank system against potential damage.

**FOSTER WHEELER ENVIRONMENTAL CORPORATION
FEDERAL FACILITY AGREEMENT
APPENDIX F
COMPLIANCE CERTIFICATION
BETHEL VALLEY FFA UPGRADES PROJECT - WBS 1.1 & 1.2**

B. STANDARDS FOR DESIGN/INSTALLATION OF NEW OR REPLACEMENT TANK SYSTEMS (cont'd)

1(d) (cont'd)

ASSESSMENT:

COMPLIANT - The underground piping that is being installed as part of this tank system will not be located in an area where it will be subject to loadings from vehicular traffic. Further, the piping has been evaluated for operational effects as well as seismic loading in accordance with the applicable codes.

REQUIREMENT:

1(e) The design/installation assessment for each new or replacement tank system(s) design shall include, at a minimum, the design considerations to ensure that:

- (i)** Tank foundations will maintain the load of a full tank;
- (ii)** Tank systems will be anchored to prevent flotation or dislodgment where the tank system is placed in a saturated zone, or is located within a seismic fault zone which has had displacement during the Holocene period; and
- (iii)** Tank systems will withstand the effects of frost heave.

ASSESSMENT:

COMPLIANT - Calculations were performed on the tank vault to verify that it is designed to satisfactorily accommodate the loading conditions identified in items (i), (ii), and (iii) above. In addition, the Equipment Specification for the ICT requires that the manufacturer perform calculations to ensure that the tank meet the requirements of Section VIII of the ASME Code, including vessel support loading and anchor bolt loading

REQUIREMENT:

2 The DOE shall ensure that proper handling procedures are adhered to in order to prevent damage to tank system(s) during installation. Prior to covering, enclosing, or placing a new tank system in use, a qualified installation inspector who is trained and experienced in the proper installation of tank systems or components, shall inspect the system for the presence of any of the following items:

**FOSTER WHEELER ENVIRONMENTAL CORPORATION
FEDERAL FACILITY AGREEMENT
APPENDIX F
COMPLIANCE CERTIFICATION
BETHEL VALLEY FFA UPGRADES PROJECT - WBS 1.1 & 1.2**

B. STANDARDS FOR DESIGN/INSTALLATION OF NEW OR REPLACEMENT TANK SYSTEMS (cont'd)

2 (cont'd)

- (a) Weld breaks;
- (b) Punctures;
- (c) Scrapes of protective coatings;
- (d) Cracks;
- (e) Corrosion;
- (f) Other structural damage or inadequate construction or installation.

All such discrepancies shall be remedied before the tank system is covered, enclosed, or placed in use.

ASSESSMENT:

DOE OVERSIGHT RESPONSIBILITY. The Construction Specification imposes inspection requirements on the construction contractor with regard to the items mentioned above.

REQUIREMENT:

- 3 The DOE shall obtain and maintain copies of all inspection reports relating to the fabrication, construction, installation, and testing of tank system(s). These reports shall be completed by welding inspectors certified by the American Welding Society.

ASSESSMENT:

DOE RESPONSIBILITY. Welding inspection certification requirements are included in Division 18, Volume I of the Construction Specification.

REQUIREMENT:

- 4 New tank system(s) that are placed underground and that are back filled shall be provided with a backfill material that is a noncorrosive, porous, homogenous substance and that is installed so that the backfill is placed completely around the tank and compacted to ensure that the tank and piping are fully and uniformly supported.

**FOSTER WHEELER ENVIRONMENTAL CORPORATION
FEDERAL FACILITY AGREEMENT
APPENDIX F
COMPLIANCE CERTIFICATION
BETHEL VALLEY FFA UPGRADES PROJECT - WBS 1.1 & 1.2**

B. STANDARDS FOR DESIGN/INSTALLATION OF NEW OR REPLACEMENT TANK SYSTEMS (cont'd)

4 (cont'd)

ASSESSMENT:

COMPLIANT - Excavation, backfilling and compaction for underground piping systems and foundations are adequately addressed in Division 2, Volume I Sections 02223 and 02225 of the Construction Specification.

REQUIREMENT:

- 5** All new tanks and ancillary equipment shall be tested for tightness prior to being covered, enclosed, or placed in use. If a tank system is found not to be tight, all repairs necessary to remedy the leak(s) in the system shall be performed prior to the tank system being covered, enclosed, or placed into use.

ASSESSMENT:

COMPLIANT - The construction specification requires that all of the equipment and piping installed will be tested for tightness upon completion of fabrication and/or installation and prior to start-up by the Contractor.

REQUIREMENT:

- 6** Ancillary equipment shall be supported and protected against physical damage and excessive stress due to settlement, vibration, expansion, or contraction.

ASSESSMENT:

COMPLIANT - The tanks and piping added by this project has been designed and supported in accordance with established design criteria to protect against damage due to thermal, deadweight, and seismic effects, additionally building settlement has been taken into account, where required.

REQUIREMENT:

- 7** The DOE shall provide the type and degree of corrosion protection recommended by a qualified corrosion expert, based on the information provided under Subsection 1(c), above, or other corrosion protection if the EPA/TDHE determines other corrosion protection is necessary to ensure the integrity of the tank system during use of the tank

**FOSTER WHEELER ENVIRONMENTAL CORPORATION
FEDERAL FACILITY AGREEMENT
APPENDIX F
COMPLIANCE CERTIFICATION
BETHEL VALLEY FFA UPGRADES PROJECT - WBS 1.1 & 1.2**

B. STANDARDS FOR DESIGN/INSTALLATION OF NEW OR REPLACEMENT TANK SYSTEMS (cont'd)

7 (cont'd)

system. The installation of a corrosion protection system that is field fabricated shall be inspected by a qualified DOE (or DOE-contractor) corrosion expert to ensure proper installation.

ASSESSMENT:

COMPLIANT - A corrosion expert designed the cathodic protection system. In addition, the construction specification requires that a corrosion expert overview the installation of the cathodic protection system to ensure that it is installed and tested properly.

REQUIREMENT:

- 8 The DOE shall ensure that a qualified corrosion expert has provided design guidance during the design of the tank system(s). A qualified corrosion expert shall verify the use of this guidance before construction of the tank system(s) and prior to start-up of the tank system(s).

ASSESSMENT:

COMPLIANT - Refer to the assessment in Section B.7.

REQUIREMENT:

- 9 The DOE shall maintain at its facility the information or written statements by those persons required to certify the design of the tank system(s) and review the installation of the tank system(s) in accordance with the requirements of B.1 through B.9 of this Subsection, that show that the tank system(s) was properly designed and installed and that repairs, pursuant to B.2 and B.5 of this Subsection, were performed.

ASSESSMENT:

DOE REQUIREMENT. This document fulfills the project design certification requirements of the subsection.

**FOSTER WHEELER ENVIRONMENTAL CORPORATION
FEDERAL FACILITY AGREEMENT
APPENDIX F
COMPLIANCE CERTIFICATION
BETHEL VALLEY FFA UPGRADES PROJECT - WBS 1.1 & 1.2**

C. STANDARDS FOR CONTAINMENT/RELEASE DETECTION

REQUIREMENT:

- 1(a) At a minimum, secondary containment system(s) shall be constructed or lined with materials that are compatible with the waste(s) or substance(s) to be placed in the tank system and shall have sufficient strength and thickness to prevent failure owing to pressure gradients (including static head and external hydrological forces), physical contact with the waste(s) or substance to which it is exposed, climatic conditions and the stress of daily operation (including stresses from nearby vehicular traffic).

ASSESSMENT:

COMPLIANT - Within Building 3025E the secondary containment inside the pump/tank vault is fabricated from 304L stainless steel which is the same as the material of construction for the tank and piping which has been selected by a corrosion expert based on his evaluation of the wastes to be handled by the system. In the remainder of the building secondary containment is accomplished using an epoxy coating on the floors and partially up the walls in the areas of the building where the LLLW drains are routed. Analyses of the piping has been performed ensuring that all applicable design concerns listed above have been adequately addressed. The Equipment Specification requires that the manufacturer prepare and submit calculations demonstrating structural adequacy of the tank for all applicable design conditions.

REQUIREMENT:

- 1(b) At a minimum, secondary containment system(s) shall be placed on a foundation or base capable of providing support to the secondary containment system, resistance to pressure gradients above and below the system, and capable of preventing failure due to settlement, compression, or uplift.

ASSESSMENT:

COMPLIANT - The equipment vaults are located within Building 3025E with grout used under the stainless steel liner to provide proper sloping. The underground piping is routed in a trench filled with compacted sand per Division 2, Volume I Sections 02223 and 02225 of the Construction Specification.

REQUIREMENT:

- 1(c) At a minimum, secondary containment system(s) shall be provided with a leak-detection system that is designed and operated so that it shall detect the failure of either the primary

**FOSTER WHEELER ENVIRONMENTAL CORPORATION
FEDERAL FACILITY AGREEMENT
APPENDIX F
COMPLIANCE CERTIFICATION
BETHEL VALLEY FFA UPGRADES PROJECT - WBS 1.1 & 1.2**

C. STANDARDS FOR CONTAINMENT/RELEASE DETECTION (cont'd)

1(c) (cont'd)

or secondary containment structure or the presence of any measurable release of hazardous or radioactive constituents, hazardous substances, or accumulated liquid in the secondary containment system within 24 hours, or at the earliest practical time if the DOE can demonstrate that existing detection technologies or site conditions will not allow detection of a release within 24 hours.

ASSESSMENT:

COMPLIANT - The new pump/tank vault and piping are provided with leak detection systems that meet the requirements of the section. The pump/tank vault is provided with a stainless steel liner sloped toward a sump which is provided with level detection instruments provided for leak detection. Outside the vault epoxy coating applied below the piping will hold any release that will be easily discernable via daily visual observation. The annulus of all double-wall, underground piping on this project is provided with instrumentation that will annunciate in the WOCC when the annulus pressure decays indicating a failure of the primary or secondary containment structure.

REQUIREMENT:

- 1(d)** At a minimum, secondary containment system(s) shall be sloped or otherwise designed or operated to drain and remove liquids resulting from leaks, spill, or precipitation. Liquids may be allowed to accumulate in a secondary containment system sump for up to one week. Spilled or leaked substances and accumulated precipitation that exceed the capacity of the secondary containment system sump shall be removed from the secondary containment system within 24 hours, or in as timely a manner as is possible to prevent harm to human health and the environment, if the DOE can demonstrate that removal of the released substances or accumulated precipitation cannot be accomplished within 24 hours.

ASSESSMENT:

COMPLIANT - The underground piping is sloped from Building 3025E to Valve Box 1A at a rate 1/8" per foot, minimum, and the annulus is provided with a drain connection within Valve Box 1A. The pump/tank vault is designed so that the stainless steel liner used for secondary containment is sloped toward a sump which is provided with level detection instrumentation and the means to pump the contents of the sump into the tank. The remainder of Building 3025E has an epoxy coating on the floors and up the walls to contain and leak and can be easily removed in a timely manner.

**FOSTER WHEELER ENVIRONMENTAL CORPORATION
FEDERAL FACILITY AGREEMENT
APPENDIX F
COMPLIANCE CERTIFICATION
BETHEL VALLEY FFA UPGRADES PROJECT - WBS 1.1 & 1.2**

C. STANDARDS FOR CONTAINMENT/RELEASE DETECTION (cont'd)

REQUIREMENT:

- 1(e) At a minimum, secondary containment system(s) shall include one or more of the following devices:**
- (i) A liner (external to the tank);**
 - (ii) A vault;**
 - (iii) A double-walled tank;**
 - (iv) An equivalent device approved by EPA.**

ASSESSMENT:

COMPLIANT - The pump/tank vault is provided with an 11 gauge stainless steel liner which covers the floor and is continued up the walls to an elevation that will contain the entire contents of the tank. The underground piping on this project is double-walled stainless steel with continuous leak detection monitored in the WOCC.

REQUIREMENT:

- 1(f)(i)(A) The external liner shall be designed or operated to contain 100 percent of the capacity of the largest tank within its boundary.**

ASSESSMENT:

COMPLIANT - The liner surrounding the Interim Collection Tank is capable of containing a volume of liquid greater than the capacity of the tank (250 gallons) which is the only tank within the liner's boundary.

REQUIREMENT:

- 1(f)(i)(B) The external liner shall be designed or operated to prevent run-on or infiltration of precipitation into the secondary containment system unless the collection system has sufficient excess capacity to contain run-on or infiltration. Such additional capacity shall be sufficient to contain precipitation from a 25-year, 24-hour rainfall event.**

ASSESSMENT:

COMPLIANT - The below grade piping penetrations through the foundation of Building 3025E and Valve Box 1A are designed to eliminate infiltration of precipitation. The design of these penetrations is consistent with existing below grade foundation penetrations.

**FOSTER WHEELER ENVIRONMENTAL CORPORATION
FEDERAL FACILITY AGREEMENT
APPENDIX F
COMPLIANCE CERTIFICATION
BETHEL VALLEY FFA UPGRADES PROJECT - WBS 1.1 & 1.2**

C. STANDARDS FOR CONTAINMENT/RELEASE DETECTION (cont'd)

REQUIREMENT:

1(f)(i)(C) The external liner shall be free of cracks or gaps.

ASSESSMENT:

COMPLIANT - Inspection requirements for the vault liner provided in the Construction Specification require that the liner be free of cracks or gaps.

REQUIREMENT:

1(f)(i)(D) The external liner shall be designed and installed to surround the tank completely and to cover all surrounding earth likely to come into contact with substances if the substances are released from the tank(s) (i.e. capable of preventing lateral as well as vertical migration of the substance(s)).

ASSESSMENT:

COMPLIANT - The Interim Collection Tank is located in a vault with a stainless steel liner. The function of the liner is to provide adequate secondary containment for the liquid in the tank. Since the tank cannot be pressurized (i.e. there is a path through the HVAC vent to the atmosphere), spraying of the substances within the tank need not be considered, and the liner, as designed, is adequate.

REQUIREMENT:

1(f)(ii)(A) The vault system shall be designed to contain 100 percent of the capacity of the largest tank within its boundary.

ASSESSMENT:

COMPLIANT - The vault containing the Interim Collection Tank is lined with 11 gauge stainless steel which covers the floor and extends up the walls far enough to accommodate the full capacity of the tank (250 gallons).

**FOSTER WHEELER ENVIRONMENTAL CORPORATION
FEDERAL FACILITY AGREEMENT
APPENDIX F
COMPLIANCE CERTIFICATION
BETHEL VALLEY FFA UPGRADES PROJECT - WBS 1.1 & 1.2**

C. STANDARDS FOR CONTAINMENT/RELEASE DETECTION (cont'd)

REQUIREMENT:

- 1(f)(ii)(B)1** The vault systems shall also be designed to prevent run-on or infiltration of precipitation into the secondary containment system unless the collection system has sufficient capacity to contain run-on or infiltration. Such additional capacity shall be sufficient to contain precipitation from a 25-year, 24-hour rainfall event and be constructed with chemical-resistant water stops in place at all joints (if any).

ASSESSMENT:

COMPLIANT - The Interim Collection Tank is enclosed in a vault located within Building 3025E. Subsurface penetrations into the building are provided with chemical-resistant water stops, consistent with existing penetration designs thus preventing all precipitation infiltration.

REQUIREMENT:

- 1(f)(ii)(B)2** The vault shall be provided with an impermeable interior coating or lining that is compatible with the stored waste and that will prevent migration of waste into the concrete.

ASSESSMENT:

COMPLIANT - The vault structure housing the Interim Collection Tank is provided with an 11 gauge stainless steel liner that extends up the walls capable of containing the capacity of the tank.

REQUIREMENT:

- 1(f)(ii)(C)1** The vault system shall be provided with a means to protect against the formation of and ignition of vapors within the vault, if substances being stored or treated meet the definition of ignitable waste under 40 CFR §261.21.

ASSESSMENT:

COMPLIANT - The Interim Collection Tank is provided with a ventilation system that moves air through the tank at a rate of 20 to 40 ft.³/min. This is adequate to remove any accumulation of ignitable vapors that might develop from the substances contained in the tank. In addition, the temperature inside the tank is less than the lowest flash point of any substance in the tank. A detonation involving the vapors from the combustible liquids in the tank resulting from either direct initiation or a transition from a deflagration to detonation is not considered credible.

**FOSTER WHEELER ENVIRONMENTAL CORPORATION
FEDERAL FACILITY AGREEMENT
APPENDIX F
COMPLIANCE CERTIFICATION
BETHEL VALLEY FFA UPGRADES PROJECT - WBS 1.1 & 1.2**

C. STANDARDS FOR CONTAINMENT/RELEASE DETECTION (cont'd)

REQUIREMENT:

- 1(f)(ii)(C)2** The vault system shall be provided with a means to protect against the formation of and ignition of vapors within the vault, if the substances being stored or treated meet the definition of reactive waste under 40 CFR §261.23, and may form an ignitable or explosive vapor.

ASSESSMENT:

COMPLIANT - The ventilation system for the Interim Collection Tank provides sufficient circulation through the tank to preclude the possibility of detonation of any explosive vapors such as hydrogen developed from radiolysis within the LLLW in the tank. Therefore, a detonation involving combustible vapors resulting from radiolysis in the Interim Collection Tank is not considered credible.

REQUIREMENT:

- 1(f)(ii)(D)** The vault system shall be provided with an exterior moisture barrier or be otherwise designed or operated to prevent migration of moisture into the vault if the vault is subject to hydraulic pressure.

ASSESSMENT:

COMPLIANT - The vault for the Interim Collection Tank is built within Building 3025E and has not experienced migration of moisture into the area being used. Penetrations made through the wall have been designed to utilize water stops.

REQUIREMENT:

- 1(f)(iii)(A)** Double-walled tank requirements.

ASSESSMENT:

Not applicable to this project.

REQUIREMENT:

- 1(f)(iv)** Ancillary equipment shall be provided with secondary containment (e.g. trench, jacketing, double-walled piping) that meet the requirements of this agreement.

**FOSTER WHEELER ENVIRONMENTAL CORPORATION
FEDERAL FACILITY AGREEMENT
APPENDIX F
COMPLIANCE CERTIFICATION
BETHEL VALLEY FFA UPGRADES PROJECT - WBS 1.1 & 1.2**

C. STANDARDS FOR CONTAINMENT/RELEASE DETECTION (cont'd)

1(f)(iv) (cont'd)

ASSESSMENT:

COMPLIANT - The underground piping system included in the scope of this project is double-walled. The annulus is continuously pressurized with nitrogen gas at a pressure higher than the operating pressure in the system. In addition, the piping annulus is monitored in the WOCC for any pressure decay, indicating a leak in either the core pipe or the outer pipe. Areas of Building 3025E through which single-wall pipe is routed have an epoxy coating applied on the floor and partially up the wall to contain any possible release of LLLW. This will allow leak detection to occur during regularly scheduled visual inspections.

B. SPECIFICATIONS

Note: Enclosed is a list of construction and equipment specifications. Complete copies of the specifications are available for review upon request. The design assessment packages submitted to EPA and TDEC included complete specifications.

CONSTRUCTION SPECIFICATION

Division 1	Specific Subcontract Requirements
Division 2	Site Work
Division 3	Concrete
Division 7	Thermal and Moisture Protection
Division 8	Doors
Division 9	Finishes
Division 15	Mechanical
Division 16	Electrical
Division 17	Instrument and Control
Division 18	General Welding Requirements

EQUIPMENT SPECIFICATIONS

ES-IEX-020345-A001	Control Panels K-3025E-01 through K-3025E-07
ES-IEX-020452-A001	HOG Condensate Collection Tank Level Monitoring Panel K-2175-1
JS-EM-020452-A001	HOG Condensate Collection Tank
JS-EM-020345-A001	Intermediate Collection Tank
JS-EM-020345-A002	Full Port Valves and Actuators, VS-6000
JS-EM-020345-A003	Special Stainless Steel Pipe, Fittings, and Materials

C. DRAWINGS

Note: Enclosed is a list of drawings reviewed in the design assessment. Copies of the drawings are available upon request. The design assessment packages submitted to EPA and TDEC included a complete set of drawings.

DRAWINGS

<u>Number</u>	<u>Revision</u>	<u>Title</u>
<u>Instrumentation</u>		
I3C020345A001	0	Instrument Loop Diagram Drawing Index
I3C020345A002	0	Instrument Loop Diagram Symbol Sheet
I3C020345A003	0	Tank F-2150 Differential Pressure Loop PDIT-F2150
I3C020345A004	0	Tank Vault Differential Pressure Loop PDIT-25E15
I3C020345A005	0	Pass Through Differential Pressure Loop PDIT-25E14
I3C020345A006	0	Transfer Line Leak Detection Loop PIT-25E12
I3C020345A007	0	Transfer Line Leak Detection Loop PSL-25E13
I3C020345A008	0	Tank F-2150 Valve Control Loop HCV-25E00
I3C020345A009	0	Tank F-2150 Valve Control Loop HCV-25E01
I3C020345A010	0	Tank F-2150 Valve Control Loop HCV-25E02
I3C020345A036	0	Tank F-2150 Valve Control Loop HCV-25E03
I3C020345A037	0	Tank F-2150 Valve Control Loop HCV-25E04
I3C020345A038	0	Tank F-2150 Valve Control Loop HCV-25E05
I3C020345A039	0	Tank F-2150 Tank Level Continuous Detection Loop LE-F2150A
I3C020345A040	0	Tank F-2150 Tank Hi-Level Detection Loop LE-F2150B

DRAWINGS

<u>Number</u>	<u>Revision</u>	<u>Title</u>
I3C020345A041	0	Tank F-2150 Sump Level Detection Loop LE-F2150C
I3C020345A042	0	Tank F-2150 Loop Seal Level Detection Loop LE-F2150D
I3C020345A043	0	Pump J-2151 Outlet Pressure Indication Loop PI-J2151B
I3C020345A044	0	Tank F-2150 pH Indication Loop AE-2150A
I3C020345A045	0	Tank F-2150 & Vault Inlet Heater Controls Loop TIC-AH2102
I3C020345A046	0	Tank F-2150 Off Gas Heater Controls Loop TIC-AH2103
I3C020345A047	0	Tank F-2150 & Vault HVAC Air Flow Loop FSL-F2150A & FSL-F2150B
I3C020345A048	0	Tank F-2150 Combustible Gas Monitor Loop AE-F2150B
I3C020345A049	0	Tank F-2150 Rupture Alarm Loop PSE-F2150
I3C020345A050	0	Power Distribution Panel K-3025E-01
I3C020345A051	0	Power Distribution Panel K-3025E-02 & -07
I3C020345A052	0	Power Distribution Panel K-3025E-03
I3C020345A053	0	Annunciator Loop UA-25E10
I3E020345A011	0	LLW Coll & Trans Stat Drawing Index
I3E020345A012	0	LLW Coll & Trans Stat Instrumentation Location Plans
I3E020345A013	0	LLW Coll & Trans Stat Instrument Details Sheet 1

DRAWINGS

<u>Number</u>	<u>Revision</u>	<u>Title</u>
I3E020345A014	0	LLLW Coll & Trans Stat Instrument Details Sheet 2
I3E020345A015	0	LLLW Coll & Trans Stat Instrument Tubing Routing Plan View
I3E020345A016	0	LLLW Coll & Trans Stat Instrument Tubing Sections and Details
I3E020345A017	0	LLLW Coll & Trans Stat Control Panel K-3025E-01 Front Layout
I3E020345A018	0	LLLW Coll & Trans Stat Control Panel K-3025E-01 Internal Layout and Annunciator
I3E020345A019	0	LLLW Coll & Trans Stat Control Panel K-3025E-01 Mimic Layout
I3E020345A020	0	LLLW Coll & Trans Stat Control Panel K-3025E-01 Mimic Details Sheet 1
I3E020345A021	0	LLLW Coll & Trans Stat Control Panel K-3025E-01 Mimic Details Sheet 2
I3E020345A024	0	LLLW Coll & Trans Stat Trans Line Leak Detection Panel K-3025E-03
I3E020345A025	0	LLLW Coll & Trans Stat Solid State Pwr Cont Panels K-3025E-04 & -05
I3E020345A026	0	LLLW Coll & Trans Stat Local Panel K-3025E-06
I3E020345A027	0	LLLW Coll & Trans Stat HVAC Filter Instrument Panel K-3025E-07 Sht 1
I3E020345A028	0	LLLW Coll & Trans Stat HVAC Filter Instrument Panel K-3025E-07 Sht 2
I3E020345A029	0	LLLW Coll & Trans Stat HVAC Filter Instrument Panel K-3025E-02 Sht 1
I3E020345A030	0	LLLW Coll & Trans Stat HVAC Filter Instrument Panel K-3025E-02 Sht 2

DRAWINGS

<u>Number</u>	<u>Revision</u>	<u>Title</u>
I3E020452A005	0	HOG Cond Coll & Trans Lead Sheet Drawing Index
I3E020452A006	0	HOG Cond Coll & Trans Location Plan and Instrument Details
I3E020452A007	0	HOG Cond Coll & Trans Local Panel K- 2175-1, Front & Internals
I3C020452A002	0	HOG Cond Coll & Trans Condensate Collection Tank Level LE-F2175
 <u>Electrical</u>		
E3E020345D037	0	Drawing Index
E3E020345D038	0	3025 LLLW Col & Trans Fac Electrical Conduit Plan 2nd Floor
E3E020345D039	0	3025 LLLW Col & Trans Fac Electrical Conduit Plan 1st Floor
E3E020345D040	0	3025 LLLW Col & Trans Fac Electrical Pole Plan
E3E020345D041	0	3025 LLLW Col & Trans Fac Conduit & Cable Schedule
E3E020345D042	0	3025 LLLW Col & Trans Fac Conduit & Cable Schedule
E3E020345D043	0	3025 LLLW Col & Trans Fac Sections & Details
E3E020031D031	0	Cathodic Protection Plan System 37
E3E020031D032	0	Cathodic Protection Details System 37
E3E020031D033	0	Cathodic Protection Details System 37
E3E020452D019	0	HOG Cond Coll & Trans Electrical Plan & Details
E3E020452D020	0	HOG Cond Coll & Trans One Line & Schedule

DRAWINGS

<u>Number</u>	<u>Revision</u>	<u>Title</u>
<u>Civil</u>		
C3E020345A025	0	Access Plan and Civil/Architectural/Structural Drawing Index
C3E020345A027	0	3025E LLLW Coll & Trans Underground Piping & Misc Site Details
<u>Architectural</u>		
A3E020345A001	0	3025E LLLW Coll & Trans Architectural Floor Plan
A3E020345A002	0	3025E LLLW Coll & Trans Door Schedule & Details
<u>Structural</u>		
S3E020345B023	0	3025E LLLW Coll & Trans First Floor Plan Sections and Details
S3E020345B024	0	3025E LLLW Coll & Trans Tk/Pump Vault Liner Plate Dets & Misc Sect's & Det's
S3E020345B025	0	3025E LLLW Coll & Trans Pipe Supports
S3E020345B026	0	3025E LLLW Coll & Trans Equipment and HVAC Supports
S3E020452B016	0	HOG Coll & Trans Facil Pipe Supports and Misc Foundations
<u>Mechanical</u>		
P3E020345C060	0	Lead Sheet Drawing Titles
P3E020345C061	0	General Notes Symbols & Abbreviations
J3E020345A001	0	Bldg 3025E and HOG Process Flow Diagram

DRAWINGS

<u>Number</u>	<u>Revision</u>	<u>Title</u>
J3E020345A002	0	3025E LLLW Coll & Trans Facility Piping and Instrument Diagram Liquid Low Level Waste System
P3E020345C068	0	3025E LLLW Coll & Trans Facility Piping Arrangement 1st Floor Plan Col 1 to 5
P3E020345C069	0	3025E LLLW Coll & Trans Facility Piping Arrangement 1st Floor Plan & Sections
P3E020345C070	0	3025E LLLW Coll & Trans Facility Piping Arrangement Sections and Details
P3E020345C071	0	3025E LLLW Coll & Trans Facility Piping Arrangement Relocated Service Piping
P3E020345C062	0	3025E LLLW Coll & Trans Facility Piping Arrangement 1st Floor Plan Col 5 to 9
P3E020345C063	0	3025E LLLW Coll & Trans Facility Piping Arrangement Sections and Details
P3E020345C064	0	3025E LLLW Coll & Trans Facility Piping Arrangement LLLW Transfer Line Sheet 1
P3E020345C065	0	3025E LLLW Coll & Trans Facility Piping Arrangement LLLW Transfer Line Sheet 2
P3E020345C066	0	3025E LLLW Coll & Trans Facility Piping Arrangement LLLW Transfer Line Details Sht 1
P3E020345C067	0	3025E LLLW Coll & Trans Facility Piping Arrangement LLLW Transfer Line Details Sht 2
H3E020345G026	0	3025E LLLW Coll & Trans Facility Piping and Instrument Diagram HVAC System

DRAWINGS

<u>Number</u>	<u>Revision</u>	<u>Title</u>
H3E020345G027	0	3025E LLLW Coll & Trans Facility HVAC Arrangement Main & 1st Floor Plan Col 3 to 5
H3E020345G028	0	3025E LLLW Coll & Trans Facility HVAC Arrangement Sections and Details
H3E020345G029	0	3025E LLLW Coll & Trans Facility HVAC Arrangement 1st Floor Plan Col 5 to 9
H3E020345G030	0	3025E LLLW Coll & Trans Facility HVAC Arrangement Sections and Details
J3E020452A004	0	Hot Off Gas Condensate Coll & Trans Facility Piping and Instrument Diagram HOG System
P3E020452C029	0	Hot Off Gas Condensate Coll & Trans Facility Piping Arrangement Plan and Profiles
P3E020452C031	0	Hot Off Gas Condensate Coll & Trans Facility Piping Arrangement Plan and Sections

INTERIM TRANSPARENCIES

<u>Number</u>	<u>Revision</u>	<u>Title</u>
D-23334	4	Off Gas, Plan & Details
D-19824	1	Metallographic Cell Extension Bldg. - 3025 Service Piping - Plan & Details
D-38165	2	Buildings 3503 & 3508 Plans, Profile, Section and Elevation
P3E020013C338	1	Bldg 3019A LLW Piping and Instrument Diagram
P3E20013C013	2	Piping Details Double Contained Pipe
10528 Sheet 4-100	1	Plumbing - First Floor Drainage
10533 Sheet 4-F-2	1	Foundation Details
10532 Sheet 4-F-1	1	Foundation Plans & Details
10503 Sheet 4-A1	1	First Floor Plan

PART II

EVAPORATOR AREA UPGRADE

A. DESIGN ASSESSMENT

**UNITED STATES DEPARTMENT OF ENERGY
OAK RIDGE OPERATIONS**

**PROJECT ORDER 940001.01
Work Breakdown Structure 1.3**

FFA COMPLIANCE CERTIFICATION

FOR

THE BETHEL VALLEY FFA UPGRADES

THIS DOCUMENT IS THE PROPERTY OF THE DEPARTMENT OF ENERGY, PREPARED BY FOSTER WHEELER ENVIRONMENTAL CORPORATION UNDER CONTRACT NO. DE-AC05-91OR21928 FOR EXECUTION OR REVIEW OF THE ENGINEERING AND CONSTRUCTION OF THE SUBJECT PROJECT. THE ORIGINAL CERTIFICATIONS AND SUBSEQUENT REVISIONS THEREOF, WITH APPROVAL NAMES, INITIALS, DATES, AND WITH THE P.E. SEAL, ARE MAINTAINED IN THE FILES.

Prepared under the supervision of Peter Stanish
Tennessee PE Number 23435



Revision	Prepared by	Reviewed by	Approved by	Date	Pages Affected
0	<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>	6/6/95	All

**FOSTER WHEELER ENVIRONMENTAL CORPORATION
FEDERAL FACILITY AGREEMENT
APPENDIX F
COMPLIANCE CERTIFICATION
BETHEL VALLEY FFA UPGRADES PROJECT - WBS 1.3**

PROJECT SUMMARY

WBS 1.3 EVAPORATOR AREA UPGRADE

WBS 1.3.1 BUILDING 2568 CELL VENT AND OFF GAS FILTER FACILITY

The evaporator facility, Building 2531, serves as the collection point for all LLLW generated at the Oak Ridge National Laboratory. At Building 2531, LLLW is collected and concentrated before transfer to final storage at the Melton Valley Storage Tanks.

Facilities 2533 and 2534 are existing underground Hot Off-Gas filter pits that service the Evaporator Facility. The 2533 filter pit services cell vent off-gas and 2534 services building off-gas. Both filter pits have drains which tie to the LLLW system. The LLLW drain collection system requires upgrade to satisfy FFA requirements. A Value Engineering study identified that it would be more cost effective to provide new filter systems than to upgrade the existing filters. The upgrades will, therefore, construct new filters as described below.

- **Filter systems:**
Two new redundant filter systems will be provided to replace the existing system at 2533 and 2534. The new filter systems are contained within a new facility 2568, "Cell Vent and Off Gas Filter Facility". Each system will contain mist eliminators, heaters, HEPA filters, and controls, as required. Drains from the mist eliminators will be routed to the Process Waste System since the waste is classified as process waste.
- **Shielding:**
The new facility will utilize shield walls to protect personnel from radiation exposure.
- **Central Instrumentation:**
Inputs will be provided to the Waste Operations Control Center (WOCC) located at the Transported Waste Receiving Facility (TWRWF) to monitor filter system status. Local control and monitoring will also be provided at the site.

WBS 1.3.2 BUILDING 2537 UPGRADE

Building 2537 is the control house for Evaporator Service Tanks W-21, W-22, and W-23. The control house contains instrumentation, a steam pressure reducing station, steam jet control valves, and a non functioning sample station. This project will upgrade the control house as follows.

- **Control House Modifications:**
The steam pressure reducing station and steam jet control valves will be relocated outside; existing control and electrical panels will be replaced; minor renovation will occur, and the sampling system will be removed. Signals from the new control panel will also be routed to

**FOSTER WHEELER ENVIRONMENTAL CORPORATION
FEDERAL FACILITY AGREEMENT
APPENDIX F
COMPLIANCE CERTIFICATION
BETHEL VALLEY FFA UPGRADES PROJECT - WBS 1.3**

WBS 1.3.2 (cont'd)

- the WOCC via the DCS located at the TWRF.
- **Decontamination:**
The area around the sampling cabinet will be decontaminated prior to the start of work in the area. Once the cabinet is removed, additional decontamination of the area may be required.
- Temporary steam service and controls will be provided at 2537 to LLLW tank steam jets during construction.

B. STANDARDS FOR DESIGN/INSTALLATION OF NEW OR REPLACEMENT TANK SYSTEMS

REQUIREMENT:

- 1(a) The design/installation assessment for each new or replacement tank system(s) design shall include, at a minimum, the design standards, including available as-built specifications, according to which tank(s) and/or ancillary equipment are constructed.**

ASSESSMENT:

The scope of this portion of the project does not include the design/installation of a new or replacement tank system(s); therefore, this requirement is not applicable.

REQUIREMENT:

- 1(b) The design/installation assessment for each new or replacement tank system(s) design shall include, at a minimum, the hazardous characteristics of hazardous and/or radioactive substance(s) to be handled (on a tank specific basis).**

ASSESSMENT:

The scope of this portion of the project does not include the design/installation of a new or replacement tank system(s); therefore, this requirement is not applicable.

REQUIREMENT:

- 1(c)i The design/installation assessment for each new or replacement tank system(s) design shall include, at a minimum, for new or replacement tank system(s) in which the external shell of a metal tank or any external metal component(s) of the tank system(s) will be in contact with the soil, moisture, or other precipitation a determination by a corrosion expert of the factors**

**FOSTER WHEELER ENVIRONMENTAL CORPORATION
FEDERAL FACILITY AGREEMENT
APPENDIX F
COMPLIANCE CERTIFICATION
BETHEL VALLEY FFA UPGRADES PROJECT - WBS 1.3**

B. STANDARDS FOR DESIGN/INSTALLATION OF NEW OR REPLACEMENT TANK SYSTEMS (cont'd)

1(c)i (cont'd)

affecting the potential for corrosion, including but not limited to:

- (A) Soil moisture content;
- (B) Soil pH;
- (C) Soil sulfides;
- (D) Soil resistivity;
- (E) Structure to soil potential;
- (F) Influence of nearby underground metal structures (e.g., piping);
- (G) Existence of stray electric currents;
- (H) Existing corrosion-protection measures (e.g., coating, cathodic protection).

ASSESSMENT:

The scope of this portion of the project does not include the design/installation of a new or replacement tank system(s); therefore, a determination by a corrosion expert is not required.

REQUIREMENT:

- 1(c)ii** The design/installation assessment for each new or replacement tank system(s) design shall include, at a minimum, the type and degree of external corrosion protection that are needed to ensure the integrity of the tank system(s) during the use of the system(s), consisting of one or more of the following:

- (A) Corrosion-resistant materials of construction such as special alloys, fiberglass reinforced plastic, etc.;
- (B) Corrosion-resistant coating (such as epoxy, fiberglass, etc.) with cathodic protection (e.g., impressed current or sacrificial anodes); and
- (C) Electrical isolation devices such as insulating joints, flanges, etc.

ASSESSMENT:

The scope of this portion of the project does not include the design/installation of a new or replacement tank system(s); therefore, assessment of external corrosion protection is not required.

**FOSTER WHEELER ENVIRONMENTAL CORPORATION
FEDERAL FACILITY AGREEMENT
APPENDIX F
COMPLIANCE CERTIFICATION
BETHEL VALLEY FFA UPGRADES PROJECT - WBS 1.3**

B. STANDARDS FOR DESIGN/INSTALLATION OF NEW OR REPLACEMENT TANK SYSTEMS (cont'd)

REQUIREMENT:

- 1(d) The design/installation assessment for each new or replacement tank system(s) design shall include, at a minimum, for underground tank system components that are likely to be adversely affected by vehicular traffic, a determination of design or operational measures that will protect the tank system against potential damage.

ASSESSMENT:

There are no new or replacement underground tanks included in the scope of this portion of the project; therefore, this requirement is not applicable.

REQUIREMENT:

- 1(e) The design/installation assessment for each new or replacement tank system(s) design shall include, at a minimum, the design considerations to ensure that:
- (i) Tank foundations will maintain the load of a full tank;
 - (ii) Tank systems will be anchored to prevent flotation or dislodgment where the tank system is placed in a saturated zone, or is located within a seismic fault zone which has had displacement during the Holocene period; and
 - (iii) Tank systems will withstand the effects of frost heave.

ASSESSMENT:

Since no tanks are being installed as part of this portion of the project the evaluations required by this section do not apply.

REQUIREMENT:

- 2 The DOE shall ensure that proper handling procedures are adhered to in order to prevent damage to tank system(s) during installation. Prior to covering, enclosing, or placing a new

**FOSTER WHEELER ENVIRONMENTAL CORPORATION
FEDERAL FACILITY AGREEMENT
APPENDIX F
COMPLIANCE CERTIFICATION
BETHEL VALLEY FFA UPGRADES PROJECT - WBS 1.3**

D. STANDARDS FOR DESIGN/INSTALLATION OF NEW OR REPLACEMENT TANK SYSTEMS (cont'd)

2 (cont'd)

tank system in use, a qualified installation inspector who is trained and experienced in the proper installation of tank systems or components, shall inspect the system for the presence of any of the following items:

- (a) Weld breaks;**
- (b) Punctures;**
- (c) Scrapes of protective coatings;**
- (d) Cracks;**
- (e) Corrosion;**
- (f) Other structural damage or inadequate construction or installation.**

All such discrepancies shall be remedied before the tank system is covered, enclosed, or placed in use.

ASSESSMENT:

No tank systems are being added by this portion of the project; therefore this requirement is not applicable.

REQUIREMENT:

- 3 The DOE shall obtain and maintain copies of all inspection reports relating to the fabrication, construction, installation, and testing of tank system(s). These reports shall be completed by welding inspectors certified by the American Welding Society.**

ASSESSMENT:

These requirements are not applicable to this portion of the project; no new or replacement tank system is included.

REQUIREMENT:

- 4 New tank system(s) that are placed underground and that are back filled shall be provided with a backfill material that is a noncorrosive, porous, homogenous substance and that is**

**FOSTER WHEELER ENVIRONMENTAL CORPORATION
FEDERAL FACILITY AGREEMENT
APPENDIX F
COMPLIANCE CERTIFICATION
BETHEL VALLEY FFA UPGRADES PROJECT - WBS 1.3**

B. STANDARDS FOR DESIGN/INSTALLATION OF NEW OR REPLACEMENT TANK SYSTEMS (cont'd)

4 (cont'd)

installed so that the backfill is placed completely around the tank and compacted to ensure that the tank and piping are fully and uniformly supported.

ASSESSMENT:

No tanks are being placed underground as part of this portion of the project; therefore, this requirement is not applicable.

REQUIREMENT:

- 5 All new tanks and ancillary equipment shall be tested for tightness prior to being covered, enclosed, or placed in use. If a tank system is found not to be tight, all repairs necessary to remedy the leak(s) in the system shall be performed prior to the tank system being covered, enclosed, or placed into use.**

ASSESSMENT:

No tanks are being covered, enclosed or placed into service as part of the effort covered by this portion of the project; therefore, system testing is not required.

REQUIREMENT:

- 6 Ancillary equipment shall be supported and protected against physical damage and excessive stress due to settlement, vibration, expansion, or contraction.**

ASSESSMENT:

Piping added by this project has been designed and supported in accordance with established design criteria to protect against damage due to thermal, deadweight, and seismic effects. Additionally, building settlement has been taken into account, where required.

REQUIREMENT:

- 7 The DOE shall provide the type and degree of corrosion protection recommended by a qualified corrosion expert, based on the information provided under Subsection 1(c),**

**FOSTER WHEELER ENVIRONMENTAL CORPORATION
FEDERAL FACILITY AGREEMENT
APPENDIX F
COMPLIANCE CERTIFICATION
BETHEL VALLEY FFA UPGRADES PROJECT - WBS 1.3**

B. STANDARDS FOR DESIGN/INSTALLATION OF NEW OR REPLACEMENT TANK SYSTEMS (cont'd)

7 (cont'd)

above, or other corrosion protection if the EPA/TDEC determines other corrosion protection is necessary to ensure the integrity of the tank system during use of the tank system. The installation of a corrosion protection system that is field fabricated shall be inspected by a qualified DOE (or DOE-contractor) corrosion expert to ensure proper installation.

ASSESSMENT:

As stated in the assessment for Subsection 1(c), above, no new or replacement tank systems are being added as a result of this portion of the project; therefore, the requirements of this section are not applicable.

REQUIREMENT:

- 8 The DOE shall ensure that a qualified corrosion expert has provided design guidance during the design of the tank system(s). A qualified corrosion expert shall verify the use of this guidance before construction of the tank system(s) and prior to start-up of the tank system(s).

ASSESSMENT:

No new tank system(s) will be constructed during this phase of the project; therefore, guidance of a corrosion expert is not required for this effort.

REQUIREMENT:

- 9 The DOE shall maintain at its facility the information or written statements by those persons required to certify the design of the tank system(s) and review the installation of the tank system(s) in accordance with the requirements of B.1 through B.9 of this Subsection, that show that the tank system(s) was properly designed and installed and that repairs, pursuant to B.2 and B.5 of this Subsection, were performed.

ASSESSMENT:

There are no tank system(s) designed or installed as a result of this portion of the project; therefore, this requirement is not applicable.

**FOSTER WHEELER ENVIRONMENTAL CORPORATION
FEDERAL FACILITY AGREEMENT
APPENDIX F
COMPLIANCE CERTIFICATION
BETHEL VALLEY FFA UPGRADES PROJECT - WBS 1.3**

C. STANDARDS FOR CONTAINMENT/RELEASE DETECTION

REQUIREMENT:

- 1 Secondary containment system(s) requirements.**

ASSESSMENT:

Not applicable to this portion of the project.

B. SPECIFICATIONS

Note: Enclosed is a list of construction and equipment specifications. Complete copies of the specifications are available for review upon request. The design assessment packages submitted to EPA and TDEC included complete specifications.

CONSTRUCTION SPECIFICATION

Division 01:	Specific Contract Requirements
Division 02:	Site Work
Division 03:	Concrete
Division 05:	Metals
Division 07:	Thermal and Moisture Protection
Division 08:	Doors And Windows
Division 09:	Finishes
Division 15:	Mechanical
Division 16:	Electrical
Division 17:	Instrumentation
Division 18:	Welding

EQUIPMENT SPECIFICATIONS

ES-IEX-020237-A001

Local Control Panels M-7, M-8 and M-9 and Temporary Panels (3) for Building 2537

ES-IEX-021494-A001

Control Panels K-2547-1 through K-2568-9, K-2568-11 through K-2568-16

C. DRAWINGS

Note: Enclosed is a list of drawings reviewed in the design assessment. Copies of the drawings are available upon request. The design assessment packages submitted to EPA and TDEC included complete sets of drawings.

Attachment 5
Drawing Index

<u>Drawing Number</u>	<u>Rev.</u>	<u>Title</u>
Building 2537		
C3E020345A023 *	0	Access Plan and Civil/Architectural/Structural Drawing Index
S3E021311B012	0	Enclosure for Steam Reducing Station Plan, Elevation and Sections
S3E021311B013	0	Pipe Hanger Support Sections and Details
I3C020237A001	0	Instrument Loop Diagram Drawing Index
I3C020237A002	0	Instrument Loop Diagram Symbols
I3C020237A003	0	Instrument Loop Diagram, PDT-2
I3C020237A004	0	Instrument Loop Diagram, PDT-54
I3C020237A005	0	Instrument Loop Diagram, LIT-26
I3C020237A006	0	Instrument Loop Diagram, LIT-4
I3C020237A007	0	Instrument Loop Diagram, LIT-57
I3C020237A008	0	Instrument Loop Diagram, AE-61
I3C020237A009	0	Instrument Loop Diagram, AE-62
I3C020237A010	0	Instrument Loop Diagram, AE-63
I3C020237A011	0	Instrument Loop Diagram, FT-61
I3C020237A012	0	Instrument Loop Diagram, FT-62
I3C020237A013	0	Instrument Loop Diagram, FT-63
I3C020237A014	0	Instrument Loop Diagram, PDT-61
I3C020237A015	0	Instrument Loop Diagram, PDT-62
I3C020237A016	0	Instrument Loop Diagram, PDT-63
I3C020237A017	0	Instrument Loop Diagram, LT-38
I3C020237A018	0	Instrument Loop Diagram, LT-2
I3C020237A019	0	Instrument Loop Diagram, LT-59
I3C020237A020	0	Instrument Loop Diagram, LT-32
I3C020237A021	0	Instrument Loop Diagram, LT-30
I3C020237A022	0	Instrument Loop Diagram, FT-64
I3C020237A023	0	Instrument Loop Diagram, PDT-36
I3C020237A024	0	Instrument Loop Diagram, PT-3P-P
I3C020237A025	0	Instrument Loop Diagram, PSL-1
I3C020237A026	0	Instrument Loop Diagram, FE-W21

Attachment 5
Drawing Index (continued)

<u>Drawing Number</u>	<u>Rev.</u>	<u>Title</u>
I3C020237A027	0	Instrument Loop Diagram, FE-W22
I3C020237A028	0	Instrument Loop Diagram, FE-W23
I3C020237A029	0	Instrument Loop Diagram, ES03P3
I3C020237A030	0	Instrument Loop Diagram, Panel M9 Power Distribution
I3C020237A031	0	Instrument Loop Diagram, Panel M8 Power Distribution
I3C020237A032	0	Instrument Loop Diagram, Panel M7 Power Distribution
I3C020237A033	0	Instrument Loop Diagram, Ann Loop UA-8
I3C020237A034	0	Instrument Loop Diagram, LCV-6
I3C020237A035	0	Instrument Loop Diagram, LCV-7
I3C020237A036	0	Instrument Loop Diagram, LCV-10
I3C020237A037	0	Instrument Loop Diagram, LCV-11
I3C020237A038	0	Instrument Loop Diagram, LCV-8
I3C020237A029	0	Instrument Loop Diagram, LCV-9
I3C020237A040	0	Instrument Loop Diagram, HCV-5
I3C020237A041	0	Instrument Loop Diagram, HCV-6
I3C020237A042	0	Instrument Loop Diagram, HCV-29
I3C020237A043	0	Instrument Loop Diagram, HCV-31
I3C020237A044	0	Instrument Loop Diagram, HCV-60
I3C020237A045	0	Instrument Loop Diagram, PDT-16
I3C020237A046	0	Instrument Loop Diagram, Calibration Converter Box
I3C020237A047	0	Instrument Loop Diagram, PAL-3P-A
I3E020237A051	0	Lead Sheet Drawing Index
I3E020237A052	0	Instrument Flow Diagram Process - Sheet 1 of 2
I3E020237A053	0	Instrument Flow Diagram Process - Sheet 2 of 2
I3E020237A055	0	Panel M7 Front
I3E020237A056	0	Panel M7 Internal Layout
I3E020237A058	0	Panel M8 Front
I3E020237A059	0	Panel M8 Internal Layout
I3E020237A061	0	Panel M9 Front

Attachment 5
Drawing Index (continued)

<u>Drawing Number</u>	<u>Rev.</u>	<u>Title</u>
I3E020237A062	0	Panel M9 Internal Layout
I3E020237A064	0	Panel M7, M8 & M9 Mimic Composite
I3E020237A065	0	Panel M7 Mimic Details Sht 1
I3E020237A066	0	Panel M7 Mimic Details Sht 2
I3E020237A067	0	Panel M7 Mimic Details Sht 3
I3E020237A068	0	Panel M7 Mimic Details Sht 4
I3E020237A069	0	Panel M8 Mimic Details Sht 5
I3E020237A070	0	Panel M8 Mimic Details Sht 6
I3E020237A071	0	Panel M8 Mimic Details Sht 7
I3E020237A072	0	Panel M8 Mimic Details Sht 8
I3E020237A073	0	Panel M9 Mimic Details Sht 9
I3E020237A074	0	Panel M9 Mimic Details Sht 10
I3E020237A075	0	Panel M9 Mimic Details Sht 11
I3E020237A076	0	Field Cable Connection Diagram, M7
I3E020237A077	0	Field Cable Connection Diagram, M8
I3E020237A078	0	Field Cable Connection Diagram, M9
I3E020237A085	0	Instrument Tubing Plan and Details
I3E020237A087	0	Electrical Schematics
I3E020237A088	0	Temporary Panel for Control of Steam Jet Control Valves
I3E020237A089	0	Temporary Monitoring Panel Wiring
I3E020237A090	0	Temporary Monitoring Panels A&B Layout
I3E20234-0073	1	Control Panel, Rear Panel Wiring Module M10, Sh 3
I3E20234-0074	1	Instrument Wiring Schematic, M10
I-20237-YE-43-E	3	Evap. Svc. Tanks, Instrument Flow Diagram, Ventilation
I-20237-YE-47-E	3	Evap. Svc. Tanks, Instrument Flow Diagram, Process
I-20237-YE-50-E	2	Evap. Svc. Tanks, Front Panel Layout
I-20237-YE-51-E	2	Evap. Svc. Tanks, Front and Rear Panel, B.O.M. and Name Tags
I-20237-YE-52-E	1	Evap. Svc. Tanks, Control Panel, Rear Panel Equip Layout
I-20237-YE-53-E	1	Evap. Svc. Tanks, Control Panel, Rear Panel Piping

Attachment 5
Drawing Index (continued)

<u>Drawing Number</u>	<u>Rev.</u>	<u>Title</u>
I-20237-YE-54-E	2	Evap. Svc. Tanks, Control Panel - Rear Panel Wiring, Sh 1
I-20237-YE-55-E	2	Evap. Svc. Tanks, Control Panel - Rear Panel Wiring, Sh 2
I-20237-YE-56-E	2	Evap. Svc. Tanks, Electrical Schematics
P3E021494A006 *	0	Lead Sheet - Drawing Titles
P3E021494A007 *	0	General Notes - Symbols & Abbreviations
H3E021494A006 *	0	Building 2568 and 2537 Process Flow Diagram
J3E021311A001	0	Evap. Serv. Tks. Control House Piping and Inst Diagram - Steam System
P3E021311C012	0	Evap. Serv. Tks. Control House Piping Arrangement - Steam - Plan & Sections
P3E021311C013	0	Evap. Serv. Tks. Control House Piping Arrangement - Steam System Sections & Details
P-20237-YC-030-E	4	Evaporator Service Tanks - Tank Piping - Sections & Details Sht #1, Tanks #21, #22, & #23
P-20237-YC-033-E	4	Evaporator Service Tanks - Tank Piping - Plan & Details
P-20237-YC-034-E	5	Evaporator Service Tanks Control House Piping Plan & Details
P-20237-YC-035-E	3	Evaporator Service Tanks Sampler Piping Details
P-20237-YC-080-E	4	Evaporator Service Tanks Piping Flow Diagram - Service
P-20237-YC-081-E	4	Evaporator Service Tanks & Evaporator Annex Piping Flow Diagram - Sampler
E3E021494A001 *	0	Drawing Index
E3E021494A014	0	Conduit & Cable Plan and Details Bldgs 2568, 2537 & 2649
E3E020237D017	1	Fire Alarm System Bldg 2531 Interconnection Diagram
E3E020237D018	1	Evaporator Annex 480V One Line Diagram MCC 1
E3E020237D019	1	Evaporator Annex Operating Area Power Plan
E-20237-YD-003-E	3	Evaporator Annex, Power Plan
E-20237-YD-007-E	3	Evap. Serv. Tanks Cont Hse - Bldg 2537 Pwr. Telp. & F.A.
E-20237-YD-008-E	2	Revised Lighting Panel Schedule
E-E-52738	2	Auxiliary System Plan & Details

Attachment 5
Drawing Index (continued)

<u>Drawing Number</u>	<u>Rev.</u>	<u>Title</u>
E3E021311D014	0	Electrical Plan & Details
Building 2568		
C3E020345A023 *	0	Access Plan and Civil/Architectural/Structural Drawing Index
C3E021494A001	0	Cell V&OG Filtration Facility Site Layout and Grading
C3E021494A002	0	Cell V&OG Filtration Facility Cross-Sections, Profiles & Partial Plan
C3E021494A003	0	Cell V&OG Filtration Facility Details
A3E021494A001	0	Plans, Elevations & Details
S3E021494A001	0	Plans, Elevations & Sections
S3E021494A002	0	Plan, Sections & Details
S3E021494A003	0	HVAC Vent & Off Gas Filter and Duct Support Sections & Details
S3E021494A004	0	Pipe Hanger Support Sections and Details
I3C021494A001	0	Instrument Loop Diagram Drawing Index
I3C021494A002	0	Instrument Loop Diagram Symbols Sheet
I3C021494A003	0	Off Gas Filters Inlet Pressure Loop PIT-2000-1
I3C021494A004	0	Off Gas Filters Outlet Pressure Loop PIT-2000-2
I3C021494A005	0	Off Gas Filters Outlet Flow Switch Loop FS-2000
I3C021494A006	0	Off Gas Filters Tr-A Mist Eliminator Differential Pressure Loop PDT-2010
I3C021494A007	0	Off Gas Filters Tr-A Heater Control Loop TIC-2006
I3C021494A008	0	Off Gas Filters Tr-A Differential Pressure Loop PDT-2000
I3C021494A009	0	Off Gas Filters Tr-A Outlet Humidity Loop MIT-2006
I3C021494A010	0	Off Gas Filters Tr-A Panel K-2568-1 Power ES-K2568-1
I3C021494A011	0	Off Gas Filters Tr-B Mist Eliminator Differential Pressure Loop PDT-2011
I3C021494A012	0	Off Gas Filters Tr-B Heater Control Loop TIC-2007
I3C021494A013	0	Off Gas Filters Tr-B Filter Differential Pressure Loop PDT-2001
I3C021494A014	0	Off Gas Filters Tr-B Outlet Humidity Loop MIT-2007
I3C021494A015	0	Off Gas Filters Tr-B Panel K-2568-2 Power ES-K2568-2
I3C021494A016	0	Off Gas Filters Tr-A Mist Eliminator Loop Seal Loop LE-2010
I3C021494A017	0	Off Gas Filters Tr-B Mist Eliminator Loop Seal Loop LE-2011
I3C021494A018	0	Off Gas Filters Tr-A Loop Seal Refill Station Loop ROV-PW2033
I3C021494A019	0	Off Gas Filters Tr-B Loop Seal Refill Station Loop ROV-PW2034

Attachment 5
Drawing Index (continued)

<u>Drawing Number</u>	<u>Rev.</u>	<u>Title</u>
I3C021494A020	0	Off Gas Filters Panel K-2568-9 Power ES-K2568-9
I3C021494A021	0	Cell Vent Filters Inlet Pressure Loop PIT-2002-1
I3C021494A022	0	Cell Vent Filters Outlet Pressure Loop PIT-2002-2
I3C021494A023	0	Cell Vent Filters Outlet Flow Switch Loop FS-2002
I3C021494A024	0	Cell Vent Filters TR-A Heater Control Loop TIC-2004
I3C021494A025	0	Cell Vent Filters Tr-A Filter Diff Press Loop PDT-2002
I3C021494A026	0	Cell Vent Filters TR-A Outlet Humidity Loop MIT-2004
I3C021494A027	0	Cell Vent Filters TR-A Panel K-2568-3 Power ES-K2568-3
I3C021494A028	0	Cell Vent Filters TR-B Heater Control Loop TIC-2005
I3C021494A029	0	Cell Vent Filters TR-B Filter Diff Press Loop PDT-2003
I3C021494A030	0	Cell Vent Filters Tr-B Outlet Humidity Loop MIT-2005
I3C021494A031	0	Cell Vent Filters TR-B Panel K-2568-4 Power ES-K2568-4
I3C021494A032	0	Bldg 2568 Instrument Air Header Pressure Loop PS-YA2044
I3C021494A033	0	Area Drain to Storm Sewer Drain (HV-230) Loop ZSH-230/ZSL-230
I3C021494A034	0	Area Drain to Process Water Drain (HV-231) Loop ZSH-231/ZSL-231
I3E021494A051	0	Drawing Index
I3E021494A052	0	Instrument Location Plan
I3E021494A053	0	Off Gas Filter Train A Panel K-2568-1 Sh-1
I3E021494A054	0	Off Gas Filter Train A Panel K-2568-1 Sh-2
I3E021494A055	0	Off Gas Filter Train B Panel K-2568-2 Sh-2
I3E021494A056	0	Off Gas Filter Train B Panel K-2568-2 Sh-2
I3E021494A057	0	Interconnection Diagram Panels K-2568-1 2 4 5 12 Terminal Block/Cable Connections
I3E021494A058	0	Cell Vent Filter Train A Panel K-2568-3 Sh-1
I3E021494A059	0	Cell Vent Filter Train A Panel K-2568-3 Sh 2
I3E021494A060	0	Cell Vent Filter Train B Panel K-2568-4 Sh 1
I3E021494A061	0	Cell Vent Filter Train B Panel K-2568-4 Sh 2

Attachment 5
Drawing Index (continued)

<u>Drawing Number</u>	<u>Rev.</u>	<u>Title</u>
I3E021494A062	0	Interconnection Diagram Panels K-2568-3 4 7 8 Terminal Block/Cable Connections
I3E021494A063	0	Solid State Power Cntl Pnl K-2568-5 thru K-2568-8
I3E021494A064	0	Solid State Power Cntl Pnl K-2568-5 thru K-2568-8
I3E021494A065	0	Off Gas Panel K-2568-9 Front & Internals
I3E021494A066	0	Panel K-2568-9 Mimic & Instrumentation Layout
I3E021494A067	0	Panel K-2568-9 Mimic Cutout Details
I3E021494A068	0	Instrument Tubing Routing Plan
I3E021494A069	0	Instrument Tubing Sections & Details
I3E021494A070	0	Instrument Tubing Sections & Details
I3E021494A071	0	Instrument Tubing Sections & Details
I3E021494A072	0	Process Water & Air Header Pressure Panel K-2568-11
I3E021494A073	0	Storm Drain & Process Drains Indication Panel K-2568-12
I3E021494A074	0	Instrument Details Sheet 1
I3E021494A075	0	Instrument Details Sheet 2
I3E021494A076	0	Instrument Details Sheet 3
I3E021494A077	0	Interconnection Diagram Panels K-2568-9, 11
P3E021494A006 *	0	Lead Sheet - Drawing Titles
P3E021494A007 *	0	General Notes - Symbols & Abbreviations
H3E021494A006 *	0	Building 2568 and 2537 Process Flow Diagram
J3E021494A001	0	Cell Vent & O>G> Filter Facility Piping and Inst Diagram - Air and Water Systems
J3E021494A002	0	Cell Vent & O.G. Filter Facility Piping and Inst Diagram - Area & Equip Drains
H3E021494A001	0	Cell vent & O.G. Filter Facility Piping and Inst Diagram - HVAC System
H3E021494A002	0	Cell Vent & O.G. Filter Facility HVAC Arrangement - Abv Grade Duct Plan

Attachment 5
Drawing Index (continued)

<u>Drawing Number</u>	<u>Rev.</u>	<u>Title</u>
G3E021494A003	0	Cell Vent & O.G. Filter Facility HVAC Arrangement - Duct Layout Plan Below Grade
H3E021494A004	0	Cell Vent & O.G. Filter Facility HVAC Arrangement - Sections and Details
H3E021494A005	0	Cell Vent & O.G. Filter Facility HVAC Arrangement - Off Gas and Cell Vent Duct Profiles
P3E021494A001	0	Cell Vent & O.G. Filter Facility Piping Arrangement - Air and Water Plan
P3E021494A002	0	Cell Vent & O.G. Filter Facility Piping Arrangement - Area Drains, Plans & Profiles
P3E021494A003	0	Cell Vent & O.G. Filter Facility Piping Arrangement - Equip Drains, Plans & Profiles
P3E021494A004	0	Cell Vent & O.G. Filter Facility Piping Arrangement - Relocated Service Piping
P3E021494A005	0	Cell Vent & O.G. Filter Facility Piping Arrangement - Air and Water Pipe Sections
P-20237-YE-075-E	4	Evaporator Annex Piping Flow Diagram - Process
H-20237-YG-011-E	4	Evap. Serv. Tks. Control House Flow Diagram
D-52635	7	Cell Ventilation Filter Pit Arrangement Plan & Details
D-52639	2	Cell Ventilation Filter Pit Drainage Plan & Details
D-52642	5	Off Gas Filter Pit Arrangement, Plan & Details
E-52690	3	Outside Underground Utilities Plan and Details
E-52692	2	Steam and Air Service Plan Profile & Detail
D-52781	4	Lines "D" & "DA" Cell Ventilating Ducts Plan and Profile
D-52782	3	Line "H" 4" SST Off Gas Plan, Profile & Details
D-52783	1	Lines "F" & "G" Filter Pit Drain & 2" SST Evaporator Transfer to Tank W-5 Plan, Profile & Details
D-52784	4	Lines "D", "DA", & "H" Details & Plan of Spare Lines to Future Tks
E3E021494A001 *	0	Drawing Index
E3E021494A002	0	Electrical Equipment and Single Line

Attachment 5
Drawing Index (continued)

<u>Drawing Number</u>	<u>Rev.</u>	<u>Title</u>
E3E021494A003	0	Lighting and Receptacle Plan and Details
E3E021494A004	0	Grounding Plan and Details
E3E021494A005	0	Conduit Plan
E3E021494A006	0	Conduit Details
E3E021494A007	0	Fire Alarm Plan
E3E021494A008	0	Heat Trace Plan and Details
E3E021494A009	0	Heat Trace Details
E3E021494A010	0	Conduit & Cable Schedule Sheet 1
E3E021494A011	0	Conduit & Cable Schedule Sheet 2
E3E021494A012	0	Conduit & Cable Schedule Sheet 3
E3E021494A013	0	Conduit & Cable Schedule Sheet 4
E3E021494A014	0	Electrical Plan and Details 2568, 2537 & 2649
E3E021494A078	0	HVAC Balancing Pnls, K-2568-13, 14, 15, 16 Sheet 1
E3E021494A079	0	HVAC Balancing Pnls, K-2568-13, 14, 15, 16 Sheet 2

* Drawing appears on both building drawing indexes - Only one copy required.

DISTRIBUTION

1. W. R. Clark
- 2-4. D. A. Conaster
5. J. S. Davidson
- 6-8. J. T. Etheridge
9. C. E. Frye
10. H. R. Gaddis
11. C. E. Mulkey
- 12-13 .P. T. Owen
- 14-15. M. R. Peet
16. C. B. Scott
17. R. C. Stewart
18. P. S. Wood
19. Central Research Library
20. ORNL ER Document Management Center
21. Central ER Document Management Center
22. Engineering Document Management Center
23. Laboratory Records Department
24. B. Meccia, Foster Wheeler, 111 Union Valley Drive, Oak Ridge, TN 37831
25. C. Mims, DOE Oak Ridge Operations Office, P.O. Box 2001, Oak Ridge, TN 37831-8541
26. L. L. Radcliff, DOE Oak Ridge Operations Office, P.O. Box 2001, Oak Ridge, TN 37831-8541
27. C. E. Pepper, DOE Oak Ridge Operations Office, P.O. Box 2001, Oak Ridge, TN 37831-8541
28. R. C. Sleeman, DOE Oak Ridge Operations Office, P.O. Box 2001, Oak Ridge, TN 37831-8541
29. D. Underwood, DOE Oak Ridge Operations Office, P.O. Box 2001, Oak Ridge, TN 37831-8541
30. Office of Assistant Manager for Energy Research and Development, DOE Oak Ridge Operations Office, P.O. Box 2001, Oak Ridge, TN 37831-8600
- 31-32. Office of Scientific and Technical Information, P.O. Box 62, Oak Ridge, TN 37831