TPMC/PORTS-198

Theta Pro2Serve Management Company, LLC

Environmental Management
& Enrichment Facilities

De-lease and Deactivation Plan for the X-533 Facility at the Portsmouth Gaseous Diffusion Plant, Piketon, Ohio

Managed by
Theta Pro2Serve Management Company, LLC
for the Portsmouth/Paducah Project Office
of the United States Department of Energy

This document is approved for public release per review by:

Henry Thomas 09/26/2008

PORTS Classification/Information Officer Date

TPMC/PORTS-198

De-lease and Deactivation Plan for the X-533 Facility at the Portsmouth Gaseous Diffusion Plant Piketon, Ohio

Date Issued – September 2008

Prepared for the
U.S. Department of Energy
Portsmouth Paducah Project Office

Theta Pro2Serve Management Company LLC
managing the
Infrastructure Activities at the
Portsmouth Gaseous Diffusion Plant
under contract DE-AC24-05OH20193
For the
U.S.DEPARTMENT OF ENERGY

CONTENTS

FIGURES v

ACRONYMS vii

EXECUTIVE SUMMARY ix

1. INTRODUCTION 1

2. FACILITY DESCRIPTION 1
   2.1 GENERAL 1

3. X-533 ISOLATION/DEACTIVATION PLAN FOR DE-LEASE 8
   3.1 GENERAL 8
   3.2 NEED FOR DEACTIVATION AND/OR ISOLATION 8
   3.3 FACILITY INTERCONNECTIONS 11
      3.3.1 Electric Power 11
      3.3.2 RCW 12
      3.3.3 Sanitary Water 12
      3.3.4 Steam 12
      3.3.5 Plant Dry Air 12
      3.3.6 Sanitary Sewer 12
      3.3.7 Storm Sewer 12
      3.3.8 Personnel Evacuation and PA System 12
      3.3.9 Supervisory Control and Data Acquisition (SCADA) 12
      3.3.10 Telephone Service 12
      3.3.11 Fire Water System 13
      3.3.12 SAFA Fire Alarm System 14
      3.3.13 Surface Drainage System 14
   3.4 INTERFACE/ISOLATION TABLES 14
   3.5 END-STATE SURVEILLANCE AND MAINTENANCE 14
      3.5.1 Electric Power 15
      3.5.2 Plant Dry Air 15
      3.5.3 RCW 15
      3.5.4 Sanitary Water/Sewage 15
      3.5.5 Fire Water Services 15
      3.5.6 ADT Fire Alarm and PA Systems 15
      3.5.7 SCADA System 15
      3.5.8 Telephone System 15

4. PRE-D&D EQUIPMENT REMOVAL 15
   4.1 SF_6 GAS CIRCUIT BREAKERS 16
   4.2 GROUNDING TRANSFORMERS 16
   4.3 345 KV-13.8 KV, 127 MVA POWER TRANSFORMERS 16
   4.4 CAPACITIVE TRANSFORMERS 16
   4.5 OLD EQUIPMENT LOCATED ON THE X-533 STORAGE PAD 16

5. HAZARDS 17

CONTENTS

6. OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION 10CFR851 REQUIREMENTS . 18

7. EXCESS EQUIPMENT AND MATERIALS 18
7.1 CONTROL HOUSE 18
7.2 EAST SWITCH HOUSE 18
7.3 WEST SWITCH HOUSE 19
7.4 HIGH VOLTAGE YARD 19
7.5 MISCELLANEOUS X-533 BUILDINGS 19

8. OPTIMUM S&M 19
8.1 TRANSITION TO AN OPTIMUM S&M PROGRAM 19

APPENDIX A: X-533 ABOVEGROUND INTERFACES A-1
APPENDIX B: X-533 BELOWGROUND INTERFACES B-1
APPENDIX C: DRAWING X-533-S&M-1 - X-533 S&M PLAN ABOVEGROUND INTERFACES . C-1
APPENDIX D: DRAWING X-533-S&M-2 - X-533 S&M PLAN BELOWGROUND INTERFACES. D-1

FIGURES

1 The X-533 complex plan view and facility numbers 2
2 Aerial view of the X-533 complex looking west 2
3 A diagram of the X-533 345 kV arrangement 4
4 A typical synchronous condenser 5
5 A view of SF_6 GCBs 5
6 View of a 127 MVA power transformer 6
7 View of a 345 kV side-arm disconnect switch 6
8 The south elevation of the X-533 control room 7
9 A deck-mounted 13.8 kV ACB 8
10 Deactivation/isolation decision tree 11
11 System 112, 113, 114 wet pipe master control 13
12 Transformer deluge controls 14
13 The X-533 old equipment storage slab 17

TABLES

1 Utilities and other plant systems for the X-533 facility 9

ACRONYMS

AC	air-conditioning
ACB	air circuit breaker
ACM	asbestos-containing material
ADT	American District Telegraph
CCVT	capacitive-coupled voltage transformer
CFR	Code of Federal Regulation
CVT	capacitive voltage transformer
DC	direct current
D&D	decontamination and decommissioning
DOE	U.S. Department of Energy
EPA	U.S. Environmental Protection Agency
GCB	gas circuit breaker
HPFW	high pressure fire water
HVAC	heating, ventilation, and air-conditioning
kV	kilovolt
kVA	kilovolt-amperes
M&I	management and integration
MVA	megavolt-ampere
NRC	U.S. Nuclear Regulatory Commission
OSHA	Occupational Safety and Health Administration
OVEC	Ohio Valley Electric Corporation
PA	public address
PAX	private automatic exchange
PCB	polychlorinated biphenyl
RCW	recirculating cooling water
RHW	recirculating hot water
SAS	sprinkler alarm system
SCADA	Supervisory Control and Data Acquisition
SF_6	sulfur hexafluoride
S&M	surveillance and maintenance
TPMC	Theta Pro2Serve Management Company, LLC
USEC	United States Enrichment Corporation

EXECUTIVE SUMMARY

This planning document was prepared as a precursor to the de-leasing of the X-533 Switchyard complex from the United States Enrichment Corporation (USEC). Its objective is to identify the desired status of facility interconnections with retained leased systems and to provide a plan for achieving this status. These utility and system interfaces are developed for initial de-lease, transitional, and optimum long-term "cold, tight, and dark" status. Comprehensive engineering drawings and tabulations are included in the Appendices of this report to show interface and isolation points. Also identified are some residual services that should be provided by USEC, at least initially. Opportunities for further risk reduction through equipment removal are discussed that further utilize the surveillance and maintenance (S&M) window of opportunity to lower decontamination and decommissioning (D&D) costs. This document presents the recommendation to deactivate the subject systems upon facility shutdown.

The information in this report represents a best effort attempt at systematically locating and identifying the X-533 utilities and other interfaces. It does not, however, replace the need for due diligence when performing work nor does it constitute an assumption of liability for determining the presence of these and any other interfaces.

1. INTRODUCTION

The U.S. Department of Energy (DOE) is taking steps to secure de-leasing of select non-operating facilities from the United States Enrichment Corporation (USEC). Those facilities will then be either assigned to the current remediation contractor, LATA/Parallax Portsmouth, LLC (LPP) or assigned to the infrastructure contractor, Theta Pro2Serve Management Company, LLC (TPMC) for interim surveillance and maintenance (S&M) until the management and integration (M&I) contractor for the decontamination and decommissioning (D&D) is able to take possession.

The lightly loaded X-533 Switchyard is scheduled to be removed from service and shutdown as soon as October 1, 2008. This shutdown is made possible by an ongoing project which diverts the X-533 loads to the X-530 Switchyard which will remain in service. Coincidentally the X-533 may be placed in the S&M mode with the facility unoccupied, unheated, and essentially totally depowered except for minimal safety lighting.

During the period of time the facility is awaiting D&D, the X-533 facility will be vacant except for periodic surveillance with practically all of the utilities and systems drained/deactivated to minimize potential safety hazards and reduce utilities consumption. Physical integrity of the structures and equipment will be maintained to prevent deterioration. Access will be controlled to preclude unauthorized entry and personnel harm.

Consideration will be given to risk reduction and protecting the S&M worker from unsafe conditions and to protect the environment from inadvertent insults while allowing efficient performance of work. Emphasis must also be placed on preventing negative impacts to other facilities and systems that will remain serviceable. Mitigating these factors is accomplished by switching off, isolating, air gapping, and/or in some cases removing the operating media.

This report identifies the status of X-533 utilities and systems upon de-leasing or soon thereafter and defines tasks that must be accomplished by USEC before de-lease and by TPMC after de-lease.

2. FACILITY DESCRIPTION

2.1 GENERAL

The X-533 Switchyard is comprised of the 770,000 ft^2 equipment switchyard area (X-533A), a two-story control room with two switchgear wings (X-533B), a general maintenance crew area for housing the yard maintenance and performing minor maintenance activities (X-533C), an oil pumping/reclaiming station (X-533D), two belowground head houses (X-533E & X-533F) for housing the fire water valves for transitioning the fire water system from a wet to dry system for transformer fire suppression, and a metal pole barn type structure for housing the sulfur hexafluoride (SF_6) reclamation cart along with the spare SF_6 cylinders, monitoring station (X-533H), and an outbound equipment storage slab. USEC has requested that X-533H be retained. Figure 1 of this report shows the general layout of the X-533 complex and Fig. 2 shows an aerial view.

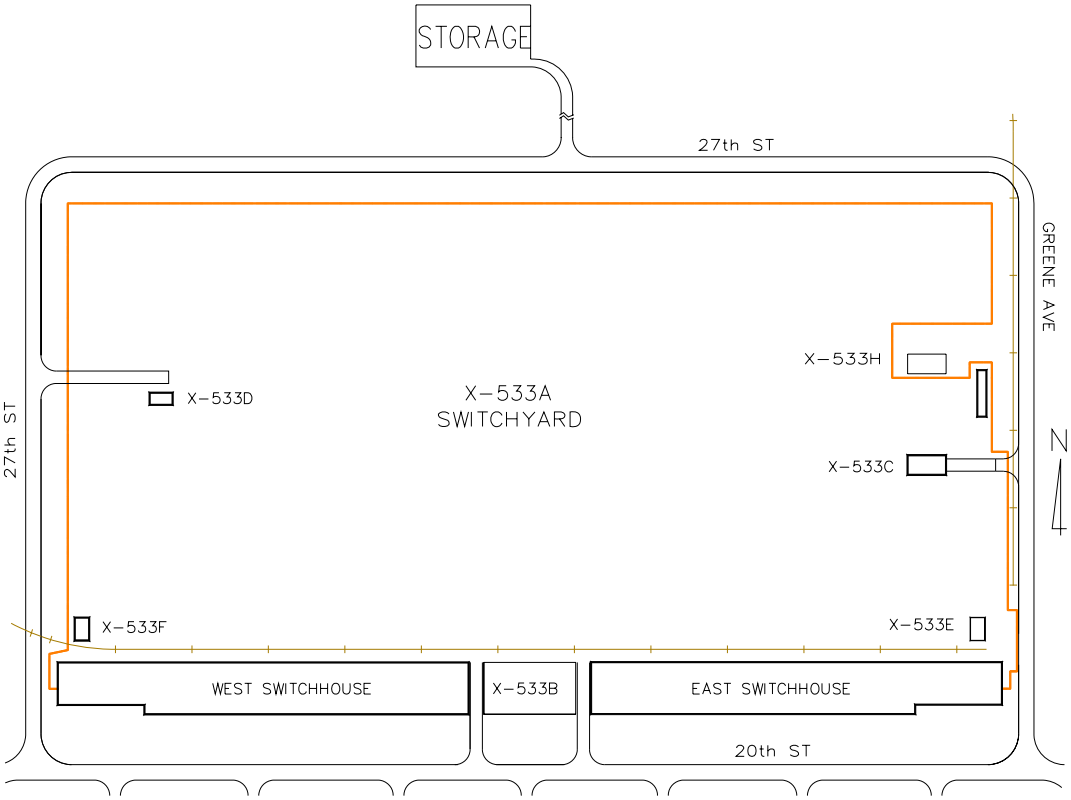


Fig. 1. The X-533 complex plan view and facility numbers.

Fig. 2. Aerial view of the X-533 complex looking west.

The X-533A equipment switchyard is a rectangular area that is graveled, and bounded on three sides with an eight foot high, nine-gauge chain link security fence (the boundary on the fourth side is the control room/switchyard decks). The yard contains 16 100-127 megavolt-ampere (MVA) transformers, associated grounding transformers, bus work, potential (voltage) transformers, circuit breakers, disconnect switches, and other miscellaneous support equipment and structural elements. The original 18 oil circuit breakers were replaced by 18 SF_6 gas circuit breakers (GCBs) in the 1980s. The GCBs are configured in a "breaker-and-a-half" scheme and are arranged in rows (bays) of three each, running north and south, with an air break vertical lift disconnect switches on either side of the breakers.

Some of the grounding transformers and some control wiring contain polychlorinated biphenyls (PCBs). Special inspections will be required until removal and final disposition of the suspect equipment. Leaks, if any, must be cleaned up according to requirements of the U.S. Environmental Protection Agency (EPA), Federal Facilities Compliance Agreement covering the continued use of PCBs at the Portsmouth Gaseous Diffusion Plant.

The breaker rows sit between two 345 kilovolt (kV), three phase buses (running east and west) configured in a breaker-and-a-half scheme. Five of the bays have 345 kV transmission lines terminating between the northern most breakers and the middle breakers, while transformer feeds originate from between the southern most breakers and the middle breakers. The sixth bay does not have any line feeds, but has two transformers feeds from the three breaker bay as shown in Fig. 3 of this report.

There are ten synchronous condensers (six Elliot and four General Electric) all located on the switch house decks. The condensers are for power factor correction necessitated by the large inductive load from the X-333 process motors. Figure 4 shows a typical synchronous condenser.

The entire switchyard from the railroad track to the fence on the north end of the yard has a heavy layer of limestone gravel approximately 30 in. deep allowing precipitation dissipation. In addition, the gravel bed would have the capability of handling a large oil spill from a catastrophic failure of one of the transformers. Multiple drains run beneath the gravel to ditches on the east and west ends of the yard. The containment of this oil would be of significant environmental concern until it is removed and dispositioned.

Current plans for the deactivation of the switchyard include complete electrical isolation with the exception of a back-feed from existing 13.8 kV overhead feeder, F3, to a X-533 auxiliary substation for egress and task lighting. Since there is an indeterminable time window between the X-533 return to DOE and the equipment/materials removal phase of D&D, the facility will remain in a condition that is suitable for "cold, tight, and dark".

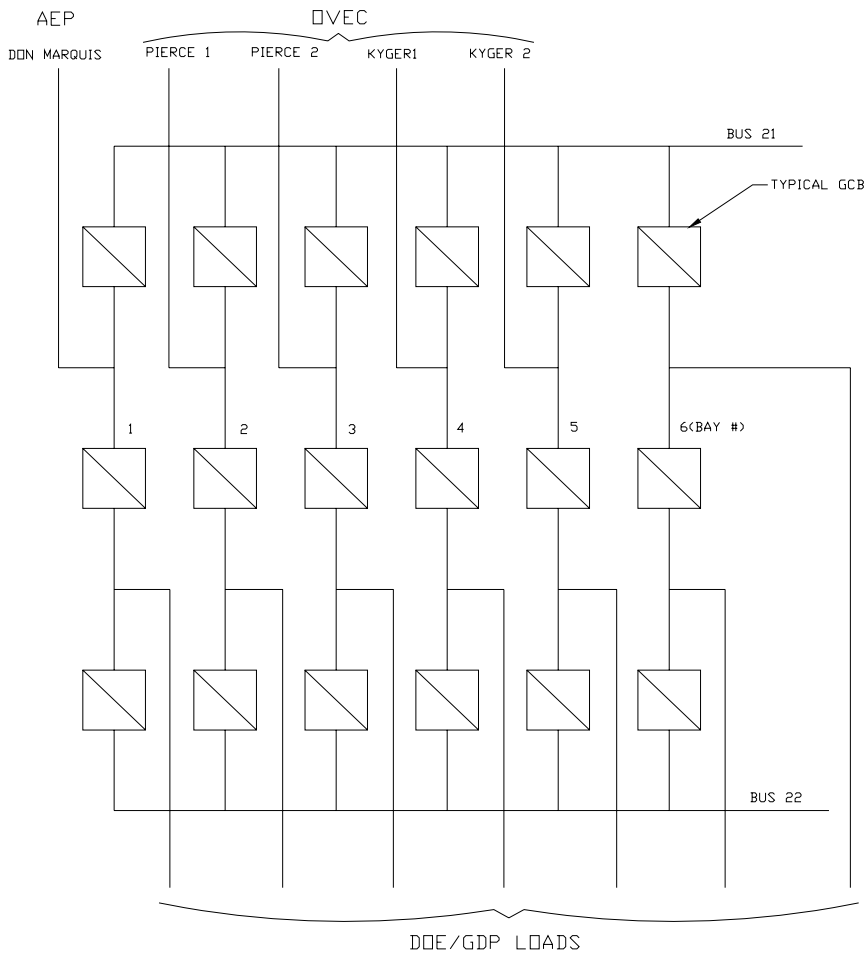


Fig. 3. A diagram of the X-533 345 kV arrangement.

As stated, the X-533 Switchyard contains 18 SF_6 GCBs and the breaker rows sit between two 345 kV, three phase buses running east and west. See Fig. 5 for a view of the breakers.

There are 16 345 kV-13.8 kV, 100-127 MVA power transformers in the X-533 Switchyard. Of these 16 transformers, 14 of them lie in an east-to-west configuration paralleling the switchyard control house. There is a railroad track between the transformers and the control house. The remaining two transformers (installed during the 1970s) are on the east end of the switchyard in a north-to-south configuration. A typical 127 MVA power transformer is shown in Fig. 6.

There are three 345 kV non-load-break, side-arm disconnect switches feeding each 127 MVA transformers. A set of disconnects is shown in Fig. 7.

The X-533B control room and switching decks form the south side of the switchyard, and runs in an east to west direction. The control room sits between the two switchyard decks, and houses the equipment controls and protective relaying for the switchyard. The control room also houses the operator, and has both men and women restroom facilities along with a small kitchen area. Figure 8 is a view of the south elevation of the control room.

Fig. 4. A typical synchronous condenser.

Fig. 5. A view of SF_6 GCBs.

Fig. 6. View of a 127 MVA power transformer.

Fig. 7. View of a 345 kV side-arm disconnect switch.

Fig. 8. The south elevation of the X-533 control room.

The top deck area (which is open with railing) accommodates all of the 13.8 kV air circuit breakers (ACBs) for the switchyard, as well as ten synchronous condensers. The ground level of the switch house contains the air compressors for the 13.8 kV ACBs located on the upper deck. Two 13.8/2.4 kV [2500 kilovolt-ampere (kVA)] general purpose transformers, four 2400/277/480 volt transformers, several 2400/120/208 lighting transformers for facility electrical needs, electrical switchgear for the synchronous condensers, as well as electrical feeds for the switchyard equipment, an air handling system for the control room, and two large storage battery rooms for direct current (DC) control power.

The ACB housings on the upper deck are connected to each of the 345/13.8 kV switchyard power transformers via a square copper bus for each of the three phases. This bus work is enclosed in a round weather-tight, aluminum housing, extending from the top of the secondary side of the transformer, across the track alley, through the upper section of the north wall of the switchyard deck housing to the ACB cubicles. A lineup of 13.8 kV ACBs is shown in Fig. 9.

Efforts are currently underway to re-feed all needed external 13.8 kV loads served by this switchyard in order to "position" select facilities (including the X-533 Switchyard) for deactivation and demolition. The project needed to effect this re-feed operation is currently on-going and on schedule to be completed by October 1, 2008.

Fig. 9. A deck-mounted 13.8 kV ACB.

3. X-533 ISOLATION/DEACTIVATION PLAN FOR DE-LEASE

3.1 GENERAL

The X-533A, X-533B, X-533C, X-533D, X-533E, X-533F, and X-533H are scheduled to be de-leased from USEC on October 1, 2008. The exception to this is that there is an option to have X-533H retained for use as a personnel monitoring station. A summary of the recommended conditions is shown in Table 1. Efforts should be made by to achieve these conditions.

3.2 NEED FOR DEACTIVATION AND/OR ISOLATION

The decision tree shown in Fig. 10 represents the process utilized to determine if a deactivation and/or isolation step is required. These isolations also protect the S&M worker from unsafe conditions, help protect the environment from an insult, allows the contractor to perform efficiently, and prevent impacting other facilities and systems that must remain in service or be serviceable.

Table 1. Utilities and other plant systems for the X-533 facility

Utility or plant system		Present condition	DOE preference ****	Isolation/deactivation location ****
Sanitary Water		In-service	Deactivate and defer*	Close valves 20-4E, 5E, and 6E
Sewage		In-service	Deactivate and defer*	At restrooms
Septic		N/A	N/A	N/A
Restroom X-533B and C		In-service	Deactivate and defer*	Close supply valves to and at fixtures. Remove fixtures and seal flanges
Electrical	345kV Ohio Valley Electric Corporation (OVEC)(4) and X-533 Don Marquis tie line	In-service	***Must be deactivated*** and switchyard removed from bulk electric system grid. Isolations will be performed by OVEC and American Electric Power (AEP)	Last spans (4) coming in from OVEC (K1,2,P1,2) to X533 and going into Don Marquis (1) from X-533 to be removed.
	13.8 kV	In-service	Aux power for lighting, fire alarms, etc. provided.**	Unneeded circuits will be switched off and tagged at local panels. All 13.8 kV power feeds to be air gapped in switchgear compartments.
	2400 volts	In-service		
	480 volts	In-service		
	120 volts	In-service		
OVEC owned hardware (meters, telemetry, etc)		In-service	Removed and returned to OVEC	Panels 306R, 307R, 308R, 309R, 310R, Carrier Current Room
Recirculating cooling water (RCW)		In-service	Out of service. All supply and return valves closed to syn. cond. and air-conditioning (AC)	Valves under each syn. cond. 30, 31, 32, 34, 35, 36, 39, 51, 52, and 53. AC valves closed at AC
Recirculating hot water (RHW)		Isolated/air gapped	No change	N/A
Make-Up water		N/A	N/A	N/A
RCW chemical systems		N/A	N/A	N/A
Steam		In-service	Isolate/air gap	Near south wall of X-533B
Condensate		N/A	N/A	N/A
High pressure fire water (HPFW)		N/A	No change	N/A
Sanitary fire hydrants		In-service		
HPFW fire hydrants		N/A		
Fire alarm pull boxes		In-service		
American District Telegraph (ADT) fire system		In-service	No change	N/A
Evacuation Alarms		N/A	N/A	N/A

*Deactivate and defer – Shutoff energy sources/remove from service. Defer isolation to a later date.
** Suggest this be achieved by 13.8 kV back feed to S4 auxiliary sub from F3 overhead (using existing W2 feeder cable tied into S4 primary disconnect).
***Sprinklers are operational assets not fire loss prevention systems (assure control cable functionality for cascade control).
****All utility and plant system isolations/deactivations will be performed by USEC unless otherwise noted.

Table 1. Utilities and other plant systems for the X-533 facility (continued)

Utility or plant system	Present condition	DOE preference ****	Isolation/deactivation location ****
X-533B condenser, vent, and cable tray sprinklers	In-service	Deactivate and defer*	Close post-indicating valve (PIV) 112,113,114 (one valve)
Transformer deluge system	In-service	Deactivate and defer*	Close OS&Y valves 301 thru 316 in X-533E and X-533F
CO_2 Electrical cabinet fire suppression system	In-service	Deactivate and defer*	Remove CO_2 cylinders
Criticality Accident Alarm System	N/A	N/A	N/A
Private automatic exchange (PAX) phone	In-service	Deactivated and disconnected	Phone service disconnected by Chillicothe telephone at the X-540. Ring down feature disconnected in X-300 basement in process telephone cabinet #2
Red phone	In-service		
Administrative plant phone	In-service		
Public Address (PA)	In-service	Remain in service	N/A
Dry air	In-service	Isolate/air gap	Valve off in X-333-7; air gap/cap south of X-533B
Nitrogen	N/A	N/A	N/A
Switchgear supervisory	In-service	Deactivated and disconnected	Isolate in X-300 basement cable S1000 (lift leads/pull fuses)
DC power (switchgear/alarms/lights, etc.)	In-service	In-service for emergency lighting	N/A
Power and grounding transformer N_2 buffers	In-service	In-service	N/A
Fire extinguishers	In-service	In service	N/A
Heating, ventilation, and air-conditioning (HVAC) systems	In-service	Deactivate and defer*	No action required
Underground storage tanks (permitted)	N/A	N/A	N/A
Vent systems (air permits)	N/A	N/A	N/A
Emergency generator(s)	N/A	N/A	N/A
Fluorine	N/A	N/A	N/A
PCB/oil catch basins	In-service	In-service	N/A
Facility temperature monitoring	N/A	N/A	N/A
Emergency egress lighting	In-service	In-service	N/A
Storm sewers	In-service	In-service	N/A

*Deactivate and defer – Shutoff energy sources/remove from service. Defer isolation to a later date.
** Suggest this be achieved by 13.8 kV back feed to S4 auxiliary sub from F3 overhead (using existing W2 feeder cable tied into S4 primary disconnect).
***Sprinklers are operational assets not fire loss prevention systems (assure control cable functionality for cascade control).
****All utility and plant system isolations/deactivations will be performed by USEC unless otherwise noted.

Deactivation/Isolation Decision Tree

For Each Interface Point

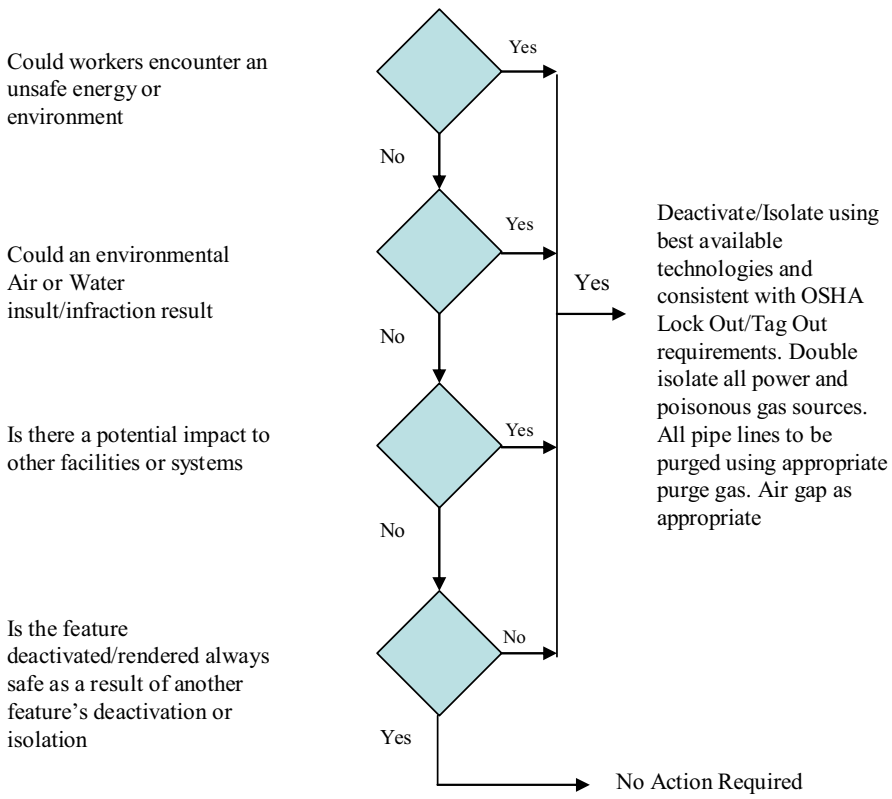


Fig. 10. Deactivation/isolation decision tree.

3.3 FACILITY INTERCONNECTIONS

The X-533 complex is connected to the following plant site systems and utilities shown in Sect. 3.3.1 through 3.3.13 of this report.

3.3.1 Electric Power

As stated earlier, the incoming power to the switchyard is provided via five 345 kV transmission lines. The voltage level for power from the X-533 to other facilities in the northeast quadrant is 13.8 kV. Station power for the switchyard is fed at 13.8 kV from four feeders to a switch selector for each of the two switchyard decks, plus a 13.8 kV feed for each of the ten synchronous condensers. The utilized

voltages for the facility are 277/480 volts and 120/208 volts (provided from step-down transformers located beneath the switchyard decks).

3.3.2 RCW

The RCW consists of a supply and return piping system originally designed for a heat transfer medium for the synchronous condensers and the control room AC units. (Note: Each condenser is designed with two return lines.)

3.3.3 Sanitary Water

The sanitary water is supplied at a nominal pressure of 85 psig to the control room, switch house wings, and to the maintenance shop area.

3.3.4 Steam

Steam is supplied at approximately 125 psig from the aboveground plantsite loop for facility and switchgear heating needs.

3.3.5 Plant Dry Air

The plant dry air service is supplied at a nominal 110 psig, minus 60º dew point from the aboveground central plant loop. This is utilized by the air compressors supplying the 13.8 kV ACBs for HVAC controls, and for maintenance.

3.3.6 Sanitary Sewer

The sanitary sewer taps are in the control room restrooms and the maintenance shop.

3.3.7 Storm Sewer

The storm sewer connects to the control room and switch houses.

3.3.8 Personnel Evacuation and PA System

The personnel evacuation and PA system is provided in both the control room and the maintenance area.

3.3.9 Supervisory Control and Data Acquisition (SCADA)

Sensor points monitor and/or provide control of most of the X-533 switchyard equipment. The facility system circuitry runs from the control room back to the power operation console in the X-300 Plant Control Facility via duct banks and the tunnel system.

3.3.10 Telephone Service

Telephone service is provided to the control room and the maintenance shop.

3.3.11 Fire Water System

There are numerous hydrants within the switchyard equipment area as well as along all four sides of the switchyard. The X-533 switchyard and associated buildings (X-533A, X-533B, X-533C, X-533D, X-533E, X-533F, and X-533H) are by design generally not protected by automated fire suppression sprinkler systems. The reason for not using an automatic sprinkler system in the switchyard is reflective of the general incompatibility of water spray and electrical operations. Additionally, construction materials are primarily concrete, steel, aluminum, copper, porcelain and transite which are all non combustible. The principle exceptions to this are the large main power transformers which are filled with mineral oil that serves as the insulating and cooling media for the units. Fire protection for the main power transformers includes two head houses (one on each end of the track alley) for the wet-to-dry transformer deluge system.

Parts of the control room, some of control cables, and the ventilation rooms which contain flammable filter media are protected by an automatic sprinkler system.

The sprinkler systems for this study are identified as Systems 112, 113, and 114 and transformer specific (i.e., 301 thru 316) deluge systems. Related system components are fire hydrants and fire alarm pull boxes. All sprinkler systems receive their pressurization and water supply from underground piping connected to the potable sanitary water supply. The underground supply system is arranged in a loop that entirely surrounds the switchyard with two separate feed sources thereby assuring a redundant source of water.

A wet-pipe master flow control and flapper valve system located inside the control house (ground floor) serves the sprinkler systems (Fig. 11).

Fig. 11. System 112, 113, 114 wet pipe master control.

As stated earlier, fire protection for the main power transformers incorporates two head houses (one on each end of the track alley) for the wet-to-dry transformer deluge system. A typical transformer deluge system is shown in Figure 12.

Figure 12. Transformer deluge controls.

3.3.12 SAFA Fire Alarm System

A Superior American Fire Alarm is provided in numerous locations including a pull box in the middle of the equipment area of the switchyard, the control room, and several other locations inside the fenced area. Additionally, there are sprinkler alarm system (SAS) flow sensors for the risers supplying the sprinkler heads in the area, and for the head houses supplying the transformer deluge system.

3.3.13 Surface Drainage System

This system consists of a gravel bed and underground piping to provide surface water drainage under the equipment location area of the switchyard.

3.4 INTERFACE/ISOLATION TABLES

While all of the switchyard equipment belonging to the DOE will eventually be removed in the D&D process, the purpose of this paper is to focus on isolating the utility services for the switchyard control room, switching decks, the maintenance shop, and the oil handling facility. Since OVEC owns the incoming transmission lines and controls the 345 kV power currently fed across the X-533 busses, the isolation of this system will not be performed by the D&D contractor, and this report will not address isolation of this system. Utility interface and isolation points are shown in the Appendices of this report.

3.5 END-STATE SURVEILLANCE AND MAINTENANCE

The proposed isolation for each of the above utility systems is as follows:

3.5.1 Electric Power

All of the outside connected load on the feeders coming out of the X-533 Switchyard will be transferred to new or “redirected” circuits fed from the X-530 Switchyard by the end of September 2008. Until such time as the D&D contractor commences facility removal, some level of power (for lights, etc.) will be needed in this yard. It is proposed that this needed power be back-fed from an existing overhead line emanating from the X-530 Switchyard. As soon lighting and other power needs are no longer needed, the back-feed will removed.

3.5.2 Plant Dry Air

Currently the plant air is piped into each of the switchyard "wings". Once all of the 13.8 kV feeders originating from this switchyard are eliminated, plant air will no longer be needed and can be valved off where it connects to the plant loop and cap if necessary.

3.5.3 RCW

Once the facility is vacated, isolation can be attained via valve closure and/or air gapped at the feed points from the main header and blind-flange if necessary.

3.5.4 Sanitary Water/Sewage

Potable water and sewage services for the X-533 Switchyard can be discontinued once the facility is unmanned at turnover. The water supply can be valved off, and the sanitary sewer can be discontinued by plugging the drains in the bathrooms.

3.5.5 Fire Water Services

Once the X-533 facility is unmanned, the automatic sprinkler riser can be valved off and drained. Likewise, once the switchyard transformers are removed from service, the deluge system can be valved off at the head houses.

3.5.6 ADT Fire Alarm and PA Systems

These systems will be left in place until commencement of D&D activities. At that time, the fire reporting system will need to be re-configured to eliminate the X-533 facility from the fire alarm loop. The PA system can either be abandoned in place, or components salvaged for use in other areas.

3.5.7 SCADA System

Once equipment monitoring for this switchyard is no longer needed, this system serves no purpose, and can be abandoned in place, or components salvaged for use in other areas.

3.5.8 Telephone System

Once the X-533 is unoccupied, this system can be turned off. Source feeds from the X-300 and the X-540 can be isolated at the supply points.

4. PRE D&D EQUIPMENT REMOVAL

Wholesale removal of equipment prior to D&D is not considered worthwhile. However, selected removal of items that either present a risk if left as is or have a high monetary attractiveness level that might be degraded if left in place, should be considered. The following items are felt to be likely candidates for early removal and sale through the DOE property disposition process.

4.1 SF_6 GAS CIRCUIT BREAKERS

The X-533 Switchyard contains eighteen SF_6 GCBs. The SF_6 contained in these breakers is a highly potent green house gas that must be removed either through disposition of the breakers or through recovery to compressed gas cylinders. The gas is of considerable value and will eventually leak to the atmosphere through small but persistent leaks that typically develop as the breakers age and are subject to seasonal thermal cycling.

4.2 GROUNDING TRANSFORMERS

There are 16 13.8 kV grounding transformers, some of which contain low levels (<5 to 130 ppm with a 75 ppm average) of polychlorinated biphenyls (PCBs). Special inspection will be required until removal and final disposition of the equipment takes place. As this equipment is depowered, cools, and ages, increased leakage to the environment is likely. Leaks, if any, must be cleaned up according to requirements of the EPA. It is recommended that the PCB-contaminated units be removed by a transformer clean up and recycling company licensed to handle PCBs in this range. It is likely that the salvage value of the units could exceed the cost of removal, transportation, and PCB elimination.

4.3 345 KV-13.8 KV, 127 MVA POWER TRANSFORMERS

The X-533 contains sixteen (16) 345 kV-13.8 kV, 100-127 MVA power transformers. Essentially all of these units have some level of leakage of mineral oil and are a persistent risk for environmental impact. As long as there is a significant reuse resale value for the transformer unit, the oil and associated nitrogen buffers should remain in place. However, when it is determined that there is no appreciable market for these units for reuse, they should have their oil removed and sold. The transformers themselves should at this time be sold also for recycle of the constituent parts since there will remain some residual risk of oil leakage due to incomplete drainage. There is a robust aftermarket for the laminations, copper windings, and insulation boards contained in these units but taking advantage of it requires careful, time consuming and methodical transformer disassembly. Beginning the task before D&D will allow the maximization of the value recovered as well as earliest possible risk reduction.

4.4 CAPACITIVE TRANSFORMERS

There are 15 345 kV capacitive voltage transformers (CVTs) and 4 345 kV capacitive-coupled voltage transformers (CCVTs) located in the X-533 Switchyard. These devices each contain a small amount of mineral oil that is at risk of leaking as the units age, remain unpowered, and are subject to seasonal thermal cycling. If a survey of aftermarket sale-ability of these units reveals whole unit value greater than the cost of removing them, they should be removed and sold as soon as possible. If the aftermarket value is less than the removal cost, the mineral oil should be removed from the units to avoid the risk of leakage and the units left in place for D&D removal.

4.5 OLD EQUIPMENT LOCATED ON THE X-533 STORAGE PAD

Old equipment located on the storage pad (see Fig. 13) includes two 100 MVA 345 kV-13.8 kV power transformers, a 13.8 kV grounding transformer, two 750 kVA outdoor transformers, and miscellaneous electrical parts. These items also contain mineral oil. None of this equipment is buffered and must be considered as likely candidates for early salvage or recycle since it is unlikely they have any

residual value for reuse. Since this area is neither diked nor included in the capture area of the switchyard gravel drainage system, mineral oil leakage accompanying a catastrophic event has the potential for a more severe environmental insult. These units should be dispositioned at the earliest possible time through a transformer remediation company. Since the units are already disconnected from electrical networks and staged at a location convenient for a contractor to remove or dismantle them, there would be only minimal cost associated with their disposition with the value of the salvage being significant.

Fig. 13. The X-533 old equipment storage slab.

5. HAZARDS

The X-533 has several hazards that will remain after shutdown and prior to D&D such as elevated working surfaces, small amounts of energized electrical equipment, and unsafe walkways. None of these items are expected to present any greater challenge than a standard industrial hazard.

A survey conducted during August 2006[1] indicated the presence of the following chemical hazards: asbestos-containing materials (ACMs) in transite siding, pipe insulation, and high temperature light gauge control wiring, PCBs in grounding transformer oil, control wiring, and in fluorescent light fixture ballasts. Additionally, small PCB-containing capacitors are known to exist in certain protective relays. It is likely that there is lead-based paint throughout the facility. Significant amounts of lead are also found in the original installation 13.8 kV distribution power cables that feed from the X-533 to other facilities. Freon exists in the control house AC system and a large quantity of SF_6 as previously discussed exists in the gas

[1] TPMC/PORTS-59/R1, Facility Condition Survey of the Portsmouth Gaseous Diffusion Plant Facilities, Piketon, Ohio, August, 2006

circuit breakers. A study performed in 1993[2] identified the presence of Mercury in switches and various janitorial supplies.

Also, PCBs are expected to be in the control and switch house ventilation systems duct gasket material, and in the fluorescent light fixture ballasts.

6. OCCUPATIONAL SAFETY AND HEALTH ADMINISTATION 10CFR851 REQUIREMENTS

Title 10 Code of Federal Regulation (CFR) 851.21(a) requires the DOE S&M contractor to perform an initial baseline hazards identification assessment on receipt of a closure facility. Within 90 days after identifying hazards, a list of closure facility hazards identified in this assessment is to be supplied to the DOE Field Element [10CFR851.21(b)]. A thorough assessment must be accomplished, results reported, and steps taken to mitigate the hazards. Technical compliance must be achieved or additional controls to protect the workers must be put in place. With the X-533, defective hand railings and other guarding and unsafe walking surfaces will likely be encountered and must be quickly repaired or additional controls such as more sturdy barricades installed.

7. EXCESS EQUIPMENT AND MATERIALS

A survey conducted in February 2006[3] indicated that there was as much as 10,000 ft^3 of debris and excess spare parts lying within and/or stored throughout the facility. Following determination that no contamination exists, these items should be considered for removal prior to D&D. A listing of these items is shown in Sect. 7.1 through 7.5 of this report.

7.1 CONTROL HOUSE

Excess equipment and materials consist mainly of the following: dumpster, furniture, calibration equipment, kitchen appliances, file cabinets, and janitorial supplies.

7.2 EAST SWITCH HOUSE

The east switch house contains the following: ladder, sump pump, scaffold, tool cart, pallet of parts, circuit breaker, fan insulation, parts cabinet, six oil drums, gas cylinders, two spill pallets, a tool bench, three tool carts, one 4 ft x 4 ft x 3 ft crate of parts, miscellaneous conduit, a tool box, hoses, a pump, and a flammable liquid locker.

---

[2] DOE/OR/1087&V1, Report for Environmental Audit Supporting Transition of the Gaseous Diffusion Plants to the United States Enrichment Corporation, June 1993.

[3] TPMC/PORTS-52, Cost Estimate for Removing Excess Equipment and Materials from the Support Buildings and Grounds at the Portsmouth Gaseous Diffusion Plant, Piketon, Ohio, February 2006.

7.3 WEST SWITCH HOUSE

Items in the west switch house include the following: shaft test set, chairs, guard rails, scaffold, five empty barrels, synchronous condenser spare parts, pipe threaded, cart, genie lift, table, calibration tester PHW piping, fan blades, used oil drums, flammable liquid locker.

7.4 HIGH VOLTAGE YARD

The high voltage yard has cables stored in valve vaults, a vacuum pump, chemical locker, GCB skid, concrete tile pipe, insulators, pipe, two rolls of cable, an A-frame, spare air tank, insulators, scrap wood, and five large orange boxes are also stored in the switchyard.

7.5 MISCELLANEOUS X-533 BUILDINGS

There are tools, cabinets of parts, furniture, kitchen appliances, air conditioners, carts, shelves of parts, and pallets in the remaining X-533 buildings.

8. OPTIMUM S&M

8.1 TRANSITION TO AN OPTIMUM S&M PROGRAM

After de-lease TPMC should advance the facility state to cold, tight, and dark as well as attempt to further isolate X-533 from USEC services. This condition is described as vacant except for periodic and infrequent surveillances with all utilities deactivated and systems drained to minimize potential ignition sources, mitigate unsafe conditions, and reduce consumption. Minimal electric power may be maintained as supplied through one or more back feeds from the plant overhead distribution system for safe pathway and egress lighting and may be switchable to off when the facility is not being visited. Physical structure integrity will be maintained to prevent deterioration that could make D&D problematic. Access will be robustly controlled to preclude unauthorized entry and personnel harm. A regimen of initially daily and then weekly walkthroughs of the facility would be expected to be sufficient to assure the environmental and safety envelop is maintained and asset preservation buffers are in place.

The key to achieving this state is to effectively reduce risk by systematically removing all hazards and drivers for introducing new hazards. Physical removal or air gapping of some items may be necessary to assure this is sufficiently thorough.

Removal of combustibles can be relatively easily accomplished with debris removal and draining of oils from synchronous condensers and through steps taken for risk reduction as previously discussed.

Tightening the facility is primarily a matter of repairing or replacing broken glass, pedestrian doors, or transite openings that could allow vermin and weather to enter the buildings. Since there are only a few doors and gates, welding shut and multiple locking of entrances can almost unequivocally assure unauthorized access is prevented for all but the highest motivated trespasser.

APPENDIX A

X-533 ABOVEGROUND INTERFACES

Table A.1. X-533 aboveground interfaces

Interface tag Number	Plant Site Grid North (ft)	Plant Site Grid East (ft)	Elevation (ft) 1st floor @ 672'	Feature size/material	Reference drawing	Other considerations	Isolation needed (yes/no)	Method of isolation	De-energization identification or location
Power									
X-00533-PO-A-0001	11850	8637	680'	Steel 24" Cable Tray	X-215A-113-S	3 each 15 kV Cables	Yes	Air gap/ground cable ends	X-533 ACB 32502 cable 325C X-533 ACB 32302 cable 323C X-533 ACB 32102 cable 321C
X-00533-PO-A-0002	11850	8867	680'	Steel 18" Cable Tray Bottom	X-215A-113-S	2 each 15kV Cables	Yes	Air gap/ground cable ends	X-533 ACB 32706 cable 327C X-533 ACB 32906 cable 329C
X-00533-PO-A-0003	11850	8867	684'	Steel 36" Cable Tray Top	X-215A-113-S	5 each 15kV Cables	Yes	Air gap/ground cable ends	X-533 ACB 37204 cable 372C X-533 ACB 37404 cable 374C X-533 ACB 37805 cable 378C X-533 ACB 37005 cable 370C X-533 ACB 37605 cable 376C
X-00533-PO-A-0004	11850	8867	680'	Steel 30" Cable Tray Bottom	X-215A-113-S	4 each 15kV Cables	Yes	Air gap/ground cable ends	X-533 ACB 32606 cable 326C X-533 ACB 32406 cable 324C X-533 ACB 32806 cable 328C X-533 ACB 32006 cable 320C
X-00533-PO-A-0005	11850	8867	684'	Steel 24" Cable Tray Top	X-215A-113-S	3 each 15kV Cables	Yes	Air gap/ground cable ends	X-533 ACB 37705 cable 377C X-533 ACB 37905 cable 379C X-533 ACB 37505 cable 375C
X-00533-PO-A-0006	11850	9196	680'	Steel 36" Cable Tray Bottom	Visual	5 each 15kV Cables	Yes	Air gap/ground cable ends	X-533 ACB 33708 cable 337C X-533 ACB 33108 cable 331C X-533 ACB 33308 cable 333C X-533 ACB 33508 cable 335C X-533 ACB 33909 cable 339C
X-00533-PO-A-0007	11850	9196	684'	Steel 36" Cable Tray Top	Visual	5 each 15kV Cables	Yes	Air gap/ground cable ends	X-533 ACB 37206 cable 372C X-533 ACB 37307 cable 373C X-533 ACB 37107 cable 371C X-533 ACB 36710 cable 367C X-533 ACB 36910 cable 369C

Table A.1. X-533 aboveground interfaces (continued)

Interface tag Number	Plant Site Grid North (ft)	Plant Site Grid East (ft)	Elevation (ft) 1st Floor @ 672'	Feature size/material	Reference drawing	Other considerations	Isolation needed (yes/no)	Method of isolation	De-energization identification or location
Power (Cont.)									
X-00533-PO-A-0008	11850	9190	680'	Steel 36" Cable Tray Bottom	Visual	5 each 15kV Cables	Yes	Air gap/ground cable ends	X-533 ACB 36207 cable 362C X-533 ACB 36607 cable 366C X-533 ACB 36407 cable 364C X-533 ACB 36010 cable 360C X-533 ACB 36810 cable 368C
X-00533-PO-A-0009	11850	9190	684'	Steel 36" Cable Tray Top	Visual	5 each 15kV Cables	Yes	Air gap/ground cable ends	X-533 ACB 33009 cable 330C X-533 ACB 33809 cable 338C X-533 ACB 33809 cable 338B X-533 ACB 33409 cable 334C X-533 ACB 33609 cable 336C
X-00533-PO-A-0010	11850	9433	680'	Steel 36" Cable Tray Bottom	Visual	4 each 15kV Cables	Yes	Air gap/ground cable ends	X-533 ACB 36312 cable 363C X-533 ACB 36512 cable 365C X-533 ACB 36112 cable 361C X-533 ACB 33208 cable 332C
X-00533-PO-A-0011	11850	9433	685'	Steel 36" Cable Tray Top	Visual	5 each 15kV Cables	Yes	Air gap/ground cable ends	X-533 ACB 35212 cable 352C X-533 ACB 35811 cable 358C X-533 ACB 35011 cable 350C X-533 ACB 35611 cable 356C X-533 ACB 35411 cable 354C
X-00533-PO-A-0012	11850	9436	685'	Steel 36" Cable Tray Middle	Visual	5 each 15kV Cables	Yes	Air gap/ground cable ends	X-533 ACB 34515 cable 345C X-533 ACB 34315 cable 343C X-533 ACB 34715 cable 347C X-533 ACB 34115 cable 341C X-533 ACB 34916 cable 349C
X-00533-PO-A-0013	11850	9439	680'	Steel 36" Cable Tray Bottom	Visual	5 each 15kV Cables	Yes	Air gap/ground cable ends	X-533 ACB 34016 cable 340C X-533 ACB 34816 cable 348C X-533 ACB 34616 cable 346C X-533 ACB 34416 cable 344C X-533 ACB 34213 cable 342C

Table A.1. X-533 aboveground interfaces (continued)

Interface tag Number	Plant Site Grid North (ft)	Plant Site Grid East (ft)	Elevation (ft) 1st Floor @ 672'	Feature size/material	Reference drawing	Other considerations	Isolation needed (yes/no)	Method of isolation	De-energization identification or location
Power (Cont.)									
X-00533-PO-A-0014	11850	9439	685'	Steel 36" Cable Tray Top	Visual	5 each 15kV Cables	Yes	Air gap/ground cable ends	X-533 ACB 35911 cable 359C X-533 ACB 35313 cable 353C X-533 ACB 35513 cable 355C X-533 ACB 35113 cable 351C X-533 ACB 35713 cable 357C
X-00533-PO-A-0015	12471	8703	~723'	½" Ø 7 strand SM steel cable	X-533 E156 E-751	Tower static line	Yes	Remove	From interface reference to first tower outside boundary definition
X-00533-PO-A-0016	12471	8723	~705'	1,414,000 cm ACSR cable	X-533 E156 E-751	X33-X30 Tie Line CØ	Yes	Remove	From interface reference to first tower outside boundary definition
X-00533-PO-A-0017	12471	8748	~705'	1,414,000 cm ACSR cable	X-533 E156 E-751	X33-X30 Tie Line BØ	Yes	Remove	From interface reference to first tower outside boundary definition
X-00533-PO-A-0018	12471	8773	~705'	1,414,000 cm ACSR cable	X-533 E156 E-751	X33-X30 Tie Line AØ	Yes	Remove	From interface reference to first tower outside boundary definition
X-00533-PO-A-0019	12471	8788	~723'	2 each½" Ø 7 strand SM steel cable	X-533 E156 E-751	Tower static lines	Yes	Remove	From interface reference to first tower outside boundary definition
X-00533-PO-A-0020	12471	8803	~705'	1,414,000 cm ACSR cable	X-533 E156 E-751	Pierce X33 No. 1 CØ	Yes	Remove	From interface reference to first tower outside boundary definition
X-00533-PO-A-0021	12471	8828	~705'	1,414,000 cm ACSR cable	X-533 E156 E-751	Pierce X33 No. 1 BØ	Yes	Remove	From interface reference to first tower outside boundary definition
X-00533-PO-A-0022	12471	8853	~705'	1,414,000 cm ACSR cable	X-533 E156 E-751	Pierce X33 No. 1 AØ	Yes	Remove	From interface reference to first tower outside boundary definition
X-00533-PO-A-0023	12471	8883	~705'	1,414,000 cm ACSR cable	X-533 E156 E-751	Pierce X33 No. 2 CØ	Yes	Remove	From interface reference to first tower outside boundary definition
X-00533-PO-A-0024	12471	8908	~705'	1,414,000 cm ACSR cable	X-533 E156 E-751	Pierce X33 No. 2 BØ	Yes	Remove	From interface reference to first tower outside boundary definition
X-00533-PO-A-0025	12471	8933	~705'	1,414,000 cm ACSR cable	X-533 E156 E-751	Pierce X33 No. 2 AØ	Yes	Remove	From interface reference to first tower outside boundary definition
X-00533-PO-A-0026	12471	8948	~723'	2 each½" Ø 7 strand SM steel cable	X-533 E156 E-751	Tower static lines	Yes	Remove	From interface reference to first tower outside boundary definition
X-00533-PO-A-0027	12471	8963	~705'	1,414,000 cm ACSR cable	X-533 E156 E-751	Kyger X33 No. 1 CØ	Yes	Remove	From interface reference to first tower outside boundary definition

Table A.1. X-533 aboveground interfaces (continued)

Interface tag Number	Plant Site Grid North (ft)	Plant Site Grid East (ft)	Elevation (ft) Grade @ 672'	Feature size/material	Reference drawing	Other considerations	Isolation needed (yes/no)	Method of isolation	De-energization identification or location
Power (Cont.)									
X-00533-PO-A-0028	12471	8988	~705'	1,414,000 cm ACSR cable	X-533 E156 E-751	Kyger X33 No. 1 BØ	Yes	Remove	From interface reference to first tower outside boundary definition
X-00533-PO-A-0029	12471	9013	~705'	1,414,000 cm ACSR cable	X-533 E156 E-751	Kyger X33 No. 1 AØ	Yes	Remove	From interface reference to first tower outside boundary definition
X-00533-PO-A-0030	12471	9043	~705'	1,414,000 cm ACSR cable	X-533 E156 E-751	Kyger X33 No. 2 CØ	Yes	Remove	From interface reference to first tower outside boundary definition
X-00533-PO-A-0031	12471	9068	~705'	1,414,000 cm ACSR cable	X-533 E156 E-751	Kyger X33 No. 2 BØ	Yes	Remove	From interface reference to first tower outside boundary definition
X-00533-PO-A-0032	12471	9093	~705'	1,414,000 cm ACSR cable	X-533 E156 E-751	Kyger X33 No. 2 CØ	Yes	Remove	From interface reference to first tower outside boundary definition
X-00533-PO-A-0033	12471	9108	~723'	½" Ø 7 strand SM steel cable	X-533 E156 E-751	Tower static line	Yes	Remove	From interface reference to first tower outside boundary definition
Air									
X-00533-DA-A-0001	11853	9138	684'	2" steel pipe	Visual		Yes	Valve Off & Air gap	At nearest isolation points inside East Switch House and outside the boundary
Sanitary Water									
X-00533-SW-A-0001	11850	9321	675'	2" steep pipe	Visual		Yes	Valve Off/Blind flange	At valve 20-6E
X-00533-SW-A-0002	11850	9058	675'	2" steel pipe	Visual		Yes	Valve Off/Blind flange	At valve 20-5E
X-00533-SW-A-0003	11850	8736	677'	2" steel pipe	Visual		Yes	Valve Off/Blind flange	At valve 20-4E

Table A.1. X-533 aboveground interfaces (continued)

Interface tag Number	Plant Site Grid North (ft)	Plant Site Grid East (ft)	Elevation (ft) 1st Floor @ 672'	Feature size/material	Reference drawing	Other considerations	Isolation needed (yes/no)	Method of isolation	De-energization identification or location
Communication									
X-00533-CO-A-0001	11875	9532	686'	1½" conduit SCADA Cable S-1040, 19 pr #19/25 to X-611	X-220S-4000E X-220S-28E X-220S-5010E	Re-route cable	No	N/A	Re-route cable overhead from station protector box on pole N-1 to RTU located in X-333
X-00533-CO-A-0002	12266	9632	677'	4C #16 shielded PA cable	Visual	Referenced to where cable crosses boundary	No	N/A	See Table 1A if X-533H is included in the boundary definition for isolation points
X-00533-CO-A-0003	12266	9632	677'	2 pair telephone cable	Visual	Referenced to where cable crosses boundary	No	N/A	See Table 1A if X-533H is included in the boundary definition for isolation points
Steam									
X-00533-ST-A-0001	11853	9124	676'	6" steel pipe	Visual		Yes	Valve Off & Air gap	At nearest isolation points inside East Switch House and outside the boundary
Heating Water									
X-00533-RH-A-0001	11850	9130	675'	8" steel pipe	X-633-7006M	RHW Supply	Yes	Air gap/blind flange	Blind Flange @ NIBCO F-619 Flanged 8" Gate Valve ~12' North of N. 11655.0, E. 9718.25
X-00533-RH-A-0002	11850	9015	673'	4" steel pipe	Visual	RCW Supply	Yes	Air gap/blind flange	At nearest isolation points inside Control House and outside the boundary
X-00533-RH-A-0003	11850	9015	674'	4" steel pipe	Visual	RCW Return	Yes	Air gap/blind flange	At nearest isolation points inside Control House and outside the boundary
Heating Water									
X-00533-RH-A-0001	11850	9130	675'	8" steel pipe	X-633-7006M	RHW Supply	Yes	Air gap/blind flange	Blind Flange @ NIBCO F-619 Flanged 8" Gate Valve ~12' North of N. 11655.0, E. 9718.25

Table A.2. X-533H option aboveground interfaces

Interface tag Number	Plant Site Grid North (ft)	Plant Site Grid East (ft)	Elevation (ft) 1st Floor @ 672'	Feature size/material	Reference drawing	Other considerations	Isolation needed (yes/no)	Method of isolation	De-energization identification or location
Power									
X-0533H-PO-A-0034	12302	9570	681'	480V 3Ø drop to X-533H	X-215B-51-E & Visual	Point of reference is where power enters X-533H	Yes	Remove	Remove 480V 3Ø drop from X-533H building to pole #263
Communications									
X-0533H-CO-A-0004	12302	9570	681'	Telephone drop to X-533H	X-215B-51-E & Visual	Point of reference is where telephone line enters X-533H	Yes	Remove	Remove telephone drop from pole #262 to the X-533H facility
X-0533H-CO-A-0005	12302	9565	683'	4C #16 shielded PA cable	Visual	Point of reference is where telephone line enters X-533H	Yes	Isolate & Abandon	Open knife switch in X-300 basement isolating PA+/PA- and PL+/PL- for X-533H

APPENDIX B

X-533 BELOWGROUND INTERFACES

Table B.1. X-533 belowground interfaces

Interface tag Number	Plant Site Grid North (ft)	Plant Site Grid East (ft)	Elevation (ft) 1st Floor @ 672'	Feature size/material	Reference drawing	Other considerations	Isolation needed (yes/no)	Method of isolation	De-energization identification or location
Power									
X-00533-PO-B-0001	11861.46	9531.79	~668' Inv	21"X30" concrete duct 6 ea. 5" conduits	X-215A-2028-E East Sw. House	(1)Abandon duct bank (2) Air gap power cables	(1) No (2)Yes	(1) N/A (2) Air gap/ground cable ends	(2) X-533 ACB 354P1 cable 3P1 & X-633 Transformers 5 & 7; X-533 ACB 354P2 cable 3P2 & X-633 Transformers 6 & 8; X-533 ACB 363P3 cable 3P3 & X-633 Transformers 1 & 3; X-533 ACB 363P4 cable 3P4 & X-633 Transformers 2 & 4 X-533 ACB 3P513 cable 3P5 & X-633 Transf. #10 X-533 ACB 3P609 cable 3P6 & X-633 Transf.# 9
X-00533-PO-B-0002	11850.00	9500.20	667.59' Inv	21"X30" concrete duct 6 ea. 5" Fiber conduits	X-215A-2014-E East Sw. House	(1) Abandon duct bank (2) Air gap power cables	No Yes	N/A (2) Air gap/ground cable ends	(2) X-533 ACB 34416 cables 344A & 344B & X-333 Substation 344B X-533 ACB 34616 cables 346A & 346B & X-333 Substation 346B
X-00533-PO-B-0003	11850.00	9477.43	667.64' Inv	21"X30" concrete duct 6 ea. 5" Fiber conduits	X-215A-2014-E East Sw. House	(1) Abandon duct bank (2) Air gap power cables	No Yes	N/A (2) Air gap/ground cable ends	(2) X-533 ACB 35113 cables 351A & 351B & X-333 Substation 351B X-533 ACB 34213 cables 342A & 342B & X-333 Substation 342B

Table B.1. X-533 belowground interfaces (continued)

Interface tag Number	Plant Site Grid North (ft)	Plant Site Grid East (ft)	Elevation (ft) 1st Floor @ 672'	Feature size/material	Reference drawing	Other considerations	Isolation needed (yes/no)	Method of isolation	De-energization identification or location
Power (Cont.)									
X-00533-PO-B-0004	11850.00	9466.22	667.64' Inv	21"X30" concrete duct 6 ea. 5" Fiber conduits	X-215A-2014-E East Sw. House	(1) Abandon duct bank (2) Air gap power cables	No Yes	N/A (2) Air gap/ground cable ends	(2) X-533 ACB 35313 cables 353A & 353B & X-333 Substation 353B X-533 ACB 35513 cables 355A & 355B & X-333 Substation 355B
X-00533-PO-B-0005	11850.00	9408.92	667.6' Inv	21"X30" concrete duct 6 ea. 5" Fiber conduits	X-215A-2014-E East Sw. House	(1) Abandon duct bank (2) Air gap power cables	No Yes	N/A (2) Air gap/ground cable ends	(2) X-533 ACB 35911 cables 359A & 359B & X-333 Substation 359B X-533 ACB 35713 cables 357A & 357B & X-333 Substation 357B

Table B.1. X-533 belowground interfaces (continued)

Interface tag Number	Plant Site Grid North (ft)	Plant Site Grid East (ft)	Elevation (ft) 1st Floor @ 672'	Feature size/material	Reference drawing	Other considerations	Isolation needed (yes/no)	Method of isolation	De-energization identification or location
Power (Cont.)									
X-00533-PO-B-0006	11850.00	9401.26	667.6' Inv	21"X30" concrete duct 6 ea. 5" Fiber conduits	X-215A-2014-E East Sw. House	(1) Abandon duct bank (2) Air gap power cables	No Yes	N/A (2) Air gap/ground cable ends	(2) X-533 ACB 34016 cables 340A & 340B & X-333 Substation 3410B X-533 ACB 34816 cables 348A & 348B & X-333 Substation 348B
X-00533-PO-B-0007	11850.00	9392.85	667.4' Inv	21"X21" concrete duct 4 ea. 5" Fiber conduits	X-215A-2014-E East Sw. House	(1) Abandon duct bank (2) Air gap power cables	No Yes	N/A (2) Air gap/ground cable ends	(2) X-533 ACB 354S4 cable 35342 & X-342 B Substation & X-333 Aux. Subs 35A3 X-533 ACB 354P1 cable 35144 & X-333 Aux. Subs 35A2

Table B.1. X-533 belowground interfaces (continued)

Interface tag Number	Plant Site Grid North (ft)	Plant Site Grid East (ft)	Elevation (ft) 1st Floor @ 672'	Feature size/material	Reference drawing	Other considerations	Isolation needed (yes/no)	Method of isolation	De-energization identification or location
Power (Cont.)									
X-00533-PO-B-0008	11850.00	9383.34	667.8' Inv	21"X21" concrete duct 4 ea. 5" Fiber conduits	X-215A-2014-E East Sw. House	(1) Abandon duct bank (2) Air gap power cables	No Yes	N/A (2) Air gap/ground cable ends	(2) X-533 ACB 3546B cables 35441 & X-333 Aux. Subs 35A4
X-00533-PO-B-0009	11850.00	9376.84	667.4' Inv	21"X30" concrete duct 6 ea. 5" Fiber conduits	X-215A-2014-E East Sw. House	(1) Abandon duct bank (2) Air gap power cables	No Yes	N/A (2) Air gap/ground cable ends	(2) X-533 ACB 35611 cables 356A & 356B & X-333 Substation 356A X-533 ACB 35411 cables 354A & 354B & X-333 Substation 354A
X-00533-PO-B-0010	11850.00	9369.33	667.8' Inv	21"X30" concrete duct 6 ea. 5" Fiber conduits	X-215A-2014-E East Sw. House	(1) Abandon duct bank (2) Air gap power cables	No Yes	N/A (2) Air gap/ground cable ends	(2) X-533 ACB 34315 cables 343A & 343B & X-333 Substation 343A X-533 ACB 34515 cables 345A & 345B & X-333 Substation 345A
X-00533-PO-B-0011	11850.00	9362.83	667.4' Inv	21"X30" concrete duct 6 ea. 5" Fiber conduits	X-215A-2014-E East Sw. House	(1) Abandon duct bank (2) Air gap power cables	No Yes	N/A (2) Air gap/ground cable ends	(2) X-533 ACB 35011 cables 350A & 350B & X-333 Substation 3510A X-533 ACB 35811 cables 358A & 358B & X-333 Substation 358A

Table B.1. X-533 belowground interfaces (continued)

Interface tag Number	Plant Site Grid North (ft)	Plant Site Grid East (ft)	Elevation (ft) 1st Floor @ 672'	Feature size/material	Reference drawing	Other considerations	Isolation needed (yes/no)	Method of isolation	De-energization identification or location
Power (cont.)									
X-00533-PO-B-0012	11850.00	9354.22	667.95' Inv	21"X30" concrete duct 6 ea. 5" Fiber conduits	X-215A-2014-E East Sw. House	(1) Abandon duct bank (2) Air gap power cables	No Yes	N/A (2) Air gap/ground cable ends	(2) X-533 ACB 34916 cables 349A & 349B & X-333 Substation 349A X-533 ACB 34715 cables 347A & 347B & X-333 Substation 347A
X-00533-PO-B-0013	11850.00	9269.96	667.74' Inv	21"X30" concrete duct 6 ea. 5" Fiber conduits	X-215A-2014-E East Sw. House	(1) Abandon duct bank (2) Air gap power cables	No Yes	N/A (2) Air gap/ground cable ends	(2) X-533 ACB 35212 cables 352A & 352B & X-333 Substation 352A X-533 ACB 34115 cables 341A & 341B & X-333 Substation 341A
X-00533-PO-B-0014	11850.00	9261.55	667.75' Inv	21"X30" concrete duct 6 ea. 5" Fiber conduits	X-215A-2014-E East Sw. House	(1) Abandon duct bank (2) Air gap power cables	No Yes	N/A (2) Air gap/ground cable ends	(2) X-533 ACB 33609 cables 336A & 336B & X-333 Substation 336B X-533 ACB 33409 cables 334 A & 334B & X-333 Substation 334B
X-00533-PO-B-0015	11850.00	9253.90	667.4' Inv	21"X30" concrete duct 6 ea. 5" Fiber conduits	X-215A-2014-E East Sw. House	(1) Abandon duct bank (2) Air gap power cables as identified	No Yes	N/A (2) Air gap/ground cable ends	(2) X-533 ACB 33215 cables 332A & 332B & X-333 Substation 332B X-533 ACB 36112 cables 361A & 361B & X-333 Substation 361B

Table B.1. X-533 belowground interfaces (continued)

Interface tag Number	Plant Site Grid North (ft)	Plant Site Grid East (ft)	Elevation (ft) 1st Floor @ 672'	Feature size/material	Reference drawing	Other considerations	Isolation needed (yes/no)	Method of isolation	De-energization identification or location
Power (cont.)									
X-00533-PO-B-0016	11850.00	9246.44	667.4' Inv	21"X30" concrete duct 6 ea. 5" Fiber conduits	X-215A-2014-E East Sw. House	(1) Abandon duct bank (2) Air gap power cables	No Yes	N/A (2) Air gap/ground cable ends	(2) X-533 ACB 36710 cables 367A & 367B & X-333 Substation 367B X-533 ACB 36910 cables 369A & 369B & X-333 Substation 369B
X-00533-PO-B-0017	11850.00	9238.03	667.73' Inv	21"X30" concrete duct 6 ea. 5" Fiber conduits	X-215A-2014-E East Sw. House	(1) Abandon duct bank (2) Air gap power cables	No Yes	N/A (2) Air gap/ground cable ends	(2) X-533 ACB 36312 cables 363A & 363B & X-333 Substation 363B X-533 ACB 36512 cables 365A & 365B & X-333 Substation 365B
X-00533-PO-B-0018	11850.00	9230.37	667.73' Inv	21"X30" concrete duct 6 ea. 5" Fiber conduits	X-215A-2014-E East Sw. House	(1) Abandon duct bank (2) Air gap power cables	No Yes	N/A (2) Air gap/ground cable ends	(2) X-533 ACB 33009 cables 330A & 330B & X-333 Substation 3310B X-533 ACB 33809 cables 338A & 338B & X-333 Substation 338B
X-00533-PO-B-0019	11850.00	9215.26	667.73' Inv	21"X21" concrete duct 4 ea. 5" Fiber conduits	X-215A-2014-E East Sw. House	(1) Abandon duct bank (2) Air gap power cables	No Yes	N/A (2) Air gap/ground cable ends	(2) X-533 ACB 363P3 cable 36332 & X-333 Aux. Subs 36A3 X-533 ACB 363S3 cable 36134 & X-333 Aux. Subs 36A1

Table B.1. X-533 belowground interfaces (continued)

Interface tag Number	Plant Site Grid North (ft)	Plant Site Grid East (ft)	Elevation (ft) 1st Floor @ 672'	Feature size/material	Reference drawing	Other considerations	Isolation needed (yes/no)	Method of isolation	De-energization identification or location
Power (cont.)									
X-00533-PO-B-0020	11850.00	9179.15	667.4' Inv	21"X30" concrete duct 6 ea. 5" Fiber conduits	X-215A-2014-E East Sw. House	(1) Abandon duct bank (2) Air gap power cables as identified	No Yes	N/A (2) Air gap/ground cable ends	(2) X-533 ACB 363P4 cable 36431 & X-333 Aux. Subs 36A4 X-533 ACB 363U6 cable 36233 & X-333 Aux. Subs 36A2 X-533 ACB 3546B cable 36B & X-333 EBS 36B
X-00533-PO-B-0021	11850.00	9172.65	667.4' Inv	21"X30" concrete duct 6 ea. 5" Fiber conduits	X-215A-2014-E East Sw. House	(1) Abandon duct bank (2) Air gap power cables	No Yes	N/A (2) Air gap/ground cable ends	(20 X-533 ACB 33308 cables 333A & 333B & X-333 Substation 333A X-533 ACB 33508 cables 335A & 335B & X-333 Substation 335A
X-00533-PO-B-0022	11850.00	9165.42	667.73' Inv	21"X30" concrete duct 6 ea. 5" Fiber conduits	X-215A-2014-E East Sw. House	(1) Abandon duct bank (2) Air gap power cables as identified	No Yes	N/A (2) Air gap/ground cable ends	(2) X-533 ACB 36607 cables 366A & 366B & X-333 Substation 366A X-533 ACB 36407 cables 364A & 364 B & X-333 Substation 364A
X-00533-PO-B-0023	11850.00	9153.10	667.73' Inv	21"X30" concrete duct 6 ea. 5" Fiber conduits	X-215A-2014-E East Sw. House	(1) Abandon duct bank (2) Air gap power cables as identified	No Yes	N/A (2) Air gap/ground cable ends	(2) X-533 ACB 36010 cables 360A & 360B & X-333 Substation 3610A X-533 ACB 36810 cables 368A & 368B & X-333 Substation 368A

Table B.1. X-533 belowground interfaces (continued)

Interface tag Number	Plant Site Grid North (ft)	Plant Site Grid East (ft)	Elevation (ft) 1st Floor @ 672'	Feature size/material	Reference drawing	Other considerations	Isolation needed (yes/no)	Method of isolation	De-energization identification or location
Power (cont.)									
X-00533-PO-B-0024	11850.00	9143.95	667.73' Inv	21"X30" concrete duct 6 ea. 5" Fiber conduits	X-215A-2014-E East Sw. House	(1) Abandon duct bank (2) Air gap power cables	No Yes	N/A (2) Air gap/ground cable ends	(2) X-533 ACB 33108 cables 331A & 331B & X-333 Substation 331A X-533 ACB 36207 cables 362A & 362B & X-333 Substation 362A
X-00533-PO-B-0025	11850.00	9126.93	~668' Inv	21"X30" concrete duct 6 ea. 5" Fiber conduits	X-215A-2014-E East Sw. House	(1) Abandon duct bank (2) Air gap power cables	No Yes	N/A (2) Air gap/ground cable ends	(2) X-533 ACB 33909 cables 339A & 339B & X-333 Substation 339A X-533 ACB 33708 cables 337A & 337B & X-333 Substation 337A
X-00533-PO-B-0026	11850.00	9120.43	~668' Inv	21"X30" concrete duct 6 ea. 5" Fiber conduits	X-215A-2014-E East Sw. House	(1) Abandon duct bank (2) air gap power cables	No Yes	N/A (2) Air gap/ground cable ends	(2) X-533 ACB 37107 cables 371A & 371B & X-333 Substation 371B X-533 ACB 37307 cables 373A & 373B & X-333 Substation B
X-00533-PO-B-0027	11850.00	8900.64	~668' Inv	21"X30" concrete duct 6 ea. 5" Fiber conduits	X-215A-2013-E West Sw. House	(1) Abandon duct bank (2) Air gap power cables	No Yes	N/A (2) Air gap/ground cable ends	(2) X-533 ACB 32806 cables 328A & 328B & X-333 Substation 328B X-533 ACB 32006 cables 320A & 320B & X-333 Substation 3210B

Table B.1. X-533 belowground interfaces (continued)

Interface tag Number	Plant Site Grid North (ft)	Plant Site Grid East (ft)	Elevation (ft) 1st Floor @ 672'	Feature size/material	Reference drawing	Other considerations	Isolation needed (yes/no)	Method of isolation	De-energization identification or location
Power (cont.)									
X-00533-PO-B-0028	11850.00		~668' Inv	21"X30" concrete duct 6 ea. 5" Fiber conduits	X-215A-2013-E West Sw. House	(1) Abandon duct bank (2) Air gap power cables	No Yes	N/A (2) Air gap/ground cable ends	(2) X-533 ACB 32606 cables 326A & 326B & X-333 Substation 326B X-533 ACB 32406 cables 324A & 324B & X-333 Substation 324B
X-00533-PO-B-0029	11850.00	8847.03	~668' Inv	21"X30" concrete duct 6 ea. 5" Fiber conduits	X-215A-2013-E West Sw. House	(1) Abandon duct bank (2) Air gap power cables	No Yes	N/A (2) Air gap/ground cable ends	(2) X-533 ACB 32208 cables 322A & 322B & X-333 Substation 322B X-533 ACB 37505 cables 375A & 375B & X-333 Substation B
X-00533-PO-B-0030	11850.00	8838.79	~668' Inv	21"X30" concrete duct 6 ea. 5" Fiber conduits	X-215A-2013-E West Sw. House	(1) Abandon duct bank (2) Air gap power cables	No Yes	N/A (2) Air gap/ground cable ends	(2) X-533 ACB 37705 cables 377A & 377B & X-333 Substation B X-533 ACB 37905 cables 379A & 379B & X-333 Substation 379B
X-00533-PO-B-0031	11850.00	8832.28	~668' Inv	21"X21" concrete duct 4 ea. 5" Fiber conduits	X-215A-2013-E West Sw. House	(1) Abandon duct bank (2) air gap power cables	No Yes	N/A (2) Air gap/ground cable ends	(2) X-533 ACB 372U4 cable 37322 & X-333 Aux. Subs 37A3 X-533 ACB 372U5 cable 37124 & X-333 Aux. Subs 37A1

Table B.1. X-533 belowground interfaces (continued)

Interface tag Number	Plant Site Grid North (ft)	Plant Site Grid East (ft)	Elevation (ft) 1st Floor @ 672'	Feature size/material	Reference drawing	Other considerations	Isolation needed (yes/no)	Method of isolation	De-energization identification or location
Power (cont.)									
X-00533-PO-B-0032	11850.00	8825.61	~668' Inv	21"X21" concrete duct 4 ea. 5" Fiber conduits	X-215A-2013-E West Sw. House	(1) Abandon duct bank (2) Air gap power cables	No Yes	N/A (2) Air gap/ground cable ends	(2) X-533 ACB 372U2 cable 37421 & X-333 Aux. Subs 37A4 X-533 ACB 372U3 cable 37223 & X-333 Aux. Subs 37A2
X-00533-PO-B-0033	11850.00	8817.95	~688' Inv	21"X30" concrete duct 6 ea. 5" Fiber conduits	X-215A-2013-E West Sw. House	(1) Abandon duct bank (2) Air gap power cables	No Yes	N/A (2) Air gap/ground cable ends	(2) X-533 ACB 32706 cables 327A & 327B & X-333 Substation 327 A X-533 ACB 32906 cables 329A & 329B & X-333 Substation 329A
X-00533-PO-B-0034	11850.00	8809.54	~668' Inv	21"X30" concrete duct 6 ea. 5" Fiber conduits	X-215A-2013-E West Sw. House	(1) Abandon duct bank (2) Air gap power cables	No Yes	N/A (2) Air gap/ground cable ends	(2) X-533 ACB 37404 cables 374A & 374B & X-333 Substation 374A X-533 ACB 37605 cables 376A & 376B & X-333 Substation 376A
X-00533-PO-B-0035	11850.00	8802.09	~668' Inv	21"X30" concrete duct 6 ea. 5" Fiber conduits	X-215A-2013-E West Sw. House	(1) Abandon duct bank (2) Air gap power cables	No Yes	N/A (2) Air gap/ground cable ends	(2) X-533 ACB 37805 cable 378A & 378B & X-333 Substation 378A X-533 ACB 37005 cables 370A & 370B & X-333 Substation 3710A

Table B.1. X-533 belowground interfaces (continued)

Interface tag Number	Plant Site Grid North (ft)	Plant Site Grid East (ft)	Elevation (ft) 1st Floor @ 672'	Feature size/material	Reference drawing	Other considerations	Isolation needed (yes/no)	Method of isolation	De-energization identification or location
Power (cont.)									
X-00533-PO-B-0036	11850.00	8793.68	~668' Inv	21"X30" concrete duct 6 ea. 5" Fiber conduits	X-215A-2013-E West Sw. House	(1) Abandon duct bank (2) Air gap power cables	No Yes	N/A (2) Air gap/ground cable ends	(2) X-533 ACB 32102 cables 321A & 321B & X-333 Substation 321A X-533 ACB 37204 cables 372A & 372B & X-333 Substation 372A
X-00533-PO-B-0037	11850.00	8787.18	~668' Inv	21"X30" concrete duct 6 ea. 5" Fiber conduits	X-215A-2013-E West Sw. House	(1) Abandon duct bank (2) Air gap power cables	No Yes	N/A (2) Air gap/ground cable ends	(2) X-533 ACB 32502 cables 325A & 325B & X-333 Substation 325A X-533 ACB 31803 cable 318C & X-333 Substation 318A X-533 ACB 32302 cables 323A & 323B & X-333 Substation 323A
X-00533-PO-B-0038	11850.00	8780.68	~668' Inv	21"X30" concrete duct 6 ea. 5" Fiber conduits	X-215A-2013-E West Sw. House	(1) Abandon duct bank (2) Air gap power cables	No Yes	N/A (2) Air gap/ground cable ends	(2) X-533 ACB 38104 cables 381A, 381B & 318C & X-333 Substation 318A & 381B X-533 ACB 38304 cables 383A, 383B & 383C & X-333 Substation 383A& 383B

Table B.1. X-533 belowground interfaces (continued)

Interface tag Number	Plant Site Grid North (ft)	Plant Site Grid East (ft)	Elevation (ft) 1st Floor @ 672'	Feature size/material	Reference drawing	Other considerations	Isolation needed (yes/no)	Method of isolation	De-energization identification or location
Power (cont.)									
X-00533-PO-B-0039	11850.00	8779.96	672'	¾" conduit 3-#12 THHN	Visual	115 V power for vault sump pump	Yes	Air gap	Air gap at junction box located at identified grid location
X-00533-PO-B-0040	11850.00	8771.34	~668' Inv	21"X30" concrete duct 6 ea. 5" Fiber conduits	X-215A-2013-E West Sw. House	(1) Abandon duct bank (2) Air gap power cables	No Yes	N/A (2) Air gap/ground cable ends	(2) X-533 ACB 38704 cables 387A, 387B & 387C & X-333 Substation 387A & 387B X-533 ACB 38504 cables 385A, 385B & 385C X-333 Substation 385A & 385B
X-00533-PO-B-0041	11850.00	8689.71	672'	¾" conduit 3-#12 THHN	Visual	115 V power for vault sump pump	Yes	Air gap	Air gap at junction box located at identified grid location
X-00533-PO-B-0042	11850.00	8685.64	~668' Inv	21"X30" concrete duct 6 ea. 5" Fiber conduits	X-215A-2013-E West Sw. House	(1) Abandon duct bank (2) Air gap power cables	No Yes	N/A (2) Air gap/ground cable ends	(2) X-533 ACB 31202 cables 312A, 312B & 312C & X-333 Substation 312A & 312B X-533 ACB 38901 cables 389A, 389B & 389C & X-333 Substation 389Z & 389B
X-00533-PO-B-0043	11850.00	8679.14	~668' Inv	21"X30" concrete duct 6 ea. 5" Fiber conduits	X-215A-2013-E West Sw. House	(1) Abandon duct bank (2) Air gap power cables	No Yes	N/A (2) Air gap/ground cable ends	(2) X-533 ACB 31003 cables 310A, 310B & 310C & X-333 Substation 3110A & 3110B X-533 ACB 31803 cables 318A & 318B & X-333 Substation 318B

Table B.1. X-533 belowground interfaces (continued)

Interface tag Number	Plant Site Grid North (ft)	Plant Site Grid East (ft)	Elevation (ft) 1st Floor @ 672'	Feature size/material	Reference drawing	Other considerations	Isolation needed (yes/no)	Method of isolation	De-energization identification or location
Power (Cont.)									
X-00533-PO-B-0044	11850.00	8672.64	~668' Inv	21"X30" concrete duct 6 ea. 5" Fiber conduits	X-215A-2013-E West Sw. House	(1) Abandon duct bank (2) Air gap power cables	No Yes	N/A (2) Air gap/ground cable ends	(2) X-533 ACB 31602 cables 316A, 316B & 316C & X-333 Substation 316A & 316B X-533 ACB 31402 cables 314A, 314B & 314C & X-333 Substation 314A & 314B
X-00533-PO-B-0045	11850.00	8663.22	~668' Inv	21"X30" concrete duct 6 ea. 5" Fiber conduits	X-215A-2013-E West Sw. House	(1) Abandon duct bank (2) Air gap power cables	No Yes	N/A (2) Air gap/ground cable ends	(2) X-533 ACB 3818B cable 38312 & X-333 Aux. Subs 38A3 X-533 ACB 3818B cable 38B & X-333 Booster 38B1 X-533 ACB 381S1 cable 38114 & X-333 Aux. Subs 38A1
X-00533-PO-B-0046	11850.00	8657.38	672'	¾" conduit 3-#12 THHN	Visual	115 V power for vault sump pump	Yes	Air gap	Air gap at junction box located at identified grid location

Table B.1. X-533 belowground interfaces (continued)

Interface tag Number	Plant Site Grid North (ft)	Plant Site Grid East (ft)	Elevation (ft) 1st Floor @ 672'	Feature size/material	Reference drawing	Other considerations	Isolation needed (yes/no)	Method of isolation	De-energization identification or location
Power (cont.)									
X-00533-PO-B-0047	11850.00	8655.64	~668' Inv	21"X30" concrete duct 6 ea. 5" Fiber conduits	X-215A-2013-E West Sw. House	(1) Abandon duct bank (2) Air gap power cables	No Yes	N/A (2) Air gap/ground cable ends	(2) X-533 ACB 381U1 cable 38213 & X-333 Aux. Subs 38A2 X-533 ACB 381S2 cable 38411 & X-333 Aux. Subs 38A4 X-533 ACB 31903 cables 319A, 319B & 319C & X-333 Substation 319A & 319B X-533 ACB 31703 cable 317C & X-333 Substation 317B
X-00533-PO-B-0048	11850.00	8647.15	~668' Inv	21"X30" concrete duct 6 ea. 5" Fiber conduits	X-215A-2013-E West Sw. House	(1) Abandon duct bank (2) Air gap power cables	No Yes	N/A (2) Air gap/ground cable ends	(2) X-533 ACB 31103 cables 311A, 311B & 311C & X-333 Substations 311A & 311B X-533 ACB 31703 cables 317A & 317B & X-333 Substations 317A
X-00533-PO-B-0049	11850.00	8640.38	~668' Inv	21"X30" concrete duct 6 ea. 5" Fiber conduits	X-215A-2013-E West Sw. House	(1) Abandon duct bank (2) Air gap power cables	No Yes	N/A (2) Air gap/ground cable ends	(2) X-533 ACB 31303 cables 313A, 313B & 313C X-333 Substation 313A & 313B X-533 ACB 31503 cables 315A, 315B & 315C & X-333 Substation 315A & 315B

Table B.1. X-533 belowground interfaces (continued)

Interface tag Number	Plant Site Grid North (ft)	Plant Site Grid East (ft)	Elevation (ft) 1st Floor @ 672'	Feature size/material	Reference drawing	Other considerations	Isolation needed (yes/no)	Method of isolation	De-energization identification or location
Power (cont.)									
X-00533-PO-B-0050	11850.00	8584.18	~668' Inv	21"X30" concrete duct 6 ea. 5" Fiber conduits	X-215A-2013-E West Sw. House	(1) Abandon duct bank (2) Air gap power cables	No Yes	N/A (2) Air gap/ground cable ends	(2) X-533 ACB 38801 cables 388A, 388B & 388C X-333 Substation 388A & 388B X-533 ACB 38001 cables 380A, 380B & 380C X-333 Substation 3810A& 3810B
X-00533-PO-B-0051	11850.00	8566.27	~668' Inv	21"X30" concrete duct 6 ea. 5" Fiber conduits	X-215A-2013-E West Sw. House	(1) Abandon duct bank (2) Air gap power cables	No Yes	N/A (2) Air gap/ground cable ends	(2) X-533 ACB 38401 cables 384A, 384B & 348C & X-333 Substation 384A & 384B X-533 ACB 38601 cables 386A, 386B & 386C & X-333 Substation 386A & 386B
X-00533-PO-B-0052	11850.00	8558.81	~668' Inv	21"X21" concrete duct 4 ea. 5" Fiber conduits	X-215A-2013-E West Sw. House	(1) Abandon duct bank (2) Air gap power cables	No Yes	N/A (2) Air gap/ground cable ends	(2) X-533 ACB 38201 cables 382A, 382B & 382C & X-333 Substation 382A & 382B
Sanitary Water									
X-00533-SW-B-0001	11961.11	9630.92		4" pipe		To X-533E Valve Vault	Yes	Valve off/blind flange	Close valve GH-1 & G2/BP

Table B.1. X-533 belowground interfaces (continued)

Interface tag Number	Plant Site Grid North (ft)	Plant Site Grid East (ft)	Elevation (ft) 1st Floor @ 672'	Feature size/material	Reference drawing	Other considerations	Isolation needed (yes/no)	Method of isolation	De-energization identification or location
Sanitary Water (Cont.)									
X-00533-SW-B-0002	11850.00	9321.21		2" pipe	Visual	Abandoned	No	N/A	
X-00533-SW-B-0003	11850.00	9058.04		2" pipe	Visual	Abandoned	No	N/A	
X-00533-SW-B-0004	11850.00	9014.79		4" pipe	Visual		Yes	Valve off/blind flange	Close PIV 112/113/114
X-00533-SW-B-0005	11850.00	8736.21		2" pipe	Visual	Abandoned	No	N/A	
X-00533-SW-B-0006	11960.39	8425.29		4" pipe			Yes	Valve off/blind flange	Close valves 20-3E/BP & 20-2E/BP
X-00533-SW-B-0007	12508.97	8688.06		4" pipe			Yes	Valve off/blind flange	Close valve X-533A
X-00533-SW-B-0008	12508.97	9311.83		4" pipe			Yes	Valve off/blind flange	Close valve X-533B
Sanitary Sewer									
X-00533-SS-B-0001	11850.00	9062.33	??	6" sewer pipe	X-215A-2014-E		Yes	Air gap/cap	Cap @ N. 11850.00, E. 9062.33
Communication									
X-00533-CO-B-0001	11852.58	9531.79	668.5' Inv	26 pr PAX cable	X-220A-6002E	Re-route 26 pr PAX cable for X-633	Yes	Air gap @ terminal strip	X-533 52 pr PAX cabinet on first floor and at 312 pr PAX cabinet in basement of ACR 1
X-00533-CO-B-0002	11850.00	8982.50	~676' Inv	14/C Process Control & Instrumentation Cable Terminal Cabinet 33-1F	X-533 dwg. E 1837		Yes	Air gap @ Terminal Strips	Cable # 15201 at TC 33-1F & at X-333 ACR terminal cabinet #1
X-00533-CO-B-0003	11850.00	8982.50	~676' Inv	14/C Process Control & Instrumentation Cable Terminal Cabinet 33-1F	X-533 dwg. E 1837		Yes	Air gap @ Terminal Strips	Cable # 15202 at TC 33-1F & at X-333 ACR terminal cabinet #1

Table B.1. X-533 belowground interfaces (continued)

Interface tag Number	Plant Site Grid North (ft)	Plant Site Grid East (ft)	Elevation (ft) 1st Floor @ 672'	Feature size/material	Reference drawing	Other considerations	Isolation needed (yes/no)	Method of isolation	De-energization identification or location
Communication (Cont.)									
X-00533-CO-B-0004	11850.00	8982.50	~676' Inv	14/C Process Control & Instrumentation Cable Terminal Cabinet 33-1F	X-533 dwg. E 1837		Yes	Air gap @ Terminal Strip	Cable # 15203 at TC 33-1F & at X-333 ACR terminal cabinet #1
X-00533-CO-B-0005	11850.00	8982.50	~676' Inv	14/C Process Control & Instrumentation Cable Terminal Cabinet 33-1F	X-533 dwg. E 1837		Yes	Air gap @ Terminal Strip	Cable # 15204 at TC 33-1F & at X-333 ACR terminal cabinet #1
X-00533-CO-B-0006	11850.00	8982.50	~676' Inv	14/C Process Control & Instrumentation Cable Terminal Cabinet 33-1F	X-533 dwg. E 1837		Yes	Air gap @ Terminal Strip	Cable # 15205 at TC 33-1F & at X-333 ACR terminal cabinet #1
X-00533-CO-B-0007	11850.00	8982.50	~676' Inv	14/C Process Control & Instrumentation Cable Terminal Cabinet 33-1F	X-533 dwg. E 1837		Yes	Air gap @ Terminal Strip	Cable # 15206 at TC 33-1F & at X-333 ACR terminal cabinet #1
X-00533-CO-B-0008	11850.00	8982.50	~676' Inv	14/C Process Control & Instrumentation Cable Terminal Cabinet 33-1F	X-533 dwg. E 1837		Yes	Air gap @ Terminal Strip	Cable # 15207 at TC 33-1F & at X-333 ACR terminal cabinet #2
X-00533-CO-B-0009	11850.00	8982.50	~676' Inv	14/C Process Control & Instrumentation Cable Terminal Cabinet 33-1F	X-533 dwg. E 1837		Yes	Air gap @ Terminal Strip	Cable # 15208 at TC 33-1F & at X-333 ACR terminal cabinet #1
X-00533-CO-B-0010	11850.00	8982.50	~676' Inv	14/C Process Control & Instrumentation Cable Terminal Cabinet 33-1F	X-533 dwg. E 1837		Yes	Air gap @ Terminal Strip	Cable # 15210 at TC 33-1F & at X-333 ACR terminal cabinet #1
X-00533-CO-B-0011	11850.00	8982.50	~676' Inv	14/C Process Control & Instrumentation Cable Terminal Cabinet 33-1F	X-533 dwg. E 1837		Yes	Air gap @ Terminal Strip	Cable # 15209 at TC 33-1F & at X-333 ACR terminal cabinet #2

Table B.1. X-533 belowground interfaces (continued)

Interface tag Number	Plant Site Grid North (ft)	Plant Site Grid East (ft)	Elevation (ft) 1st Floor @ 672'	Feature size/material	Reference drawing	Other considerations	Isolation needed (yes/no)	Method of isolation	De-energization identification or location
Communication (Cont.)									
X-00533-CO-B-0012	11850.00	8982.50	~676' Inv	14/C Process Control & Instrumentation Cable Terminal Cabinet 33-1F	X-533 dwg. E 1837		Yes	Air gap @ Terminal Strip	Cable # 15211 at TC 33-1F & at X-333 ACR terminal cabinet #1
X-00533-CO-B-0013	11850.00	8982.50	~676' Inv	14/C Process Control & Instrumentation Cable Terminal Cabinet 33-1F	X-533 dwg. E 1837		Yes	Air gap @ Terminal Strip	Cable # 15214 at TC 33-1F & at X-333 ACR terminal cabinet #2
X-00533-CO-B-0014	11850.00	8982.50	~676' Inv	14/C Process Control & Instrumentation Cable Terminal Cabinet 33-1F	X-533 dwg. E 1837		Yes	Air gap @ Terminal Strip	Cable # 15215 at TC 33-1F & at X-333 ACR terminal cabinet #1
X-00533-CO-B-0015	11850.00	8982.50	~676' Inv	14/C Process Control & Instrumentation Cable Terminal Cabinet 33-1F	X-533 dwg. E 1837		Yes	Air gap @ Terminal Strip	Cable # 15216 at TC 33-1F & at X-333 ACR terminal cabinet #1
X-00533-CO-B-0016	11850.00	8982.50	~676' Inv	14/C Process Control & Instrumentation Cable Terminal Cabinet 33-1F	X-533 dwg. E 1837		Yes	Air gap @ Terminal Strip	Cable # 15217 at TC 33-1F & at X-333 ACR terminal cabinet #1
X-00533-CO-B-0017	11850.00	8982.50	~676' Inv	14/C Process Control & Instrumentation Cable Terminal Cabinet 33-1F	X-533 dwg. E 1837		Yes	Air gap @ Terminal Strip	Cable # 15218 at TC 33-1F & at X-333 ACR terminal cabinet #1
X-00533-CO-B-0018	11850.00	8982.50	~676' Inv	14/C Process Control & Instrumentation Cable Terminal Cabinet 33-1F	X-533 dwg. E 1837		Yes	Air gap @ Terminal Strip	Cable # 15219 at TC 33-1F & at X-333 ACR terminal cabinet #1
X-00533-CO-B-0019	11850.00	8982.50	~676' Inv	14/C Process Control & Instrumentation Cable Terminal Cabinet 33-1F	X-533 dwg. E 1837		Yes	Air gap @ Terminal Strip	Cable # 15220 at TC 33-1F & at X-333 ACR terminal cabinet #1

Table B.1. X-533 belowground interfaces (continued)

Interface tag Number	Plant Site Grid North (ft)	Plant Site Grid East (ft)	Elevation (ft) 1st Floor @ 672'	Feature size/material	Reference drawing	Other considerations	Isolation needed (yes/no)	Method of isolation	De-energization identification or location
Communication (Cont.)									
X-00533-CO-B-0020	11850.00	8982.50	~676' Inv	14/C Process Control & Instrumentation Cable Terminal Cabinet 33-1F	X-533 dwg. E 1837		Yes	Air gap @ Terminal Strip	Cable # 15212 at TC 33-1F & at X-333 ACR terminal cabinet #1
X-00533-CO-B-0021	11850.00	8982.50	~676' Inv	14/C Process Control & Instrumentation Cable Terminal Cabinet 33-1F	X-533 dwg. E 1837		Yes	Air gap @ Terminal Strip	Cable # 15221 at TC 33-1F & at X-333 ACR terminal cabinet #1
X-00533-CO-B-0022	11850.00	8982.50	~676' Inv	10/C Process Control & Instrumentation Cable Terminal Cabinet 33-1F	X-533 dwg. E 1837		Yes	Air gap @ Terminal Strip	Cable # 15803 at TC 33-1F & at X-300 Term. Cab. X-300-2F
X-00533-CO-B-0023	11850.00	8982.50	~676' Inv	10/C Process Control & Instrumentation Cable Terminal Cabinet 33-1F	X-533 dwg. E 1837		Yes	Air gap @ Terminal Strip	Cable # 15809 at TC 33-1F & at X-300 Term. Cab. X-300-2F
X-00533-CO-B-0024	11850.00	8982.50	~676' Inv	10/C Process Control & Instrumentation Cable Terminal Cabinet 33-1F	X-533 dwg. E 1837		Yes	Air gap @ Terminal Strip	Cable # 15810 at TC 33-1F & at X-300 Term. Cab. X-300-2F
X-00533-CO-B-0025	11850.00	8982.50	~676' Inv	10/C Process Control & Instrumentation Cable Terminal Cabinet 33-1F	X-533 dwg. E 1837		Yes	Air gap @ Terminal Strip	Cable # 15821 at TC 33-1F & at X-300 Term. Cab. X-300-2F
X-00533-CO-B-0026	11850.00	8982.50	~676' Inv	10/C Process Control & Instrumentation Cable Terminal Cabinet 33-1F	X-533 dwg. E 1837		Yes	Air gap @ Terminal Strip	Cable # 15822 at TC 33-1F & at X-300 Term. Cab. X-300-2F
X-00533-CO-B-0027	11850.00	8982.50	~676' Inv	10/C Process Control & Instrumentation Cable Terminal Cabinet 33-1F	X-533 dwg. E 1837		Yes	Air gap @ Terminal Strip	Cable # 15823 at TC 33-1F & at X-300 Term. Cab. X-300-2F

Table B.1. X-533 belowground interfaces (continued)

Interface tag Number	Plant Site Grid North (ft)	Plant Site Grid East (ft)	Elevation (ft) 1st Floor @ 672'	Feature size/material	Reference drawing	Other considerations	Isolation needed (yes/no)	Method of isolation	De-energization identification or location
Communication (Cont.)									
X-00533-CO-B-0028	11850.00	8982.50	~676' Inv	10/C Process Control & Instrumentation Cable Terminal Cabinet 33-1F	X-533 dwg. E 1837		Yes	Air gap @ Terminal Strip	Cable # 15824 at TC 33-1F & at X-300 Term. Cab. X-300-2F
X-00533-CO-B-0029	11850.00	8982.50	~676' Inv	10/C Process Control & Instrumentation Cable Terminal Cabinet 33-1F	X-533 dwg. E 1837		Yes	Air gap @ Terminal Strip	Cable # 15825 at TC 33-1F & at X-300 Term. Cab. X-300-2F
X-00533-CO-B-0030	11850.00	8982.50	~676' Inv	52 pr. Process Control & Instrumentation Cable Terminal Cabinet 33-1F	X-533 dwg. E 1837		Yes	Air gap @ Terminal Strip	Cable # 15805 at TC 33-1F & at X-300 Term. Cab. X-300-2R
X-00533-CO-B-0031	11850.00	8982.50	~676' Inv	52 pr. Process Control & Instrumentation Cable Terminal Cabinet 33-1F	X-533 dwg. E 1837		Yes	Air gap @ Terminal Strip	Cable # 15807 at TC 33-1F & at X-300 Term. Cab. X-300-2F
X-00533-CO-B-0032	11850.00	8982.50	~676' Inv	26 pr. Process Control & Instrumentation Cable Terminal Cabinet 33-1R	X-533 dwg. E 1838		Yes	Air gap @ Terminal Strip	Cable # 15833 at TC 33-1R & at X-300 Term. Cab. X-300-2R
X-00533-CO-B-0033	11850.00	8982.50	~676' Inv	25/C Process Control & Instrumentation Cable Terminal Cabinet 33-1R	X-533 dwg. E 1838		Yes	Air gap @ Terminal Strip	Cable # 15832 at TC 33-1R & at X-300 Term. Cab. X-300-2R
X-00533-CO-B-0034	11850.00	8982.50	~676' Inv	10/C Process Control & Instrumentation Cable Terminal Cabinet 33-1R	X-533 dwg. E 1838		Yes	Air gap @ Terminal Strip	Cable # 15811 at TC 33-1R & at X-300 Term. Cab. X-300-2F
X-00533-CO-B-0035	11850.00	8982.50	~676' Inv	10/C Process Control & Instrumentation Cable Terminal Cabinet 33-1R	X-533 dwg. E 1838		Yes	Air gap @ Terminal Strip	Cable # 15812 at TC 33-1R & at X-300 Term. Cab. X-300-2F

Table B.1. X-533 belowground interfaces (continued)

Interface tag Number	Plant Site Grid North (ft)	Plant Site Grid East (ft)	Elevation (ft) 1st Floor @ 672'	Feature size/material	Reference drawing	Other considerations	Isolation needed (yes/no)	Method of isolation	De-energization identification or location
Communication (Cont.)									
X-00533-CO-B-0036	11850.00	8982.50	~676' Inv	10/C Process Control & Instrumentation Cable Terminal Cabinet 33-1R	X-533 dwg. E 1838		Yes	Air gap @ Terminal Strip	Cable # 15813 at TC 33-1R & at X-300 Term. Cab. X-300-2F
X-00533-CO-B-0037	11850.00	8982.50	~676' Inv	10/C Process Control & Instrumentation Cable Terminal Cabinet 33-1R	X-533 dwg. E 1838		Yes	Air gap @ Terminal Strip	Cable # 15814 at TC 33-1R & at X-300 Term. Cab. X-300-2F
X-00533-CO-B-0038	11850.00	8982.50	~676' Inv	10/C Process Control & Instrumentation Cable Terminal Cabinet 33-1R	X-533 dwg. E 1838		Yes	Air gap @ Terminal Strip	Cable # 15815 at TC 33-1R & at X-300 Term. Cab. X-300-2F
X-00533-CO-B-0039	11850.00	8982.50	~676' Inv	10/C Process Control & Instrumentation Cable Terminal Cabinet 33-1R	X-533 dwg. E 1838		Yes	Air gap @ Terminal Strip	Cable # 15816 at TC 33-1R & at X-300 Term. Cab. X-300-2F
X-00533-CO-B-0040	11850.00	8982.50	~676' Inv	10/C Process Control & Instrumentation Cable Terminal Cabinet 33-1R	X-533 dwg. E 1838		Yes	Air gap @ Terminal Strip	Cable # 15817 at TC 33-1R & at X-300 Term. Cab. X-300-2F
X-00533-CO-B-0041	11850.00	8982.50	~676' Inv	10/C Process Control & Instrumentation Cable Terminal Cabinet 33-1R	X-533 dwg. E 1838		Yes	Air gap @ Terminal Strip	Cable # 15831 at TC 33-1R & at X-300 Term. Cab. X-300-2F
X-00533-CO-B-0042	11850.00	8982.50	~676' Inv	10/C Process Control & Instrumentation Cable Terminal Cabinet 33-1R	X-533 dwg. E 1838		Yes	Air gap @ Terminal Strip	Cable # 15839 at TC 33-1R & at X-300 Term. Cab. X-300-2F
X-00533-CO-B-0043	11850.00	8982.50	~676' Inv	15/C Process Control & Instrumentation Cable Terminal Cabinet 33-1R	X-533 dwg. E 1838		Yes	Air gap @ Terminal Strip	Cable # 15818 at TC 33-1R & at X-300 Term. Cab. X-300-2F

Table B.1. X-533 belowground interfaces (continued)

Interface tag Number	Plant Site Grid North (ft)	Plant Site Grid East (ft)	Elevation (ft) 1st Floor @ 672'	Feature size/material	Reference drawing	Other considerations	Isolation needed (yes/no)	Method of isolation	De-energization identification or location
Communication (Cont.)									
X-00533-CO-B-0044	11850.00	8982.50	~676' Inv	14/C Process Control & Instrumentation Cable Terminal Cabinet 33-1R	X-533 dwg. E 1838		Yes	Air gap @ Terminal Strip	Cable # 15224 at TC 33-1R & at X-333 ACR terminal cabinet #2
X-00533-CO-B-0045	11850.00	8982.50	~676' Inv	15/C Process Control & Instrumentation Cable Terminal Cabinet 33-1R	X-533 dwg. E 1838		Yes	Air gap @ Terminal Strip	Cable # 15819 at TC 33-1R & at X-300 Term. Cab. X-300-2F
X-00533-CO-B-0046	11850.00	8982.50	~676' Inv	14/C Process Control & Instrumentation Cable Terminal Cabinet 33-1R	X-533 dwg. E 1838		Yes	Air gap @ Terminal Strip	Cable # 20202 at TC 33-1R & at X-300 Term. Cab. X-300-2R
X-00533-CO-B-0047	11850.00	8982.50	~676' Inv	14/C Process Control & Instrumentation Cable Terminal Cabinet 33-1R	X-533 dwg. E 1838		Yes	Air gap @ Terminal Strip	Cable # 15226 at TC 33-1R & at X-333 ACR terminal cabinet #1
X-00533-CO-B-0048	11850.00	8982.50	~676' Inv	14/C Process Control & Instrumentation Cable Terminal Cabinet 33-1R	X-533 dwg. E 1838		Yes	Air gap @ Terminal Strip	Cable # 15227 at TC 33-1R & at X-333 ACR terminal cabinet #1
X-00533-CO-B-0049	11850.00	8982.50	~676' Inv	14/C Process Control & Instrumentation Cable Terminal Cabinet 33-1R	X-533 dwg. E 1838		Yes	Air gap @ Terminal Strip	Cable # 15228 at TC 33-1R & at X-333 ACR terminal cabinet #2
X-00533-CO-B-0050	11850.00	8982.50	~676' Inv	14/C Process Control & Instrumentation Cable Terminal Cabinet 33-1R	X-533 dwg. E 1838		Yes	Air gap @ Terminal Strip	Cable # 15229 at TC 33-1R & at X-333 ACR terminal cabinet #1
X-00533-CO-B-0051	11850.00	8982.50	~676' Inv	14/C Process Control & Instrumentation Cable Terminal Cabinet 33-1R	X-533 dwg. E 1838		Yes	Air gap @ Terminal Strip	Cable # 15230 at TC 33-1R & at X-333 ACR terminal cabinet #2

Table B.1. X-533 belowground interfaces (continued)

Interface tag Number	Plant Site Grid North (ft)	Plant Site Grid East (ft)	Elevation (ft) 1st Floor @ 672'	Feature size/material	Reference drawing	Other considerations	Isolation needed (yes/no)	Method of isolation	De-energization identification or location
Communication (Cont.)									
X-00533-CO-B-0052	11850.00	8982.50	~676' Inv	14/C Process Control & Instrumentation Cable Terminal Cabinet 33-1R	X-533 dwg. E 1838		Yes	Air gap @ Terminal Strip	Cable # 15231 at TC 33-1R & at X-333 ACR terminal cabinet #1
X-00533-CO-B-0053	11850.00	8982.50	~676' Inv	14/C Process Control & Instrumentation Cable Terminal Cabinet 33-1R	X-533 dwg. E 1838		Yes	Air gap @ Terminal Strip	Cable # 15232 at TC 33-1R & at X-333 ACR terminal cabinet #2
X-00533-CO-B-0054	11850.00	8982.50	~676' Inv	14/C Process Control & Instrumentation Cable Terminal Cabinet 33-1R	X-533 dwg. E 1838		Yes	Air gap @ Terminal Strip	Cable # 15233 at TC 33-1R & at X-333 ACR terminal cabinet #2
X-00533-CO-B-0055	11850.00	8982.50	~676' Inv	14/C Process Control & Instrumentation Cable Terminal Cabinet 33-1R	X-533 dwg. E 1838		Yes	Air gap @ Terminal Strip	Cable # 15234 at TC 33-1R & at X-333 ACR terminal cabinet #2
X-00533-CO-B-0056	11850.00	8982.50	~676' Inv	14/C Process Control & Instrumentation Cable Terminal Cabinet 33-1R	X-533 dwg. E 1838		Yes	Air gap @ Terminal Strip	Cable # 15235 at TC 33-1R & at X-333 ACR terminal cabinet #2
X-00533-CO-B-0057	11850.00	8982.50	~676' Inv	14/C Process Control & Instrumentation Cable Terminal Cabinet 33-1R	X-533 dwg. E 1838		Yes	Air gap @ Terminal Strip	Cable # 15236 at TC 33-1R & at X-333 ACR terminal cabinet #2
X-00533-CO-B-0058	11850.00	8982.50	~676' Inv	14/C Process Control & Instrumentation Cable Terminal Cabinet 33-1R	X-533 dwg. E 1838		Yes	Air gap @ Terminal Strip	Cable # 15239 at TC 33-1R & at X-333 ACR terminal cabinet #2

Table B.1. X-533 belowground interfaces (continued)

Interface tag Number	Plant Site Grid North (ft)	Plant Site Grid East (ft)	Elevation (ft) 1st Floor @ 672'	Feature size/material	Reference drawing	Other considerations	Isolation needed (yes/no)	Method of isolation	De-energization identification or location
Communication (Cont.)									
X-00533-CO-B-0059	11850.00	8982.50	~676' Inv	14/C Process Control & Instrumentation Cable Terminal Cabinet 33-1R	X-533 dwg. E 1838		Yes	Air gap @ Terminal Strip	Cable # 15240 at TC 33-1R & at X-333 ACR terminal cabinet #2
X-00533-CO-B-0060	11850.00	8982.50	~676' Inv	14/C Process Control & Instrumentation Cable Terminal Cabinet 33-1R	X-533 dwg. E 1838		Yes	Air gap @ Terminal Strip	Cable # 15241 at TC 33-1R & at X-333 ACR terminal cabinet #2
X-00533-CO-B-0061	11850.00	8982.50	~676' Inv	14/C Process Control & Instrumentation Cable Terminal Cabinet 33-1R	X-533 dwg. E 1838		Yes	Air gap @ Terminal Strip	Cable # 15242 at TC 33-1R & at X-333 ACR terminal cabinet #2
X-00533-CO-B-0062	11850.00	8982.50	~676' Inv	14/C Process Control & Instrumentation Cable Terminal Cabinet 33-1R	X-533 dwg. E 1838		Yes	Air gap @ Terminal Strip	Cable # 15243 at TC 33-1R & at X-333 ACR terminal cabinet #2
X-00533-CO-B-0063	11850.00	8982.50	~676' Inv	14/C Process Control & Instrumentation Cable Terminal Cabinet 33-1R	X-533 dwg. E 1838		Yes	Air gap @ Terminal Strip	Cable # 15244 at TC 33-1R & at X-333 ACR terminal cabinet #2
X-00533-CO-B-0064	11850.00	8982.50	~676' Inv	14/C Process Control & Instrumentation Cable Terminal Cabinet 33-1R	X-533 dwg. E 1838		Yes	Air gap @ Terminal Strip	Cable # 15245 at TC 33-1R & at X-333 ACR terminal cabinet #2
X-00533-CO-B-0065	11850.00	8982.50	~676' Inv	14/C Process Control & Instrumentation Cable Terminal Cabinet 33-2F	X-533 dwg. E 1839		Yes	Air gap @ Terminal Strip	Cable # 15246 at TC 33-2F & at X-333 ACR terminal cabinet #2

Table B.1. X-533 belowground interfaces (continued)

Interface tag Number	Plant Site Grid North (ft)	Plant Site Grid East (ft)	Elevation (ft) 1st Floor @ 672'	Feature size/material	Reference drawing	Other considerations	Isolation needed (yes/no)	Method of isolation	De-energization identification or location
Communication (Cont.)									
X-00533-CO-B-0066	11850.00	8982.50	~676' Inv	14/C Process Control & Instrumentation Cable Terminal Cabinet 33-2F	X-533 dwg. E 1839		Yes	Air gap @ Terminal Strip	Cable # 15247 at TC 33-2F &at X-333 ACR terminal cabinet #2
X-00533-CO-B-0067	11850.00	8982.50	~676' Inv	14/C Process Control & Instrumentation Cable Terminal Cabinet 33-2F	X-533 dwg. E 1839		Yes	Air gap @ Terminal Strip	Cable # 15248 at TC 33-2F & at X-333 ACR terminal cabinet #3
X-00533-CO-B-0068	11850.00	8982.50	~676' Inv	14/C Process Control & Instrumentation Cable Terminal Cabinet 33-2F	X-533 dwg. E 1839		Yes	Air gap @ Terminal Strip	Cable # 15249 at TC 33-2F & at X-333 ACR terminal cabinet #3
X-00533-CO-B-0069	11850.00	8982.50	~676' Inv	14/C Process Control & Instrumentation Cable Terminal Cabinet 33-2F	X-533 dwg. E 1839		Yes	Air gap @ Terminal Strip	Cable 15250 at TC 33-2F & at X-333 ACR terminal cabinet #3
X-00533-CO-B-0070	11850.00	8982.50	~676' Inv	14/C Process Control & Instrumentation Cable Terminal Cabinet 33-2F	X-533 dwg. E 1839		Yes	Air gap @ Terminal Strip	Cable 15251 at TC 33-2F & at X-333 ACR terminal cabinet #3
X-00533-CO-B-0071	11850.00	8982.50	~676' Inv	14/C Process Control & Instrumentation Cable Terminal Cabinet 33-2F	X-533 dwg. E 1839		Yes	Air gap @ Terminal Strip	Cable # 15252 at TC 33-2F & at X-333 ACR terminal cabinet #3
X-00533-CO-B-0072	11850.00	8982.50	~676' Inv	14/C Process Control & Instrumentation Cable Terminal Cabinet 33-2F	X-533 dwg. E 1839		Yes	Air gap @ Terminal Strip	Cable # 15255 at TC 33-2F & at X-333 ACR terminal cabinet #3
X-00533-CO-B-0073	11850.00	8982.50	~676' Inv	14/C Process Control & Instrumentation Cable Terminal Cabinet 33-2F	X-533 dwg. E 1839		Yes	Air gap @ Terminal Strip	Cable # 15256 at TC 33-2F & at X-333 ACR terminal cabinet #3

Table B.1. X-533 belowground interfaces (continued)

Interface tag Number	Plant Site Grid North (ft)	Plant Site Grid East (ft)	Elevation (ft) 1st Floor @ 672'	Feature size/material	Reference drawing	Other considerations	Isolation needed (yes/no)	Method of isolation	De-energization identification or location
Communication (Cont.)									
X-00533-CO-B-0074	11850.00	8982.50	~676' Inv	14/C Process Control & Instrumentation Cable Terminal Cabinet 33-2F	X-533 dwg. E 1839		Yes	Air gap @ Terminal Strip	Cable # 15257 at TC 33-2F & at X-333 ACR terminal cabinet #3
X-00533-CO-B-0075	11850.00	8982.50	~676' Inv	14/C Process Control & Instrumentation Cable Terminal Cabinet 33-2F	X-533 dwg. E 1839		Yes	Air gap @ Terminal Strip	Cable # 15258 at TC 33-2F & at X-333 ACR terminal cabinet #3
X-00533-CO-B-0076	11850.00	8982.50	~676' Inv	14/C Process Control & Instrumentation Cable Terminal Cabinet 33-2F	X-533 dwg. E 1839		Yes	Air gap @ Terminal Strip	Cable # 15259 at TC 33-2F & at X-333 ACR terminal cabinet #3
X-00533-CO-B-0077	11850.00	8982.50	~676' Inv	14/C Process Control & Instrumentation Cable Terminal Cabinet 33-2F	X-533 dwg. E 1839		Yes	Air gap @ Terminal Strip	Cable # 15260 at TC 33-2F & at X-333 ACR terminal cabinet #2
X-00533-CO-B-0078	11850.00	8982.50	~676' Inv	14/C Process Control & Instrumentation Cable Terminal Cabinet 33-2F	X-533 dwg. E 1839		Yes	Air gap @ Terminal Strip	Cable # 15261 at TC 33-2F & at X-333 ACR terminal cabinet #3
X-00533-CO-B-0079	11850.00	8982.50	~676' Inv	14/C Process Control & Instrumentation Cable Terminal Cabinet 33-2F	X-533 dwg. E 1839		Yes	Air gap @ Terminal Strip	Cable # 15262 at TC 33-2F & at X-333 ACR terminal cabinet #3
X-00533-CO-B-0080	11850.00	8982.50	~676' Inv	14/C Process Control & Instrumentation Cable Terminal Cabinet 33-2F	X-533 dwg. E 1839		Yes	Air gap @ Terminal Strip	Cable # 15263 at TC 33-2F & at X-333 ACR terminal cabinet #3
X-00533-CO-B-0081	11850.00	8982.50	~676' Inv	14/C Process Control & Instrumentation Cable Terminal Cabinet 33-2F	X-533 dwg. E 1839		Yes	Air gap @ Terminal Strip	Cable # 15264 at TC 33-2F & at X-333 ACR terminal cabinet #3

Table B.1. X-533 belowground interfaces (continued)

Interface tag Number	Plant Site Grid North (ft)	Plant Site Grid East (ft)	Elevation (ft) 1st Floor @ 672'	Feature size/material	Reference drawing	Other considerations	Isolation needed (yes/no)	Method of isolation	De-energization identification or location
Communication (Cont.)									
X-00533-CO-B-0082	11850.00	8982.50	~676' Inv	14/C Process Control & Instrumentation Cable Terminal Cabinet 33-2F	X-533 dwg. E 1839		Yes	Air gap @ Terminal Strip	Cable # 15265 at TC 33-2F & at X-333 ACR terminal cabinet #3
X-00533-CO-B-0083	11850.00	8982.50	~676' Inv	14/C Process Control & Instrumentation Cable Terminal Cabinet 33-2F	X-533 dwg. E 1839		Yes	Air gap @ Terminal Strip	Cable # 15266 at TC 33-2F & at X-333 ACR terminal cabinet #4
X-00533-CO-B-0084	11850.00	8982.50	~676' Inv	10/C Process Control & Instrumentation Cable Terminal Cabinet 33-2F	X-533 dwg. E 1839		Yes	Air gap @ Terminal Strip	Cable # 15834 at TC 33-2F & at X-300 Term. Cab. X-300-2F
X-00533-CO-B-0085	11850.00	8982.50	~676' Inv	10/C Process Control & Instrumentation Cable Terminal Cabinet 33-2F	X-533 dwg. E 1839		Yes	Air gap @ Terminal Strip	Cable # 15835 at TC 33-2F & at X-300 Term. Cab. X-300-2F
X-00533-CO-B-0086	11850.00	8982.50	~676' Inv	10/C Process Control & Instrumentation Cable Terminal Cabinet 33-2F	X-533 dwg. E 1839		Yes	Air gap @ Terminal Strip	Cable # 15836 at TC 33-2F & at X-300 Term. Cab. X-300-2F
X-00533-CO-B-0087	11850.00	8982.50	~676' Inv	10/C Process Control & Instrumentation Cable Terminal Cabinet 33-2F	X-533 dwg. E 1839		Yes	Air gap @ Terminal Strip	Cable # 15837 at TC 33-2F & at X-300 Term. Cab. X-300-2F
X-00533-CO-B-0088	11850.00	8982.50	~676' Inv	14/C Process Control & Instrumentation Cable Terminal Cabinet 33-2F	X-533 dwg. E 1839		Yes	Air gap @ Terminal Strip	Cable # 15265 at TC 33-2F & at X-333 ACR terminal cabinet #3
X-00533-CO-B-0089	11850.00	8982.50	~676' Inv	10/C Process Control & Instrumentation Cable Terminal Cabinet 33-2F	X-533 dwg. E 1839		Yes	Air gap @ Terminal Strip	Cable # 15830 at TC 33-2F & at X-300 Term. Cab. X-300-2F

Table B.1. X-533 belowground interfaces (continued)

Interface tag Number	Plant Site Grid North (ft)	Plant Site Grid East (ft)	Elevation (ft) 1st Floor @ 672'	Feature size/material	Reference drawing	Other considerations	Isolation needed (yes/no)	Method of isolation	De-energization identification or location
Communication (Cont.)									
X-00533-CO-B-0090	11850.00	8982.50	~676' Inv	10/C Process Control & Instrumentation Cable Terminal Cabinet 33-2F	X-533 dwg. E 1839		Yes	Air gap @ Terminal Strip	Cable # 15826 at TC 33-2F & at X-300 Term. Cab. X-300-2F
X-00533-CO-B-0091	11850.00	8982.50	~676' Inv	10/C Process Control & Instrumentation Cable Terminal Cabinet 33-2F	X-533 dwg. E 1839		Yes	Air gap @ Terminal Strip	Cable # 15827 at TC 33-2F & at X-300 Term. Cab. X-300-2F
X-00533-CO-B-0092	11850.00	8982.50	~676' Inv	10/C Process Control & Instrumentation Cable Terminal Cabinet 33-2F	X-533 dwg. E 1839		Yes	Air gap @ Terminal Strip	Cable # 15828 at TC 33-2F & at X-300 Term. Cab. X-300-2F
X-00533-CO-B-0093	11850.00	8982.50	~676' Inv	10/C Process Control & Instrumentation Cable Terminal Cabinet 33-2F	X-533 dwg. E 1839		Yes	Air gap @ Terminal Strip	Cable # 15829 at TC 33-2F & at X-300 Term. Cab. X-300-2F
X-00533-CO-B-0094	11850.00	8982.50	~676' Inv	7/C Process Control & Instrumentation Cable Terminal Cabinet 33-2F	X-533 dwg. E 1839		Yes	Air gap @ Terminal Strip	Cable # 15503 at TC 33-2F & at X-530 Term. Cab. 30-1R
X-00533-CO-B-0095	11850.00	8982.50	~676' Inv	7/C Process Control & Instrumentation Cable Terminal Cabinet 33-2F	X-533 dwg. E 1839		Yes	Air gap @ Terminal Strip	Cable # 15504 at TC 33-2F & at X-530 Term. Cab. 30-1R
X-00533-CO-B-0096	11850.00	8982.50	~676' Inv	14/C Process Control & Instrumentation Cable Terminal Cabinet 33-2F	X-533 dwg. E 1839		Yes	Air gap @ Terminal Strip	Cable # 15253 at TC 33-2F & at X-333 ACR terminal cabinet #3
X-00533-CO-B-0097	11850.00	8982.50	~676' Inv	14/C Process Control & Instrumentation Cable Terminal Cabinet 33-2F	X-533 dwg. E 1839		Yes	Air gap @ Terminal Strip	Cable # 15254 at TC 33-2F & at X-633-1 Remote Pump Control & Pilot Wire J.B. (X-633-1-4006-E)

Table B.1. X-533 belowground interfaces (continued)

Interface tag Number	Plant Site Grid North (ft)	Plant Site Grid East (ft)	Elevation (ft) 1st Floor @ 672'	Feature size/material	Reference drawing	Other considerations	Isolation needed (yes/no)	Method of isolation	De-energization identification or location
Communication (Cont.)									
X-00533-CO-B-0098	11850.00	8982.50	~676' Inv	52 pr Process Control & Instrumentation Cable Terminal Cabinet 33-2F	X-533 dwg. E 1839		Yes	Air gap @ Terminal Strip	Cable # 15806 at TC 33-2F & at X-300 Term. Cab. X-300-2R
X-00533-CO-B-0099	11850.00	8982.50	~676' Inv	52 pr Process Control & Instrumentation Cable Terminal Cabinet 33-2F	X-533 dwg. E 1839		Yes	Air gap @ Terminal Strip	Cable # 15808 at TC 33-2F & at X-300 Term. Cab. X-300-2F
X-00533-CO-B-0100	11850.00	8982.50	~676' Inv	52 pr Process Control & Instrumentation Cable Terminal Cabinet 33-2R	X-533 dwg. E 1840		Yes	Air gap @ Terminal Strip	Cable # 15801 at TC 33-2R & at X-300 Term. Cab. X-300-2R
X-00533-CO-B-0101	11850.00	8982.50	~676' Inv	52 pr Process Control & Instrumentation Cable Terminal Cabinet 33-2R	X-533 dwg. E 1840		Yes	Air gap @ Terminal Strip	Cable # 15804 at TC 33-2R & at X-300 Term. Cab. X-300-2R
X-00533-CO-B-0102	11850.00	8982.50	~676' Inv	14/C Process Control & Instrumentation Cable Terminal Cabinet 33-2R	X-533 dwg. E 1840		Yes	Air gap @ Terminal Strip	Cable # 15273 at TC 33-2F & at X-333 ACR terminal cabinet #4
X-00533-CO-B-0103	11850.00	8982.50	~676' Inv	14/C Process Control & Instrumentation Cable Terminal Cabinet 33-2R	X-533 dwg. E 1840		Yes	Air gap @ Terminal Strip	Cable # 15274 at TC 33-2R & at X-633-1 Remote Pump Control & Pilot Wire J.B. (X-633-1-4006-E)
X-00533-CO-B-0104	11850.00	8982.50	~676' Inv	14/C Process Control & Instrumentation Cable Terminal Cabinet 33-2R	X-533 dwg. E 1840		Yes	Air gap @ Terminal Strip	Cable # 15267 at TC 33-2R & at X-333 ACR terminal cabinet #4

Table B.1. X-533 belowground interfaces (continued)

Interface tag Number	Plant Site Grid North (ft)	Plant Site Grid East (ft)	Elevation (ft) 1st Floor @ 672'	Feature size/material	Reference drawing	Other considerations	Isolation needed (yes/no)	Method of isolation	De-energization identification or location
Communication (Cont.)									
X-00533-CO-B-0105	11850.00	8982.50	~676' Inv	14/C Process Control & Instrumentation Cable Terminal Cabinet 33-2R	X-533 dwg. E 1840		Yes	Air gap @ Terminal Strip	Cable # 15268 at TC 33-2R & at X-333 ACR terminal cabinet #3
X-00533-CO-B-0106	11850.00	8982.50	~676' Inv	14/C Process Control & Instrumentation Cable Terminal Cabinet 33-2R	X-533 dwg. E 1840		Yes	Air gap @ Terminal Strip	Cable # 15269 at TC 33-2R & at X-333 ACR terminal cabinet #3

Table B.1. X-533 belowground interfaces (continued)

Interface tag Number	Plant Site Grid North (ft)	Plant Site Grid East (ft)	Elevation (ft) 1st Floor @ 672'	Feature size/material	Reference drawing	Other considerations	Isolation needed (yes/no)	Method of isolation	De-energization identification or location
Communication (Cont.)									
X-00533-CO-B-0107	11850.00	8982.50	~676' Inv	14/C Process Control & Instrumentation Cable Terminal Cabinet 33-2R	X-533 dwg. E 1840		Yes	Air gap @ Terminal Strip	Cable # 15270 at TC 33-2R & at X-333 ACR terminal cabinet #3
X-00533-CO-B-0108	11850.00	8982.50	~676' Inv	14/C Process Control & Instrumentation Cable Terminal Cabinet 33-2R	X-533 dwg. E 1840		Yes	Air gap @ Terminal Strip	Cable # 15271 at TC 33-2R & at X-333 ACR terminal cabinet #3
X-00533-CO-B-0109	11850.00	8982.50	~676' Inv	14/C Process Control & Instrumentation Cable Terminal Cabinet 33-2R	X-533 dwg. E 1840		Yes	Air gap @ Terminal Strip	Cable # 15272 at TC 33-2R & at X-333 ACR terminal cabinet #3
X-00533-CO-B-0110	11850.00	8982.50	~676' Inv	14/C Process Control & Instrumentation Cable Terminal Cabinet 33-2R	X-533 dwg. E 1840		Yes	Air gap @ Terminal Strip	Cable # 15275 at TC 33-2R & at X-333 ACR terminal cabinet #4
X-00533-CO-B-0111	11850.00	8982.50	~676' Inv	14/C Process Control & Instrumentation Cable Terminal Cabinet 33-2R	X-533 dwg. E 1840		Yes	Air gap @ Terminal Strip	Cable # 15276 at TC 33-2R & at X-333 ACR terminal cabinet #4
X-00533-CO-B-0112	11850.00	8982.50	~676' Inv	14/C Process Control & Instrumentation Cable Terminal Cabinet 33-2R	X-533 dwg. E 1840		Yes	Air gap @ Terminal Strip	Cable # 15277 at TC 33-2R & at X-333 ACR terminal cabinet #4
X-00533-CO-B-0113	11850.00	8982.50	~676' Inv	14/C Process Control & Instrumentation Cable Terminal Cabinet 33-2R	X-533 dwg. E 1840		Yes	Air gap @ Terminal Strip	Cable # 15278 at TC 33-2R & at X-333 ACR terminal cabinet #4
X-00533-CO-B-0114	11850.00	8982.50	~676' Inv	14/C Process Control & Instrumentation Cable Terminal Cabinet 33-2R	X-533 dwg. E 1840		Yes	Air gap @ Terminal Strip	Cable # 15279 at TC 33-2R & at X-333 ACR terminal cabinet #4

Table B.1. X-533 belowground interfaces (continued)

Interface tag Number	Plant Site Grid North (ft)	Plant Site Grid East (ft)	Elevation (ft) 1st Floor @ 672'	Feature size/material	Reference drawing	Other considerations	Isolation needed (yes/no)	Method of isolation	De-energization identification or location
Communication (Cont.)									
X-00533-CO-B-0115	11850.00	8982.50	~676' Inv	14/C Process Control & Instrumentation Cable Terminal Cabinet 33-2R	X-533 dwg. E 1840		Yes	Air gap @ Terminal Strip	Cable # 15280 at TC 33-2R & at X-333 ACR terminal cabinet #4
X-00533-CO-B-0116	11850.00	8982.50	~676' Inv	14/C Process Control & Instrumentation Cable Terminal Cabinet 33-2R	X-533 dwg. E 1840		Yes	Air gap @ Terminal Strip	Cable # 15281 at TC 33-2R & at X-333 ACR terminal cabinet #4
X-00533-CO-B-0117	11850.00	8982.50	~676' Inv	14/C Process Control & Instrumentation Cable Terminal Cabinet 33-2R	X-533 dwg. E 1840		Yes	Air gap @ Terminal Strip	Cable # 15282 at TC 33-2R & at X-333 ACR terminal cabinet #4
X-00533-CO-B-0118	11850.00	8982.50	~676' Inv	14/C Process Control & Instrumentation Cable Terminal Cabinet 33-2R	X-533 dwg. E 1840		Yes	Air gap @ Terminal Strip	Cable # 15285 at TC 33-2R & at X-333 ACR terminal cabinet #4
X-00533-CO-B-0119	11850.00	8982.50	~676' Inv	14/C Process Control & Instrumentation Cable Terminal Cabinet 33-2R	X-533 dwg. E 1840		Yes	Air gap @ Terminal Strip	Cable # 15286 at TC 33-2R & at X-333 ACR terminal cabinet #4
X-00533-CO-B-0120	11850.00	8982.50	~676' Inv	14/C Process Control & Instrumentation Cable Terminal Cabinet 33-2R	X-533 dwg. E 1840		Yes	Air gap @ Terminal Strip	Cable # 15287 at TC 33-2R & at X-333 ACR terminal cabinet #4
X-00533-CO-B-0121	11850.00	8982.50	~676' Inv	14/C Process Control & Instrumentation Cable Terminal Cabinet 33-2R	X-533 dwg. E 1840		Yes	Air gap @ Terminal Strip	Cable # 15288 at TC 33-2R & at X-333 ACR terminal cabinet #4
X-00533-CO-B-0122	11850.00	8982.50	~676' Inv	14/C Process Control & Instrumentation Cable Terminal Cabinet 33-2R	X-533 dwg. E 1840		Yes	Air gap @ Terminal Strip	Cable # 15289 at TC 33-2R & at X-333 ACR terminal cabinet #4

Table B.1. X-533 belowground interfaces (continued)

Interface tag Number	Plant Site Grid North (ft)	Plant Site Grid East (ft)	Elevation (ft) 1st Floor @ 672'	Feature size/material	Reference drawing	Other considerations	Isolation needed (yes/no)	Method of isolation	De-energization identification or location
Communication (Cont.)									
X-00533-CO-B-0123	11850.00	8982.50	~676' Inv	14/C Process Control & Instrumentation Cable Terminal Cabinet 33-2R	X-533 dwg. E 1840		Yes	Air gap @ Terminal Strip	Cable # 15290 at TC 33-2R & at X-333 ACR terminal cabinet #4
X-00533-CO-B-0124	11850.00	8982.50	~676' Inv	14/C Process Control & Instrumentation Cable Terminal Cabinet 33-2R	X-533 dwg. E 1840		Yes	Air gap @ Terminal Strip	Cable # 15291 at TC 33-2R & at X-333 ACR terminal cabinet #4
X-00533-CO-B-0125	11850.00	8982.50	~676' Inv	14/C Process Control & Instrumentation Cable Terminal Cabinet 33-2R	X-533 dwg. E 1840		Yes	Air gap @ Terminal Strip	Cable # 15292 at TC 33-2R & at X-333 ACR terminal cabinet #4
X-00533-CO-B-0126	11850.00	8982.50	~676' Inv	14/C Process Control & Instrumentation Cable Terminal Cabinet 33-2R	X-533 dwg. E 1840		Yes	Air gap @ Terminal Strip	Cable # 15293 at TC 33-2R & at X-333 ACR terminal cabinet #4
X-00533-CO-B-0127	11850.00	8982.50	~676' Inv	14/C Process Control & Instrumentation Cable Terminal Cabinet 33-2R	X-533 dwg. E 1840		Yes	Air gap @ Terminal Strip	Cable # 15294 at TC 33-2R & at X-333 ACR terminal cabinet #4
X-00533-CO-B-0128	11850.00	8982.5	~676' Inv	SCADA Cable S-1000 6 pr # 18	X-220S-28E X-220S-2100E	SCADA Cable for X-533, X-633 & X-611	Yes	Air gap @ Terminals	Cable S-1000 isolation at SCADA panel terminals in X-300 (note: X-611 & X-633 re-routed)
X-00533-CO-B-0129	11852.58	9531.79	668.5' Inv	SCADA Cable S-1010 25 pr # 19/25	X-220S-5010E X-220S-28E	Re-route	No	N/A	Re-route cable from existing duct bank to Pole N1 at East end of the X-533 East Switch house. Route cables S-1010 from X-633 with cable S-1040 from X-611 through new cable from Pole N1 protector box to RTU in X-330

Table B.1. X-533 belowground interfaces (continued)

Interface tag Number	Plant Site Grid North (ft)	Plant Site Grid East (ft)	Elevation (ft) 1st Floor @ 672'	Feature size/material	Reference drawing	Other considerations	Isolation needed (yes/no)	Method of isolation	De-energization identification or location
Communication (Cont.)									
X-00533-CO-B-0130	11850.00	9056.54	672'	¾" conduit, 2-#14 THHN	Visual	Supervisory loop	Yes	Air gap	Isolate at supervisory transmitter on east wall of east battery room
X-00533-CO-B-0131	11850.00	8982.50	??	2-#12 THHN FA81 and FA82		Fire Alarm Box Loop	Yes	Air gap	
X-00533-CO-B-0132	11850.00	8982.50	??	2-#14 wires	X-220H-103E	Supervisory Loop	Yes	Air gap	At X-533 SAS Terminal Cabinet disconnect wires 1S2,1S3 and 1S4 coming from X-333 and X-633-1, at X-333 PAX cabinet disconnect wires 1S2 and 1S4 going to X-533 and re-route 1S2 and 1S4 to X-633-1 SAS Terminal Cabinet and land 1S2 to terminal 1S3 and land 1S4 to terminal 1S4.
X-00533-CO-B-0133	11850.00	8982.50	??	4-#12 wires		Alarm Loop	Yes	Air gap	At X-533 SAS & PAX Terminal Cabinet remove wires A1 and A9 coming from X-333 SAS & PAX Terminal Cabinet, at X-333 SAS & PAX Terminal Cabinet remove wires A1 and A9 going to X-533, re-route wires A1 and A9 from X-333 SAS & PAX terminal cabinet to X-633 -1 SAS Terminal Cabinet and land wire A1 to terminal A8 and land wire A9 to terminal A9

Table B.1. X-533 belowground interfaces (continued)

Interface tag Number	Plant Site Grid North (ft)	Plant Site Grid East (ft)	Elevation (ft) 1st Floor @ 672'	Feature size/material	Reference drawing	Other considerations	Isolation needed (yes/no)	Method of isolation	De-energization identification or location
Communication (Cont.)									
X-00533-CO-B-0134	11850.00	8982.50	??	2-2 twisted pair cables		PA System	Yes	Air gap	X-533 PA System to remain operative until scheduled for D&D, at that time isolation will be at X-533 PA Cabinet remove PA+ & PA- and PL+ & PL- at PA Cabinet and at X-300 open knife switches for PA+ & PA- and PL+ & PL- at PA Cabinets in basement of X-300 and re-route new PA cable run from X-333 to X-633-1
X-00533-CO-B-0135	11850.00	8982.50	??	Multi-conductor cable			Yes	Air gap	Verizon to provide isolation at the X-540 facility
X-00533-CO-B-0136	11850.00	8982.50	??	Multi-conductor cable	X-220A-6100E	PBX Red Phone	Yes	Air gap	Remove and air gap wiring for X-533 at Power Console Relay Cabinet No. 2 in basement of X-300
X-00533-CO-B-0137	11850.00	8982.50	??	26pr #19 PAX Cable PAX-533	X-220A-6002E		Yes	Air gap	At X-533 52 terminal PAX panel remove and air gap PAX Cable PAX-533 and at X-333 312 terminal PAX panel remove and air gap PAX Cable PAX-533. Route an new 26pr #19 PAX cable from PAX cabinet in X-333 to PAX terminal cabinet at X-633-1
X-00533-CO-B-0138	11852.58	9531.79	668.5' Inv	14½"X25" Concrete Duct	X-215A-2005-E East Sw. House	Duct contains X-633cabling for pump controls, Fire Alarm, PA, PAX, PBX, Admin Tele. and SCADA	Yes	Air gap	Isolation of these cables is addressed in associated de-energization descriptions

Table B.1. X-533 belowground interfaces (continued)

Interface tag Number	Plant Site Grid North (ft)	Plant Site Grid East (ft)	Elevation (ft) 1st Floor @ 672'	Feature size/material	Reference drawing	Other considerations	Isolation needed (yes/no)	Method of isolation	De-energization identification or location
Storm Drain									
X-00533-SD-B-0001	12189.09	9646.95	~656.42' Inv	48" C.I.P. pipe	DX Storm Drains		No	N/A	Abandon In-place
X-00533-SD-B-0002	11926.54	9655.00	656.42' Inv	18" C.I.P. pipe	DX Storm Drains		No	N/A	Abandon In-place
X-00533-SD-B-0003	11883.08	9646.95	~659.04' Inv	42" C.I.P. pipe	DX Storm Drains		No	N/A	Abandon In-place
X-00533-SD-B-0004	11862.10	9550.07	~659.77' Inv	8" C.I. P. pipe	DX Storm Drains		No	N/A	Abandon In-place
X-00533-SD-B-0005	11850.00	9484.55	~660.14' Inv	6" C.I.P. pipe	DX Storm Drains		No	N/A	Abandon In-place
X-00533-SD-B-0006	11850.00	9431.46	~660.51' Inv	6" C.I.P. pipe	DX Storm Drains		No	N/A	Abandon In-place
X-00533-SD-B-0007	11850.00	9397.25	~660.88' Inv	6" C.I.P. pipe	DX Storm Drains		No	N/A	Abandon In-place
X-00533-SD-B-0008	11850.00	9349.23	~661.25' Inv	6" C.I.P. pipe	DX Storm Drains		No	N/A	Abandon In-place
X-00533-SD-B-0009	11850.00	9233.62	~661.99' Inv	6" C.I.P. pipe	DX Storm Drains		No	N/A	Abandon In-place
X-00533-SD-B-0010	11850.00	9190.92	~662.33" Inv	6" C.I.P. pipe	DX Storm Drains		No	N/A	Abandon In-place
X-00533-SD-B-0011	11850.00	9140.89	~662.67' Inv	6" C.I.P. pipe	DX Storm Drains		No	N/A	Abandon In-place
X-00533-SD-B-0012	11850.00	9117.61	~663.01' Inv	6" C.I.P. pipe	DX Storm Drains		No	N/A	Abandon In-place
X-00533-SD-B-0013	11850.00	8941.28	~663.59' Inv	6" C.I.P. pipe	DX Storm Drains		No	N/A	Abandon In-place
X-00533-SD-B-0014	11850.00	8913.88	~663.25' Inv	6" C.I.P. pipe	DX Storm Drains		No	N/A	Abandon In-place
X-00533-SD-B-0015	11850.00	8873.28	~662.91' Inv	6" C.I.P. pipe	DX Storm Drains		No	N/A	Abandon In-place
X-00533-SD-B-0016	11850.00	8828.28	~662.57' Inv	6" C.I.P. pipe	DX Storm Drains		No	N/A	Abandon In-place

Table B.1. X-533 belowground interfaces (continued)

Interface tag Number	Plant Site Grid North (ft)	Plant Site Grid East (ft)	Elevation (ft) 1st Floor @ 672'	Feature size/material	Reference drawing	Other considerations	Isolation needed (yes/no)	Method of isolation	De-energization identification or location
Storm Drain (Cont.)									
X-00533-SD-B-0017	11850.00	8783.88	~662.23" Inv	6" C.I.P. pipe	DX Storm Drains		No	N/A	Abandon In-place
X-00533-SD-B-0018	11850.00	8662.52	~659.90' Inv	6" C.I.P. pipe	DX Storm Drains		No	N/A	Abandon In-place
X-00533-SD-B-0019	11850.00	8620.52	~659.56' Inv	6" C.I.P. pipe	DX Storm Drains		No	N/A	Abandon In-place
X-00533-SD-B-0020	11850.00	8573.52	~659.22' Inv	6" C.I.P. pipe	DX Storm Drains		No	N/A	Abandon In-place
X-00533-SD-B-0021	11862.08	8501.59	~658.88' Inv	8" C.I.P. pipe	DX Storm Drains		No	N/A	Abandon In-place
X-00533-SD-B-0022	11862.08	8408.94	~658.54' Inv	42" C.I.P. pipe	DX Storm Drains		No	N/A	Abandon In-place
X-00533-SD-B-0023	11927.77	8408.99	658.19' Inv	48" C.I.P. pipe	DX Storm Drains		No	N/A	Abandon In-place
X-00533-SD-B-0024	11934.86	8424.00	~658.19' Inv	8" C.I.P. pipe	DX Storm Drains		No	N/A	Abandon In-place
Heating Water									
X-00533-RH-B-0001	11862.08	9638.21	~667.9'	8" pipe	Visual East Sw. House	West RCW Emer. Return	Yes	Air gap/cap	As reasonable outside facility
X-00533-RH-B-0002	11862.08	9636.21	~667.9'	8" pipe	Visual East Sw. House	West RCW Return	Yes	Air gap/cap	As reasonable outside facility
X-00533-RH-B-0003	11862.08	9634.30	~667.9'	8" pipe	Visual East Sw. House	West RCW Emer. Supply	Yes	Air gap/cap	As reasonable outside facility
X-00533-RH-B-0004	11862.08	9632.38	~667.9'	8" pipe	Visual East Sw. House	West RCW Supply	Yes	Air gap/cap	As reasonable outside facility
X-00533-RH-B-0005	11862.08	9590.35	~667.9' Inv	8" pipe	X-633-7006M East Sw. House	West RCW Return	Yes	Air gap/cap	As reasonable outside facility
X-00533-RH-B-0006	11862.08	9575.35	~667.9' Inv	8" pipe	X-633-7006M East Sw. House	West Emer. RCW Supply	Yes	Air gap/cap	As reasonable outside facility
X-00533-RH-B-0007	11862.08	9560.35	~667.9' Inv	8" pipe	X-633-7006M East Sw. House	West RCW Supply	Yes	Air gap/cap	As reasonable outside facility

Table B.1. X-533 belowground interfaces (continued)

Interface tag Number	Plant Site Grid North (ft)	Plant Site Grid East (ft)	Elevation (ft) 1st Floor @ 672'	Feature size/material	Reference drawing	Other considerations	Isolation needed (yes/no)	Method of isolation	De-energization identification or location
Heating Water (Cont.)									
X-00533-RH-B-0008	11850.00	9302.33	~667.9' Inv	8" pipe	X-215A-2013-E East Sw. House	West RCW Return	Yes	Air gap/cap	As reasonable outside facility
X-00533-RH-B-0009	11850.00	9287.33	~667.9' Inv	8" pipe	X-215A-2013-E East Sw. House	West Emer. RCW Supply	Yes	Air gap/cap	As reasonable outside facility
X-00533-RH-B-0010	11850.00	9272.33	~667.9' Inv	8" pipe	X-215A-2013-E East Sw. House	West RCW Supply	Yes	Air gap/cap	As reasonable outside facility
X-00533-RH-B-0011	11850.00	9042.03	~667.9' Inv	8" pipe	X-215A-2013-E Control House	West RCW Supply	Yes	Air gap/cap	As reasonable outside facility
X-00533-RH-B-0012	11850.00	9024.24	~667.9' Inv	8" pipe	X-215A-2013-E Control House	West RCW Return	Yes	Air gap/cap	As reasonable outside facility
X-00533-RH-B-0013	11850.0	8788.15	~667.9' Inv	8" pipe	X-215A-2013-E West Sw. House	West RCW Supply	Yes	Air gap/cap	As reasonable outside facility
X-00533-RH-B-0014	11850.0	8773.15	~667.9' Inv	8" pipe	X-215A-2013-E West Sw. House	West RCW Supply	Yes	Air gap/cap	As reasonable outside facility
X-00533-RH-B-0015	11850.0	8758.15	~667.9' Inv	8" pipe	X-215A-2013-E West Sw. House	West RCW Supply	Yes	Air gap/cap	As reasonable outside facility
X-00533-RH-B-0016	11862.08	8496.15	~667.9' Inv	8" pipe	X-215A-2013-E West Sw. House	West RCW Supply	Yes	Air gap/cap	As reasonable outside facility
X-00533-RH-B-0017	11862.08	8481.15	~667.9' Inv	8" pipe	X-215A-2013-E West Sw. House	West RCW Supply	Yes	Air gap/cap	As reasonable outside facility
X-00533-RH-B-0018	11862.08	8466.15	~667.9' Inv	8" pipe	X-215A-2013-E West Sw. House	West RCW Supply	Yes	Air gap/cap	As reasonable outside facility
X-00533-RH-B-0019	11862.08	8420.28	~667.9' Inv	8" pipe	Visual West Sw. House	West RCW Supply	Yes	Air gap/cap	As reasonable outside facility
X-00533-RH-B-0020	11862.08	8418.69	~667.9' Inv	8" pipe	Visual West Sw. House	West RCW Emer. Supply	Yes	Air gap/cap	As reasonable outside facility
X-00533-RH-B-0021	11862.08	8416.44	~667.9' Inv	8" pipe	Visual West Sw. House	West RCW Return	Yes	Air gap/cap	As reasonable outside facility
X-00533-RH-B-0022	11862.08	8415.19	~667.9' Inv	8" pipe	Visual West Sw. House	West RCW Emer. Return	Yes	Air gap/cap	As reasonable outside facility

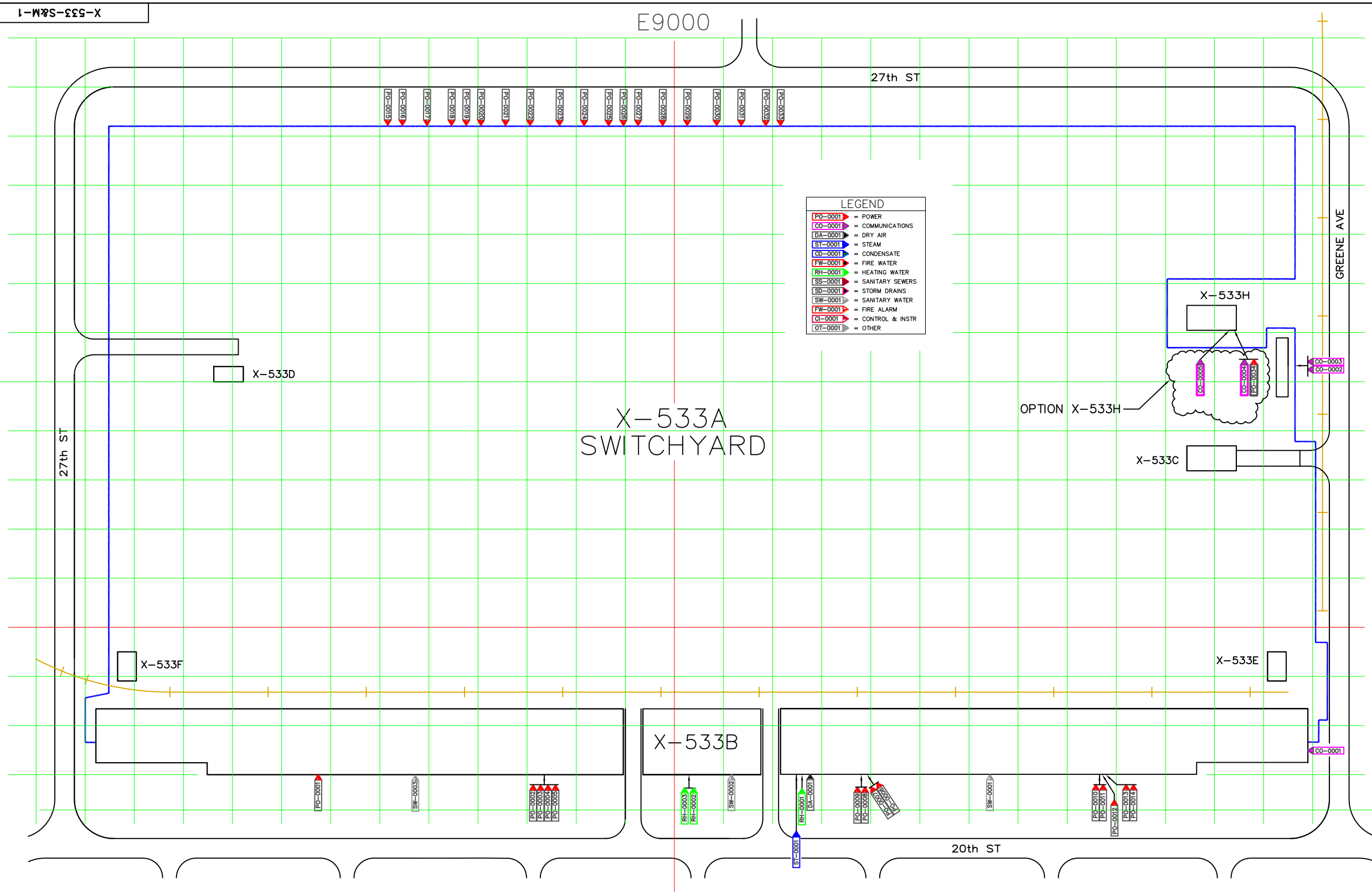
Table B.1. X-533 belowground interfaces (continued)

Interface tag Number	Plant Site Grid North (ft)	Plant Site Grid East (ft)	Elevation (ft) 1st Floor @ 672'	Feature size/material	Reference drawing	Other considerations	Isolation needed (yes/no)	Method of isolation	De-energization identification or location
Other									
X-00533-OT-B-0001	11861.46	9531.79	~668' Inv	21"X30" concrete duct 6 ea. 5" conduits	X-215A-2028-E East Sw. House	Power duct bank to X-633, isolation of circuits identified in Interface Tag X-00533-PO-B-0001	No	Abandon	
X-00533-OT-B-0002	11852.58	9531.79	668.5' Inv	14½"X25" Concrete Duct	X-215A-2005-E East Sw. House	Duct bank for Control cabling to X-633 isolation provide in Communicat-ions Interface Section	No	Abandon	
X-00533-OT-B-0003	11849.92	8982.50	??	Instrument Tunnel from X-333 ACR-1	X-215A-2014-E Control House	Isolation of individual cables identified in Communicat-ions Interface Section	No	Abandon	

APPENDIX C

X-533 S&M PLAN ABOVEGROUND INTERFACES WITH X-533H OPTION

X-533-S&M-1



X-533 ABOVE GROUND PIPING AND OTHER SERVICES

REF: X-533-S&M-2

AUTOCAD

RPE	REV	DATE	DES						
	REV	DATE	DES						
	REV	DATE	DES						
	REV	DATE	DES						
	REV	DATE	DES						
	REV	DATE	DES						
	REV	DATE	DES						
	REV	DATE	DES						
	REV	DATE	DES						
	0	7/28/08	APPROVED FOR RELEASE						
DATE	NO.	DATE	DESCRIPTION	DWN BY	DRAFT CHK	DRG/ ENGR	ENGR CHK	LE	PROJ. ENGR.
PROFESSIONAL SEAL			DRAWING REVISIONS						

U.S. DEPARTMENT OF ENERGY
PORTSMOUTH/PADUCAH PROJECT OFFICE
ENVIRONMENTAL MANAGEMENT & ENRICHMENT FACILITIES

TPMC, LLC
PIKETON, OHIO

TITLE
X-533 S&M PLAN ABOVE GROUND W/X-533H OPTION

JOB NO.	DOE CONTRACT NO.	CAD FILENAME
		M:\X-533\X-533 S&M TAGS ABOVEGROUND
CLASS NO.	BLDG. NO.	PLANT NO.
	X-533	X-SITE

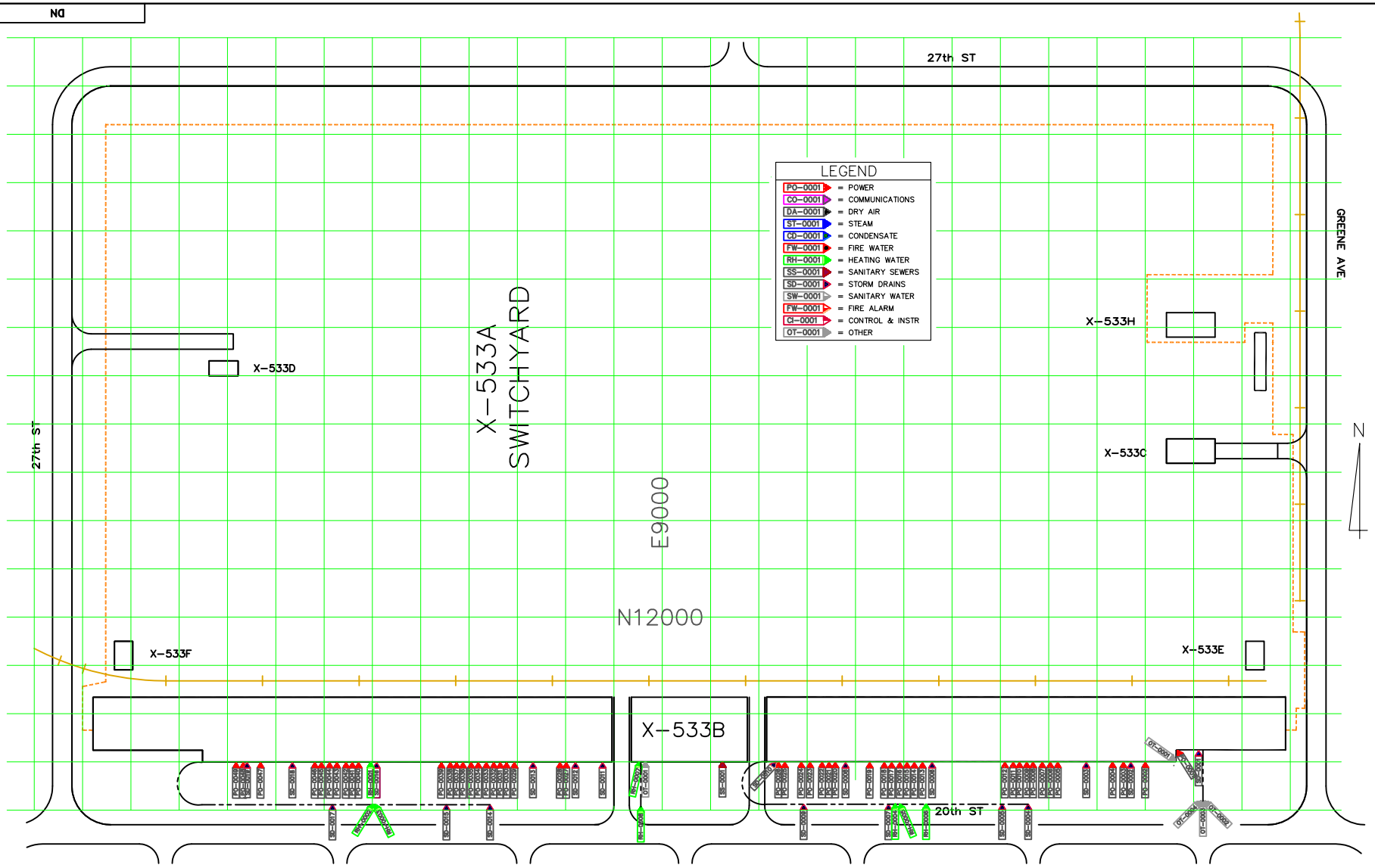
SCALE NONE

DWG NO	REV
X-533-S&M-1	0

APPENDIX D

X-533 S&M PLAN BELOWGROUND INTERFACES

DN



X-533 BELOW GROUND PIPING AND OTHER SERVICES

AUTOCAD

RPE	REV	DATE	DES	DWN	DC	OE	EC	LE	PE
	REV	DATE	DES	DWN	DC	OE	EC	LE	PE
	REV	DATE	DES	DWN	DC	OE	EC	LE	PE
	REV	DATE	DES	DWN	DC	OE	EC	LE	PE
	REV	DATE	DES	DWN	DC	OE	EC	LE	PE
	REV	DATE	DES	DWN	DC	OE	EC	LE	PE
	REV	DATE	DES	DWN	DC	OE	EC	LE	PE
	REV	DATE	DES	DWN	DC	OE	EC	LE	PE
	REV	DATE	DES	DWN	DC	OE	EC	LE	PE
	REV	6/5/08	DES	DWN	DC	OE	EC	LE	PE
DATE	NO.	DATE	DESCRIPTION	DWN BY	DRFT CHK	ENG/ ENGR	ENGR CHK	LE	PROJ. ENGR.
PROFESSIONAL SEAL			DRAWING REVISIONS						

U.S. DEPARTMENT OF ENERGY
DOE OAK RIDGE OPERATIONS
ENVIRONMENTAL MANAGEMENT – MANAGEMENT & INTEGRATION

PROGRESSIVE
OAK RIDGE, TENNESSEE

TITLE
X-533 S&M PLAN

JOB NO.	DOE CONTRACT NO.	CAD FILENAME
JOB	DE-AC05-98OR22700	CFN
CLASS NO.	BLDG. NO.	PLANT NO.
CL	BN	PL

SCALE: SC

DWG NO	REV
DN	REV