U. S. Department of Energy
Carlsbad Field Office

Office of Site Operations
Safety System Oversight Program Plan

DOE/CBFO 09-3439
Revision 1

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U. S. Department of Energy
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Acronyms

CBFO	Carlsbad Field Office
CH	Contact-handled
CTAC	CBFO Technical Assistance Contractor
DOE	U.S. Department of Energy
DSA	Documented Safety Analysis
EPA	U.S. Environmental Protection Agency
FR	Facility Representative
FTCP	Federal Technical Capability Program
HVAC	Heating, Ventilation, and Air Conditioning
IEP	Integrated Evaluation Plan
ISM	Integrated safety management
M&O	Management and operating
MOU	Memorandum of understanding
MSHA	Mine Safety and Health Administration
NMED	New Mexico Environment Department
OSHA	Occupational Safety and Health Administration
OSO	Office of Site Operations
PAC	Programmatic Administrative Control
PD	Position Description
QA	Quality assurance
RH	Remote-handled
SSO	Safety system oversight
STSM	Senior technical safety manager
TQP	Technical Qualification Program
TRU	Transuranic
TRUDOCK	TRUPACT-II Unloading Dock
WHB	Waste Handling Building
WIPP	Waste Isolation Pilot Plant
WTS	Washington TRU Solutions, LLC

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1.0 INTRODUCTION

1.1 CBFO Safety System Oversight Summary

The U. S. Department of Energy (DOE) Policy (P) 426.1, *Federal Technical Capability Policy for Defense Nuclear Facilities,* is the key driver for the Waste Isolation Pilot Plant (WIPP) Safety Systems Oversight (SSO) Program. The systems are identified in the *Documented Safety Analysis* (DSA), DOE/WIPP-07-3372, Revision 1, as Safety Class Structures, Systems and Components, Safety Significant Structures, Systems and Components, or Specific Administrative Controls, to include defense-in-depth (DID) and Equipment Important to Safety (EITS), and in the management and operating (M&O) contractor's Procedure WP.09-CN 3025, *Annual System Walkdown/Requalification*. Oversight of these systems by trained cognizant DOE Carlsbad Field Office (CBFO) staff is a requirement of DOE P 426.1, and the associated DOE Order (O) 426.1, *Federal Technical Capability*. The CBFO has trained staff assigned to provide oversight of the systems identified. These personnel have obtained site-specific training in their assigned areas in accordance with DOE O 426.1, and the *CBFO Technical Qualification Program Plan*, DOE/CBFO 02-3219. Qualifications are maintained in a qualification card maintained for each individual documenting competence in the assigned area of responsibility. The CBFO oversight assignments for the safety systems oversight duties and responsibilities at WIPP are described in Table 1.

DOE is committed to developing and maintaining a technical workforce to accomplish its mission safely and efficiently through the Federal Technical Capability Program (FTCP). The DOE/CBFO uses the program and functions described in DOE P 426.1 to recruit, deploy, develop, and retain such a workforce.

The FTCP is implemented at DOE/CBFO through the CBFO Technical Qualification Program (TQP). As explained in DOE O 426.1, a key part of the overall TQP at each site is the Safety System Oversight Qualification Program, an additional level of technical qualification aimed at qualifying and maintaining qualification for DOE SSO personnel at each site. CBFO SSO personnel are required, among other things, to monitor the performance of safety systems at WIPP and to evaluate the effectiveness of the M&O contractor's Cognizant Engineer Program in ensuring that these safety systems are effectively designed, implemented, and maintained.

1.2 Background

The mission of the CBFO is to protect human health and the environment through the safe characterization, certification, and transportation of transuranic (TRU) waste to the WIPP. The operation and management of the WIPP site is for the safe, permanent disposal of defense-related TRU waste through an effective National TRU Program system for the management of TRU waste from generation to permanent disposal. Contact-handled (CH) TRU waste disposal operations at WIPP began in March 1999. Remote-handled (RH) TRU waste disposal operations began in January 2007. Washington TRU Solutions, LLC (WTS), manages and operates the WIPP under contract with the DOE/CBFO.

1.3 Purpose

This SSO Program Plan establishes methods and requirements for the development, implementation, and administration of the CBFO SSO TQP. The CBFO SSO program description serves as a road map to communicate how CBFO implements the SSO program.

1.4 Scope

This CBFO SSO Program Plan provides information that describes the implementation of the SSO program at the WIPP site. The Plan provides a method for oversight of the identified CBFO Safety Structures Systems and Components by cognizant CBFO SSO staff.

2.0 CBFO SAFETY SYSTEM OVERSIGHT OVERVIEW: PROGRAM IMPLEMENTATION

The CBFO SSO Program is structured in accordance with DOE O 426.1 requirements. CBFO line management is responsible for safety at WIPP and for meeting mission objectives and goals. CBFO SSO personnel are a key technical resource providing oversight of contractor management of safety systems at DOE defense nuclear facilities. Integrated Safety Management (ISM) system processes help to ensure systems perform their safety functions as designed. Effective implementation of ISM relies upon the application of expertise to maintain safety system configuration and assess system conditions and safety management program implementation. Drivers and requirements for the CBFO SSO Program can incorporate applicable requirements of the Occupational Safety and Health Administration (OSHA), the Mine Safety and Health Administration (MSHA), the U.S. Environmental Protection Agency (EPA), and the New Mexico Environment Department (NMED). A major element in the WIPP ISM program is the contractor oversight provided by the CBFO Office of Site Operations (OSO).

The CBFO OSO Office Director, in conjunction with other Director-level positions at CBFO, supervises the DOE staff assigned to the SSO program, as shown in Figure 1. The WIPP Facility Representatives (FRs) are assigned to the CBFO OSO Office Director and participate in the system evaluations as appropriate. The Facility System Engineer is assigned as coordinator for the SSO program. CBFO staff are assigned to the systems as described in Table 1. Multiple systems can be assigned to one staff member. The SSO duties and responsibilities are handled as part of the regular work routine since all the assigned staff have other duties in addition to their SSO assignments.

2.1 Safety System Oversight Qualification

Responsibility for the oversight of safety systems is assigned to individuals by their supervisors and this assignment is documented on each individual's position description (PD). All positions responsible for SSO must be currently active in the TQP.

Employees assigned to SSO positions have 12 months to complete SSO qualification. If the employee is completing both the SSO qualification, the General Technical Base and Functional Area Qualification Standards at the same time, the employee has 18 months to complete all qualification activities.

Employees must complete the General Technical Base and a Functional Area Qualification Standard in addition to the SSO qualification requirements to become SSO TQP-qualified. When reassigned from one safety system to another safety system, the individual must complete a qualification card for the competencies in the newly assigned safety system within 6 months of reassignment.

After the SSO qualification is complete, the original SSO Qualification Card is submitted to the TQP Program Manager for filing. The CBFO Qualification Program is a key part of the TQP and is considered an additional level of technical qualification that builds upon technical discipline competencies. Additional requirements, unique to qualifying and maintaining qualification for performing SSO duties, are provided in individual qualification cards. The SSO Qualification Cards are maintained in the individual's personnel file and by the TQP Program Manager at CBFO.

2.2 Safety System Oversight Requalification

Requalification is required every three years. Requalification consists of documentation of satisfactory completion of new competencies in the General Technical Base and Functional Area Qualification Standards added since initial or last requalification. Assigned SSOs who fail to satisfy all requirements of the SSO Qualification and/or Requalification Programs pursuant to their job duties and/or PD may be reassigned.

2.3 Safety System Oversight Documentation Approach

CBFO staff assigned SSO responsibilities are required to have a working knowledge of assigned systems and of contractor applications of cognizant system engineer programs and safety program management principles as described in DOE O 420.1B, *Facility Safety*. CBFO SSO staff are responsible for overseeing assigned systems to ensure they perform as required by the facility safety basis and other applicable requirements. CBFO SSO personnel are required, among other things, to monitor the performance of safety systems at WIPP and to evaluate the effectiveness of the M&O contractor's Cognizant Engineer Program in ensuring that these safety systems are effectively designed, implemented, and maintained. Additional information about general duties and responsibilities is found in Table 1. CBFO SSO personnel are qualified to perform assessments to ensure that safety systems meet established safety and mission requirements. CBFO SSO qualification applies to program and field offices with responsibilities for oversight of defense nuclear facilities that rely upon safety systems in a DSA per 10 CFR 830, Subpart B. A graded approach (also described in DOE/CBFO 04-3299, *CBFO Contractor Oversight Plan*) is used in the oversight of the contractor and its operation of the identified systems:

a. Quality assurance (QA) assessments (audits and surveillances) are conducted on WTS facility operations. QA assessments are performed in accordance with CBFO Management Procedures (MPs) 10.2, *Surveillances*, and 10.3, *Audits*, and involve QA staff with a certain level of formal audit training. A formal report is issued to WTS after the audit. Other DOE staff from the Office of Site Operations may participate as schedules allow.

b. The third level of assessment, the operational assessment, is performed in accordance with CBFO Team Procedure (TP) 10.7, *Operational Assessments*. Operational assessments are used by OSO staff to provide oversight of contractor programs. The operational assessment usually involves direct participation of the assigned CBFO SSO staff and may include document review, personnel interviews, and system walk-downs with appropriate WTS Cognizant System Engineer and Cognizant Manager. A formal report can be generated and transmitted to the contractor.

c. The fourth level of oversight involves walk-around systems inspections, meetings, and/or program reviews. These approaches are performed periodically by SSO staff, determined by schedule and the need for oversight.

An annual review of the contractor's internal and external assessments is conducted by SSO personnel per DOE/CBFO 04-3299. Particular attention is given to the systems listed in Table 2. The contractor's internal and external assessments are evaluated, with emphasis on those areas with concerns or potential safety/environmental issues. These areas, along with the safety systems, are then scheduled for the following fiscal year assessment schedule identified in an Integrated Evaluation Plan (IEP). The IEP approach (see Figure 2) is a planning tool that the SSO Program uses in their annual oversight assessments of the M&O contractor.

Office of Site Operations staff members have program management responsibilities as well as assigned SSO responsibilities. If additional expertise is required, the CBFO maintains memoranda of understanding (MOU) with its federal entities both within and outside the DOE. The Office of Site Operations also utilizes the assistance of experts from the CBFO Technical Assistance Contractor (CTAC), if needed.

CBFO SSO program implementation includes a strong commitment to continuous improvement as deficiencies are identified. In addition, corrective action plans resulting from either internal or external assessments are tracked to completion to assure corrective actions are implemented in a timely manner. Internal assessments are those conducted by CBFO personnel on CBFO contractors. External assessments are those conducted by personnel external to CBFO, such as the Defense Nuclear Facilities Safety Board.

3.0 SELECTED REFERENCES

DOE Order 420.1B, *Facility Safety*

DOE Policy 426.1, *Federal Technical Capability Policy for Defense Nuclear Facilities*

DOE Order 426.1, *Federal Technical Capability*

DOE Policy 450.4, *Safety Management System Policy*

DOE/CBFO 94-1012, *Quality Assurance Program Document*

DOE/CBFO 02-3219, *CBFO Technical Qualifications Program*

DOE/CBFO 04-3299, *CBFO Contractor Oversight Plan*

Figure 1. CBFO Safety System Oversight Program Current Assignments (Example Only)

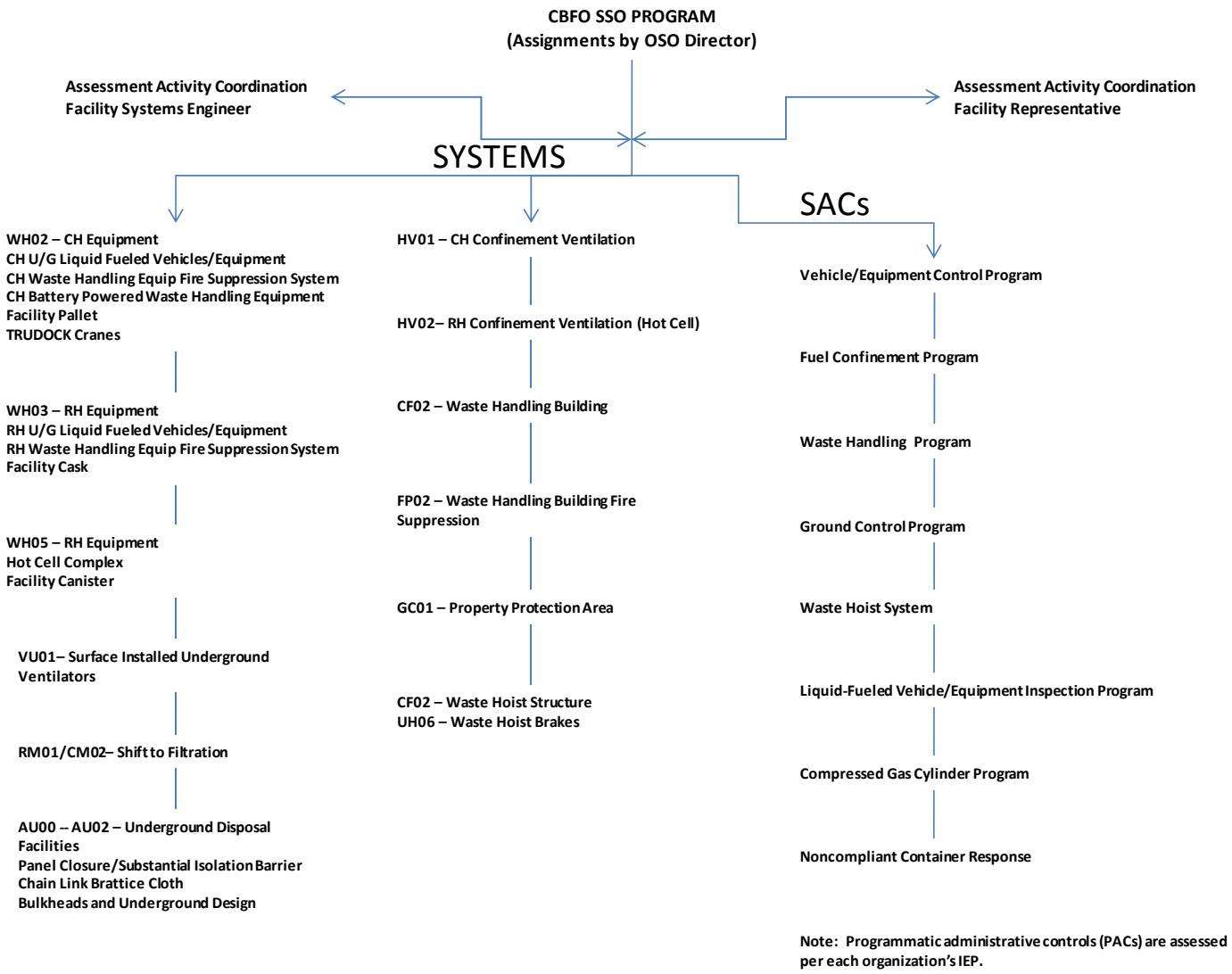

Figure 2. Integrated Evaluation Plan (Example Only)

SCOPE ACTIVITY	CBFO LEAD	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	DATE
WIPP – JOB HAZARD ANALYSIS	FORD	X												Oct 09
WIPP – U/G VENTIILATION SYSTEM	GALBRAITH	X												Oct 09
WTS – WASTE HANDLING EQUIPMENT	WATERS	X												Oct 09
WTS – FIRE HAZARD ANALYSIS	FORD		X											Nov 09
WTS – SAFETY REQUIREMENTS FOR LEASED OR RENTED POWER EQUIPMENT	ELMORE		X											Nov 09
WTS – CENTRAL MONITORING SYSTEM	FORD			X										Dec 09
WTS – CONDUCT OF OPERATIONS (LOTO)	GALBRAITH			X										Dec 09
WTS – CONDUCT OF OPERATIONS (LOGBOOK)	GALBRAITH				X									Jsn 10
WTS – GROUND CONTROL OPERATIONS	GALBRAITH				X									Jan 10
WTS – WASTE HANDLING BUILDING STRUCTURES	ELMORE					X								Feb 10
WTTS – WASTE HOIST SYSTEM STRUCTURES AND COMPONENTS	WATERS					X								Feb 10
WTS – ELECTRICAL DISTRIBUTION SYSTEMS	ELMORE						X							Mar 10
WTS – SECURITY PROGRAM	SAHD						X							Mar 10
WTS – AIR MONITORING	FERGURSON							X						Apr 10
WTS – RECORDKEEPING AND REPORTING (METEOROLOGICAL DATA AND MONITORING	GALBRAITH							X						Apr 10
WTS – FACLITY TRAINING AND QUALIFICATION	FORD								X					May 10

Figure 2. Integrated Evaluation Plan (Example Only) (cont.)

SCOPE ACTIVITY	CBFO LEAD	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	DATE
Underground Liquid-fueled Vehicles/Equipment	GALBRAITH								X					May 10
Waste Handling Equipment Fire Suppression System	GALBRAITH									X				Jun 10
Battery-powered Waste Handling Equipment	WATERS									X				Jun 10
Underground Design	GALBRAITH										X			Jul 10
Facility Cask	RODRIQUEZ										X			Jul 10
Hot Cell Complex	ELMORE											X		Aug 10
CH Bay Confinement Ventilation System	ELMORE											X		Aug 10
Hot Cell Complex Confinement Ventilation System	ELMORE												X	Sep 10
Facility Canisters	RODRIQUEZ												X	Sep 10
TRUDOCK Cranes	WATERS												X	Sep 10
Panel Closure/Substantial Isolation Barriers	GALBRAITH											X		Aug 10
Bulkheads	GALBRAITH										X			Jul 10
Vehicle/Equipment Control Program	SAHD									X				Jun 10
Fuel Confinement Program	FORD								X					May 10
Waste Handling Program	WATERS							X						Apr 10
Liquid-Fueled Vehicle/Equipment Inspection Program	GALBRAITH						X							Mar 10
Compressed Gas Cylinder Program	FORD					X								Feb 10
Noncompliant Container Response	FORD				X									Jan 10

Table 1. CBFO Safety System Oversight

Duties and Responsibilities
Safety System Oversight Personnel
(1) Maintain communication with contractor counterparts, provide oversight of systems, and monitor performance of the contractor's Cognizant System Engineer Program. (2) Attend selected contractor meetings with FR and contractor personnel responsible for system performance (e.g., cognizant system engineers, design authorities, and program managers), review system health/status reports, review test results, interface with external organizations that can provide insights on performance, and perform other oversight activities on a routine basis. (3) Perform assessments and periodic evaluation of equipment configuration and material condition. The effect of aging on system equipment and components, the adequacy of application of work control and change control processes, and appropriateness of system maintenance and surveillance should be considered with respect to reliable performance of safety functions. (4) In conjunction with FRs, perform evaluations of contractor troubleshooting, investigations, root cause evaluations, and selection and implementation of corrective actions. May be requested to respond to off normal and/or off normal hours events and investigations, be able to provide relevant insights, and serve as the DOE recognized expert on issues related to assigned areas. (5) Assess contractor compliance with relevant DOE regulations, industry standards, contract requirements, safety basis requirements, and other system requirements. (6) Confirm that configuration documentation, procedures, and other sources of controlling information are current and accurate. (7) Report potential or emergent hazards immediately to DOE line management and FRs, and stop tasks, if required, to prevent imminent impact to the health and safety of workers and the public, to protect the environment, or to protect the facility and equipment. Immediately notify the on-duty or on-call FR.
Supervisors with Responsibilities for SSOs
(1) Maintain senior technical safety manager (STSM) qualification. (2) Develop site-specific SSO qualification standards and cards for safety systems and safety management programs. (3) Identify and approve candidate selection. (4) Establish SSO personnel qualification schedules. (5) Facilitate SSO qualification (e.g., ensure sufficient time and training is provided to complete qualification tasks). (6) Train and qualify SSO candidates so they are capable of performing assigned duties. (7) Ensure SSO responsibilities are included and maintained in individual performance plans. (8) Ensure SSO qualifications are maintained current by training and assignments planned in individual development plans (IDPs). (9) Periodically evaluate program effectiveness and serve as management advocates within their respective field elements to resolve programmatic issues.
Relationship Between SSO Personnel, Facility Representatives, and Senior Technical Safety Managers
A. STSMs are responsible for the status of safety systems and safety management programs. As such, they provide direction to SSO personnel and FRs to ensure that safety systems and safety management programs required by the facility safety basis are functional and fully implemented. B. FRs perform oversight of their assigned facilities to ensure that the contractor operates facilities safely and efficiently (i.e., within the boundaries of those controls invoked in the facility authorization basis), communicating system and facility status and operational performance information to STSMs. C. SSO personnel coordinate with FRs to ensure, and report to STSMs, the operability of specific safety systems. SSO personnel focus on the details of safety system operability implementation, while FRs focus on the integrated operational aspects of these systems and programs.

Table 1. CBFO Safety System Oversight (cont.)

Program Requirements
Purpose and Scope
The purpose of SSO qualification is to ensure that a sufficient number of competent DOE staff members are assigned to oversee contractor management of safety systems at DOE defense nuclear facilities. Such oversight provides DOE line managers with accurate, objective information on fulfillment of the facility safety basis, and on the performance of safety systems and the associated effectiveness of contractor work performance and practices, including implementation of the ISM system and the contractor's Cognizant System Engineer Program.
Coverage and Staffing
Determination of the number of staff members to be assigned and qualified at the Federal level begins with the identification of safety systems and safety management programs at each site, as relied upon in the DSA. The facility hazard classification; safety classification, number, type, complexity, and accessibility of safety systems; programmatic importance and potential environment, safety, health and/or financial impact of facility systems; and maturity and effectiveness of implementation of the contractor's Cognizant System Engineer (as described in DOE O 420.1A) and Safety Management Programs are used to determine the need for Federal employees with this expertise.
Relationship to Other Programs
SSO should be considered one of the primary functions of assigned personnel. Depending on the level of required coverage, some of these "positions" may not require full-time involvement and the assigned employees may have other, collateral, functions.

SSO Training and Qualifications
Consistent with DOE O 426.1, the CBFO has developed a TQP to identify those positions requiring a Technical Qualification Standard/Card and to further identify those site-specific qualifications required for positions assigned SSO duties (DOE/CBFO 02-3219). All CBFO staff assigned SSO duties have a site-specific SSO qualification included in their CBFO Technical Qualification Card. These are maintained and updated every three years, in accordance with the TQP requirements.
CBFO SSO personnel will acquire the necessary basic technical knowledge and technical discipline competencies linked to their individual job descriptions or assigned responsibilities. In addition, the overall competency expectation for SSO personnel is that they have a working knowledge of and ability to oversee those safety systems to which they have been assigned. The knowledge, skills, and abilities were developed to meet this expectation and are documented in the individual qualification cards. (1) IDENTIFY and DESCRIBE the authorization basis documents and DESCRIBE the function and purpose of the assigned safety systems and major components and how these functions support the full spectrum of system operations. (2) Given the major design basis supporting analyses: a. DESCRIBE the maintenance requirements of the safety system, DESCRIBE how to determine the status and adequacy of contractor maintenance activities, and EXPLAIN how the contractor maintains the configuration of the safety system (both physical and document configuration) throughout the work control and design change processes. b. DESCRIBE the contractor's Cognizant System Engineer Program, the program's role in maintaining and improving safety system performance, the key criteria for determining that this role is adequately performed, and how to assess the program to confirm that it is fulfilling assigned responsibilities. c. DESCRIBE the key considerations in preparing and implementing a troubleshooting plan to determine the root cause for equipment failures (e.g., evidence preservation, need for contingencies, troubleshooting).

Table 2. CBFO Safety Structures Systems and Components

SAFETY CLASS STRUCTURES, SYSTEMS, AND COMPONENTS

1 Waste Handling Building
2 Underground Liquid-fueled Vehicles/Equipment
3 Waste Handling Equipment Fire Suppression System
4 Battery-powered Waste Handling Equipment
5 Waste Hoist Structure
6 Underground Design

SAFETY SIGNIFICANT STRUCTURES, SYSTEMS, AND COMPONENTS

1 Waste Handling Building (WHB) Fire Suppression
2 Facility Cask
3 Facility Pallet
4 Hot Cell Complex
5 CH Bay Confinement Ventilation System
6 Hot Cell Complex Confinement Ventilation System
7 Facility Canisters
8 TRUPACT-II Unloading Dock (TRUDOCK) Cranes
9 Property Protection Area
10 Panel Closure/Substantial Isolation Barriers
11 Bulkheads
12. Chain Link or Brattice Cloth

SPECIFIC ADMINISTRATIVE CONTROLS

1 Vehicle/Equipment Control Program
2 Fuel Confinement Program
3 Waste Handling Program
4 Ground Control Program
5 Waste Hoist System
6 Liquid-Fueled Vehicle/Equipment Inspection Program
7 Compressed Gas Cylinder Program
8 Noncompliant Container Response