

**Department of the Army**  
**Program Manager for**  
**Chemical Demilitarization**  
Aberdeen Proving Ground, Maryland

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**Chemical Stockpile Disposal Project**

**Programmatic Process**  
**Functional Analysis Workbook (FAWB)**

**Book 30**

**Container Handling Building**

**CHB**

Revision 0  
December 21, 1999

**NOTE:** The CHB programmatic process FAWB applies to ANCDF, PBCDF, TOCDF and UMCDF.

## ALL FAWB SYSTEMS

Book (Chapter <sup>1</sup> )	System Identifier	FAWB Title
<u>UTILITY SYSTEMS (Site-specific)</u>		
1 (5.15)	NGLPG	Fuel Gas System (Natural Gas and Liquefied Petroleum Gas)
2 (5.14)	HYPY	Hydraulic Power Unit and Distribution System
3 (5.19)	BCS	Bulk Chemical Storage System
4 (5.16)	CAS	Compressed Air Systems (Plant, Instrument, and Life Support)
5 (5.22)	SGS	Steam Generation System
6 (5.26)	DMS	Door Monitoring System
7 (5.28)	PCS	Primary Cooling Systems
8 (5.12)	EPS	Electrical Distribution and Emergency Power System
9 (5.13)	—	(HVAC FAWB moved to Book 20 (Process Systems))
10 (5.17)	WATER	Water Systems (Process Water, Potable Water, and Water Treatment Systems)
11 (5.21)	CDSS	Central Decon Supply System
12 (5.18)	TSHS	Toxic Storage and Handling Systems (Agent Collection, Spent Decon, and Sumps)
13 (5.20)	ACSWS	Acid and Caustic Storage and Wash System (DELETED <sup>2</sup> )
14 (5.27)	FDSS	Fire Detection and Suppression System
15 -19	—	(not assigned; reserved for future use)
<u>PROCESS SYSTEMS (Programmatic)</u>		
20	HVAC	Heating, Ventilation, and Air Conditioning System
21	RHS	Rocket Handling System
22	PHS	Projectile Handling System
23	MHS	Mine Handling System
24	BCHS	Bulk Container Handling System
25	DFS	Deactivation Furnace System
26	LIC	Liquid Incineration System
27	MPF	Metal Parts Furnace System
28 <sup>3</sup>	PAS/PFS	DFS, LIC, and MPF Pollution Abatement System and PAS Filter System
29	BRA	Brine Reduction Area and BRA PAS
30	CHB	Container Handling Building
31	ACAMS	Automatic, Continuous Air-Monitoring System
32	TCE	Treaty Compliance Equipment
33 <sup>4</sup>	DUN	Dunnage Incineration System and DUN PAS

<sup>1</sup> TOCDF has original “chapter” numbers for utility system FAWBs.

<sup>2</sup> The ACSWS FAWB was deleted.

<sup>3</sup> The PAS and PFS draft FAWBs were combined into a single PAS/PFS FAWB (Book 28).

<sup>4</sup> A DUN FAWB is not being developed per direction of PM-CSD on 9-10-98.

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## REVISION LOG

<u>REV.#</u>	<u>PAGE(S)</u>	<u>REFERENCE AND DESCRIPTION OF CHANGE</u>
0	NA	Initial Issue



# SECTION 1

## INTRODUCTION

### 1.1 CSD PROJECT BASELINE TECHNOLOGY OVERVIEW

The Office of the Project Manager for Chemical Stockpile Disposal (PM-CSD) is responsible for the disposal of the United States' existing unitary chemical weapon stockpile. PM-CSD manages execution of the design, construction, equipment acquisition/installation, systemization, plant operations, and closure of all Chemical Stockpile Disposal (CSD) project sites. The CSD project baseline technology consists of mechanical disassembly or puncturing the munitions to remove chemical agent and any explosives or propellant, followed by incineration of the chemical agent and any explosives and propellant, and thermal detoxification of metal parts and any contaminated dunnage. This technology was demonstrated during a series of operational verification testing (OVT) campaigns at the Johnston Atoll Chemical Agent Disposal System (JACADS). JACADS represents the first generation of a full-scale facility that implements the baseline technology. JACADS continues to operate and dispose of the remaining chemical agent and munitions stockpiled at Johnston Atoll.

The second generation plants implementing the baseline technology include the Tooele Chemical Agent Disposal Facility (TOCDF) located at the Deseret Chemical Depot (DCD) in Tooele, Utah, the Anniston Chemical Agent Disposal Facility (ANCDF) located at the Anniston Army Depot (ANAD) near Anniston, Alabama, the Umatilla Chemical Agent Disposal Facility (UMCDF) located at the Umatilla Chemical Depot near Hermiston, Oregon, and the Pine Bluff Chemical Agent Disposal Facility (PBCDF) located at the Pine Bluff Arsenal (PBA) near Pine Bluff, Arkansas. Unless otherwise noted, the programmatic functional analysis workbooks (FAWBs) for process systems apply to each of these CSD sites.

### 1.2 BACKGROUND

FAWBs for 25 plant systems were issued for JACADS in January 1985 by The Ralph M. Parsons Company (now the Parsons Infrastructure & Technology Group, Inc.). Parsons is the Design and Systems Integration Contractor (DSIC) for the CSD project. The FAWBs provided the basis for the facility control system's programmable logic controller (PLC) and computer systems programming. The JACADS FAWBs were later revised by United Engineers & Constructors (UE&C) and, by the July 1989 issue, two additional systems had been added.

FAWBs for TOCDF were issued in April 1993 by Parsons. There were 28 plant systems defined for TOCDF, however, only 27 FAWBs were issued (the Residue Handling Area was not issued). Most of the TOCDF plant systems were the same as those for JACADS, however, there were some differences due to different plant configurations, consolidation of some systems, and the inclusion of additional systems. The TOCDF systems contractor (SC) received the FAWBs and assumed responsibility to maintain the set

current with the TOCDF plant configuration and the evolution of the operational strategy of the facility. Sets of FAWBs for utility systems were also developed for ANCDF and UMCDF (and are being developed for PBCDF) to assist the sites during procurement of utility systems equipment to understand the use of the utility systems in the operation of the facility.

In September 1997 PM-CSD decided that it would be beneficial to develop a set of programmatic FAWBs for the process systems that are shared between the sites rather than have each site maintain its own set of process system FAWBs. Having a single set of process FAWBs provides a means to ensure operational consistency between the sites and to accurately record differences between the demil facilities. The programmatic process FAWBs will serve as an invaluable training tool for the Systems Contractor for Training (SCT) to ensure consistent training on process systems for all sites and to quickly identify site-specific training requirements.

FAWBs for utility systems, which are more site specific and consist predominantly of equipment procured by the SC, are or will be maintained by each of the individual demilitarization sites.

### **1.3 PROGRAMMATIC PROCESS FAWB SYSTEMS**

Sixteen process systems at the baseline facilities were designated as programmatic systems whose FAWBs can be maintained as a single reference rather than maintained at each site. The difference between the sites for these systems is minimal which supports the development of a single set of programmatic process FAWBs. Minor configuration differences between the sites are highlighted in the FAWB discussions and tables. Fourteen of these sixteen systems were included in the original 28 plant system FAWBs developed by the DSIC. For conciseness, the DUN and DUN PAS FAWBs were to be combined into a single FAWB in order to have a total of fifteen programmatic process FAWBs. Development of a programmatic FAWB for the DUN and DUN PAS, however, has been suspended indefinitely at the direction of the PM-CSD Operations Team (See FAWB Note B-1). In addition, FAWBs for the wet pollution abatement system (PAS) and the PAS filter system were combined into a single FAWB (see FAWB Note B-2). Therefore, a total of thirteen programmatic FAWBs are being developed for the process systems. The HVAC FAWB, considered a utility system when utility FAWBs were produced for ANCDF in 1996 (HVAC FAWB was Book 9 for ANCDF Utility FAWBs), has since been recategorized as a process system and is included in the set of programmatic process FAWBs.

The programmatic FAWBs have been numbered in accordance with a numbering convention established during production of the FAWBs for utility systems for ANCDF and UMCDF. Under the numbering convention, books numbered 1 through 19 are reserved for utility systems; the process FAWBs are numbered from 20 through 34. Table 1.1 lists the book numbers and titles for the programmatic process FAWBs. The chapter numbers from the original TOCDF FAWBs are shown for reference.

Twelve of the systems from the original 28 FAWBs are designated as site-specific utility systems. For these systems, the SC is delivered an initial utility FAWB indicating the design configuration and operational strategy for the system. The SC maintains the

utility FAWBs to reflect the site-specific configuration. The utility FAWBs are listed in Table 1.2; chapter numbers from the original TOCDF FAWBs are shown for reference.

Each programmatic process FAWB contains a subsection that defines the system boundaries and identifies the interfaces with other plant process systems and with the utility systems.

The two remaining systems from the originally planned 28 plant system FAWBs are the acid and caustic storage and wash (5.20) and the residue handling area (5.24). The acid and caustic storage and wash system FAWB at TOCDF is no longer maintained and has not been developed for follow-on sites (see FAWB Note B-3). A FAWB for the residue handling area was never produced due to the lack of automatic control features.

Table 1.1 Programmatic Process FAWBs

FAWB Book #	FAWB Title (TOCDF FAWB Chapter #)
20	MDB Heating, Ventilation and Air Conditioning (5.13)
21	Rocket Handling System (5.1)
22	Projectile Handling System (5.2)
23	Mine Handling System (5.3)
24	Bulk Container Handling System (5.4)
25	Deactivation Furnace System (5.5)
26	Liquid Incinerator System (5.6)
27	Metal Parts Furnace System (5.7)
28 <sup>1</sup>	DFS, LIC, and MPF Pollution Abatement System and PAS Filter System (5.9)
29	Brine Reduction Area and BRA PAS (5.23)
30	Container Handling Building (5.11)
31	Automatic Continuous Air Monitoring System (5.25)
32	Treaty Compliance Equipment (Not included in original FAWB)
33 <sup>2</sup>	Dunnage Incinerator System and DUN PAS (5.8 & 5.10)

<sup>1</sup> Per discussions held during the comment resolution matrix meeting for the PAS FAWB on 11-10-98, the draft programmatic process FAWBs for the PAS and PFS were combined into a single PAS/PFS FAWB, Book 28 (See FAWB Note B-2).

<sup>2</sup> As directed at the FAWB teleconference on 9-10-98, a programmatic process FAWB for the DUN/DUN PAS is not being developed (See FAWB Note B-1).

Table 1.2 Site-Specific Utility FAWBs

FAWB Book #	FAWB Title (TOCDF FAWB Chapter #)
1	Fuel Gas System (5.15)
2	Hydraulic Power Unit and Distribution System (5.14)
3	Bulk Chemical Storage System (5.19)
4	Compressed Air Systems (5.16)
5	Steam Generation System (5.22)
6	Door Monitoring System (5.26)
7	Primary Cooling System (5.28)
8	Electrical Distribution & Emergency Power System (5.12)
9	Not used (formerly HVAC).
10	Water Systems (5.17)
11	Central Decon Supply System (5.21)
12	Toxic Storage and Handling Systems (5.18)
13	Not used (formerly acid and caustic storage and wash system).
14	Fire Detection and Protection System (5.27)
15 -19	(not assigned; reserved for future use)

#### 1.4 PROCESS FAWB PHILOSOPHY

The programmatic FAWBs for process systems serve multiple purposes:

- The FAWB operational descriptions serve as one of the source documents for the facility control system’s programmable logic controller (PLC) and computer systems programming.
- The FAWBs are a technical reference that supports programmatic training of operators on how to operate the baseline technology facilities.
- The FAWBs serve as a ready reference during operation of each facility to enhance operational consistency among all sites.
- The FAWBs serve as a programmatic reference document that defines how the process systems operate and captures the differences between operational configurations at the facilities.

The FAWB is a living document subject to configuration control under the CSD project Participant Quality Assurance Plan (PQAP). Changes to the process FAWBs are implemented in accordance with the process FAWB revision philosophy discussed in Section 1.6. The process by which the SCT maintains the programmatic process FAWBs and the roles and responsibilities of each organization affiliated with the CSD project are described in detail in the Programmatic Process FAWB Maintenance Plan. The programmatic process FAWBs are meant to be updated continuously with input from its

users whenever modifications are made or as needed to enhance the information presented. The FAWBs serve as a repository for all control information for the automated aspects of the baseline technology demilitarization process systems.

#### 1.4.1 Programmatic Process FAWB Limitations

Even though the FAWBs contain detailed descriptions of the configuration and control for each process system, the FAWBs are not all-inclusive. Every effort is made to include the level of detail necessary to fully describe the specific operating configuration for each process system. References are provided with each FAWB to direct the user to the programmatic and site-specific documentation (e.g., SOPs, drawings) that supports the information presented in the FAWBs.

Because of the revision cycle time there will be a slight lag time between recent changes and their reflection in the FAWB. The FAWB maintenance philosophy, however, will be to update the FAWBs on a regular basis (review for revision every 6 months) or more frequently if needed to reflect significant modifications that are made.

The FAWB maintenance program relies heavily on receiving input from each of the baseline technology demilitarization sites. Timely and accurate information is needed to ensure that the FAWBs reflect the current configuration at each of the sites. All information received will be thoroughly reviewed to ensure consistent and accurate documentation.

As a programmatic document, the FAWBs describe the configuration and operation of 4 separate facilities. Care must be taken by the user to ensure that the information extracted from this document reflects the configuration for the facility of interest. Site-specific differences are highlighted in both the text and the appendices to avoid confusion.

### 1.5 PROCESS FAWB ORGANIZATION

The process FAWBs document the chemical demilitarization facility operations at ANCDF, PBCDF, TOCDF, and UMCDF. The format and structure of the programmatic process FAWBs differ from the original format prepared by the DSIC and also differ slightly from the format previously maintained at TOCDF. The information from earlier versions of the process system FAWBs, however, has been retained and updated to reflect lessons learned from the design, construction, systemization, and operation of the demilitarization facilities, including JACADS and the Chemical Agent Munition Disposal System (CAMDS). The overall layout of the programmatic process FAWBs is shown in Table 1.3.

Table 1.3 Organization of the Programmatic Process FAWBs

Section	Title	Contents
Front Matter		Contains title page, table of contents, lists of tables and figures, and revision log.
1	Introduction	Discusses the general FAWB philosophy, background, organization, and revision method.
2	System Overview	Discusses the purpose of the system and presents an operational and process design basis summary. System boundaries and interfaces are also provided.
3	Process Description	Presents a detailed process description.
4	Component Summary	Presents tables listing parameters for primary components at each of the sites for the specific system. Power source listings for system components are also listed.
App. A	Acronyms and Abbreviations	Contains acronyms and abbreviations used in the programmatic process FAWBs.
App. B	FAWB Notes	Contains notes that provide additional detail or background information related to a discussion in the text of the FAWB.
App. C	Alarm and Interlock Matrices	Contains matrices for each of the sites. Parameters and interlocks that are unique to each site are highlighted in the matrices.
App. D	PLC Automatic Control Sequences	Presents the automatic logic contained in the code for the PLCs that monitor and control the specific system. Burner management system automatic controls are included for furnace systems and sequencer logic is included for demil systems. Site-specific differences are highlighted.
App. E	Operator Screens	Contains the Advisor PC screens for each site associated with the specific system with all indicators showing.
App. F	Instrument Ranges	Presents tables for each of the sites showing instrument ranges and setpoints for the instrumentation in the specific system. Instruments with ranges or setpoints unique to each site are highlighted in the tables.
App. G	Intercontroller Communications	Contains tables listing the digital intercontroller outputs (DICOs) for the PLCs associated with the specific system.
App. H	References	Listing of reference documents, including drawings, that are used to prepare and maintain the FAWB.

## 1.6 PROCESS FAWB REVISION PHILOSOPHY

The programmatic process FAWBs will be maintained by the SCT to reflect the operational and control system configuration at each of the CSD sites that implements the baseline destruction technology. Each of the programmatic process FAWBs will be reviewed and revised as required on a semi-annual basis. Individual process system FAWBs may be revised more frequently if needed to reflect significant configuration changes. Programmatic process FAWB modifications may be generated by:

- ECPs at any of the CSD sites
- CSD project programmatic lessons learned
- Operational modifications that do not involve configuration changes
- Programmatic changes
- Need for greater detail or clarification

The programmatic process FAWB maintenance plan identifies the organizations that participate in the FAWB maintenance program and identifies the responsibilities of each organization to supply information that may result in revision to the FAWB. All organizations have representatives on the FAWB Evolvement/Evaluation Team (FEET) and are involved with review of each FAWB revision to ensure that the FAWBs accurately reflect the current configuration and operating strategy for the sites.



## SECTION 2

# SYSTEM OVERVIEW

### 2.1 PURPOSE AND FUNCTION

The container handling building (CHB) provides safe, temporary storage for chemical munitions prior to unpacking and transporting them into the munitions demilitarization building (MDB). The CHB is a semiautomated warehouse that supplies the MDB with munitions sufficient for up to 24 hours of continuous processing.

The CHB consists of load/unload areas, a container storage area, a conveyor corridor, a transition area, and a CHB unpack area (UPA). At PBCDF, there is no transition area or CHB UPA; the conveyor corridor is connected to the MDB first-floor UPA through the CHB vestibule. CHB operations are summarized below by their functional areas. By convention, compass directions used throughout the CHB FAWB refer to TOCDF.

### 2.2 OPERATIONAL SUMMARY

At the storage igloos, most munitions are packed into onsite containers (ONCs) that are prepositioned on transport trucks. Each truck can accommodate a single ONC. The container of munitions then is transported to the CHB for processing. As the transport trucks enter the plant gate, one of two CHB loading docks is assigned. The truck moves to the assigned loading dock. CHB operations start from the time the truck stops beside the loading dock and continue until the munitions are delivered into the MDB.

The following three types of munitions containers are transported through the CHB:

- (1) Onsite Containers (all sites)  
The dimensions of an ONC are approximately 140 in. long by 102 in. in diameter. The ONCs are designed to hold all munition types, except weteye bombs and spray tanks. In each munition load, an ONC contains only one type of munition and agent.
- (2) Weteye-Bomb Containers (TOCDF only)  
The dimensions of a weteye-bomb container are approximately 103 in. long by 20 in. wide by 32 in. high. The weteye-bomb container is designed to hold one weteye bomb (MK-116).
- (3) Spray-Tank Containers (TOCDF and UMCDF)  
The dimensions of a spray-tank container are approximately 198 in. long by 62 in. wide by 73 in. high. The spray-tank container is designed to hold one spray tank (TMU-28).

Two load/unload areas, measuring 37 ft by 146 ft, are located in the north end of the CHB. Each load/unload area is an enclosable, covered dock for the receiving and loading/unloading of munition containers. A third dock on the west side of the CHB, next to the transition area, receives containers for combined munition processing. PBCDF has no third dock.

Operations at the east and west docks are identical. A transport truck carries a munitions container from the storage igloo or warehouse to the loading dock. At the loading dock, a 20-ton bridge crane (CHB-CRAN-402 or -403) picks up the munitions container from the truck bed and places it onto a CHB tray. Then, the munitions container is secured to the tray. The tray with munitions container is transferred to one of the storage area feed conveyors.

Container trays distribute loads uniformly over the material-handling equipment and are suitable for roller-type conveyors. These trays are used for all munition types. However, to accommodate the oversize length of spray-tank containers, “spacer” container trays are required between each spray tank.

Two storage areas between the load/unload areas are designed to hold either full or empty containers during bulk or explosively configured munition processing. The container storage area is an enclosed structure consisting of east and west bays, one on each side of the conveyor corridor.

The storage area has the capacity to hold a 16-hour, or overnight, minimum supply of the munition being processed. At TOCDF, the overall size of the storage area is approximately 80 ft by 206 ft. ANCDF and UMCDF are similar; PBCDF is shorter in length. There are four lines in each bay, lines A through D. Each line is capable of handling six trays with ONCs, for a maximum capacity of 48 trays with ONCs. At PBCDF, each line is capable of handling four trays with ONCs, for a maximum capacity of 32 trays with ONCs. At TOCDF only, each line also is capable of handling six trays with MK-116 bomb containers, for a maximum capacity of 48 trays with MK-116s. At TOCDF and UMCDF, each line also is capable of handling three trays with TMU-28/B spray-tank containers, for a maximum capacity of 24 trays with TMU-28/Bs. Any line can be selected and reserved for storing the full or empty containers after processing commences. The storage area also is used to store empty containers during spray-tank operations at TOCDF and UMCDF.

The conveyor transfer/corridor system area is between the two storage areas. The conveyor corridor is an enclosed structure, approximately 164 ft long, through which loaded containers are transported from the storage bays to the transition area, and to the CHB vestibule at PBCDF. The conveyor corridor also is used to transport empty containers from the lifts, or from the CHB vestibule at PBCDF, back to the storage area. The conveyor corridor is required to meet safe, quantity-distance requirements when storing munitions with explosives. This area consists of the conveyor, right-angle, transfer area and the conveyor corridor.

The CHB conveyor corridor connects to the transition area, providing a working space for container loading/unloading from the corridor conveyor to the two hydraulic lifts, and to the first-floor conveyor. The transition area is an enclosed structure through which the full containers are moved from the corridor conveyor to the east lift, and where the empty containers, or containers containing leaking munitions, are moved from the west lift back to the corridor conveyor.

At PBCDF, ONCs are transported from the conveyor corridor to the MDB UPA using conveyors in the CHB vestibule. The CHB vestibule conveyors also return empty ONCs to the conveyor corridor.

The CHB UPA is an enclosed structure located on the second floor between the CHB east and west lifts and the MDB UPA. Three conveyor systems are located here to support the munition unpacking operations. Emergency exit is provided on the outside of the west wall.

The east lift delivers loaded containers to the CHB UPA. Containers are monitored to confirm that no leakers are present, then opened, unpacked, closed, and moved to the west return conveyor. Then, they are delivered via the west lift to the ground level for return to the CHB storage area. The two conveyors adjacent to the east lift are designed to handle a total of four containers, three full and one empty. The conveyor adjacent to the west lift is provided for returning the empty containers to the lift. A 20-ton bridge crane lifts the empty container from the east conveyor and deposits it onto the west conveyor. The west conveyor and lift conveyor transfer the empty container into the west lift. Seals on the lift gates are provided to effectively maintain the ventilation integrity between the Category C CHB UPA and the Category D lift enclosure. The lift doors are equipped with interlocks to prevent simultaneous opening of the upper and lower level lift doors. The lift doors are fire-rated and sealed. The underpass below the UPA is open for both lift truck and personnel traffic. This minimizes external travel distances between the east and west sides of the MDB. The south side of the west CHB lift is provided with a 5 ft by 13 ft passage door to transfer metal parts furnace (MPF) trays and miscellaneous equipment from the first floor to the CHB UPA.

At all sites, a CHB mechanical equipment room (MER) and electrical room, located on the east side of CHB, house the mechanical and electrical equipment for the CHB, including the CHB, roller-conveyor, hydraulic-power unit (CHB-HYPU-101). A separate MER is located behind the east lift to support the hydraulic requirements of the two lifts. PBCDF does not have this separate MER since it is a single-floor facility area and does not have lifts and supporting mechanical equipment. Firewalls separate the MER from the storage area and the conveyor/charge car corridor.

The CHB, lift-truck, battery-charging area is located on the east side of the conveyor corridor. Firewalls separate the charging area from the CHB conveyor/charge car corridor. The area accommodates one 20-ton lift truck (CHB-FORK-101).

### **2.3 PROCESS DESIGN BASIS SUMMARY**

The CHB is designed to provide safe, temporary storage for chemical munitions prior to unpacking and transporting them into the MDB. The combined storage bays are designed to store 48 ONCs. At PBCDF, the combined storage bays are designed to store 32 ONCs.

The CHB is a pre-engineered, steel-frame building with insulated, metal roofing and composite building panels, except for the transition area. The transition area construction is reinforced concrete columns and slab. Normal occupancy is 11 persons total during the day shift (10 at PBCDF) and five persons during the second and third shifts. This includes three lift-truck drivers (two at PBCDF), three dock workers, two monorail operators, one lift operator, and two unpackers. The CHB is classified as a service storage building for explosively configured munitions. Personnel shall limit the occupation of the CHB to handling containers and other support operations.

## **2.4 SYSTEM BOUNDARIES AND INTERFACES**

The CHB consists primarily of the structures that house the working areas, conveyors, lifts, cranes, and supporting components and instrumentation. Major system interfaces include the following:

- (1) Utility Systems: The CHB is equipped with many of its own utility systems. However, proper operation of the CHB also requires the plant electric power and plant air utility systems to be operable.
- (2) MDB UPA: After unpacking in the CHB UPA, munitions are transferred via forklift to the corresponding MDB UPA processing station. At PBCDF, ONCs are conveyed from the CHB vestibule to the MDB UPA for unpacking.

## **SECTION 3**

### **PROCESS DESCRIPTION**

#### **3.1 INTRODUCTION**

The container handling building (CHB) is designed to provide safe, temporary storage for chemical munitions prior to transport into the munitions demilitarization building (MDB). The CHB can supply the MDB with munitions sufficient for up to 24 hours of continuous processing.

The CHB is comprised of six separate process areas: loading docks, a container-storage area, a conveyor corridor, a transition area, lifts, and an unpack area (UPA). PBCDF has four separate process areas: loading docks, a container-storage area, a conveyor corridor, and a CHB vestibule. Containers arrive at one of two loading docks. A crane transfers the containers onto one of the loading-dock conveyors. From the load/unload area, the container is transferred to the container-storage area, where it is temporarily held prior to transport to the CHB UPA. At PBCDF, containers are transported to the CHB vestibule.

The container is transferred from the storage area onto the corridor conveyor, which delivers it to the transition area. Here, additional conveyors move the container onto the east lift, which raises it to the second-floor CHB UPA, where the containers are monitored and opened. At PBCDF, the container is transferred from the storage area onto the corridor conveyor, which delivers it to the CHB vestibule, and then to the MDB UPA.

Munition trays are removed from the onsite containers (ONCs) by a winch onto CHB UPA, scissors-lift conveyor CHB-CNVP-103, or onto scissors-lift conveyor UPA-CNVP-108 at PBCDF. The munition trays or pallets then are unloaded by the bridge crane and moved, by walkie stacker or monorail, to the MDB UPA, where munitions are removed from the trays. The trays are returned to the CHB UPA and inserted back into the ONCs. The empty ONCs are returned to the transition area via the west lift, and then back to the loading dock for reuse. At PBCDF, the empty ONCs are returned to the vestibule, and then back to the loading dock for reuse.

A programmable logic controller (PLC) controls all conveyor operations from the storage area until the containers are emptied manually in the CHB UPA, or in the CHB vestibule at PBCDF. The PLC also controls the return trip from the west lift of the CHB UPA, or from the CHB vestibule at PBCDF, to the storage area.

#### **3.2 DESCRIPTION OF SUBSYSTEMS**

##### **3.2.1 Loading Docks**

The CHB has three loading docks. The east and west docks support container receiving, shipping, and changing operations. The combined processing dock receives rockets and overpacked munitions, and ships empty and leaker containers. PBCDF has two loading docks that support container receiving, shipping, and changing operations.

A control console, located in the east loading dock, allows operators to locally control and monitor both east and west loading dock, storage area, and corridor operations. This console also allows operators access to a utility screen that is used to monitor the CHB hydraulic system and sump pump status. A loading dock signaling system consisting of three colored lights (i.e., green, white, and red) above each loading-dock conveyor indicates the status of each storage conveyor line to the loading dock personnel. A green light indicates that the line is selected for loading. A white light indicates that the line is selected for unloading. A red light indicates that the line is not available for loading or unloading. The bridge crane control pendant has two pushbuttons that enable the operator to index containers into and out of the storage area. One button is for LOAD and the other is for UNLOAD.

The operations of the east and the west docks are identical. A transport truck carries an ONC from the storage igloo to the loading dock. A crane (CHB-CRAN-402 or -403) at the loading dock picks up the ONC from the truck bed and places it onto a CHB tray. Then, the tray is attached to the ONC. The ONC with tray is placed on one of eight loading-dock conveyors (CHB-CNVM-101, -102, -103, -104, -121, -122, -123, and -124) and transferred into the container-storage area.

The ONC is designed to withstand a 10-ft drop on an unyielding, flat surface and a 40-in. drop onto a 6-in.-diameter spike, without breaking the ONC containment. The maximum height of the loading docks is 30 inches above-grade, which is within the maximum drop height without damaging the ONCs.

Overhead spreader bars (CHB-SPRD-101 through -104) attach to the east and west dock bridge cranes. The International Standards Organization (ISO)-type connectors at each of the top four corners are used in conjunction with a spreader bar-type, hoist-lifting frame.

The bridge crane, using a spreader bar fitted with ISO connectors, removes the ONCs from the transport truck. The bridge crane's 20 ft lifting hook allows an ONC to be lifted to a maximum height of 8 ft. However, through the operational procedures, an ONC can be lifted only to a maximum height of 40 in., which complies with the ONC design requirement.

An empty ONC and tray are removed by bridge crane from a loading-dock conveyor at the end of the unload line, and moved to the end of the loading dock, where an operator detaches the tray. The ONC is lifted again and placed on the truck bed. The crane then returns to the unload line and repeats the process with a second empty ONC, rotating the container 180° so that its door faces that of the first ONC on the truck.

Spray-tank containers at TOCDF and UMCDF, or weteye-bomb containers at TOCDF, are lifted by crane slings attached to the bridge crane, or by forklift, from the transport trucks. The spray-tank containers or weteye-bomb containers are placed on container trays sitting on the loading dock. After the spray tanks or weteye bombs are detached from the crane or forklift, the bridge crane lifts the trays and positions them on one of the four loading-dock conveyors. The trays are detached from the bridge crane and, together with the container, moved into the temporary storage area. Empty containers are handled in a manner similar to that of the ONCs.

Spray-tank containers are 198 in. long and overlap the ONC tray, which is approximately 140 in. long. The overlap is accommodated during storage by placing an empty “spacer” tray between any two, adjacent spray tanks. Other clearances (e.g., airlocks and elevators) have been checked to verify that the additional length can be accommodated.

### 3.2.2 Container Storage Area

Two storage areas, one for each loading dock, are designed to store either full or empty containers temporarily until they are transferred to the MDB, or offsite, for reuse. The storage areas are enclosed.

Each storage area can accommodate four rows of six containers, with a combined capacity of 48 ONCs. The PBCDF CHB is a smaller version of the CHB at other sites. The combined PBCDF CHB storage bays can store 32 ONCs. A retractable, roller-conveyor system services each row to transport the containers. These storage area conveyor systems (CHB-CNVM-105 through -120) are connected to a corridor conveyor system that is located between the two storage areas. Munition-packed containers are transported from the storage areas to the MDB by this corridor conveyor system, and the empty containers are returned by the same corridor conveyor system. Interlocks ensure that full and empty containers are not in the corridor simultaneously. The container movement in the storage area is performed semiautomatically. Container storage is managed on a first-in/first-out basis.

The PLC (ICS-CONR-120) controls all conveyor operations from the storage area until the containers are emptied manually in the CHB UPA, and from the west lift of the CHB UPA, to the storage area. At PBCDF, the PLC controls all conveyor operations from the storage area until containers are emptied in the CHB vestibule. The PLC activates warning lights and horns to alert operators before starting the conveyors.

The retractable, roller conveyor uses a pneumatic system to inflate a high-strength airbag, thereby lifting heavy-duty rollers and chain. The conveyors are provided with guides to keep the containers on track. After the container is in place, the system is deflated so that the container sits firmly on the conveyor housing. The containers are positioned through a series of sensors; however, conveyor stops are provided as part of the conveyor design. These stops are controlled through the PLC, and are raised when the containers reach their designated storage locations. The stops prevent any container overrun due to conveyor control malfunction.

The open utility trenches underneath the conveyor systems in the storage areas provide pathways for the electrical power supply lines, vacuum system lines, instrumentation lines, and hot water supply/return lines. The trenches also are designed to act as hot water drains. These trenches are approximately 3 ft wide by 4 ft 4 in. deep, slope toward a sump, and are covered by painted, steel grating.

### 3.2.3 Conveyor Corridor

The conveyor corridor is an enclosed structure. In this corridor, the loaded containers are transported from the storage areas to the transition area, or to the CHB vestibule at PBCDF. The containers are conveyed from the west lift (CHB-LIFT-102), or from the CHB vestibule at PBCDF, and sent back to the storage areas via the same corridor.

A corridor conveyor system (CHB-CNVM-125 through -130) is mounted at the floor level. Before the conveyors start moving, an audible warning horn and a flashing light operate for approximately 10 seconds to alert floor personnel. The flashing light stays on while conveyors are moving. When the conveyor system is in automatic mode, the flashing light remains on to caution personnel that the conveyors can restart without audible warning.<sup>1</sup>

After a container reaches the first position of its storage row, it passes onto a right-angle transfer conveyor (CHB-CNVM-133 through -136). The transfer conveyor moves the container to the corridor-conveyor system. The corridor-conveyor system transports the container from the container-storage areas to east lift, CHB-LIFT-101, or to the CHB vestibule at PBCDF. The container stops at the entrance of the east lift, where the container waits for lift gate CHB-GATE-147 to open. Then, the container is lifted to the second floor. Conveyor stops at the ends of the corridor-conveyor system prevent any chance of container overrun.

### 3.2.4 Transition Area

A CHB transition area is located at the south end of the conveyor corridor in the lobby of the east and the west lifts, except at PBCDF. PBCDF utilizes a CHB vestibule (see Section 3.2.7). This area houses the following equipment: a corridor conveyor, right-angle transfer conveyor CHB-CNVM-131, first-floor conveyor CHB-CNVM-132, and transition area monorail hoist CHB-MONO-409. A control console located in this area allows operators to locally control transition-area operations and monitor container-storage area status.

Containers are moved to the transition area by the corridor conveyors. Containers with munitions are taken to the second-floor CHB UPA by the east lift. After the munitions are emptied from the container in the CHB UPA, the empty container is returned from the CHB UPA to the transition area through the west lift. The container is rolled out from the lift to the first-floor conveyor. The right-angle transfer conveyors move the empty container from the first-floor conveyor to the corridor conveyors for delivery to the storage area.

The transition area also is used to support container handling for combined processing/receiving munition operations. During the combined-processing campaign, both rocket and bulk lines are operated, and the agent is destroyed in the LIC. One munition type is processed through the CHB, following the standard ONC handling scheme. The other munition type is received at the combined-receiving dock. Containers from the transport truck at the combined processing/receiving dock are unloaded by a lift truck and placed on the first-floor conveyor. Containers are rolled into the west lift by the first-floor conveyor and coupled with west-lift conveyor CHB-CNVM-138. After lift gate CHB-GATE-146 is closed, the west lift raises the container to the second-floor UPA.

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<sup>1</sup> This is the standard-conveyor system, start-warning method used throughout the MDB. TOCDF engineering change proposal (ECP) TEMP1490CHB was issued to change the conveyor start warning sequence for the CHB; however, this change had not been implemented in the referenced version of the TOCDF software.

### 3.2.5 Lifts

Hydraulic power lift CHB-LIFT-101 is located on the transition area east side; hydraulic power lift CHB-LIFT-102 is located on the transition area west side. The lifts transfer the containers from the CHB transition area on the first floor to the CHB UPA on the second floor. In normal operations, the east lift raises full containers to the second floor, and the west lift returns empty containers to the first floor. At PBCDF, lifts are not required since this is a single-floor facility area.

The east and west lifts are separated by a concrete wall. Interlocks at each lift-shaft gate prevent the upper- and lower-level, lift-shaft gates from opening at the same time. These lift shafts act as air locks. The simultaneous opening of both the upper- and lower-level lift gates will cause too much air in-flow to the MDB UPA, disturbing the MDB heating, ventilating, and air-conditioning (HVAC) cascade system. Upper-level shaft gates CHB-GATE-202 and -203 are fire-rated for 1 hour, and are sealed to meet specified infiltration criteria. The sealed gates provide an airlock capability to maintain separation of the CHB UPA from the transition area.

Hydraulic units used for the conveyors and lifts, are located in the mechanical equipment room (MER) at the south side of the lifts.

### 3.2.6 CHB Unpack Area

CHB UPA (02-201) is located on the second floor and is connected to the north side of MDB UPA (02-214), except at PBCDF (see Section 3.2.7). Equipment in the CHB UPA consists of an overhead, 20-ton crane (CHB-CRAN-401), a scissors lift (CHB-CNVP-103), a forklift, and three elevated conveyors. The first conveyor is the delivery and monitor station conveyor (CHB-CNVM-139), and the second is the unpack-and-return station conveyor (CHB-CNVM-140). The third is the CHB, second-floor conveyor (CHB-CNVM-141), which feeds or receives containers from the west lift. The CHB UPA is an area where containers are monitored and opened. Munition trays are removed from containers and unpacked in this area before the munitions can be transferred to the MDB UPA by forklift.

The CHB master-control console is located in the CHB UPA and allows operators to locally control and monitor operations at the east and west loading docks, storage area, corridor, transition area, and CHB UPA. This console also allows operators access to a utility screen, which is used to monitor the CHB hydraulic system and sump pump status.

Containers sent from the east lift are received on the delivery and monitor station conveyor. Once received, the container is moved to the monitor station. There, an automatic, continuous air-monitoring system (ACAMS) unit (MON-ACAM-218) is used to ensure that there are no leaking munitions inside the container. Then, the container is moved to the unpack station of the unpack-and-return station conveyor. After opening the container doors, the munition trays are pulled, by winch, out of the container and placed on the scissors-lift conveyor, which can handle two munitions trays. An operator lowers the scissors lift for unpacking. The straps can be loosened from the munition trays for pallet removal. The munition trays or pallets are unloaded by the bridge crane and moved, by walkie stacker or monorail, to the MDB UPA. The scissors lift is raised back to the container level, and the empty trays are pushed back into the container, with the

help of rollers. The container doors are partially bolted, and the container is conveyed to the return station. The container doors are bolted and ready for returning to the storage areas. The empty container is picked up by the 20-ton overhead bridge crane, using its spreader bar, and placed on the CHB, second-floor conveyor, which feeds it into the west lift. After closing the lift doors, the empty container is moved down to the transition area by the west lift.

After monitoring, trays holding spray tanks or weteye bombs pass straight to the fourth conveyor station. The container trays are disconnected, and the spray tanks or weteye bombs are picked up by the CHB UPA forklift and transported to the corresponding MDB UPA processing station.

During a combined processing campaign, a second munitions stream of rockets, or ton containers in ONCs, is received at the combined processing dock and moved to the CHB UPA, using the west lift. The 20-ton crane transfers the container to the delivery and monitor station conveyor, where it is processed as a regular container.

If a container is found to have leaking munitions at the monitor station, it is sent to the toxic maintenance area (TMA) for munition overpacking, via the reverse path of the combined-processing campaign to the transition area.

### 3.2.7 CHB Vestibule

Only PBCDF has a CHB vestibule located at the end of the conveyor corridor. The CHB vestibule area houses the CHB vestibule conveyor and has a CHB, multisection, access door (DOOR-133). ONCs are delivered from the CHB vestibule to the MDB, first-floor UPA through CHB process gate CHB-GATE-203A/B. Equipment in the MDB, first-floor UPA consists of the first-floor, UPA, overhead crane (UPA-CRAN-401); the UPA, scissors-lift conveyor (UPA-CNVP-108), a forklift, and two elevated conveyors. The first conveyor is the empty return and delivery conveyor (UPA-CNVM-139); the second conveyor is the monitor-and-unpack conveyor (UPA-CNVM-140). Munition trays are removed from ONCs and unpacked in the MDB first-floor UPA. After removal from the ONC, ton containers are loaded into cradles on ton container conveyor no.1 (MMS-CNVP-137). Rocket and mine pallets are loaded onto UPA lift UPA-LIFT-101 and raised to the MDB, second-floor UPA.

Containers are received from the CHB vestibule conveyor, on the empty return and delivery conveyor, and then moved to the monitor station of the monitor and unpack conveyor. After having an ACAMS (MON-ACAM-218) ensure that there are no leakers inside the container, the container is moved to the unpack station of the monitor and unpack conveyor. After opening the container doors, the munition trays are pulled, by winch, out of the container and placed on the UPA, scissors-lift conveyor, which can handle two munitions trays. An operator lowers the scissors lift for unpacking. The straps are loosened from the munition trays. Ton containers are moved by monorail to ton container conveyor no.1, and pallets of rockets or mine drums are moved, by forklift, to the UPA lift. The scissors lift is raised back to the container level, and the empty munition trays are pushed back into the container, with the help of rollers. The container doors are bolted; the container is ready for returning to the storage areas. The empty container is picked up by the first-floor, UPA, overhead crane, using its spreader bar, and placed on the empty return and delivery conveyor. The empty container is moved from

the empty return and delivery conveyor to the CHB vestibule conveyor and returned to the container-storage area using the CHB vestibule conveyor and corridor conveyors.

### 3.2.8 CHB Hydraulic Systems

The CHB hydraulic systems are separate and unique for the operation of the CHB lifts and CHB conveyors. PBCDF has only a conveyor hydraulic system. The conveyor hydraulic system is located in Room 106, which is an extension to the east side of the conveyor corridor.

The entire CHB, retractable, roller-conveyor system is powered by a single, hydraulic power skid. The hydraulic system consists of a common reservoir, three common piping headers, four variable volume pumps, a cooling system recirculation pump, and two air-cooled heat exchangers. The roller-conveyor, hydraulic-drive motors are controlled by an individual conveyor control valve, or "stack." The stack is adjustable and provides from 0 to 80 fpm conveyor speeds. The target speed for all conveyors is 40 fpm. The hydraulic operating pressure is 3000 psig at full design load. The cooling system is designed to maintain 115°F system temperature at full load.

The hydraulic system consists of a common, 320-gallon-capacity reservoir with four, Oilgear PVG 100, variable-volume pumps (96-CHB-HYPU-101A, B, C, and D). These pumps are rated at 24.8 gpm, with 6 cubic inches per revolution displacement, and are driven by 60 hp motors at 1200 rpm. The pump operating pressures are set at staggered, 50 psig intervals to prevent surging. The settings for all sites, except TOCDF, are: HYPU-101A at 3150 psig; HYPU-101B at 3200 psig; HYPU-101C at 3250 psig; and HYPU-101D at 3300 psig. The settings for TOCDF are: HYPU-101A at 2800 psig; HYPU-101B at 2850 psig; HYPU-101C at 2900 psig; and HYPU-101D at 2950 psig. Cooling is provided by recirculating pump HYPU-101E, Oilgear no. 218, driven by a 7.5 hp motor and two, air-cooled units (CHB-COOL-101A and -101B), each using 3 hp fans. The cooling system maintains the hydraulic system at 115°F by means of progressive, cooler-fan operations as the heat load increases or decreases.

The hydraulic unit uses 2-in. distribution header piping in the storage area, and in the corridor area, while the remainder uses 1-in. piping runs. Each conveyor hydraulic motor is controlled by a valve "stack." Each valve stack includes forward and reverse solenoids, and a key-lock, conveyor-speed adjustment. Two-inch flexible hoses are used from the valve stack to the hydraulic motors. The system has return headers and drain piping headers.

The hydraulic motor drive system uses the following three sizes of motors and valve stacks, each set at 3200 psig:

- (1) The V1 - 35,000-pound load hydraulic motor and valve rack with 2.35 gpm flow is used in the CHB to power the following conveyors at all sites:
  - CHB Loading-Dock Conveyors CHB-CNVM-101, -102, -103, -104, -121, -122, -123, and -124
  - CHB North Transfer Conveyors CHB-CNVM-133A, -133B, -134A, -134B, -135A, -135B, -136A, and -136B
  - CHB Corridor Conveyor CHB-CNVM-125, -126, -127, -128, -129, and -130

The V1 hydraulic motor and valve rack also is used to power the following conveyors at ANCDF, TOCDF, and UMCDF:

- CHB South Transfer Conveyor CHB-CNVM-131A, -131B, -131C, and -132
- CHB Lift Conveyor CHB-CNVM-137 and -138
- CHB Return Conveyor CHB-CNVM-141

The V1 hydraulic motor and valve rack also is used to power the following conveyor at PBCDF:

- CHB Vestibule Conveyor CHB-CNVM-142

- (2) The V2 - 70,000-pound hydraulic motor and valve stacks with a 4.32-gpm output are used to power CHB UPA receiving conveyors CHB-CNVM-139, and -140 at ANCDF, TOCDF, and UMCDF.
- (3) The V3 - 105,000-pound motor and valve stacks with a 5.89-gpm output are used to power all of the 16 storage-area conveyors CHB-CNVM-105 through -120.

The hydraulic system is started from a local panel at the CHB hydraulic system in the CHB MER. The panel has four, supply pump, on-off selector switches plus one hand-off-auto (HOA) recirculation pump switch. Two HOA, cooler fan, selector switches are located outside the MER, adjacent to the hydraulic system oil coolers. The required valve alignment can be done in the MER for the intended pumps and filters prior to startup. Normally, the HYPV-101E circulation pump, CHB-COOL-101A cooling fan, and CHB-COOL-101B cooling fan HOA selector switches are placed in AUTO. In AUTO operation mode, thermostats control the operation of the recirculation pump and cooling fans. When the hydraulic system oil temperature is below 90°F, the recirculation pump and cooling fans are off. When the oil temperature reaches 90°F, the recirculation pump starts. This circulates oil through the cooling fan heat exchangers, and the fans remain off. When the oil temperature reaches 111°F, CHB-COOL-101A fan starts. When the oil temperature reaches 114°F, CHB-COOL-101B fan starts. If the oil temperature reaches 125°F, all main pumps shut down until the oil cools. The operating delta temperature on all thermostats is 7°F.

### 3.2.9 Retractable Roller Conveyor System

The materials handling system uses a series of pneumatically elevated rollers. By inflating the air bag beneath the rollers, the rollers elevate, extending through the cover plate, to lift the load above them. Each segment of the conveyor is valved independently so that, if any one develops a leak, it can be isolated and repaired. The system has sufficient excess load-carrying capacity to convey a container, even if one segment is in the retracted position.

The basic components of the roller-track system include:

- (1) Supporting extruded channel
- (2) Air bag
- (3) Roller assembly
- (4) Cover plate

The roller system uses a hydraulic motor to power a slip chain that makes contact with the bottom of the CHB tray and pulls it along the length of the conveyor. The plant air-compressor system supplies the air required to inflate the roller and slip chain air bags of the operating segments. The hydraulic power units (HYPU) are located in the CHB MER, with the individual hydraulic-conveyor motors along each driven, conveyor track.

### 3.2.10 Electrical Power System

The CHB electrical power distribution system has three subsystems:

- (1) The utility, power-supply system provides electrical power for motors, fans, and lighting.
- (2) The essential, power-supply system provides power for the depot area, air-monitoring system (DAAMS) and emergency lighting.
- (3) The uninterrupted, power-supply (UPS) system provides power for the ACAMS and PLC.

Power-supply lines share the same utility trench with other utility lines. Due to maintenance access to the trench, and hot water draining in the trench, the power supply lines are weatherproof. A ground fault interrupter is installed to shut off the power supply if a leakage current is detected.

### 3.2.11 HVAC System

No filtration system is provided for CHB ventilated air; ventilator fans are used for air circulation only. All fans are controlled by the area-temperature sensors and normally are used during hot summer days.

Emergency-shutdown pushbuttons are provided at exit locations in the east and west loading docks, at the north and south ends of the corridor, and also in the MDB control room (CON) on consoles ICS-CONS-110, -112, -116 to shut down the building's exhaust ventilation, doors, sump pump, and conveying equipment under an emergency-shutdown condition (see Section 3.3.12).

### 3.2.12 Fire Protection System

The dry-pipe, water sprinkler system is a preaction-type system used for fire protection in the CHB areas, including the loading docks, storage areas, conveyor corridor, transition area, and CHB UPA. Rate-of-rise-type thermal detectors are used throughout the areas to detect fire. For detailed fire protection information, refer to the Utility FAWB, "Fire Detection and Suppression Systems," Book 14 for ANCDF, UMCDF, and PBCDF; and Chapter 5.27 at TOCDF.

### 3.2.13 Sump

A utility-trench system in the storage areas houses the utility lines and provides drainage channels. Fire protection water, accidental hot water or agent spills are drained into the trench. The container load/unload area and storage-area trench systems are sloped and piped together to the CHB sump, located east of the main utility trench next to the east storage area conveyor corridor. The sump accumulates all the CHB wastewater. If the ACAMS in the area indicates no agent vapor and no evidence of agent spill, the CHB sump pump (CHB-PUMP-101) can be used to pump the water into a tanker truck. The

sump water pump is manually started and automatically shut off. If an ACAMS detects agent in the CHB, due to an agent spill, the PLC sends a signal to deenergize the CHB sump pump (CHB-PUMP-101) local start circuitry, which inhibits starting the pump. If the pump is running, it shuts down to prevent release of any liquid that has the potential to contain agent.

### 3.3 CONTROL SEQUENCE LIST

The following subsections present the control sequences for container processing, load/unload area process flow, storage-area operations, MPF-tray operations, leaker processing. The following sequencing operations also are presented: from load/unload area to storage area; from storage area to lifts; container movement on second floor; container return to selected, storage-area line; storage area, return-tray placement; storage area to load/unload area; and emergency-stop operation.

The following control sequences are based on the TOCDF standing operating procedures (SOPs) and PLC logic.

#### 3.3.1 Container Processing

Container processing at all sites is similar up to the transfer of containers from the corridor conveyors to the transition area. Only PBCDF has a CHB vestibule located at the end of the corridor conveyor (see Section 3.2.7). Therefore, the following discussions related to container handling in the transition area, lifts, and CHB UPA do not apply to PBCDF.

In general, retractable-roller conveyors transfer loaded trays from the load/unload area to the CHB UPA and back. The bridge crane transfers empty containers from CHB UPA position 4 to CHB second-floor conveyor CHB-CNVM-141. The transition area crane transfers containers with leakers from the transition area to a truck. The loading-dock crane transfers containers from trucks to the loading dock and back.

The operational function of the container storage lines is selected from either the CHB UPA console or the east, loading-dock console. Load and unload lines normally are selected from the east, loading-dock console. Feed and return lines normally are selected from the CHB UPA console. The control system requires that a feed line and a return line be selected before automatic operations can begin. An alarm alerts the operator if the system is put in automatic prior to designating a feed and a return line. Only one feed line and one return line destination is permitted within the CHB storage area at any one time. A loading dock signaling system, in the form of colored lights (i.e., green, white, and red), above each load conveyor provides loading dock personnel with the status of each storage line. The following five line functions can be operator assigned:

- (1) LOAD – The load function is selected for the line that the loading dock bridge crane operator will place full containers on and index into the storage area. A green light above the loading-dock conveyor indicates a load status to the loading-dock personnel. The line status will automatically change to hold when the line is filled with full containers.
- (2) UNLOAD – The unload function is selected for the line from which the loading dock bridge crane operator will remove empty containers. The storage line selected for this function is usually a line that was previously filled with empty containers returning from the UPA. A white light above the loading-dock

- conveyor indicates an unload status to the loading-dock personnel. The line status will automatically change to hold when the line is emptied.
- (3) FEED – The feed function is selected for the line that will provide full containers to the CHB UPA for processing. The storage line selected for this function is usually a line that was previously loaded with full containers. The line status will automatically change to hold when the line is emptied.
  - (4) RETURN – The return function is selected for the line that will store empty containers returning from the UPA. The storage line selected for this function is usually a line that is empty or was previously only partially filled with empty containers returning from the UPA. The line status will automatically change to hold when the line is filled with empty containers.
  - (5) HOLD – The storage line hold status normally is an automatic result of a completed load, unload, feed, or return function. It also is the default status when a line is empty and has not been selected for another function. The hold function can be selected by an operator for a line that has not completed a formerly selected function. Although this would not be standing operating procedure, it allows additional flexibility in the operation of the container storage area. A red light above the loading-dock conveyor indicates a hold status to the loading-dock personnel.

The CHB UPA operator console is the CHB master console. Selection of a specific control screen overrides control of the same screen from the transition area or east, loading-dock consoles. The EMERGENCY STOP pushbutton on the side of each control console stops the entire CHB conveyor system. Each conveyor is interlocked with predecessor and successor conveyors. A conveyor holding a tray in the last position in the tray's direction of travel does not start until the conveyor immediately ahead of the loaded conveyor, in the same direction of travel, starts. This prevents trays from being pushed onto conveyors with the rollers down. Similarly, a moving tray stops before the end of the conveyor, at the last sensor on that conveyor, if the next conveyor in the tray's direction of travel is not running. Trays in motion stop before the mechanical-tray stop, if the stop is up. The tray stop must be lowered before any movement toward the tray stop can begin, even though the tray does not contact the stop.

The processing cycle of a container begins at the first position of its storage line. Passing onto a right-angle transfer conveyor, the container starts its journey along the corridor conveyor. The corridor conveyor travels in a north-south direction from the storage bays, through the CHB corridor, to the east lift. The orientation of the container on the corridor conveyor remains unchanged from its storage position, aligned in an east-west direction with the door facing west. Upon arrival at the east-lift entrance, the container is detected, the lift door opens, and the combined action of the corridor conveyor and the east-lift conveyor moves the container forward into the east lift, except at PBCDF. At PBCDF, lifts are not required since this is a single floor facility area.

At PBCDF, the container is received from the CHB vestibule conveyor by empty-return and delivery conveyor UPA-CNVM-139 in the MDB, first-floor UPA. The container is transferred to monitor and unpack conveyor UPA-CNVM-140, where an ACAMS monitors the atmosphere within the container to confirm that no leakers exist. If ACAMS detects a

leaker, the container is handled as described in Section 3.3.5, Processing Leaking Munitions. After the container is emptied, it is hoisted by bridge crane UPA-CRAN-401 and returned to the empty-return and delivery conveyor for transport back to the CHB.

At all other sites, the east lift raises the container to the second-floor UPA. Category C ventilation of the CHB and MDB UPA is maintained with seals on the doors of the lifts leading to the UPA and transition area.

From the east lift, the container is moved onto the first of four conveyor stations by using the UPA control console indexing function. The two conveyors are sized to hold two containers/trays each. The first conveyor station, the delivery station, receives the container from the lift. The second station, the monitoring station, is where the atmosphere within the container is monitored with an ACAMS to confirm that no leakage exists in the container. If a leaker is found during this procedure, the container is handled as described in Section 3.3.5, Processing Leaking Munitions. After the container is determined to be safe, most of the ONC bolts are loosened before movement to station three. The third conveyor station, the unpack station, is where the container is opened and its contents removed. The fourth conveyor station receives the empty containers for bolt-up before return to the storage area. A minimum of four feet between containers is provided on the east conveyor system.

The container doors are opened at the third conveyor station, and a scissors conveyor is raised to the munitions-tray elevation. An air hose connected to the ONC tray raises the ONC tray support rollers. The scissors conveyor, using its winch, pulls the munitions tray out of the container onto the scissors lift. The scissors conveyor lowers the tray of munitions, and the securing netting or straps are removed. The overhead crane removes the pallets of munitions from the tray, using its auxiliary hook, and places them on the floor of the UPA. The UPA forklift picks up the munitions and transports them to the correct MDB UPA processing station. The scissors conveyor raises to return the empty munitions tray to the container. The trays are reloaded into the container, the ONC tray roller air hose is removed, and the doors are partially fastened. Then, the conveyor indexes to move the container to station four. At the fourth station, the container doors are secured for return transportation. The empty container is picked up by the 20-ton overhead bridge crane, using its spreader bar, and placed on the west lift feed conveyor. The empty container is conveyed into the west lift and lowered to the first floor.

The empty container is conveyed from the west lift onto the first-floor transition conveyor. After the PLC determines that the corridor conveyors are clear, the tray transfers to the corridor conveyors and travels north, back to the storage area. At the storage area, the tray is placed on the RETURN line by the PLC. The PLC controls the entire conveyor operation.

### 3.3.2 Load/Unload Area Process Flow

The load/unload area operator is responsible for manually placing containers on the loading-dock conveyors, and for manually removing containers returned by the process. The operator uses the bridge crane to place and remove containers from the loading-dock conveyors. Two pushbuttons on the bridge crane, operator-control pendant interface with the PLC. One button is for LOAD and the other is for UNLOAD.

Pressing the LOAD button indexes the designated, loading-dock conveyor (i.e., green line) forward one position, moving trays into the storage area. Pressing the UNLOAD button

indexes the designated, loading-dock conveyor (i.e., white line) reverse one position, moving trays into the load/unload area.

As the tray is placed and aligned on the loading-dock conveyor by the operator, its presence is sensed by the control system. After the LOAD line is full, the system is placed in AUTO, the full line is designated as the FEED line, and the system functions in automatic FEED mode. The control system automatically inflates the appropriate rollers and drive bags, and activates the appropriate drives, to transport all the containers in a convoy-type configuration. Photo sensors, strategically located in the conveyor system, sense the tray presence. These signals are transmitted to the PLC; the PLC program determines which bags to inflate/deflate, and which conveyor motors to start/stop.

The normal default condition of each conveyor drive is off, the drive air bag is deflated, and the roller air bags are deflated. A green LOAD light is illuminated above the loading-dock conveyor, indicating the line is not full. The LOAD sequence starts from the east or west load/unload area. All container ONC doors must be facing west when they are loaded onto the storage conveyors.

### 3.3.3 Container Handling in Storage Area

The CHB has spaces for 48 containers, 32 at PBCDF. The containers are managed on a first-in/first-out basis. After loading a full container onto the end of the roller conveyor on the LOAD line with the bridge crane, the operator indexes the container forward one position. The operator then removes an empty container from the RETURN line and starts the cycle over again.

The operator controls the loading-dock conveyors with the LOAD and UNLOAD, crane-pendant buttons. The LOAD pushbutton on the overhead crane control pendant signals the PLC that an input station is loaded. The PLC automatically controls the buffering of the containers after the input signal is activated. Warning lights and horns are activated 10 seconds before starting any conveyor.

In automatic FEED mode, the PLC controls all movements of containers after they are placed onto the end of one retractable-roller conveyor in the load/unload areas until they are emptied in the CHB UPA. The sensors are strategically placed to see the leading edge of CHB trays. The containers/trays are designed to touch nose to tail, when placed properly on the conveying system. Containers are pulled from a single-storage FEED line until the storage line is empty, unless a conveyor goes into an alarm mode or is otherwise designated by the CHB foreman. Returning trays are handled by the PLC in a similar manner. The trays are convoyed onto the RETURN line by the PLC, nose to tail, until the RETURN line is full. Convoy is defined as "to place or move containers in a manner such that adjacent containers/trays touch nose to tail without space in between containers."

The PLC resumes tray/container control of returning UPA trays after the empty container is transferred onto the UPA west conveyor. The PLC controls the movement of trays until the empty container is positioned on the RETURN conveyor in one of the load/unload areas. The container-storage area can be controlled and monitored from either the master CHB control console located in the CHB UPA, or the east loading dock control console.

PLC interface actions for the CHB loading dock, bridge crane, operator pendants are as follows:

- (1) The crane pendant LOAD pushbutton signals the PLC that a full container is ready to be indexed forward, or into storage. For the operation to succeed, the conveyor line must be in AUTO, predesignated as a LOAD line, and a tray must be in position on the end of the conveyor line.
- (2) The UNLOAD pushbutton on the crane pendant signals the PLC that a container is to be indexed in reverse, into the load/unload area. Activation of UNLOAD is predicated by having the line in AUTO, the line predesignated as an UNLOAD line, and a container present on the designated storage UNLOAD line.

Empty ONCs are not processed through the CHB storage area when overnight operations require a full CHB by the end of the day, or when the transition corridor conveyors are being maintained. Instead, empty ONCs are taken from the transition area by transition area monorail hoist (CHB-MONO-409), through the east transition area door, and placed on transport trucks.

#### 3.3.4 MPF Tray Operations

At PBCDF, empty metal parts furnace (MPF) tray assemblies that are needed in the MDB to support munitions processing are brought by forklift from outside, through CHB Door 130, into the CHB vestibule. Then, the tray assemblies are delivered to the MDB, first-floor UPA. For mine processing, the tray assemblies are delivered to the MDB second floor using either UPA lift car UPA-LIFT-101, or lift-car conveyor MMS-LIFT-101 in the BDS room.

At all other sites, empty MPF tray assemblies are moved to the CHB UPA via the west lift. These trays are taken from the assembly tray, discharge-cooling area and transported, via lift truck, to the breezeway below the CHB UPA, where a gate feeds the west lift from the south side. The trays are placed into the west lift, which takes them to the second floor. The CHB UPA operator sets the MPF tray delivery permissive by pressing CALL MPF TRAYS at the CHB UPA operator console. The PLC closes gate 149, raises the lift, opens gate 202, drops the south side stops, inflates the drive and roller bags for conveyor 141, and starts conveyor 141 drive motors in reverse. Then, the PLC raises the lift conveyor roller and drive air bags, and starts the lift conveyor in reverse. The conveyors run until the trays reach the end of conveyor 141. There, the trays are transported into the MDB UPA by forklift.

Equipment, pallets, and dunnage are returned from the CHB UPA to the Breezeway through gate 149. After the CHB tray is positioned on the west conveyor, the CHB UPA operator selects SEND TRAY HOLDER. The PLC opens gate 202, lowers the lift tray stops, raises the lift roller and drive air bags, starts the lift conveyor in forward, raises the roller and drive air bags on the UPA west conveyor, and starts the west conveyor in forward. The tray moves into the lift and stops when properly positioned. Then, the PLC stops conveyor 141 and lowers all air bags. The lift stops raise, gate 202 closes, the lift runs to the first floor, and gate 149 in the breezeway opens. After gate 149 opens, a forklift operator removes the load transported on the tray.

The normal resting location for the east lift, when empty, is at the first floor. The west lift, when empty, normally remains on the second floor. During manual operations, the control-

console operator moves the lifts between floors by selecting START UP or START DOWN. During automatic operations, the west lift is moved between floors using the SEND LIFT and RETURN LIFT commands on the UPA console.

### 3.3.5 Processing Leaking Munitions

If a leaker is detected among the mines, projectiles, rockets, or bulk items, the ONC is taken to the TMA. Munitions are unpacked in the TMA and reconfigured for demilitarization. The munitions are transported to the MDB explosive containment vestibule (ECV) for unpacking by operators in demilitarization protective ensembles (DPEs).

If a leaker is discovered at station 2 among the spray tanks (TOCDF/UMCDF) or MK-116 (Weteye) bombs (TOCDF only), the sealed container with the leaking munition is transferred to the MDB UPA turntable and fed into the ECV for unpack by operators in DPE. Spray tanks must be processed on Line B, while MK-116 bombs can be processed on Line A or B.

For detailed information on processing leaking munitions, refer to RHS FAWB Book 21, PHS FAWB Book 22, MHS FAWB Book 23, and BCHS FAWB Book 24.

### 3.3.6 Sequence from Load/Unload Area to Storage Area

- a. Place container 1 on the loading-dock conveyor.

When in AUTO, the normal position for all stops is up. When given a START command, the PLC inflates the roller bag, then starts the hydraulic-conveyor drive, and inflates the chain air bag. When given a STOP command, the PLC stops the hydraulic conveyor and deflates the chain and roller air bags all at the same time.

- (1) Select LOAD line on load/unload area control console.
- (2) Activate LOAD button on the pendant.
- (3) Conveyor 1 starts and tray moves forward.
- (4) Conveyor 1 sensor detects tray.
- (5) Conveyors 2 and 3 roller air bags inflate.
- (6) Conveyors 2 and 3 drive air bags inflate; conveyors 2 and 3 drive motors start in forward.
- (7) Conveyor 2, first-position sensor detects the leading edge on tray 1.
- (8) Conveyors 1, 2, and 3 drive motors stop; drive and roller air bags deflate.

- b. Place container 2 on the loading-dock conveyor.

- (1) Repeat steps a.2 through a.6.
- (2) Conveyor 2, second-position, FEED sensor detects the leading edge of tray 1.
- (3) Repeat step a.8.

- c. Place container 3 on the loading-dock conveyor.

- (1) Repeat steps a.2 through a.6.
- (2) Conveyor 2, third-position, FEED sensor detects the leading edge of tray 1.

- (3) Repeat step a.8.
- d. Place container 4 on the loading-dock conveyor.
  - (1) Repeat steps a.2 through a.6.
  - (2) Conveyor 3, first-position, FEED sensor detects the leading edge of tray 1.
  - (3) Repeat step a.8.
- e. Place container 5 on the loading-dock conveyor.
  - (1) Repeat steps a.2 through a.6.
  - (2) Conveyor 3, second-position, FEED sensor detects the leading edge of tray 1.
  - (3) Repeat step a.8.
- f. Place container 6 on the loading-dock conveyor.
  - (1) Repeat steps a.2 through a.6.
  - (2) Conveyor 3, third sensor detects leading edge of tray 1.
  - (3) Conveyors 1, 2, and 3 drive motors stop; drive and roller bags deflate.
  - (4) PLC designates full line as a HOLD line.

### 3.3.7 Sequence from Storage Area to Lifts

The following sequence of operations transfers a full storage line to the corridor conveyors, into the lifts, up the lifts, and onto the CHB UPA conveyors, except at PBCDF (see Section 3.2.7). The PLC controls tray movement, with input from individual presence sensors on each conveyor.

To initialize the system operation, the system must be in AUTO, line function must be in FEED, no trays can be in transfer areas (i.e., storage area to corridor transition), lift 101 must be empty, and the system cannot be in AUTO RETURN sequence (i.e., trays returning to storage area). The PLC automatically controls movement of the trays from the storage area to the CHB UPA using the following sequence:

- a. Move container in line with corridor conveyors.
  - (1) Select FEED line on north or south storage area control screen, as appropriate, from east loading dock control console, or from CHB master console in UPA, and initiate AUTO operation.
  - (2) Lower FEED line tray stops.
  - (3) Inflate roller bags on storage conveyors 2, 3, and 4.
  - (4) Inflate drive air bags and start drive motors 2, 3, and 4.
  - (5) Conveyor 3, third sensor detects leading edge of tray 2.
  - (6) Conveyor drive motors 2 and 3 stop; drive and roller air bags deflate.
  - (7) Conveyor 4 tray-centered-to-corridor sensor detects forward edge of tray 1.
  - (8) Conveyor 4 drive motor stops; drive and roller air bags deflate.

- (9) Storage-conveyor 3, tray stop raises.
- b. Move container down the corridor.
  - (1) Inflate roller air bags on conveyors 125, 126, 127, 128, 129, and 130.
  - (2) Inflate drive air bags and start drive motors 125, 126, 127, 128, 129, and 130.
  - (3) Tray-presence sensor detects tray on conveyor 129.
  - (4) Lift gate 147 opens, conveyor 130 stops lower, and conveyor 137 north stops lower.
  - (5) Conveyors 125 and 126 drive motors stop; drive and roller air bags deflate.
- c. Container movement in transition area and lift 101.
  - (1) Tray-presence sensor on conveyor 130 detects tray.
  - (2) Conveyors 127, 128, and 129 drive motors stop; drive and roller air bags deflate.
  - (3) Lift conveyor 137 drive and roller air bags inflate; drive motor starts.
  - (4) Tray-presence sensor on lift-conveyor sensor detects trays.
  - (5) Conveyors 137 and 130 drive motors stop; drive and roller air bags deflate; conveyors 130 and 137 stops raise.
  - (6) First-floor lift gate 147 closes.
  - (7) Lift runs up to second floor; tray waits on lift, with lift gate 203 closed.

### 3.3.8 Container Movement on Second-Floor CHB UPA

Prior to container movement, the following equipment must be in AUTO operation mode: gate 203, conveyor 139, conveyor 139 south stops, conveyor 140, and conveyor 141. At PBCDF, lifts are not required since this is a single-floor facility area.

- a. First tray from lift to UPA conveyor.
  - (1) Select FEED INDEX on the CHB UPA control console.
  - (2) Gate 203 opens, lift conveyor 137 and conveyor 139 stops lower. Conveyor 139 will not start if trays are in positions 2 and 4. FEED INDEX sequence will not start unless a tray is detected on lift conveyor 137.
  - (3) Conveyor 137 roller air bags inflate.
  - (4) Conveyor 137 drive air bags inflate and drive motor starts.
  - (5) Lift conveyor 139 roller air bags inflate.
  - (6) Lift conveyor 139 drive air bags inflate and drive motor starts.
  - (7) Conveyor 139 station 1 tray sensor detects tray.
  - (8) Conveyors 137 and 139 drive motors stop, drive and roller air bags deflate, lift conveyor tray stops raise.

- (9) Lift gate 203 closes if no tray is detected on the lift.
- (10) Lift returns to first floor.

The PLC program automatically repeats Section 3.3.7, Steps a, b, and c, every time FEED INDEX is selected from the CHB UPA Console, there is a tray present on the designated storage area FEED line, and there is no tray present in the last position on conveyor 140 (i.e., CHB UPA position 4).

Full trays have priority in the corridor. Empty trays return to the storage area from the transition area only after the corridor is clear, and a full tray is sitting on lift 101 at the second floor, except when the storage area FEED line is empty. Empty trays then return without needing to interface with full-tray traffic in the corridor.

A FEED INDEX command can be selected until there is a tray in the last position on conveyor 140. The position 4 tray must be removed for the FEED INDEX to again index the UPA trays forward.

b. Second tray from lift to UPA conveyor.

- (1) Second tray is routed through corridor, arrives at second floor, and waits on lift with lift gate 203 closed.
- (2) Select FEED INDEX on the UPA control console.
- (3) Gate 203 opens; conveyors 137 and 139 tray stops lower.
- (4) Conveyor 137 roller air bags inflate; drive air bags inflate and conveyor drive starts in forward.
- (5) Conveyor 139 roller air bags inflate; drive air bags inflate and conveyor drive motors start.
- (6) Tray 2 moves out of lift to station 1; tray 1 moves to station 2.
- (7) Conveyor 139, second-position, tray sensor detects tray 1.
- (8) Conveyors 137 and 139 drive motors stop; roller and drive air bags deflate; tray stops raise.
- (9) Gate 203 closes and lift returns to first floor.
- (10) Third tray is routed through corridor, arrives at second floor, and waits on lift with gate 203 closed.

c. Third tray from lift to UPA.

- (1) Select FEED INDEX on the UPA control console.
- (2) Gate 203 opens; conveyors 137 and 139 tray stops lower.
- (3) Conveyor 137 roller air bags inflate; drive air bags inflate and drive motor starts.
- (4) Conveyors 139 and 140 roller air bags inflate.
- (5) Conveyors 139 and 140 drive air bags inflate and conveyor drive motors start.

- (6) Tray 3 moves out of lift to station 1; tray 2 moves to station 2; tray 1 moves to station 3.
  - (7) Gate 203 closes and lift returns to first floor.
  - (8) Fourth tray is routed through corridor, arrives at second floor, and waits on lift with lift gate 203 closed.
- d. Fourth tray from lift to UPA.
- (1) Select FEED INDEX on the UPA control console.
  - (2) Gate 203 opens; conveyors 137 and 139 tray stops lower.
  - (3) Conveyor 137 roller air bags inflate.
  - (4) Conveyor 137 drive air bags inflate and drive motor starts forward.
  - (5) Conveyors 139 and 140 roller air bags inflate.
  - (6) Conveyors 139 and 140 drive air bags inflate and drive motors start forward.
  - (7) Tray 4 moves out of lift to station 1; tray 3 moves to station 2; tray 2 moves to station 3; tray 1 moves to station 4.
  - (8) Gate 203 closes and lift returns to first floor.
  - (9) Fifth tray is routed through corridor, arrives at second floor, and waits on lift.
- e. Fifth tray, and all following trays, from lift to UPA.
- The tray in station 4 must be removed before a FEED INDEX will move trays.
- (1) Repeat steps d.1 through d.8 to continue processing.

### 3.3.9 Return Container to Selected Storage Area RETURN Line.

At PBCDF, lifts are not required since this is a single-floor facility area.

- a. UPA to first-floor transition area.
- (1) Move tray from station 4 (i.e., conveyor 140) to conveyor 141 using overhead crane.
  - (2) Select RETURN INDEX on the UPA operator's console.
  - (3) Tray moves forward and stops in front of gate 202. PLC automatically returns trays to storage area in following sequence:
  - (4) Select RETURN DISCHARGE; PLC initiates AUTO RETURN sequence.
  - (5) Gate 202 opens if a tray is detected on conveyor 141, and no tray is detected in the lift.
  - (6) Lift conveyor 138 roller air bags inflate.
  - (7) Lift conveyor 138 drive air bags inflate and drive motor starts.
  - (8) Conveyor 141 roller air bags inflate.
  - (9) Conveyor 141 drive air bags inflate and drive motor starts.

- (10) Lift conveyor sensor detects tray positioned in lift.
  - (11) Conveyors 138 and 141 drives stop; roller and drive air bags deflate; and stops raise.
  - (12) Gate 202 closes.
  - (13) Lift runs to first floor after gate 202 is detected closed.
- b. Transition area to corridor operation.
- (1) First-floor gate 146 opens and tray stop lowers.
  - (2) Conveyor 132 roller air bags inflate.
  - (3) Conveyor 132 drive air bags inflate and drive motor starts forward.
  - (4) Lift conveyor 138 roller air bags inflate.
  - (5) Lift conveyor 138 drive air bags inflate and drive motor starts forward.
  - (6) Conveyor 132 tray sensor detects tray.
  - (7) Conveyor 132 drive motor stops tray in line with conveyor 131; air bags deflate.
  - (8) Lift conveyor 138 drive motor stops, air bags deflate, and tray stops raise.
  - (9) Gate 146 closes and lift returns to second floor.
  - (10) Tray remains in position until PLC determines that corridor is clear.
  - (11) Conveyors 131A, B, and C roller air bags inflate.
  - (12) Conveyors 131A, B, and C drive air bags inflate; conveyors 131A, B, and C drive motors start.
  - (13) Conveyor 131A, tray-presence sensor detects tray.
  - (14) Conveyors 131A, B, and C drive motors stop; air bags deflate.
- c. Corridor to storage area operation.
- (1) Conveyors 127, 128, 129, and 130 roller air bags inflate.
  - (2) Conveyors 127, 128, 129, and 130 drive air bags inflate; drive motors start in reverse.
  - (3) Conveyor 127, tray-presence sensor detects tray.
  - (4) Conveyors 125 and 126 roller air bags inflate.
  - (5) Conveyors 125 and 126 drive air bags inflate; conveyors start in reverse. Conveyor 125 starts if storage-area conveyors A-East, A-West, B-East, or B-West are selected as RETURN LINES; otherwise, conveyor 125 will not operate.
  - (6) Conveyor 126, tray-presence sensor detects tray.
  - (7) Conveyors 127, 128, 129, and 130 drive motors stop and air bags deflate.

### 3.3.10 Storage Area RETURN Tray Placement

- a. First returning tray placement.
  - (1) Conveyor 125 or 126, in-line sensor detects tray.
  - (2) Conveyors 125 and 126 drive motors stop; air bags deflate.
  - (3) Storage-line conveyors 3 and 4 roller air bags raise; stops lower. Forward for conveyor 4 is defined as tray travel from east to west. When a tray is returning to a west-storage conveyor, the PLC starts conveyor 4 in forward.
  - (4) Storage-line conveyors 3 and 4 drive air bags inflate and drive motors start in reverse.
  - (5) First-position sensor detects tray 1.
  - (6) Conveyors 3 and 4 stop, air bags deflate, and stop raises.
- b. Second returning tray placement.
  - (1) Return second tray from CHB UPA using steps in Sections 3.3.9 through 3.3.10.a.3.
  - (2) Storage-line conveyors 3 and 4 air bags inflate; stops lower.
  - (3) Conveyors 3 and 4 start in reverse.
  - (4) Tray 2 moves to first position on RETURN conveyor; tray 1 moves to second position.
  - (5) Second-position sensor detects tray 1.
  - (6) Conveyors 3 and 4 drive motors stop; air bags deflate.
- c. Third returning tray placement.
  - (1) Return third tray from CHB UPA using steps in Sections 3.3.9 through 3.3.10.a.3.
  - (2) Repeat steps b.2 and b.3.
  - (3) Tray 3 moves to position 1; tray 2 moves to position 2; tray 1 moves to position 3.
  - (4) Conveyors 3 and 4 stop; air bags deflate.
- d. Fourth returning tray placement.
  - (1) Return fourth tray from CHB UPA using steps in Sections 3.3.9 through 3.3.10.a.3.
  - (2) Storage-line conveyors 2, 3, and 4 roller air bags inflate; stops lower.
  - (3) Storage-line conveyors 2, 3, and 4 drive air bags inflate; conveyors 2, 3, and 4 start in reverse.
  - (4) Tray 4 moves to position 1; tray 3 moves to position 2; tray 2 moves to position 3; tray 1 moves to position 4.
  - (5) Conveyors 2, 3, and 4 stop; air bags deflate.

- e. Fifth returning tray placement.
  - (1) Return fifth tray from CHB UPA using steps in Sections 3.3.9 through 3.3.10.a.3.
  - (2) Repeat steps d.2 and d.3.
  - (3) Tray 5 moves to position 1; tray 4 moves to position 2; tray 3 moves to position 3; tray 2 moves to position 4; tray 1 moves to position 5.
  - (4) Conveyors 2, 3, and 4 stop; air bags deflate.
- f. Sixth returning tray placement.
  - (1) Return sixth tray from CHB UPA using steps in Sections 3.3.9 through 3.3.10.a.3.
  - (2) Repeat steps d.2 and d.3.
  - (3) Tray 6 moves to position 1; tray 5 moves to position 2; tray 4 moves to position 3; tray 3 moves to position 4; tray 2 moves to position 5; tray 1 moves to position 6.
  - (4) Conveyors 2, 3, and 4 stop; air bags deflate.
  - (5) PLC designates line as HOLD line.

### 3.3.11 Sequence from Storage Area to Load/Unload Area

- a. Move first tray from storage line to loading-dock conveyor.

To initialize system operation, the loading-dock conveyor line must be designated as the UNLOAD line, the line must be in AUTO, and at least one tray must be on the conveyor line.

- (1) Push UNLOAD on the crane pendant.
  - (2) Conveyors 1, 2, and 3 roller air bags inflate.
  - (3) Conveyors 1, 2, and 3 drive air bags inflate and drive motors start in reverse.
  - (4) Conveyor 2 tray sensor detects second tray.
  - (5) Conveyors 2 and 3 drives stop and air bags deflate.
  - (6) Conveyor 1 tray sensor detects first tray.
  - (7) Conveyor 1 drives stop and air bags deflate.
  - (8) Overhead crane and spreader bar are used to remove tray and container from conveyor 1.
- b. Remove remaining trays from loading-dock conveyor.
    - (1) Repeat steps a.1 through a.8.
    - (2) After the last tray is removed from UNLOAD line, the PLC detects that the conveyor line is empty and re-identifies the line as a HOLD line.

### 3.3.12 CHB Emergency Shutdown Systems

The CHB emergency shutdown system design configuration for follow-on sites differs from that currently in use at TOCDF. Therefore, these two configurations are discussed separately.

#### 3.3.12.1 TOCDF CHB Emergency Shutdown Systems

There are two types of CHB emergency shutdown systems at TOCDF<sup>2</sup>: (1) CHB conveyor emergency shutdown system, (2) CHB emergency shutdown system.

The CHB conveyor emergency shutdown system can be activated by any of three pushbuttons, 96-XS-855A, -855B, or -855C, located on local control panels ICS-PANL-127, -128, and -129, respectively. Depressing any of these pushbuttons activates an audible alarm and flashing indication at the local control panels and in the CON. The alarms are recorded by the process data acquisition and recording (PDAR) system. With a single pushbutton action, a CHB operator can shut down the following CHB system PLC-controlled equipment during an emergency: CHB-CNVM-101 through -141; CHB-GATE-146, -147, -149, -202, and -203; and CHB-LIFT-101 and -102. In addition, conveyor stops for the following conveyors are interlocked from extending: CHB-CNVM-130, -132, -133A, -133B, -134A, -134B, -135A, -135B, -136A, -136B, -137A, -137B, -138A, -138B, and -141.

The CHB emergency shutdown system initiates the CHB conveyor emergency shutdown system and also stops CHB ventilation fans CHB-FANX-701 through -716; stops sump pump CHB-PUMP-101; stops Doors 101, 104, 115, 125, 129, 139, and 141 that are in movement; and activates evacuation horns. The CHB emergency shutdown system can be activated by any of six pushbuttons. Three of the pushbuttons, 71-XS-013, -033, and -133, are located in the CON on consoles ICS-CONS-110, -112, and -116, respectively. Two others, 96-XS-856B and -856C<sup>3</sup>, are located at the emergency exits for the west loading dock and north-end of the conveyor corridor. A sixth pushbutton, 96-XS-856A<sup>3</sup>, CHB emergency shutdown from the assembly area, is located in the CHB assembly area near the east loading dock

#### 3.3.12.2 Follow-on Site CHB Emergency Shutdown Pushbuttons

The design for the follow-on sites includes three types of CHB emergency shutdown pushbuttons: (1) CHB emergency shutdown system for equipment, (2) CHB emergency shutdown at the emergency exit doors, and (3) CHB emergency shutdown in assembly area.

The CHB emergency shutdown for equipment system can be activated by any of six pushbuttons. Three of the pushbuttons, 96-XS-855A, -855D, and -855G, are located on local control panels ICS-PANL-127, -128, and -129, respectively. Three more, 71-XS-013, -033, and -133, are located in the CON on consoles ICS-CONS-110, -112, and -116, respectively. Depressing any of these pushbuttons activates an audible alarm and flashing

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<sup>2</sup> The description of the TOCDF CHB emergency shutdown pushbuttons is based on the March 1999 TOCDF PLC code (see FAWB Note B-4).

<sup>3</sup> 96-XS-856A, -856B, and -856C are shown on TE-7-D-503 as 96-XS-856, and 96-XS-855B and -855C, respectively (see FAWB Note B-4).

indication at the local control panels and in the CON. The alarms are recorded by the PDAR system. The response to activation of the CHB emergency shutdown for equipment system is identical to the TOCDF CHB conveyor emergency shutdown system response, except at PBCDF. At PBCDF, the CHB emergency shutdown system for equipment shuts down the following equipment: CHB-CNVM-101 through -130, CHB-CNVM-133 through -136, CHB-CNVM-142, and UPA-CNVM-138 and -139; and Door 133. In addition, conveyor stops for the following conveyors are interlocked from extending: CHB-CNVM-130, -133A, -133B, -134A, -134B, -135A, -135B, -136A, -136B, and -142, and UPA-CNVM-139.

The CHB emergency shutdown at the emergency exit doors system includes pushbuttons 96-XS-855B, -855C, -855E, and -855F. These pushbuttons are located at the emergency exit doors in the west load/unload area, the north-end of the conveyor corridor, the east load/unload area, and the south-end of the conveyor corridor at the transition area, respectively. At PBCDF, these pushbuttons are located in the south load/unload area, the west-end of the conveyor corridor, the north load/unload area, and east-end of the conveyor corridor. Activation of any of these local emergency stop pushbuttons initiates the CHB emergency shutdown for equipment system and stops the same equipment as the CHB emergency shutdown system at TOCDF, except at PBCDF. At PBCDF, the CHB emergency shutdown system for equipment stops CHB ventilation fans CHB-FANX-701 through -708, and CHB-FANX-711 through -716; stops sump pump CHB-PUMP-101; stops Doors 101, 104, 110, 116, 119, 130, and 133 that are in movement; and activates evacuation horns.

The CHB emergency shutdown in the assembly area system consists of a single pushbutton, 96-XS-856, located in the CHB assembly area near the east loading dock. Depressing this pushbutton activates an alarm in the CON. Activation of the pushbutton closes Doors 101, 104, 115, 125, 129, 139, and 141 if they are open or partially open; and closes gates CHB-GATE-146 and CHB-GATE-147 if they are open or partially open. At PBCDF, activation of the pushbutton closes Doors 101, 104, 110, 116, 119, 130, and 133 if they are open or partially open.

## SECTION 4

### COMPONENT SUMMARY

#### 4.1 CHB SYSTEM COMPONENTS

The CHB components presented are grouped into three subsystems: the retractable roller conveyor hydraulic system, the lift car hydraulic system, and the material handling systems.

##### 4.1.1 Retractable Roller Conveyor Hydraulic System

The primary components of the CHB retractable roller conveyor hydraulic system are four supply pumps (CHB-HYPU-101A through -101D), one fluid recirculation (cooling) pump (CHB-HYPU-101E), the hydraulic power unit cooler (CHB-COOL-101), automatic control interlocks, and associated process instrumentation. Design parameters associated with the CHB retractable roller conveyor hydraulic power units, the CHB hydraulic power unit cooler, and the CHB conveyor hydraulic power unit oil circulating pump are listed in Tables 4.1, 4.2, and 4.3, respectively. Power source information is listed in Table 4.4.

Table 4.1 CHB Conveyor Hydraulic Power Unit Pump Design Parameters

	ANCDF	PBCDF	TOCDF	UMCDF
Quantity	4	4	4	4
Tag #(s)	CHB-HYPU-101 A thru D	CHB-HYPU-101 A thru D	CHB-HYPU-101 A thru D	CHB-HYPU-101 A thru D
Pump Type	Motor Driven Recipricating	Motor Driven Recipricating	Motor Driven Recipricating	Motor Driven Recipricating
Flow Setting/ Discharge Pressure	24.8 gpm A: 3150 psig B: 3200 psig C: 3250 psig D: 3300 psig	24.8 gpm A: 3150 psig B: 3200 psig C: 3250 psig D: 3300 psig	24.8 gpm A: 2800 psig A: 2850 psig A: 2900 psig A: 2950 psig	24.8 gpm A: 3150 psig B: 3200 psig C: 3250 psig D: 3300 psig
Motor Power	60 hp	60 hp	60 hp	60 hp
P&ID(s)	AN-7-D-512	PB-7-D-512	TE-7-D-512	UM-7-D-512

Table 4.2 CHB Hydraulic Power Unit Cooler Design Parameters

	ANCDF	PBCDF	TOCDF	UMCDF
Quantity	1	1	1	1
Tag #(s)	CHB-COOL-101	CHB-COOL-101	CHB-COOL-101	CHB-COOL-101
Cooler Type	Two-pass heat exchanger (2 fans)			
Rated Capacity	~ 5000 Btu/hr.°F at 30 gpm			
Motor Power	3 hp (each fan)			
P&ID(s)	AN-7-D-512	PB-7-D-512	TE-7-D-512	UM-7-D-512

Table 4.3 CHB Conveyor Hydraulic Power Unit Oil Circulating Pump Design Parameters

	ANCDF	PBCDF	TOCDF	UMCDF
Quantity	1	1	1	1
Tag #(s)	CHB-HYPU-101E	CHB-HYPU-101E	CHB-HYPU-101E	CHB-HYPU-101E
Pump Type	Motor Driven Rotary Screw	Motor Driven Rotary Screw	Motor Driven Rotary Screw	Motor Driven Rotary Screw
Flow/ Δ Pressure	60.3 gpm 150 psid	60.3 gpm 150 psid	60.3 gpm 100 psig (discharge)	60.3 gpm 150 psid
Motor Power	7.5 hp	7.5 hp	7.5 hp	7.5 hp
P&ID(s)	AN-7-D-512	PB-7-D-512	TE-7-D-512	UM-7-D-512

#### 4.1.2 Lift Car Systems

ANCDF, TOCDF, and UMCDF are equipped with a lift car system that delivers ONCs from the transition area to the CHB unpack area. At PBCDF, ONCs are unloaded in the MDB first floor UPA extension. The munitions handling system uses the UPA lift car to transfer the tray with the mine drum or rocket pallets from the first-floor UPA to the second-floor UPA.

The primary components of the CHB lift car systems at ANCDF, TOCDF, and UMCDF are two dual hydraulic power units, two hydraulic jacks, lift platform and conveyor, lift gates, automatic control interlocks, and associated process instrumentation. Power source information is listed in Table 4.4.

### 4.1.3 CHB Material Handling Systems

The primary components of the CHB material handling systems are the retractable roller conveyors, scissors lift conveyors, bridge cranes, spreader bars, monorail hoists, forklifts, and associated instrumentation. Power source information is listed in Table 4.4.

## 4.2 EQUIPMENT POWER SOURCES

Table 4.4 lists the equipment power sources for the major equipment used in the CHB based on TOCDF drawings as of August 31, 1999 and the following construction revisions for the other sites: ANCDF (through Change Case AN-06-18-0172), PBCDF (through Change Case PB-07-98-0021), and UMCDF (through Change Case UM-07-25-0139). Power sources are characterized as either critical, essential or utility. Critical loads are powered by the UPS panelboards and do not experience an interruption in power if offsite power is lost. Essential loads are required for safe shutdown of the facility, but can tolerate an interruption in power while being loaded on an onsite emergency diesel generator (EDG). Utility loads are not required if offsite power is lost and are not powered by the onsite EDG. Only motive power sources are listed in the table; instrumentation and control power sources are not listed. In addition, hydraulically and pneumatically powered, and non-powered equipment are not included in the table.

Table 4.4 CHB Equipment Power Sources

Equipment Tag	Description	Site(s)	Power Source	Power Type
CHB-CNVP-103	CHB Unpack Area Scissors Lift Conveyor	AN/TE/UM	CHB-MCC-101	Utility
CHB-COOL-101	CHB Hydraulic Power Unit Cooler Assembly (motors A & B)	AN/PB/TE/UM	CHB-MCC-101	Utility
CHB-CRAN-401	CHB Unpack Area Crane W/Hoist	AN/TE/UM	CHB-MCC-101	Utility
CHB-CRAN-402	CHB Loading Dock Bridge Crane	AN/PB/TE/UM	CHB-MCC-101	Utility
CHB-CRAN-403	CHB Loading Dock Bridge Crane	AN/PB/TE/UM	CHB-MCC-101	Utility
CHB-GATE-146	CHB 1 <sup>st</sup> Floor West Gate (motors A & B)	AN/TE/UM	CHB-MCC-101	Utility
CHB-GATE-147	CHB 1 <sup>st</sup> Floor East Gate (motors A & B)	AN/TE/UM	CHB-MCC-101	Utility
CHB-GATE-149	CHB 1 <sup>st</sup> Floor West Rear Gate (motors A & B)	AN/TE/UM	CHB-MCC-101	Utility
CHB-GATE-202	CHB 2 <sup>nd</sup> Floor West Gate (motors A & B)	AN/TE/UM	CHB-MCC-101	Utility
CHB-GATE-203	CHB 2 <sup>nd</sup> Floor East Gate (motors A & B)	AN/TE/UM	CHB-MCC-101	Utility
	CHB Process Gate	PB		

Table 4.4 (Cont'd)

Equipment Tag	Description	Site(s)	Power Source	Power Type
CHB-HYPU-101	Hydraulic Power Unit for CHB Conveyors (motors (A through E))	AN/PB/TE/UM	CHB-MCC-101	Utility
CHB-LIFT-101	East Lift Car and Hydraulic Power Unit	AN/TE/UM	CHB-MCC-101	Utility
CHB-LIFT-102	West Lift Car and Hydraulic Power Unit	AN/TE/UM	CHB-MCC-101	Utility
CHB-MONO-409	Transition Area Monorail Hoist	AN/TE/UM	CHB-PANB-407	Utility
	Vestibule Monorail Hoist	PB		
UPA-CNVP-108	UPA Scissors Lift Conveyor	PB	SPS-MCC-106	Utility
UPA-CRAN-401	First Floor Unpack Area Crane	PB	CHB-MCC-101	Utility

## APPENDIX A

### Acronyms and Abbreviations

The acronyms and abbreviations listed below are common for all of the programmatic process FAWBs:

A&I	alarm and interlock (matrix)
AASS	automatic agent sampling system
ABCDF	Aberdeen Chemical Agent Disposal Facility
AC	alternating current
ACAMS	automatic, continuous air-monitoring system
acfm	actual cubic foot per minute
ACI	American Concrete Institute
ACS	agent collection system
ACSWS	acid and caustic storage and wash system
ADC	air dilution controller
AgF	silver fluoride
AHT	agent holding tank
AHU	air handling unit
AISC	American Institute of Steel Construction
AMC	Army Materiel Command
ANAD	Anniston Army Depot (Alabama)
ANCDF	Anniston Chemical Agent Disposal Facility
ANSI	American National Standards Institute
AQS	agent quantification system
AR	Army Regulation
ASA	automatic submerged arc
ASC	allowable stack concentration
ASD	adjustable-speed drive
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
AWS	acid wash system
AWFCO	automatic waste feed cutoff
BCHS	bulk container handling system
BCS	bulk chemical storage
BDS	bulk drain station
BGCDF	Blue Grass Chemical Agent Disposal Facility
BLAD	blast load attenuation duct
BMS	burner management system
BPS	burster punch station (MIN)
BRA	brine reduction area
BRS	burster removal station (PMD)
BSA	buffer storage area
BSR	burster size reduction (machine)
CAMDS	Chemical Agent Munition Disposal System
CAB	combustion air blower

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CAL	chemical assessment laboratory
CAS	compressed air system
CBR	chemical, biological, and radiological (filter)
CCB	configuration control board
CCS	central control system
CCTV	closed-circuit television
CDS	central decontamination supply
CDSS	central decontamination supply system
CDTF	Chemical Demilitarization Training Facility
CEHNC	U.S. Army Engineering & Support Center, Huntsville.
CEMS	continuous emission monitoring system
CFR	Code of Federal Regulations
CGA	Compressed Gas Association
CHB	container handling building
CHB UPA	container handling building unpack area
CHWS	chilled water supply
CO	carbon monoxide (monitors/analyzers)
COM	communications system
CON	control room
COR	corridor (munitions)
CPA	client-Parsons authorization
CRO	control room operator
CRT	cathode ray tube
CS	crimp station (PMD)
CSS	campaign select screen
CSD	Chemical Stockpile Disposal (Project)
CV	control variable
CWC	Chemical Weapons Convention
CWS	chilled water supply
DAAMS	depot area air monitoring system
db	dry bulb
DC	direct current
DCD	Deseret Chemical Depot
DDESB	Department of Defense Explosives Safety Board
decon	decontamination (solution)
demil	demilitarization
DFS	deactivation furnace system
DICI	digital intercontroller communication input
DICO	digital intercontroller communication output
DMS	door monitoring system
DPE	demilitarization protective ensemble (suit)
DSA	DPE support area
DSIC	design and systems integration contractor
dscf	dry standard cubic foot
DUN	dunnage incinerator
E&M	engineering and maintenance
E-stop	emergency stop
EAC	equipment acquisition contractor
ECF	entry control facility
ECP	engineering change proposal
ECL	engineering control level

ECR	explosive containment room
ECV	explosive containment vestibule
EDG	emergency diesel generator
EHM	equipment hydraulic module
EIC	equipment installation contractor
EPS	emergency power system
ETL	extreme temperature limit
FAWB	functional analysis workbook
FDLL	field design lessons learned (program)
FDPS	fire detection and prevention system
FEET	FAWB evolvement/evaluation team
FEM	fire extinguishing medium
FIL	activated carbon and HEPA filter
FPD	flame photometric detector
FPM	feet per minute
FSSS	flame safety shutdown system
GA	general arrangement; nerve agent ethyl N-dimethylphosphoramidocyanidate (C <sub>5</sub> H <sub>11</sub> N <sub>2</sub> O <sub>2</sub> P)
GB	nerve agent Sarin, isopropyl methyl phosphonofluoridate (C <sub>4</sub> H <sub>10</sub> FO <sub>2</sub> P)
GC	gas chromatograph
GEN	emergency generator
GFE	government-furnished equipment
GLD	gross level detector
GPD	gas plasma display
gpm	gallons per minute
H	blister agent mustard, made by the Levinstein process, Bis(2-chloroethyl) sulfide or 2,2'-dichlorodiethyl sulfide (C <sub>4</sub> H <sub>8</sub> Cl <sub>2</sub> S <sub>1.5</sub> [empirical formula])
H <sub>3</sub> PO <sub>4</sub>	orthophosphoric acid
HCl	hydrochloric acid
HD	blister agent distilled mustard, Bis(2-chloroethyl) sulfide or 2,2'-dichlorodiethyl sulfide (C <sub>4</sub> H <sub>8</sub> Cl <sub>2</sub> S)
HDC	heated discharge conveyor
HDV	hydraulic directional control valve
HEPA	high-efficiency particulate air (filter)
HLE	high-level exposure
HOA	hand-off-auto
hp	horsepower
HT	60% by weight blister agent distilled mustard and 40% agent T [Bis[2(2- chloroethylthio)ethyl] ether]
HVAC	heating, ventilating, and air-conditioning
HVC	heating, ventilating, and cooling
HYD	hydraulic power
HYPU	hydraulic power unit
HYVM	hydraulic control valve manifold
I/O	input/output
I-lock	interlock
IAS	instrument air system
icfm	inlet cubic foot per minute (acfm at the inlet)
ICS	instrumentation and control system
ID	induced draft inside diameter

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IDLH	immediately dangerous to life and health
IGS	inertial gas sampling
in.	inch
in. wc.	inches water column
IR	infrared
ISO	International Standards Organization
JACADS	Johnston Atoll Chemical Agent Disposal System
L	Lewisite (blister agent)
LAB	laboratory
lb	pound
LCO	limiting condition of operation
ln	line
LIC	liquid incinerator
LIT	level-indicating transmitter
LOQ	limit of quantification
LOR	local-off-remote
LPG	liquefied petroleum gas
LQCP	laboratory quality control plan
LR	local-remote
LSB	LSS bottle filling system
LSS	life support system
LVS	low volume sampler
mA	milliamperes
MCC	motor control center
MCP	monitoring concept plan
MDB	munitions demilitarization building
MDM	multipurpose demilitarization machine
MEL	master equipment list
MER	mechanical equipment room
MGM3	milligrams per cubic meter
MIG	mine glovebox
MIN	mine machine
MMS	mine and munitions system
MPB	munitions processing bay
MPF	metal parts furnace
MPL	multiposition loader
	maximum permissible limit (for DPE)
MPRS	miscellaneous parts removal station (PMD)
MSB	monitor support building
MSS	munition sampling system
NaOCl	sodium hypochloride
NaOH	sodium hydroxide
NCRS	nose closure removal station (PMD)
NEMA	National Electrical Manufacturers Association
NEPA	National Environmental Policy Act
NFPA	National Fire Protection Association
NG	natural gas
NRT	near real time
O&M	operations and maintenance
OBV	observation corridor
ONC	onsite container

OS	orientation station (MIN)
OSHA	Occupational Safety and Health Administration
OVT	operational verification testing
P&A	precision and accuracy
P&ID	piping and instrument diagram
PA	public address
PAS	pollution abatement system
PBA	Pine Bluff Arsenal
PBCDF	Pine Bluff Chemical Agent Disposal Facility
PCS	primary cooling system
PCT	preconcentrator tube
PDAR(S)	process data acquisition and recording (system)
PDE	projectile deformation equipment
PDS	pull and drain station (MDM) punch and drain station (MIN)
PDF	process flow diagram
PFS	PAS filter system
PHS	projectile handling system
PID	proportional integral derivative
PKPL	pick-and-place machine (also PPL)
PLA	plant air system
PLC	programmable logic controller
PLL	programmatic lessons learned (program)
PMB	personnel and maintenance building
PMCD	Program Manager for Chemical Demilitarization (formerly PEO-PM Cml Demil)
PM-CSD	Project Manager for Chemical Stockpile Disposal
PMD	projectile/mortar disassembly (machine)
PML	personnel, maintenance, and laundry (complex or building)
POT	potable water
pph	pounds per hour
PPS	primary power system
PQAP	Participant Quality Assurance Plan
PRW	process water
PSB	process support building
PSV	pressure safety valve
PUB	process and utility building
PUDA	Pueblo Depot Activity (Colorado)
PWR	power systems (unit substation, uninterruptible power supply, battery rooms, and emergency generator)
RCRA	Resource Conservation and Recovery Act
RDS	rocket drain station
RDTE	research, development, testing, and evaluation
RFI	Request for Information
RHA	residue handling area
RHS	rocket handling system
rpm	revolutions per minute
RSM	rocket shear machine
RSS	rocket shear station
SC	systems contractor
SCBA	self-contained breathing apparatus
scfm	standard cubic feet per minute

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SCW	secondary cooling water
SCT	systems contractor for training
SDS	spent decon system
SG	specific gravity
SGS	steam generation system
SOP	standard (standing) operating procedure
SPS	secondary power system
SRS	slag removal system
TBD	to be determined
TCE	treaty compliance equipment
TEAD	Tooele Army Depot (Utah)
TM	Army Technical Manual
TMA	toxic maintenance area
TNT	trinitrotoluene (explosive)
TOCDF	Tooele Chemical Agent Disposal Facility
TOX	toxic cubicle
TSCA	Toxic Substances Control Act.
TSHS	toxic storage and handling system
TWA	time-weighted average
UE&C	United Engineers and Constructors
UMCDF	Umatilla Chemical Agent Disposal Facility
UPA	unpack area
UPS	uninterruptible power supply
UV	ultraviolet
VCR	video cassette recorder
VX	nerve agent, O-ethyl S-(2-diisopropylaminoethyl) methylphosphonothiolate (C <sub>11</sub> H <sub>26</sub> NO <sub>2</sub> PS)
wc	water column
WTS	water treatment system
XXX	3X level of decontamination
XXXXX	5X level of decontamination (minimum of 1000°F for 15 minutes)
Z	general designation for monitoring hazard level

## APPENDIX B

### FAWB Notes

Appendix B normally contains notes to expand upon the descriptions contained in the text of the FAWB. The notes include related experiences at TOCDF and the Johnston Atoll Chemical Agent Disposal System (JACADS).

- B-1 Per discussions held during the comment resolution matrix meeting for the HVAC FAWB on 9-10-98, the programmatic process FAWBs are being prepared under the assumption that the DUN, DUN PAS and DUN PFS (at ANCDF) systems will not be used for processing at ANCDF, PBCDF, TOCDF, or UMCDF. A programmatic process FAWB for the DUN/DUN PAS/PFS is not being developed. Handling and disposal of dunnage is considered a site-specific activity that has not yet been determined. The DUN, however, is installed at TOCDF and remains in the designs at ANCDF and PBCDF. At UMCDF, the DUN was being removed from the design, however, its use at UMCDF is currently being studied.
- B-2 Per discussions held during the comment resolution matrix meeting for the PAS FAWB on 11-10-98, the programmatic process FAWBs for the PAS and PFS have been combined into a single PAS/PFS FAWB that applies to ANCDF, PBCDF, TOCDF, and UMCDF.
- B-3 The acid/caustic storage and wash system is no longer used at TOCDF and has been removed from the ANCDF, UMCDF, and PBCDF site designs by ECPs ANAC343PAS, R1, UMAC160PAS, R1, and PBAC340PAS, respectively.
- B-4 Descriptions of the TOCDF CHB emergency shutdown system pushbuttons are based on the March 1999 PLC code, and reflect the current control configuration at TOCDF. Pushbutton tag numbers referenced in the text and in the alarm and system response tables match those in the PLC code and do not necessarily match the configuration shown on the current TOCDF P&IDs.



## APPENDIX C

### Alarm and Interlock Matrices

Appendix C contains two alarm and system response tables for the CHB. One table applies to ANCDF, TOCDF, and UMCDF; the other table applies to PBCDF only. The alarm and system response tables list the instrument tag number, a description of the instrument, and the system response to the alarm.

The tables are considered preliminary since the CHB instrumentation listed is based on the TOCDF instrumentation that has been updated by the SCT, but not verified to be 100% accurate for the three follow-on sites. Comments related to follow-on sites that were received as part of the review of the draft CHB FAWB have been incorporated.

Specific guidelines were created during development of utility system FAWBs for ANCDF and UMCDF that are followed in the programmatic FAWBs<sup>1</sup>. The following fourteen specific guidelines define the format and content of entries in the A&I matrices:

1. Analog signals from transmitters (e.g., LITs) are not listed; the alarms are indicated separately.
2. All software prealarms and alarms (e.g., LAHs) that are indicated in the CON are listed. Setpoints and actions are shown where applicable.
3. Equipment and instrument status indication signals (e.g., open/close, on/off) are not listed unless they initiate action.
4. Alarms generated from GFE package units that report to the PLC are listed. If not already available and listed, the GFE internal alarms and actions will be added to the matrix when available from the site systems contractor and “*SC to provide detail*” will be entered into the “remarks” column.
5. For field switch generated alarms, the switch tag is listed, not the alarm tag. For example, a low-low pressure alarm (PALL) generated by the field switch, 13-PSLL-008, is listed as 13-PSLL-008 rather than 13-PALL-008. The purpose for this listing is to distinguish between field switch generated hardwired alarms and alarms generated in the software based on the analog output from a transmitter.
6. Instruments that initiate actions are listed in a vertical column sorted by prefix, loop number, instrument ID, then suffix. For example, for 99-TSH-100A, the prefix is 99, the loop number is 100, the instrument ID is TSH, and the suffix is

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<sup>1</sup> For the baseline revision of the programmatic process FAWBs, A&I matrices have been included as extracted from source documentation or as supplied by FEET member organizations; the specific guidelines have not necessarily been rigorously applied to the matrices. Future revisions will include A&I matrices that have been reformatted to conform to the A&I matrix guidelines.

- A). Actions are listed in column across the top of the matrix and include prealarms and alarms.
7. Setpoints are listed for all instruments where applicable. Instrument ranges for analog transmitters are shown in Appendix F. Unless otherwise noted, tank level setpoints are shown from the level transmitter tap.
  8. Only hand switches (push buttons) that cause system shutdowns are listed; other software and hardwired hand switches are not listed.
  9. Local alarms are not listed.
  10. Matrices are grouped by subsystem as applicable within each FAWB. For example, separate matrices are provided in the RHS FAWB for the rocket input feed assembly, the rocket drain station of the RSM, and the rocket shear station of the RSM.
  11. Alarms associated with automatic actions are classified as “alarms” and alarms without automatic actions are classified as “prealarms.”
  12. Instruments listed in the matrix that are RCRA reportable are designated as such by entering “RCRA” in the Remarks column.
  13. Clarifications are provided when necessary in the remarks column of the A&I matrices, or in the system and/or operator response column in alarm and system response tables.
  14. Device malfunction alarms are not shown unless they initiate automatic actions such as equipment switchovers (e.g., to a standby pump), system shutdowns, or a stop feed signal.

**PRELIMINARY PROGRAMMATIC ALARM AND SYSTEM RESPONSE**  
**ANCDF, TOCDF, UMCDF**  
**CONTAINER HANDLING BUILDING (CHB)**

ANCDF: P&IDs: AN-7-D-503, -504, -505, -506, -507, -508, -509, -510, -511/1, -511/2, -512; PLC: ICS-CONR-120; INTERLOCK I-23  
TOCDF: P&IDs: TE-7-D-503, -504, -505, -506, -507, -508, -509, -510, -511/1, -511/2, -512; PLC: ICS-CONR-120; INTERLOCK I-23  
UMCDF: P&IDs: UM-7-D-503, -504, -505, -506, -507, -508, -509, -510, -511/1, -511/2, -512; PLC: ICS-CONR-120; INTERLOCK I-23

LN	TAG NUMBER	DESCRIPTION	SYSTEM RESPONSE	REMARKS
1	71-XS-013	SHIFT SUPERVISOR CONSOLE ICS-CONS-110 CHB EMERGENCY SHUTDOWN	S/D CONVEYORS, STOP GATES AND LIFTS.	AT TOCDF ONLY, ALSO STOP FANS, SUMP PUMP, AND DOORS 101, 104, 115, 125, 129, 139, and 141. SOUND EVAC. HORNS.
2	71-XS-033	LEAD OPERATOR CONSOLE ICS-CONS-112 CHB EMERGENCY SHUTDOWN	S/D CONVEYORS, STOP GATES AND LIFTS.	SEE REMARK FOR 71-XS-013 FOR ADDITIONAL RESPONSE AT TOCDF.
3	71-XS-113	DEMIL/FURNACE OPERATOR CONSOLE ICS-CONS-116 CHB EMERGENCY SHUTDOWN	S/D CONVEYORS, STOP GATES AND LIFTS.	SEE REMARK FOR 71-XS-013 FOR ADDITIONAL RESPONSE AT TOCDF.
4	96-TSHH-937	CHB-HYPU-101 HYD UNIT LEVEL TEMP	LOCAL S/D, ALARM AT PANEL	
5	96-TSLL-937	CHB-HYPU-101 HYD UNIT LEVEL TEMP	LOCAL S/D, ALARM AT PANEL	
6	96-LSHH-939	CHB-HYPU-101 HYD UNIT LEVEL	LOCAL S/D, ALARM AT PANEL	
7	96-LSLL-939	CHB-HYPU-101 HYD UNIT LEVEL	LOCAL S/D, ALARM AT PANEL	
8	96-ZS-001	CHB-CNVM-101 WEST UNLOADING CNVR/TRAY FAIL TO ARRIVE	ALARM	
9	96-ZS-002	CHB-CNVM-102 WEST UNLOADING CNVR/TRAY FAIL TO ARRIVE	ALARM	
10	96-ZS-003	CHB-CNVM-103 WEST UNLOADING CNVR/TRAY FAIL TO ARRIVE	ALARM	
11	96-ZS-004	CHB-CNVM-104 WEST UNLOADING CNVR/TRAY FAIL TO ARRIVE	ALARM	
12	96-ZS-005	CHB-CNVM-105 WEST STORAGE CNVR/TRAY FAIL TO ARRIVE, POSITION 1	ALARM	
13	96-ZS-006	CHB-CNVM-105 WEST STORAGE CNVR/TRAY FAIL TO ARRIVE, POSITION 2	ALARM	
14	96-ZS-007	CHB-CNVM-105 WEST STORAGE CNVR/TRAY FAIL TO ARRIVE, POSITION 3	ALARM	
15	96-ZS-008	CHB-CNVM-106 WEST STORAGE CNVR/TRAY FAIL TO ARRIVE, POSITION 1	ALARM	
16	96-ZS-009	CHB-CNVM-106 WEST STORAGE CNVR/TRAY FAIL TO ARRIVE, POSITION 2	ALARM	
17	96-ZS-010	CHB-CNVM-106 WEST STORAGE CNVR/TRAY FAIL TO ARRIVE, POSITION 3	ALARM	
18	96-ZS-011	CHB-CNVM-107 WEST STORAGE CNVR/TRAY FAIL TO ARRIVE, POSITION 1	ALARM	
19	96-ZS-012	CHB-CNVM-107 WEST STORAGE CNVR/TRAY FAIL TO ARRIVE, POSITION 2	ALARM	
20	96-ZS-013	CHB-CNVM-107 WEST STORAGE CNVR/TRAY FAIL TO ARRIVE, POSITION 3	ALARM	
21	96-ZS-014	CHB-CNVM-108 WEST STORAGE CNVR/TRAY FAIL TO ARRIVE, POSITION 1	ALARM	
22	96-ZS-015	CHB-CNVM-108 WEST STORAGE CNVR/TRAY FAIL TO ARRIVE, POSITION 2	ALARM	
23	96-ZS-016	CHB-CNVM-108 WEST STORAGE CNVR/TRAY FAIL TO ARRIVE, POSITION 3	ALARM	
24	96-ZS-021	CHB-CNVM-109 WEST STORAGE CNVR/TRAY FAIL TO ARRIVE, POSITION 1	ALARM	
25	96-ZS-022	CHB-CNVM-109 WEST STORAGE CNVR/TRAY FAIL TO ARRIVE, POSITION 2	ALARM	
26	96-ZS-023	CHB-CNVM-109 WEST STORAGE CNVR/TRAY FAIL TO ARRIVE, POSITION 3	ALARM	
27	96-ZS-024	CHB-CNVM-110 WEST STORAGE CNVR/TRAY FAIL TO ARRIVE, POSITION 1	ALARM	
28	96-ZS-025	CHB-CNVM-110 WEST STORAGE CNVR/TRAY FAIL TO ARRIVE, POSITION 2	ALARM	
29	96-ZS-026	CHB-CNVM-110 WEST STORAGE CNVR/TRAY FAIL TO ARRIVE, POSITION 3	ALARM	
30	96-ZS-027	CHB-CNVM-111 WEST STORAGE CNVR/TRAY FAIL TO ARRIVE, POSITION 1	ALARM	
31	96-ZS-028	CHB-CNVM-111 WEST STORAGE CNVR/TRAY FAIL TO ARRIVE, POSITION 2	ALARM	
32	96-ZS-029	CHB-CNVM-111 WEST STORAGE CNVR/TRAY FAIL TO ARRIVE, POSITION 3	ALARM	
33	96-ZS-030	CHB-CNVM-112 WEST STORAGE CNVR/TRAY FAIL TO ARRIVE, POSITION 1	ALARM	
34	96-ZS-031	CHB-CNVM-112 WEST STORAGE CNVR/TRAY FAIL TO ARRIVE, POSITION 2	ALARM	
35	96-ZS-032	CHB-CNVM-112 WEST STORAGE CNVR/TRAY FAIL TO ARRIVE, POSITION 3	ALARM	
36	96-ZS-033	CHB-CNVM-133B NORTH TRANSFER CNVR/TRAY FAIL TO ARRIVE	ALARM	
37	96-ZS-034	CHB-CNVM-134B NORTH TRANSFER CNVR/TRAY FAIL TO ARRIVE	ALARM	
38	96-ZS-035	CHB-CNVM-135B SOUTH TRANSFER CNVR/TRAY FAIL TO ARRIVE	ALARM	
39	96-ZS-037A	CHB-CNVM-137 EAST LIFT CNVR/TRAY LOAD CENTERED	ALARM	TOCDF ONLY
40	96-ZS-037B	CHB-CNVM-137 EAST LIFT CNVR/TRAY LOAD CENTERED	ALARM	TOCDF ONLY
41	96-ZS-038A	CHB-CNVM-138 WEST LIFT CNVR/TRAY LOAD CENTERED	ALARM	TOCDF ONLY
42	96-ZS-038B	CHB-CNVM-138 WEST LIFT CNVR/TRAY LOAD CENTERED	ALARM	TOCDF ONLY
43	96-ZS-041	CHB-LIFT-101 EAST LIFT UNIT/FAIL TO ARRIVE AT 1ST FLOOR	ALARM	
44	96-ZS-050	CHB-CNVM-121 EAST UNLOADING CNVR/TRAY FAIL TO ARRIVE	ALARM	
45	96-ZS-051	CHB-CNVM-122 EAST UNLOADING CNVR/TRAY FAIL TO ARRIVE	ALARM	
46	96-ZS-052	CHB-CNVM-123 EAST UNLOADING CNVR/TRAY FAIL TO ARRIVE	ALARM	
47	96-ZS-054	CHB-CNVM-117 EAST STORAGE CNVR/TRAY FAIL TO ARRIVE, POSITION 1	ALARM	
48	96-ZS-055	CHB-CNVM-117 EAST STORAGE CNVR/TRAY FAIL TO ARRIVE, POSITION 2	ALARM	
49	96-ZS-056	CHB-CNVM-117 EAST STORAGE CNVR/TRAY FAIL TO ARRIVE, POSITION 3	ALARM	
50	96-ZS-057	CHB-CNVM-118 EAST STORAGE CNVR/TRAY FAIL TO ARRIVE, POSITION 1	ALARM	
51	96-ZS-059	CHB-CNVM-118 EAST STORAGE CNVR/TRAY FAIL TO ARRIVE, POSITION 3	ALARM	
52	96-ZS-060	CHB-CNVM-119 EAST STORAGE CNVR/TRAY FAIL TO ARRIVE, POSITION 1	ALARM	
53	96-ZS-061	CHB-CNVM-119 EAST STORAGE CNVR/TRAY FAIL TO ARRIVE, POSITION 2	ALARM	
54	96-ZS-062	CHB-CNVM-119 EAST STORAGE CNVR/TRAY FAIL TO ARRIVE, POSITION 3	ALARM	
55	96-ZS-064	CHB-CNVM-120 EAST STORAGE CNVR/TRAY FAIL TO ARRIVE, POSITION 2	ALARM	
56	96-ZS-065	CHB-CNVM-120 EAST STORAGE CNVR/TRAY FAIL TO ARRIVE, POSITION 3	ALARM	
57	96-ZS-070	CHB-CNVM-113 EAST STORAGE CNVR/TRAY FAIL TO ARRIVE, POSITION 1	ALARM	
58	96-ZS-071	CHB-CNVM-113 EAST STORAGE CNVR/TRAY FAIL TO ARRIVE, POSITION 2	ALARM	
59	96-ZS-072	CHB-CNVM-113 EAST STORAGE CNVR/TRAY FAIL TO ARRIVE, POSITION 3	ALARM	
60	96-ZS-073	CHB-CNVM-114 EAST STORAGE CNVR/TRAY FAIL TO ARRIVE, POSITION 1	ALARM	
61	96-ZS-073(C)	CHB-LIFT-101 EAST LIFT UNIT/FAIL TO ARRIVE AT 2ND FLOOR	ALARM	INDICATED AS ZS-73 AT TE, AND ZS-73C AT AN, UM
62	96-ZS-074	CHB-LIFT-101 EAST LIFT UNIT/UP OVER TRAVEL	ALARM & HARDWARE S/D	
63	96-ZS-074A	CHB-CNVM-114 EAST STORAGE CNVR/TRAY FAIL TO ARRIVE, POSITION 2	ALARM	
64	96-ZS-075	CHB-CNVM-114 EAST STORAGE CNVR/TRAY FAIL TO ARRIVE, POSITION 3	ALARM	
65	96-ZS-077	CHB-CNVM-115 EAST STORAGE CNVR/TRAY FAIL TO ARRIVE, POSITION 2	ALARM	
66	96-ZS-078	CHB-CNVM-115 EAST STORAGE CNVR/TRAY FAIL TO ARRIVE, POSITION 3	ALARM	
67	96-ZS-081	CHB-CNVM-116 EAST STORAGE CNVR/TRAY FAIL TO ARRIVE, POSITION 3	ALARM	
68	96-ZS-082	CHB-CNVM-133A NORTH TRANSFER CNVR/TRAY FAIL TO ARRIVE	ALARM	
69	96-ZS-083	CHB-CNVM-134A NORTH TRANSFER CNVR/TRAY FAIL TO ARRIVE	ALARM	
70	96-ZS-084	CHB-CNVM-135A SOUTH TRANSFER CNVR/TRAY FAIL TO ARRIVE	ALARM	
71	96-ZS-085	CHB-CNVM-136A SOUTH TRANSFER CNVR/TRAY FAIL TO ARRIVE	ALARM	

**PRELIMINARY PROGRAMMATIC ALARM AND SYSTEM RESPONSE**  
**ANCDF, TOCDF, UMCDF**  
**CONTAINER HANDLING BUILDING (CHB)**

ANCDF: P&IDs: AN-7-D-503, -504, -505, -506, -507, -508, -509, -510, -511/1, -511/2, -512; PLC: ICS-CONR-120; INTERLOCK I-23  
 TOCDF: P&IDs: TE-7-D-503, -504, -505, -506, -507, -508, -509, -510, -511/1, -511/2, -512; PLC: ICS-CONR-120; INTERLOCK I-23  
 UMCDF: P&IDs: UM-7-D-503, -504, -505, -506, -507, -508, -509, -510, -511/1, -511/2, -512; PLC: ICS-CONR-120; INTERLOCK I-23

LN	TAG NUMBER	DESCRIPTION	SYSTEM RESPONSE	REMARKS
72	96-ZS-101	CHB-CNVM-126 SOUTH TRANSFER/CORR CNVR/TRAY FAIL TO ARRIVE C LINE	ALARM	
73	96-ZS-102	CHB-CNVM-125 NORTH TRANSFER/CORR CNVR/TRAY FAIL TO ARRIVE A LINE	ALARM	
74	96-ZS-103	CHB-CNVM-125 NORTH TRANSFER/CORR CNVR/TRAY FAIL TO ARRIVE B LINE	ALARM	
75	96-ZS-104	CHB-CNVM-126 SOUTH TRANSFER/CORR CNVR/TRAY FAIL TO ARRIVE D LINE	ALARM	
76	96-ZS-105	CHB-CNVM-127 CORRIDOR CNVR/TRAY FAIL TO ARRIVE	ALARM	
77	96-ZS-107	CHB-CNVM-128 CORRIDOR CNVR/TRAY FAIL TO ARRIVE	ALARM	
78	96-ZS-109	CHB-CNVM-129 CORRIDOR CNVR/TRAY FAIL TO ARRIVE	ALARM	
79	96-ZS-111	CHB-CNVM-130 SOUTH TRANSFER AREA CORR CNVR/TRAY FAIL TO ARRIVE, POSITION 1	ALARM	TOCDF ONLY
80	96-ZS-112	CHB-CNVM-130 SOUTH TRANSFER AREA CORR CNVR/TRAY FAIL TO ARRIVE, POSITION 2	ALARM	
81	96-ZS-112A	CHB-CNVM-130 EAST TRANSITION CNVR/TRAY FAIL TO ARRIVE, MPF POSITION	ALARM	TOCDF ONLY
82	96-ZS-121	CHB-CNVM-137 EAST LIFT CNVR/TRAY FAIL TO ARRIVE	ALARM	
83	96-ZS-122	CHB-CNVM-139 2ND FLOOR DELIVERY CNVR/TRAY FAIL TO ARRIVE, DELIVERY STATION	ALARM	
84	96-ZS-123	CHB-CNVM-139 2ND FLOOR DELIVERY CNVR/TRAY FAIL TO ARRIVE, MONITOR STATION	ALARM	
85	96-ZS-124	CHB-CNVM-140 2ND FLOOR UNPACK CNVR/TRAY FAIL TO ARRIVE, UNPACK STATION	ALARM	
86	96-ZS-124A	CHB-CNVM-140 2ND FLOOR UNPACK CNVR/TRAY FAIL TO ARRIVE, MPF POSITION	ALARM	TOCDF ONLY
87	96-ZS-125	CHB-CNVM-140 2ND FLOOR UNPACK CNVR/TRAY FAIL TO ARRIVE, CLOSE STATION	ALARM	
88	96-ZS-131	CHB-CNVM-141 2ND FLOOR RETURN CNVR/TRAY FAIL TO ARRIVE, POSITION 1	ALARM	
89	96-ZS-131A	CHB-CNVM-141 2ND FLOOR RETURN CNVR/TRAY FAIL TO ARRIVE, MPF POSITION	ALARM	TOCDF ONLY
90	96-ZS-132	CHB-CNVM-141 2ND FLOOR RETURN CNVR/TRAY FAIL TO ARRIVE, POSITION 2	ALARM	
91	96-ZS-133	CHB-CNVM-138 WEST LIFT CNVR/TRAY FAIL TO ARRIVE	ALARM	
92	96-ZS-134	CHB-CNVM-132 WEST TRANSITION CNVR/TRAY FAIL TO ARRIVE, POSITION 1	ALARM	
93	96-ZS-134A	CHB-CNVM-132 WEST TRANSITION CNVR/TRAY FAIL TO ARRIVE, MPF POSITION	ALARM	TOCDF ONLY
94	96-ZS-135	CHB-CNVM-132 WEST TRANSITION CNVR/TRAY FAIL TO ARRIVE, POSITION 2	ALARM	
95	96-ZS-136A	CHB-CNVM-131 TRANSITION CNVR/TRAY FAIL TO ARRIVE, EAST POSITION	ALARM	
96	96-ZS-136B	CHB-CNVM-131 TRANSITION CNVR/TRAY FAIL TO ARRIVE, CENTER POSITION	ALARM	
97	96-ZS-136C	CHB-CNVM-131 TRANSITION CNVR/TRAY FAIL TO ARRIVE, WEST POSITION	ALARM	
98	96-ZS-203A/B	CHB-LIFT-102 WEST LIFT UNIT/FAIL TO ARRIVE AT 1ST FLOOR	ALARM	
99	96-ZS-206A/B	CHB-LIFT-102 WEST LIFT UNIT/FAIL TO ARRIVE AT 2ND FLOOR	ALARM	
100	96-ZS-207	CHB-LIFT-102 WEST LIFT UNIT/UP OVER TRAVEL	ALARM & HARDWARE S/D	
101	96-LSHH-272	CHB-PUMP-101 CHB STORAGE AREA SUMP PUMP HI-HI LEVEL	ALARM ONLY	
102	96-ZS-497	CHB-CNVM-121 EAST UNLOADING CNVR/TRAY FAIL TO ARRIVE	ALARM	NOT AT TOCDF
103	96-ZS-499	CHB-CNVM-122 EAST UNLOADING CNVR/TRAY FAIL TO ARRIVE	ALARM	NOT AT TOCDF
104	96-ZS-500	CHB-CNVM-123 EAST UNLOADING CNVR/TRAY FAIL TO ARRIVE	ALARM	NOT AT TOCDF
105	96-ZS-519	CHB-CNVM-124 EAST UNLOADING CNVR/TRAY FAIL TO ARRIVE	ALARM	NOT AT TOCDF
106	96-ZS-520	CHB-CNVM-101 WEST UNLOADING CNVR/TRAY FAIL TO ARRIVE	ALARM	NOT AT TOCDF
107	96-ZS-530	CHB-CNVM-102 WEST UNLOADING CNVR/TRAY FAIL TO ARRIVE	ALARM	NOT AT TOCDF
108	96-ZS-599	CHB-CNVM-103 WEST UNLOADING CNVR/TRAY FAIL TO ARRIVE	ALARM	NOT AT TOCDF
109	96-ZS-600	CHB-CNVM-104 WEST UNLOADING CNVR/TRAY FAIL TO ARRIVE	ALARM	NOT AT TOCDF
110	96-PSL-541	CHB-CNVM-101 WEST UNLOADING CNVR/ROLLER AIR BAG, SLOW LEAK	ALARM	
111	96-PSL-542	CHB-CNVM-101 WEST UNLOADING CNVR/DRIVE AIR BAG, SLOW LEAK	ALARM	
112	96-PSL-543	CHB-CNVM-102 WEST UNLOADING CNVR/ROLLER AIR BAG, SLOW LEAK	ALARM	
113	96-PSL-544	CHB-CNVM-102 WEST UNLOADING CNVR/DRIVE AIR BAG, SLOW LEAK	ALARM	
114	96-PSL-545	CHB-CNVM-103 WEST UNLOADING CNVR/ROLLER AIR BAG, SLOW LEAK	ALARM	
115	96-PSL-546	CHB-CNVM-103 WEST UNLOADING CNVR/DRIVE AIR BAG, SLOW LEAK	ALARM	
116	96-PSL-547	CHB-CNVM-104 WEST UNLOADING CNVR/ROLLER AIR BAG, SLOW LEAK	ALARM	
117	96-PSL-548	CHB-CNVM-104 WEST UNLOADING CNVR/DRIVE AIR BAG, SLOW LEAK	ALARM	
118	96-PSL-549	CHB-CNVM-105 WEST STORAGE CNVR/ROLLER AIR BAG, SLOW LEAK	ALARM	
119	96-PSL-550	CHB-CNVM-105 WEST STORAGE CNVR/DRIVE AIR BAG, SLOW LEAK	ALARM	
120	96-PSL-551	CHB-CNVM-106 WEST STORAGE CNVR/ROLLER AIR BAG, SLOW LEAK	ALARM	
121	96-PSL-552	CHB-CNVM-106 WEST STORAGE CNVR/DRIVE AIR BAG, SLOW LEAK	ALARM	
122	96-PSL-553	CHB-CNVM-107 WEST STORAGE CNVR/ROLLER AIR BAG, SLOW LEAK	ALARM	
123	96-PSL-554	CHB-CNVM-107 WEST STORAGE CNVR/DRIVE AIR BAG, SLOW LEAK	ALARM	
124	96-PSL-555	CHB-CNVM-108 WEST STORAGE CNVR/ROLLER AIR BAG, SLOW LEAK	ALARM	
125	96-PSL-556	CHB-CNVM-108 WEST STORAGE CNVR/DRIVE AIR BAG, SLOW LEAK	ALARM	
126	96-PSL-557	CHB-CNVM-109 WEST STORAGE CNVR/ROLLER AIR BAG, SLOW LEAK	ALARM	
127	96-PSL-558	CHB-CNVM-109 WEST STORAGE CNVR/DRIVE AIR BAG, SLOW LEAK	ALARM	
128	96-PSL-559	CHB-CNVM-110 WEST STORAGE CNVR/ROLLER AIR BAG, SLOW LEAK	ALARM	
129	96-PSL-560	CHB-CNVM-110 WEST STORAGE CNVR/DRIVE AIR BAG, SLOW LEAK	ALARM	
130	96-PSL-561	CHB-CNVM-111 WEST STORAGE CNVR/ROLLER AIR BAG, SLOW LEAK	ALARM	
131	96-PSL-562	CHB-CNVM-111 WEST STORAGE CNVR/DRIVE AIR BAG, SLOW LEAK	ALARM	
132	96-PSL-563	CHB-CNVM-112 WEST STORAGE CNVR/ROLLER AIR BAG, SLOW LEAK	ALARM	
133	96-PSL-564	CHB-CNVM-112 WEST STORAGE CNVR/DRIVE AIR BAG, SLOW LEAK	ALARM	
134	96-PSL-565	CHB-CNVM-133 NORTH TRANSFER CNVR/ROLLER AIR BAG, SLOW LEAK	ALARM	
135	96-PSL-566	CHB-CNVM-133 NORTH TRANSFER CNVR/DRIVE AIR BAG, SLOW LEAK	ALARM	
136	96-PSL-567	CHB-CNVM-134 NORTH TRANSFER CNVR/ROLLER AIR BAG, SLOW LEAK	ALARM	
137	96-PSL-568	CHB-CNVM-134 NORTH TRANSFER CNVR/DRIVE AIR BAG, SLOW LEAK	ALARM	
138	96-PSL-569	CHB-CNVM-135 SOUTH TRANSFER CNVR/ROLLER AIR BAG, SLOW LEAK	ALARM	
139	96-PSL-570	CHB-CNVM-135 SOUTH TRANSFER CNVR/DRIVE AIR BAG, SLOW LEAK	ALARM	
140	96-PSL-571	CHB-CNVM-136 SOUTH TRANSFER CNVR/ROLLER AIR BAG, SLOW LEAK	ALARM	
141	96-PSL-572	CHB-CNVM-136 SOUTH TRANSFER CNVR/DRIVE AIR BAG, SLOW LEAK	ALARM	
142	96-PSL-573	CHB-CNVM-121 EAST UNLOADING CNVR/ROLLER AIR BAG, SLOW LEAK	ALARM	
143	96-PSL-574	CHB-CNVM-121 EAST UNLOADING CNVR/DRIVE AIR BAG, SLOW LEAK	ALARM	
144	96-PSL-575	CHB-CNVM-122 EAST UNLOADING CNVR/ROLLER AIR BAG, SLOW LEAK	ALARM	
145	96-PSL-576	CHB-CNVM-122 EAST UNLOADING CNVR/DRIVE AIR BAG, SLOW LEAK	ALARM	
146	96-PSL-577	CHB-CNVM-123 EAST UNLOADING CNVR/ROLLER AIR BAG, SLOW LEAK	ALARM	
147	96-PSL-578	CHB-CNVM-123 EAST UNLOADING CNVR/DRIVE AIR BAG, SLOW LEAK	ALARM	
148	96-PSL-579	CHB-CNVM-124 EAST UNLOADING CNVR/ROLLER AIR BAG, SLOW LEAK	ALARM	
149	96-PSL-581	CHB-CNVM-117 EAST STORAGE CNVR/ROLLER AIR BAG, SLOW LEAK	ALARM	
150	96-PSL-582	CHB-CNVM-117 EAST STORAGE CNVR/DRIVE AIR BAG, SLOW LEAK	ALARM	
151	96-PSL-583	CHB-CNVM-118 EAST STORAGE CNVR/ROLLER AIR BAG, SLOW LEAK	ALARM	

**PRELIMINARY PROGRAMMATIC ALARM AND SYSTEM RESPONSE  
 ANCDF, TOCDF, UMCDF  
 CONTAINER HANDLING BUILDING (CHB)**

ANCDF: P&IDs: AN-7-D-503, -504, -505, -506, -507, -508, -509, -510, -511/1, -511/2, -512; PLC: ICS-CONR-120; INTERLOCK I-23  
 TOCDF: P&IDs: TE-7-D-503, -504, -505, -506, -507, -508, -509, -510, -511/1, -511/2, -512; PLC: ICS-CONR-120; INTERLOCK I-23  
 UMCDF: P&IDs: UM-7-D-503, -504, -505, -506, -507, -508, -509, -510, -511/1, -511/2, -512; PLC: ICS-CONR-120; INTERLOCK I-23

LN	TAG NUMBER	DESCRIPTION	SYSTEM RESPONSE	REMARKS
152	96-PSL-584	CHB-CNVM-118 EAST STORAGE CNVR/DRIVE AIR BAG, SLOW LEAK	ALARM	
153	96-PSL-586	CHB-CNVM-119 EAST STORAGE CNVR/DRIVE AIR BAG, SLOW LEAK	ALARM	
154	96-PSL-587	CHB-CNVM-120 EAST STORAGE CNVR/ROLLER AIR BAG, SLOW LEAK	ALARM	
155	96-PSL-588	CHB-CNVM-120 EAST STORAGE CNVR/DRIVE AIR BAG, SLOW LEAK	ALARM	
156	96-PSL-589	CHB-CNVM-113 EAST STORAGE CNVR/ROLLER AIR BAG, SLOW LEAK	ALARM	
157	96-PSL-590	CHB-CNVM-113 EAST STORAGE CNVR/DRIVE AIR BAG, SLOW LEAK	ALARM	
158	96-PSL-591	CHB-CNVM-114 EAST STORAGE CNVR/ROLLER AIR BAG, SLOW LEAK	ALARM	
159	96-PSL-592	CHB-CNVM-114 EAST STORAGE CNVR/DRIVE AIR BAG, SLOW LEAK	ALARM	
160	96-PSL-593	CHB-CNVM-115 EAST STORAGE CNVR/ROLLER AIR BAG, SLOW LEAK	ALARM	
161	96-PSL-594	CHB-CNVM-115 EAST STORAGE CNVR/DRIVE AIR BAG, SLOW LEAK	ALARM	
162	96-PSL-595	CHB-CNVM-116 EAST STORAGE CNVR/ROLLER AIR BAG, SLOW LEAK	ALARM	
163	96-PSL-596	CHB-CNVM-116 EAST STORAGE CNVR/DRIVE AIR BAG, SLOW LEAK	ALARM	
164	96-PSL-601	CHB-CNVM-125 NORTH TRANSFER/CORR CNVR/ROLLER AIR BAG, SLOW LEAK	ALARM	
165	96-PSL-602	CHB-CNVM-125 NORTH TRANSFER/CORR CNVR/DRIVE AIR BAG, SLOW LEAK	ALARM	
166	96-PSL-603	CHB-CNVM-126 SOUTH TRANSFER/CORR CNVR/ROLLER AIR BAG, SLOW LEAK	ALARM	
167	96-PSL-604	CHB-CNVM-126 SOUTH TRANSFER/CORR CNVR/DRIVE AIR BAG, SLOW LEAK	ALARM	
168	96-PSL-605	CHB-CNVM-127 CORRIDOR CNVR/ROLLER AIR BAG, SLOW LEAK	ALARM	
169	96-PSL-606	CHB-CNVM-127 CORRIDOR CNVR/DRIVE AIR BAG, SLOW LEAK	ALARM	
170	96-PSL-607	CHB-CNVM-128 CORRIDOR CNVR/ROLLER AIR BAG, SLOW LEAK	ALARM	
171	96-PSL-608	CHB-CNVM-128 CORRIDOR CNVR/DRIVE AIR BAG, SLOW LEAK	ALARM	
172	96-PSL-609	CHB-CNVM-129 CORRIDOR CNVR/ROLLER AIR BAG, SLOW LEAK	ALARM	
173	96-PSL-610	CHB-CNVM-129 CORRIDOR CNVR/DRIVE AIR BAG, SLOW LEAK	ALARM	
174	96-PSL-611	CHB-CNVM-130 SOUTH TRANSFER AREA CORR CNVR/ROLLER AIR BAG, SLOW LEAK	ALARM	
175	96-PSL-612	CHB-CNVM-130 SOUTH TRANSFER AREA CORR CNVR/DRIVE AIR BAG, SLOW LEAK	ALARM	
176	96-PSL-621	CHB-CNVM-137 EAST LIFT CNVR/ROLLER AIR BAG, SLOW LEAK	ALARM	
177	96-PSL-622	CHB-CNVM-137 EAST LIFT CNVR/DRIVE AIR BAG, SLOW LEAK	ALARM	
178	96-PSL-623	CHB-CNVM-139 2ND FLOOR DELIVERY CNVR/ROLLER AIR BAG, SLOW LEAK	ALARM	
179	96-PSL-624	CHB-CNVM-139 2ND FLOOR DELIVERY CNVR/DRIVE AIR BAG, SLOW LEAK	ALARM	
180	96-PSL-625	CHB-CNVM-140 2ND FLOOR UNPACK CNVR/ROLLER AIR BAG, SLOW LEAK	ALARM	
181	96-PSL-626	CHB-CNVM-140 2ND FLOOR UNPACK CNVR/DRIVE AIR BAG, SLOW LEAK	ALARM	
182	96-PSL-631	CHB-CNVM-141 2ND FLOOR RETURN CNVR/ROLLER AIR BAG, SLOW LEAK	ALARM	
183	96-PSL-632	CHB-CNVM-141 2ND FLOOR RETURN CNVR/DRIVE AIR BAG, SLOW LEAK	ALARM	
184	96-PSL-633	CHB-CNVM-138 WEST LIFT CNVR/ROLLER AIR BAG, SLOW LEAK	ALARM	
185	96-PSL-634	CHB-CNVM-138 WEST LIFT CNVR/DRIVE AIR BAG, SLOW LEAK	ALARM	
186	96-PSL-635	CHB-CNVM-132 WEST TRANSITION CNVR/ROLLER AIR BAG, SLOW LEAK	ALARM	
187	96-PSL-636	CHB-CNVM-132 WEST TRANSITION CNVR/DRIVE AIR BAG, SLOW LEAK	ALARM	
188	96-PSL-637	CHB-CNVM-131 TRANSITION CNVR/ROLLER AIR BAG, SLOW LEAK	ALARM	
189	96-PSL-638	CHB-CNVM-131 TRANSITION CNVR/DRIVE AIR BAG, SLOW LEAK	ALARM	
190	96-HS-849	96-HS-849 OR -849A, NORTH TRANSFER/CORRIDOR CNVRS SHUTDOWN	S/D CNVRS 133A&B, 134A&B, 125	
191	96-HS-850	96-HS-850 OR -850A, SOUTH TRANSFER/CORRIDOR CNVRS SHUTDOWN	S/D CNVRS 135A&B, 136A&B, 126	
192	96-XS-855A	EAST LOADING DOCK CONSOLE ICS-PANL-127 CHB EQUIPMENT EMERGENCY SHUTDOWN	S/D CONVEYORS, STOP GATES AND LIFTS.	SEE FAWB NOTE B-4.
193	96-XS-855B	WEST LOAD/UNLOAD AREA EMERGENCY EXIT CHB EMERGENCY SHUTDOWN	S/D CONVEYORS, STOP GATES, LIFTS, FANS, SUMP PUMP, AND DOORS 101, 104, 115, 125, 129, 139, and 141. SOUND EVAC. HORNS	ANCDF, UMCDF ONLY
		SOUTH CORRIDOR (TRANSITION AREA) CONSOLE ICS-PANL-128 CHB EQUIPMENT EMERGENCY S/D	S/D CONVEYORS, STOP GATES AND LIFTS.	TOCDF ONLY. SHOWN ON TE-7-D-503 AS 96-XS-855D. SEE FAWB NOTE B-4.
194	96-XS-855C	NORTH-END CONVEYOR CORRIDOR EMERGENCY EXIT CHB EMERGENCY SHUTDOWN	S/D CONVEYORS, STOP GATES, LIFTS, FANS, SUMP PUMP, AND DOORS 101, 104, 115, 125, 129, 139, and 141. SOUND EVAC. HORNS	ANCDF, UMCDF ONLY
		MDB UPA CHB MASTER CONSOLE ICS-PANL-129 CHB EQUIPMENT EMERGENCY SHUTDOWN	S/D CONVEYORS, STOP GATES AND LIFTS.	TOCDF ONLY. NOT SHOWN ON TOCDF P&IDs. SEE FAWB NOTE B-4.
195	96-XS-855D	SOUTH CORRIDOR (TRANSITION AREA) CONSOLE ICS-PANL-128 CHB EQUIPMENT EMERGENCY S/D	S/D CONVEYORS, STOP GATES AND LIFTS.	ANCDF, UMCDF ONLY
196	96-XS-855E	EAST LOAD/UNLOAD AREA EMERGENCY EXIT CHB EMERGENCY SHUTDOWN	S/D CONVEYORS, STOP GATES, LIFTS, FANS, SUMP PUMP, AND DOORS 101, 104, 115, 125, 129, 139, and 141. SOUND EVAC. HORNS	ANCDF, UMCDF ONLY
197	96-XS-855F	SOUTH-END CONVEYOR CORRIDOR EMERGENCY EXIT CHB EMERGENCY SHUTDOWN	S/D CONVEYORS, STOP GATES, LIFTS, FANS, SUMP PUMP, AND DOORS 101, 104, 115, 125, 129, 139, and 141. SOUND EVAC. HORNS	ANCDF, UMCDF ONLY
198	96-XS-855G	MDB UPA CHB MASTER CONSOLE ICS-PANL-129 CHB EQUIPMENT EMERGENCY SHUTDOWN	S/D CONVEYORS, STOP GATES AND LIFTS.	ANCDF, UMCDF ONLY
199	96-XS-856	CHB EMERGENCY SHUTDOWN SYSTEM IN CHB ASSEMBLY AREA	CLOSE CHB-GATE-146,-147, CLOSE DOORS 101, 104, 115, 125, 129, 139, and 141	ANCDF, UMCDF ONLY
200	96-XS-856A	CHB EMERGENCY SHUTDOWN SYSTEM IN CHB ASSEMBLY AREA	S/D CONVEYORS, STOP GATES, LIFTS, FANS, SUMP PUMP, AND DOORS 101, 104, 115, 125, 129, 139, and 141. SOUND EVAC. HORNS	TOCDF ONLY. SHOWN ON TE-7-D-503 AS 96-XS-856. SEE FAWB NOTE B-4.

**PRELIMINARY PROGRAMMATIC ALARM AND SYSTEM RESPONSE**  
**ANCDF, TOCDF, UMCDF**  
**CONTAINER HANDLING BUILDING (CHB)**

ANCDF: P&IDs: AN-7-D-503, -504, -505, -506, -507, -508, -509, -510, -511/1, -511/2, -512; PLC: ICS-CONR-120; INTERLOCK I-23  
 TOCDF: P&IDs: TE-7-D-503, -504, -505, -506, -507, -508, -509, -510, -511/1, -511/2, -512; PLC: ICS-CONR-120; INTERLOCK I-23  
 UMCDF: P&IDs: UM-7-D-503, -504, -505, -506, -507, -508, -509, -510, -511/1, -511/2, -512; PLC: ICS-CONR-120; INTERLOCK I-23

LN	TAG NUMBER	DESCRIPTION	SYSTEM RESPONSE	REMARKS
201	96-XS-856B	CHB EMERGENCY SHUTDOWN, EMERGENCY EXIT	S/D CONVEYORS, STOP GATES, LIFTS, FANS, SUMP PUMP, AND DOORS 101, 104, 115, 125, 129, 139, and 141. SOUND EVAC. HORNS	TOCDF ONLY. SHOWN ON TE-7-D-503 AS 96-XS-855B SEE FAWB NOTE B-4.
202	96-XS-856C	CHB EMERGENCY SHUTDOWN, EMERGENCY EXIT	S/D CONVEYORS, STOP GATES, LIFTS, FANS, SUMP PUMP, AND DOORS 101, 104, 115, 125, 129, 139, and 141. SOUND EVAC. HORNS	TOCDF ONLY. SHOWN ON TE-7-D-503 AS 96-XS-855C SEE FAWB NOTE B-4.
203	96-PDISH-931A	CHB-HYPU-101A FILTER HIGH PRESSURE	ALARM	
204	96-PDISH-931B	CHB-HYPU-101B FILTER HIGH PRESSURE	ALARM	
205	96-PDISH-931C	CHB-HYPU-101C FILTER HIGH PRESSURE	ALARM	
206	96-PDISH-931D	CHB-HYPU-101D FILTER HIGH PRESSURE	ALARM	
207	96-PDISH-931E	CHB-HYPU-101E FILTER HIGH PRESSURE	ALARM	
208	96-ZS-941	CHB-CNVM-136B SOUTH TRANSFER CNVR/TRAY FAIL TO ARRIVE	ALARM	
209	96-ZS-942	CHB-CNVM-115 EAST STORAGE CNVR/TRAY FAIL TO ARRIVE, POSITION 1	ALARM	
210	96-ZS-943	CHB-CNVM-116 EAST STORAGE CNVR/TRAY FAIL TO ARRIVE, POSITION 1	ALARM	
211	96-ZS-944	CHB-CNVM-116 EAST STORAGE CNVR/TRAY FAIL TO ARRIVE, POSITION 2	ALARM	
212	96-PSL-953	CHB-CNVM-124 EAST UNLOADING CNVR/DRIVE AIR BAG, SLOW LEAK	ALARM	
213	96-PSL-954	CHB-CNVM-119 EAST STORAGE CNVR/ROLLER AIR BAG, SLOW LEAK	ALARM	
214	96-ZS-958	CHB-CNVM-120 EAST STORAGE CNVR/TRAY FAIL TO ARRIVE, POSITION 1	ALARM	
215	96-ZS-960	CHB-CNVM-124 EAST UNLOADING CNVR/TRAY FAIL TO ARRIVE	ALARM	
216	96-ZS-961	CHB-CNVM-118 EAST STORAGE CNVR/TRAY FAIL TO ARRIVE, POSITION 2	ALARM	
217	96-XA-962	96-HS-841 OR -841A, LINE WEST A CONVEYOR SHUTDOWN	SHUTDOWN LINE WEST A	96-HS-841A NOT AT TOCDF
218	96-XA-963	96-HS-842 OR -842A, LINE WEST B CONVEYOR SHUTDOWN	SHUTDOWN LINE WEST B	96-HS-842A NOT AT TOCDF
219	96-XA-964	96-HS-843 OR -843A, LINE WEST C CONVEYOR SHUTDOWN	SHUTDOWN LINE WEST C	96-HS-843A NOT AT TOCDF
220	96-XA-965	96-HS-844 OR -844A, LINE WEST D CONVEYOR SHUTDOWN	SHUTDOWN LINE WEST D	96-HS-844A NOT AT TOCDF
221	96-XA-966	96-HS-845 OR -845A, LINE EAST A CONVEYOR SHUTDOWN	SHUTDOWN LINE EAST A	96-HS-845A NOT AT TOCDF
222	96-XA-967	96-HS-846 OR -846A, LINE EAST B CONVEYOR SHUTDOWN	SHUTDOWN LINE EAST B	96-HS-846A NOT AT TOCDF
223	96-XA-968	96-HS-847 OR -847A, LINE EAST C CONVEYOR SHUTDOWN	SHUTDOWN LINE EAST C	96-HS-847A NOT AT TOCDF
224	96-XA-969	96-HS-848 OR -848A, LINE EAST D CONVEYOR SHUTDOWN	SHUTDOWN LINE EAST D	96-HS-848A NOT AT TOCDF
225	96-XA-972	96-HS-851, CENTRAL CORRIDOR CONVEYORS SHUTDOWN	SHUTDOWN CNVRS 127, 128, 129	
226	96-XA-973	96-HS-854, EAST & WEST LIFT CONVEYORS SHUTDOWN	SHUTDOWN CNVRS 137, 138	
227	96-XA-974	96-HS-853, 2ND FLOOR UNPACK AREA CONVEYORS SHUTDOWN	SHUTDOWN CNVRS 139, 140, 141	
228	96-XA-975	96-HS-852 OR -852A, SOUTH TRANSITION AREA CONVEYORS SHUTDOWN	SHUTDOWN CNVRS 130, 131, 132	
229	96-ZS-979	CHB-CNVM-125 NORTH TRANSFER/CORR CNVR/TRAY OVER TRAVEL	ALARM	
230	96-ZS-980	CHB-CNVM-131 TRANSITION CNVR/TRAY FAIL TO OVER TRAVEL	ALARM	

**PRELIMINARY ALARM AND SYSTEM RESPONSE**  
**PBCDF**  
**CONTAINER HANDLING BUILDING (CHB)**

P&IDs: PB-1-D-520, PB-7-D-503, -504, -505, -506, -507, -508, -509, -510, -512; PLC: ICS-CONR-120; INTERLOCK I-23

LN	TAG NUMBER	DESCRIPTION	SYSTEM RESPONSE	REMARKS
1	71-XS-013	SHIFT SUPERVISOR CONSOLE ICS-CONS-110 CHB EMERGENCY SHUTDOWN	S/D CONVEYORS, STOP GATES AND LIFTS.	
2	71-XS-033	LEAD OPERATOR CONSOLE ICS-CONS-112 CHB EMERGENCY SHUTDOWN	S/D CONVEYORS, STOP GATES AND LIFTS.	
3	71-XS-113	DEMIL/FURNACE OPERATOR CONSOLE ICS-CONS-116 CHB EMERGENCY SHUTDOWN	S/D CONVEYORS, STOP GATES AND LIFTS.	
4	96-TSHH-937	CHB-HYPU-101 HYD UNIT LEVEL TEMP	LOCAL S/D, ALARM AT PANEL	
5	96-TSLL-937	CHB-HYPU-101 HYD UNIT LEVEL TEMP	LOCAL S/D, ALARM AT PANEL	
6	96-LSHH-939	CHB-HYPU-101 HYD UNIT LEVEL	LOCAL S/D, ALARM AT PANEL	
7	96-LSLL-939	CHB-HYPU-101 HYD UNIT LEVEL	LOCAL S/D, ALARM AT PANEL	
8	96-ZS-001	CHB-CNVM-101 SOUTH UNLOADING CNVR/TRAY FAIL TO ARRIVE	ALARM	
9	96-ZS-002	CHB-CNVM-102 SOUTH UNLOADING CNVR/TRAY FAIL TO ARRIVE	ALARM	
10	96-ZS-003	CHB-CNVM-103 SOUTH UNLOADING CNVR/TRAY FAIL TO ARRIVE	ALARM	
11	96-ZS-004	CHB-CNVM-104 SOUTH UNLOADING CNVR/TRAY FAIL TO ARRIVE	ALARM	
12	96-ZS-005	CHB-CNVM-105 SOUTH STORAGE CNVR/TRAY FAIL TO ARRIVE, POSITION 1	ALARM	
13	96-ZS-006	CHB-CNVM-105 SOUTH STORAGE CNVR/TRAY FAIL TO ARRIVE, POSITION 2	ALARM	
14	96-ZS-008	CHB-CNVM-106 SOUTH STORAGE CNVR/TRAY FAIL TO ARRIVE, POSITION 1	ALARM	
15	96-ZS-009	CHB-CNVM-106 SOUTH STORAGE CNVR/TRAY FAIL TO ARRIVE, POSITION 2	ALARM	
16	96-ZS-011	CHB-CNVM-107 SOUTH STORAGE CNVR/TRAY FAIL TO ARRIVE, POSITION 1	ALARM	
17	96-ZS-012	CHB-CNVM-107 SOUTH STORAGE CNVR/TRAY FAIL TO ARRIVE, POSITION 2	ALARM	
18	96-ZS-014	CHB-CNVM-108 SOUTH STORAGE CNVR/TRAY FAIL TO ARRIVE, POSITION 1	ALARM	
19	96-ZS-015	CHB-CNVM-108 SOUTH STORAGE CNVR/TRAY FAIL TO ARRIVE, POSITION 2	ALARM	
20	96-ZS-021	CHB-CNVM-109 SOUTH STORAGE CNVR/TRAY FAIL TO ARRIVE, POSITION 1	ALARM	
21	96-ZS-022	CHB-CNVM-109 SOUTH STORAGE CNVR/TRAY FAIL TO ARRIVE, POSITION 2	ALARM	
22	96-ZS-024	CHB-CNVM-110 SOUTH STORAGE CNVR/TRAY FAIL TO ARRIVE, POSITION 1	ALARM	
23	96-ZS-025	CHB-CNVM-110 SOUTH STORAGE CNVR/TRAY FAIL TO ARRIVE, POSITION 2	ALARM	
24	96-ZS-027	CHB-CNVM-111 SOUTH STORAGE CNVR/TRAY FAIL TO ARRIVE, POSITION 1	ALARM	
25	96-ZS-028	CHB-CNVM-111 SOUTH STORAGE CNVR/TRAY FAIL TO ARRIVE, POSITION 2	ALARM	
26	96-ZS-030	CHB-CNVM-112 SOUTH STORAGE CNVR/TRAY FAIL TO ARRIVE, POSITION 1	ALARM	
27	96-ZS-031	CHB-CNVM-112 SOUTH STORAGE CNVR/TRAY FAIL TO ARRIVE, POSITION 2	ALARM	
28	96-ZS-033	CHB-CNVM-133B WEST TRANSFER CNVR/TRAY FAIL TO ARRIVE	ALARM	
29	96-ZS-034	CHB-CNVM-134B WEST TRANSFER CNVR/TRAY FAIL TO ARRIVE	ALARM	
30	96-ZS-035	CHB-CNVM-135B EAST TRANSFER CNVR/TRAY FAIL TO ARRIVE	ALARM	
31	96-ZS-038	CHB-CNVM-142 CHB VESTIBULE CNVR/TRAY FAIL TO ARRIVE, POSITION 1	ALARM	
32	96-ZS-050	CHB-CNVM-121 NORTH UNLOADING CNVR/TRAY FAIL TO ARRIVE	ALARM	
33	96-ZS-051	CHB-CNVM-122 NORTH UNLOADING CNVR/TRAY FAIL TO ARRIVE	ALARM	
34	96-ZS-052	CHB-CNVM-123 NORTH UNLOADING CNVR/TRAY FAIL TO ARRIVE	ALARM	
35	96-ZS-054	CHB-CNVM-117 NORTH STORAGE CNVR/TRAY FAIL TO ARRIVE, POSITION 1	ALARM	
36	96-ZS-055	CHB-CNVM-117 NORTH STORAGE CNVR/TRAY FAIL TO ARRIVE, POSITION 2	ALARM	
37	96-ZS-057	CHB-CNVM-118 NORTH STORAGE CNVR/TRAY FAIL TO ARRIVE, POSITION 1	ALARM	
38	96-ZS-060	CHB-CNVM-119 NORTH STORAGE CNVR/TRAY FAIL TO ARRIVE, POSITION 1	ALARM	
39	96-ZS-061	CHB-CNVM-119 NORTH STORAGE CNVR/TRAY FAIL TO ARRIVE, POSITION 2	ALARM	
40	96-ZS-064	CHB-CNVM-120 NORTH STORAGE CNVR/TRAY FAIL TO ARRIVE, POSITION 2	ALARM	
41	96-ZS-070	CHB-CNVM-113 NORTH STORAGE CNVR/TRAY FAIL TO ARRIVE, POSITION 1	ALARM	
42	96-ZS-071	CHB-CNVM-113 NORTH STORAGE CNVR/TRAY FAIL TO ARRIVE, POSITION 2	ALARM	
43	96-ZS-073	CHB-CNVM-114 NORTH STORAGE CNVR/TRAY FAIL TO ARRIVE, POSITION 1	ALARM	
44	96-ZS-074A	CHB-CNVM-114 NORTH STORAGE CNVR/TRAY FAIL TO ARRIVE, POSITION 2	ALARM	
45	96-ZS-077	CHB-CNVM-115 NORTH STORAGE CNVR/TRAY FAIL TO ARRIVE, POSITION 2	ALARM	
46	96-ZS-082	CHB-CNVM-133A WEST TRANSFER CNVR/TRAY FAIL TO ARRIVE	ALARM	
47	96-ZS-083	CHB-CNVM-134A WEST TRANSFER CNVR/TRAY FAIL TO ARRIVE	ALARM	
48	96-ZS-084	CHB-CNVM-135A EAST TRANSFER CNVR/TRAY FAIL TO ARRIVE	ALARM	
49	96-ZS-085	CHB-CNVM-136A EAST TRANSFER CNVR/TRAY FAIL TO ARRIVE	ALARM	
50	96-ZS-101	CHB-CNVM-126 EAST TRANSFER/CORR CNVR/TRAY FAIL TO ARRIVE C LINE	ALARM	
51	96-ZS-102	CHB-CNVM-125 WEST TRANSFER/CORR CNVR/TRAY FAIL TO ARRIVE A LINE	ALARM	
52	96-ZS-103	CHB-CNVM-125 WEST TRANSFER/CORR CNVR/TRAY FAIL TO ARRIVE B LINE	ALARM	
53	96-ZS-104	CHB-CNVM-126 EAST TRANSFER/CORR CNVR/TRAY FAIL TO ARRIVE D LINE	ALARM	
54	96-ZS-105	CHB-CNVM-127 CORRIDOR CNVR/TRAY FAIL TO ARRIVE	ALARM	
55	96-ZS-107	CHB-CNVM-128 CORRIDOR CNVR/TRAY FAIL TO ARRIVE	ALARM	
56	96-ZS-109	CHB-CNVM-129 CORRIDOR CNVR/TRAY FAIL TO ARRIVE	ALARM	
57	96-ZS-111	CHB-CNVM-130 EAST TRANSFER AREA CORR CNVR/TRAY FAIL TO ARRIVE, POSITION 1	ALARM	
58	96-ZS-112	CHB-CNVM-130 EAST TRANSFER AREA CORR CNVR/TRAY FAIL TO ARRIVE, POSITION 2	ALARM	
59	96-ZS-122	UPA-CNVM-139 F103 CNVR/TRAY FAIL TO ARRIVE, DELIVERY STATION	ALARM	
60	96-ZS-123	UPA-CNVM-139 EMPTY RETURN AND DELIVERY CNVR/TRAY FAIL TO ARRIVE, MONITOR STATION	ALARM	
61	96-ZS-124	UPA-CNVM-140 MONITOR AND UNPACK CNVR/TRAY FAIL TO ARRIVE, UNPACK STATION	ALARM	
62	96-ZS-125	UPA-CNVM-140 MONITOR AND UNPACK CNVR/TRAY FAIL TO ARRIVE, CLOSE STATION	ALARM	
63	96-PSL-128	CHB-CNVM-142 CHB VESTIBULE CNVR/DRIVE AIR BAG, SLOW LEAK	ALARM	
64	96-PSL-140	CHB-CNVM-142 CHB VESTIBULE CNVR/ROLLER AIR BAG, SLOW LEAK	ALARM	
65	96-LSHH-272	CHB-PUMP-101 CHB STORAGE AREA SUMP PUMP HI-HI LEVEL	ALARM ONLY	
66	96-ZS-496	CHB-CNVM-142 CHB VESTIBULE CNVR/TRAY FAIL TO ARRIVE, POSITION 2	ALARM	
67	96-ZS-497	CHB-CNVM-121 NORTH UNLOADING CNVR/TRAY FAIL TO ARRIVE	ALARM	
68	96-ZS-499	CHB-CNVM-122 NORTH UNLOADING CNVR/TRAY FAIL TO ARRIVE	ALARM	
69	96-ZS-500	CHB-CNVM-123 NORTH UNLOADING CNVR/TRAY FAIL TO ARRIVE	ALARM	
70	96-ZS-519	CHB-CNVM-124 NORTH UNLOADING CNVR/TRAY FAIL TO ARRIVE	ALARM	
71	96-ZS-520	CHB-CNVM-101 SOUTH UNLOADING CNVR/TRAY FAIL TO ARRIVE	ALARM	
72	96-ZS-530	CHB-CNVM-102 SOUTH UNLOADING CNVR/TRAY FAIL TO ARRIVE	ALARM	
73	96-ZS-599	CHB-CNVM-103 SOUTH UNLOADING CNVR/TRAY FAIL TO ARRIVE	ALARM	
74	96-ZS-600	CHB-CNVM-104 SOUTH UNLOADING CNVR/TRAY FAIL TO ARRIVE	ALARM	
75	96-PSL-541	CHB-CNVM-101 SOUTH UNLOADING CNVR/ROLLER AIR BAG, SLOW LEAK	ALARM	
76	96-PSL-542	CHB-CNVM-101 SOUTH UNLOADING CNVR/DRIVE AIR BAG, SLOW LEAK	ALARM	
77	96-PSL-543	CHB-CNVM-102 SOUTH UNLOADING CNVR/ROLLER AIR BAG, SLOW LEAK	ALARM	
78	96-PSL-544	CHB-CNVM-102 SOUTH UNLOADING CNVR/DRIVE AIR BAG, SLOW LEAK	ALARM	

**PRELIMINARY ALARM AND SYSTEM RESPONSE  
PBCDF  
CONTAINER HANDLING BUILDING (CHB)**

P&IDs: PB-1-D-520, PB-7-D-503, -504, -505, -506, -507, -508, -509, -510, -512; PLC: ICS-CONR-120; INTERLOCK I-23

LN	TAG NUMBER	DESCRIPTION	SYSTEM RESPONSE	REMARKS
79	96-PSL-545	CHB-CNVM-103 SOUTH UNLOADING CNVR/ROLLER AIR BAG, SLOW LEAK	ALARM	
80	96-PSL-546	CHB-CNVM-103 SOUTH UNLOADING CNVR/DRIVE AIR BAG, SLOW LEAK	ALARM	
81	96-PSL-547	CHB-CNVM-104 SOUTH UNLOADING CNVR/ROLLER AIR BAG, SLOW LEAK	ALARM	
82	96-PSL-548	CHB-CNVM-104 SOUTH UNLOADING CNVR/DRIVE AIR BAG, SLOW LEAK	ALARM	
83	96-PSL-549	CHB-CNVM-105 SOUTH STORAGE CNVR/ROLLER AIR BAG, SLOW LEAK	ALARM	
84	96-PSL-550	CHB-CNVM-105 SOUTH STORAGE CNVR/DRIVE AIR BAG, SLOW LEAK	ALARM	
85	96-PSL-551	CHB-CNVM-106 SOUTH STORAGE CNVR/ROLLER AIR BAG, SLOW LEAK	ALARM	
86	96-PSL-552	CHB-CNVM-106 SOUTH STORAGE CNVR/DRIVE AIR BAG, SLOW LEAK	ALARM	
87	96-PSL-553	CHB-CNVM-107 SOUTH STORAGE CNVR/ROLLER AIR BAG, SLOW LEAK	ALARM	
88	96-PSL-554	CHB-CNVM-107 SOUTH STORAGE CNVR/DRIVE AIR BAG, SLOW LEAK	ALARM	
89	96-PSL-555	CHB-CNVM-108 SOUTH STORAGE CNVR/ROLLER AIR BAG, SLOW LEAK	ALARM	
90	96-PSL-556	CHB-CNVM-108 SOUTH STORAGE CNVR/DRIVE AIR BAG, SLOW LEAK	ALARM	
91	96-PSL-557	CHB-CNVM-109 SOUTH STORAGE CNVR/ROLLER AIR BAG, SLOW LEAK	ALARM	
92	96-PSL-558	CHB-CNVM-109 SOUTH STORAGE CNVR/DRIVE AIR BAG, SLOW LEAK	ALARM	
93	96-PSL-559	CHB-CNVM-110 SOUTH STORAGE CNVR/ROLLER AIR BAG, SLOW LEAK	ALARM	
94	96-PSL-560	CHB-CNVM-110 SOUTH STORAGE CNVR/DRIVE AIR BAG, SLOW LEAK	ALARM	
95	96-PSL-561	CHB-CNVM-111 SOUTH STORAGE CNVR/ROLLER AIR BAG, SLOW LEAK	ALARM	
96	96-PSL-562	CHB-CNVM-111 SOUTH STORAGE CNVR/DRIVE AIR BAG, SLOW LEAK	ALARM	
97	96-PSL-563	CHB-CNVM-112 SOUTH STORAGE CNVR/ROLLER AIR BAG, SLOW LEAK	ALARM	
98	96-PSL-564	CHB-CNVM-112 SOUTH STORAGE CNVR/DRIVE AIR BAG, SLOW LEAK	ALARM	
99	96-PSL-565	CHB-CNVM-133 WEST TRANSFER CNVR/ROLLER AIR BAG, SLOW LEAK	ALARM	
100	96-PSL-566	CHB-CNVM-133 WEST TRANSFER CNVR/DRIVE AIR BAG, SLOW LEAK	ALARM	
101	96-PSL-567	CHB-CNVM-134 WEST TRANSFER CNVR/ROLLER AIR BAG, SLOW LEAK	ALARM	
102	96-PSL-568	CHB-CNVM-134 WEST TRANSFER CNVR/DRIVE AIR BAG, SLOW LEAK	ALARM	
103	96-PSL-569	CHB-CNVM-135 EAST TRANSFER CNVR/ROLLER AIR BAG, SLOW LEAK	ALARM	
104	96-PSL-570	CHB-CNVM-135 EAST TRANSFER CNVR/DRIVE AIR BAG, SLOW LEAK	ALARM	
105	96-PSL-571	CHB-CNVM-136 EAST TRANSFER CNVR/ROLLER AIR BAG, SLOW LEAK	ALARM	
106	96-PSL-572	CHB-CNVM-136 EAST TRANSFER CNVR/DRIVE AIR BAG, SLOW LEAK	ALARM	
107	96-PSL-573	CHB-CNVM-121 NORTH UNLOADING CNVR/ROLLER AIR BAG, SLOW LEAK	ALARM	
108	96-PSL-574	CHB-CNVM-121 NORTH UNLOADING CNVR/DRIVE AIR BAG, SLOW LEAK	ALARM	
109	96-PSL-575	CHB-CNVM-122 NORTH UNLOADING CNVR/ROLLER AIR BAG, SLOW LEAK	ALARM	
110	96-PSL-576	CHB-CNVM-122 NORTH UNLOADING CNVR/DRIVE AIR BAG, SLOW LEAK	ALARM	
111	96-PSL-577	CHB-CNVM-123 NORTH UNLOADING CNVR/ROLLER AIR BAG, SLOW LEAK	ALARM	
112	96-PSL-578	CHB-CNVM-123 NORTH UNLOADING CNVR/DRIVE AIR BAG, SLOW LEAK	ALARM	
113	96-PSL-579	CHB-CNVM-124 NORTH UNLOADING CNVR/ROLLER AIR BAG, SLOW LEAK	ALARM	
114	96-PSL-581	CHB-CNVM-117 NORTH STORAGE CNVR/ROLLER AIR BAG, SLOW LEAK	ALARM	
115	96-PSL-582	CHB-CNVM-117 NORTH STORAGE CNVR/DRIVE AIR BAG, SLOW LEAK	ALARM	
116	96-PSL-583	CHB-CNVM-118 NORTH STORAGE CNVR/ROLLER AIR BAG, SLOW LEAK	ALARM	
117	96-PSL-584	CHB-CNVM-118 NORTH STORAGE CNVR/DRIVE AIR BAG, SLOW LEAK	ALARM	
118	96-PSL-586	CHB-CNVM-119 NORTH STORAGE CNVR/DRIVE AIR BAG, SLOW LEAK	ALARM	
119	96-PSL-587	CHB-CNVM-120 NORTH STORAGE CNVR/ROLLER AIR BAG, SLOW LEAK	ALARM	
120	96-PSL-588	CHB-CNVM-120 NORTH STORAGE CNVR/DRIVE AIR BAG, SLOW LEAK	ALARM	
121	96-PSL-589	CHB-CNVM-113 NORTH STORAGE CNVR/ROLLER AIR BAG, SLOW LEAK	ALARM	
122	96-PSL-590	CHB-CNVM-113 NORTH STORAGE CNVR/DRIVE AIR BAG, SLOW LEAK	ALARM	
123	96-PSL-591	CHB-CNVM-114 NORTH STORAGE CNVR/ROLLER AIR BAG, SLOW LEAK	ALARM	
124	96-PSL-592	CHB-CNVM-114 NORTH STORAGE CNVR/DRIVE AIR BAG, SLOW LEAK	ALARM	
125	96-PSL-593	CHB-CNVM-115 NORTH STORAGE CNVR/ROLLER AIR BAG, SLOW LEAK	ALARM	
126	96-PSL-594	CHB-CNVM-115 NORTH STORAGE CNVR/DRIVE AIR BAG, SLOW LEAK	ALARM	
127	96-PSL-595	CHB-CNVM-116 NORTH STORAGE CNVR/ROLLER AIR BAG, SLOW LEAK	ALARM	
128	96-PSL-596	CHB-CNVM-116 NORTH STORAGE CNVR/DRIVE AIR BAG, SLOW LEAK	ALARM	
129	96-PSL-601	CHB-CNVM-125 WEST TRANSFER/CORR CNVR/ROLLER AIR BAG, SLOW LEAK	ALARM	
130	96-PSL-602	CHB-CNVM-125 WEST TRANSFER/CORR CNVR/DRIVE AIR BAG, SLOW LEAK	ALARM	
131	96-PSL-603	CHB-CNVM-126 EAST TRANSFER/CORR CNVR/ROLLER AIR BAG, SLOW LEAK	ALARM	
132	96-PSL-604	CHB-CNVM-126 EAST TRANSFER/CORR CNVR/DRIVE AIR BAG, SLOW LEAK	ALARM	
133	96-PSL-605	CHB-CNVM-127 CORRIDOR CNVR/ROLLER AIR BAG, SLOW LEAK	ALARM	
134	96-PSL-606	CHB-CNVM-127 CORRIDOR CNVR/DRIVE AIR BAG, SLOW LEAK	ALARM	
135	96-PSL-607	CHB-CNVM-128 CORRIDOR CNVR/ROLLER AIR BAG, SLOW LEAK	ALARM	
136	96-PSL-608	CHB-CNVM-128 CORRIDOR CNVR/DRIVE AIR BAG, SLOW LEAK	ALARM	
137	96-PSL-609	CHB-CNVM-129 CORRIDOR CNVR/ROLLER AIR BAG, SLOW LEAK	ALARM	
138	96-PSL-610	CHB-CNVM-129 CORRIDOR CNVR/DRIVE AIR BAG, SLOW LEAK	ALARM	
139	96-PSL-611	CHB-CNVM-130 EAST TRANSFER AREA CORR CNVR/ROLLER AIR BAG, SLOW LEAK	ALARM	
140	96-PSL-612	CHB-CNVM-130 EAST TRANSFER AREA CORR CNVR/DRIVE AIR BAG, SLOW LEAK	ALARM	
141	96-PSL-623	UPA-CNVM-139 EMPTY RETURN AND DELIVERY CNVR/ROLLER AIR BAG, SLOW LEAK	ALARM	
142	96-PSL-624	UPA-CNVM-139 EMPTY RETURN AND DELIVERY CNVR/DRIVE AIR BAG, SLOW LEAK	ALARM	
143	96-PSL-625	UPA-CNVM-140 MONITOR AND UNPACK CNVR/ROLLER AIR BAG, SLOW LEAK	ALARM	
144	96-PSL-626	UPA-CNVM-140 MONITOR AND UNPACK CNVR/DRIVE AIR BAG, SLOW LEAK	ALARM	
145	96-HS-849	96-HS-849 OR -849A, WEST TRANSFER/CORRIDOR CNVRS SHUTDOWN	S/D CNVRS 133A&B, 134A&B, 125	
146	96-HS-850	96-HS-850 OR -850A, EAST TRANSFER/CORRIDOR CNVRS SHUTDOWN	S/D CNVRS 135A&B, 136A&B, 126	
147	96-XS-855A	NORTH LOADING DOCK CONSOLE ICS-PANL-127 CHB EQUIPMENT EMERGENCY SHUTDOWN	S/D CONVEYORS, STOP GATES AND LIFTS.	
148	96-XS-855B	SOUTH LOAD/UNLOAD AREA EMERGENCY EXIT CHB EMERGENCY SHUTDOWN	S/D CONVEYORS, STOP GATES, LIFTS, FANS, SUMP PUMP, AND DOORS 101, 104, 110, 116, 119, 130, and 133. SOUND EVAC. HORNS	
148	96-XS-855C	WEST-END CONVEYOR CORRIDOR EMERGENCY EXIT CHB EMERGENCY SHUTDOWN	S/D CONVEYORS, STOP GATES, LIFTS, FANS, SUMP PUMP, AND DOORS 101, 104, 110, 116, 119, 130, and 133. SOUND EVAC. HORNS	

**PRELIMINARY ALARM AND SYSTEM RESPONSE  
 PBCDF  
 CONTAINER HANDLING BUILDING (CHB)**

P&IDs: PB-1-D-520, PB-7-D-503, -504, -505, -506, -507, -508, -509, -510, -512; PLC: ICS-CONR-120; INTERLOCK I-23

LN	TAG NUMBER	DESCRIPTION	SYSTEM RESPONSE	REMARKS
149	96-XS-855D	EAST CONVEYOR CORRIDOR CONSOLE ICS-PANL-128 CHB EQUIPMENT EMERGENCY S/D	S/D CONVEYORS, STOP GATES AND LIFTS.	
150	96-XS-855E	NORTH LOAD/UNLOAD AREA EMERGENCY EXIT CHB EMERGENCY SHUTDOWN	S/D CONVEYORS, STOP GATES, LIFTS, FANS, SUMP PUMP, AND DOORS 101, 104, 110, 116, 119, 130, and 133. SOUND EVAC. HORNS	
151	96-XS-855F	EAST-END CONVEYOR CORRIDOR EMERGENCY EXIT CHB EMERGENCY SHUTDOWN	S/D CONVEYORS, STOP GATES, LIFTS, FANS, SUMP PUMP, AND DOORS 101, 104, 110, 116, 119, 130, and 133. SOUND EVAC. HORNS	
152	96-XS-855G	MDB UPA CHB MASTER CONSOLE ICS-PANL-129 CHB EQUIPMENT EMERGENCY SHUTDOWN	S/D CONVEYORS, STOP GATES AND LIFTS.	
153	96-XS-856	CHB EMERGENCY SHUTDOWN SYSTEM IN CHB ASSEMBLY AREA	CLOSE DOORS 101, 104, 110, 116, 119, 130, and 133.	
147	96-PDISH-931A	CHB-HYPU-101A FILTER HIGH PRESSURE	ALARM	
148	96-PDISH-931B	CHB-HYPU-101B FILTER HIGH PRESSURE	ALARM	
149	96-PDISH-931C	CHB-HYPU-101C FILTER HIGH PRESSURE	ALARM	
150	96-PDISH-931D	CHB-HYPU-101D FILTER HIGH PRESSURE	ALARM	
151	96-PDISH-931E	CHB-HYPU-101E FILTER HIGH PRESSURE	ALARM	
152	96-ZS-941	CHB-CNVM-136B EAST TRANSFER CNVR/TRAY FAIL TO ARRIVE	ALARM	
153	96-ZS-942	CHB-CNVM-115 NORTH STORAGE CNVR/TRAY FAIL TO ARRIVE, POSITION 1	ALARM	
154	96-ZS-943	CHB-CNVM-116 NORTH STORAGE CNVR/TRAY FAIL TO ARRIVE, POSITION 1	ALARM	
155	96-ZS-944	CHB-CNVM-116 NORTH STORAGE CNVR/TRAY FAIL TO ARRIVE, POSITION 2	ALARM	
156	96-PSL-953	CHB-CNVM-124 NORTH UNLOADING CNVR/DRIVE AIR BAG, SLOW LEAK	ALARM	
157	96-PSL-954	CHB-CNVM-119 NORTH STORAGE CNVR/ROLLER AIR BAG, SLOW LEAK	ALARM	
158	96-ZS-958	CHB-CNVM-120 NORTH STORAGE CNVR/TRAY FAIL TO ARRIVE, POSITION 1	ALARM	
159	96-ZS-960	CHB-CNVM-124 NORTH UNLOADING CNVR/TRAY FAIL TO ARRIVE	ALARM	
160	96-ZS-961	CHB-CNVM-118 NORTH STORAGE CNVR/TRAY FAIL TO ARRIVE, POSITION 2	ALARM	
161	96-XA-962	96-HS-841 OR -841A, LINE SOUTH A CONVEYOR SHUTDOWN	SHUTDOWN LINE SOUTH A	
162	96-XA-963	96-HS-842 OR -842A, LINE SOUTH B CONVEYOR SHUTDOWN	SHUTDOWN LINE SOUTH B	
163	96-XA-964	96-HS-843 OR -843A, LINE SOUTH C CONVEYOR SHUTDOWN	SHUTDOWN LINE SOUTH C	
164	96-XA-965	96-HS-844 OR -844A, LINE SOUTH D CONVEYOR SHUTDOWN	SHUTDOWN LINE SOUTH D	
165	96-XA-966	96-HS-845 OR -845A, LINE NORTH A CONVEYOR SHUTDOWN	SHUTDOWN LINE NORTH A	
166	96-XA-967	96-HS-846 OR -846A, LINE NORTH B CONVEYOR SHUTDOWN	SHUTDOWN LINE NORTH B	
167	96-XA-968	96-HS-847 OR -847A, LINE NORTH C CONVEYOR SHUTDOWN	SHUTDOWN LINE NORTH C	
168	96-XA-969	96-HS-848 OR -848A, LINE NORTH D CONVEYOR SHUTDOWN	SHUTDOWN LINE NORTH D	
169	96-XA-972	96-HS-851, CENTRAL CORRIDOR CONVEYORS SHUTDOWN	SHUTDOWN CNVRS 127, 128, 129	
170	96-XA-974	96-HS-853, UPA CONVEYORS SHUTDOWN	SHUTDOWN UPA-CNVM-139, -140	
171	96-XA-975	96-HS-852, EAST TRANSFER AREA CONVEYORS SHUTDOWN	SHUTDOWN CNVRS 130, 131, 132	
172	96-ZS-979	CHB-CNVM-125 WEST TRANSFER/CORR CNVR/TRAY OVER TRAVEL	ALARM	



## APPENDIX D

### PLC Automatic Control Sequences

Appendix D contains a summary of PLC automatic control sequences based on the current versions (listed below) of the PLC code for each of the sites. At TOCDF, control for the CHB is provided by ICS-CONR-120.

The PLC automatic control sequence summaries were generated based on the control system rung ladders in the PLC code for the CHB material handling equipment. CHB operations do not interface with the Advisor PC system as do the other process system PLCs. Instead, the operator interface with the CHB PLC is the Panel View system. Similar to the Advisor PC system, the Panel View system stores device information in a database that consists of *tags*, or database records used for storing all necessary information related to a device that is monitored or controlled by the Panel View system. In Panel View, **D6** tags are used for discrete devices that may be controlled from the CHB consoles. In this appendix, automatic control for all devices with **D6** tags are described. Details related to **D6** device format can be found in the CSDP Control Systems Software Design Guide. Note that Panel View tag numbers may not match P&ID tag numbers exactly since Panel View tag numbers are labels in the code that refer to a device that may be more encompassing than the P&ID device.

The devices are grouped by screen names that appear in the Panel View database, which do not correspond to the screen names shown in Appendix E. A general correlation, however, does exist. For example, the database screen name, NSA, includes devices that appear on Panel View screens associated with the North Area. The 5 CHB Panel View database screens which have **D6**-tag devices described in this appendix are listed in Table D.1.

Table D.1 TOCDF Panel View Database Screens

Panel View Database Screen	CHB Process Area
NSA	North Storage Area
SSA	South Storage Area
CAC	Conveyor Corridor
TAC	Transition Area
UPA	CHB Unpack Area

Control sequences are listed in a single table for each Panel View database screen (Tables D.2 through D.6). The information in the tables is based on the TOCDF control system

rung ladders as of October 13, 1997, since site-specific code currently exists for TOCDF only. The Equipment Installation Contractor (EIC) is or will be developing site-specific code for ANCDF, UMCDF, and PBCDF.

Table D.2. TOCDF CHB PLC Automatic Control Sequences Panel View Screen: <b>NSA</b>	
<b>Device:</b>	<b>CHB-CNVM-121 Unload Conveyor</b>
Panel View Tag:	X96HS711
CONR:	C120
Driver Word:	0660
Driver Type:	7
Auto Forward:	<p>The auto forward relay will be active if either of the following conditions is satisfied:</p> <ul style="list-style-type: none"> <li>• CHB-CNVM-121 auto load east side line A relay (see below) is active</li> <li>• Load function selected storage line “East A”, Crane 403 pendant load permissive, and no container on CHB-CNVM-121 (96-ZS-050).</li> </ul>
Auto Reverse:	<p>The auto reverse relay will be active if the following condition is satisfied:</p> <ul style="list-style-type: none"> <li>• CHB-CNVM-121 auto unload east side line A relay (see below) is active</li> </ul>
Forward I-Lock:	<p>The following conditions must be satisfied to allow the device to operate forward:</p> <ul style="list-style-type: none"> <li>• Panel View E-Stop not active</li> <li>• East side line A E-Stop not active</li> </ul>
Reverse I-Lock:	<p>The following conditions must be satisfied to allow the device to operate reverse:</p> <ul style="list-style-type: none"> <li>• Panel View E-Stop not active</li> <li>• East side line A E-Stop not active</li> <li>• Container not present on CHB-CVNM-121 (96-ZS-408)</li> </ul>
Relay:	<p>CHB-CNVM-121 auto load east side line A relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• Load function selected storage line “East A”</li> <li>• CHB-CNVM-133A conveyor stop (96-ZS-94A) is raised</li> <li>• CHB-CNVM-133A conveyor stop (96-ZS-95A) is raised</li> <li>• Crane 403 pendant load permissive</li> <li>• Container is present on CHB-CNVM-121 (96-ZS-408)</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>

Table D.2. TOCDF CHB PLC Automatic Control Sequences Panel View Screen: <b>NSA</b>	
Relay:	<p>CHB-CNVM-121 auto unload east side line A relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• Unload function selected storage line “East A”</li> <li>• Crane 403 pendant load permissive</li> <li>• Container is not present on CHB-CNVM-121 (96-ZS-408)</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
<b>Device:</b>	<b>CHB-CNVM-117 Unload Conveyor</b>
Panel View Tag:	X96HS723
CONR:	C120
Driver Word:	0661
Driver Type:	7
Auto Forward:	<p>The auto forward relay will be active if either of the following conditions is satisfied:</p> <ul style="list-style-type: none"> <li>• CHB-CNVM-117 auto load east side line A relay (see below) is active</li> <li>• CHB-CNVM-117 auto feed east side line A relay (see below) is active</li> </ul>
Auto Reverse:	<p>The auto reverse relay will be active if either of the following conditions is satisfied:</p> <ul style="list-style-type: none"> <li>• CHB-CNVM-117 auto unload east side line A relay (see below) is active</li> <li>• CHB-CNVM-117 auto return east side line A relay (see below) is active</li> </ul>
Forward I-Lock:	<p>The following conditions must be satisfied to allow the device to operate forward:</p> <ul style="list-style-type: none"> <li>• Panel View E-Stop not active</li> <li>• East side line A E-Stop not active</li> </ul>
Reverse I-Lock:	<p>The following conditions must be satisfied to allow the device to operate reverse:</p> <ul style="list-style-type: none"> <li>• Panel View E-Stop not active</li> <li>• East side line A E-Stop not active</li> </ul>
Relay:	<p>CHB-CNVM-117 auto load east side line A relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• CHB-CNVM-121 auto load east side line A relay is active and a container is present on CHB-CNVM-121 (96-ZS-050)</li> </ul> <p style="text-align: center;"><b>OR</b></p> <ul style="list-style-type: none"> <li>• Load function selected storage line “East A”</li> <li>• CHB-CNVM-133A conveyor stop (96-ZS-94A) is raised</li> <li>• CHB-CNVM-133A conveyor stop (96-ZS-95A) is raised</li> <li>• Panel 127 input to run east line forward is active or Panel 129 input to run east line forward is active</li> </ul>

**Table D.2. TOCDF CHB PLC Automatic Control Sequences  
 Panel View Screen: NSA**

	<p>Note: Once energized, the relay will remain active until the tray is transferred.</p> <p>Relay: CHB-CNVM-117 auto feed east side line A relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• Feed function selected storage line “East A”</li> <li>• “Auto process feed tray for storage” command is active</li> <li>• Container is present on CHB-CNVM-113 (96-ZS-072)</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p> <p>Relay: CHB-CNVM-117 auto unload east side line A relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• Unload function selected storage line “East A”</li> <li>• Crane 403 pendant load permissive</li> <li>• Container is not present on CHB-CNVM-121 (96-ZS-408)</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p> <p>Relay: CHB-CNVM-117 auto return east side line A relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• CHB-CNVM-133 auto return (reverse) relay is active</li> <li>• Container is present on CHB-CNVM-113 (96-ZS-072)</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
<p><b>Device:</b>                  Panel View Tag:                  CONR:                  Driver Word:                  Driver Type:                  Auto Forward:</p> <p><b>Auto Reverse:</b></p>	<p><b>CHB-CNVM-113 Storage Conveyor</b>                  X96HS735                  C120                  0662                  7</p> <p>The auto forward relay will be active if either of the following conditions is satisfied:</p> <ul style="list-style-type: none"> <li>• CHB-CNVM-113 auto load “east side” line A relay (see below) is active</li> <li>• CHB-CNVM-113 auto feed “east side” line A relay (see below) is active</li> </ul> <p>The auto reverse relay will be active if either of the following conditions is satisfied:</p> <ul style="list-style-type: none"> <li>• CHB-CNVM-113 auto unload “east side” line A relay (see below) is active</li> <li>• CHB-CNVM-113 auto return “east side” line A relay (see below) is active</li> </ul>

Table D.2. TOCDF CHB PLC Automatic Control Sequences Panel View Screen: <b>NSA</b>	
Forward I-Lock:	<p>The following conditions must be satisfied to allow the device to operate forward:</p> <ul style="list-style-type: none"> <li>• Panel View E-Stop not active</li> <li>• East side line A E-Stop not active</li> </ul>
Reverse I-Lock:	<p>The following conditions must be satisfied to allow the device to operate reverse:</p> <ul style="list-style-type: none"> <li>• Panel View E-Stop not active</li> <li>• East side line A E-Stop not active</li> </ul>
Relay:	<p>CHB-CNVM-113 auto load “east side” line A relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• CHB-CNVM-121 auto load “east side” line A relay is active and a container is present on CHB-CNVM-121 (96-ZS-050)</li> </ul> <p style="text-align: center;"><b>OR</b></p> <ul style="list-style-type: none"> <li>• Load function selected storage line “East A”</li> <li>• CHB-CNVM-133A conveyor stop (96-ZS-94A) is raised</li> <li>• CHB-CNVM-133A conveyor stop (96-ZS-95A) is raised</li> <li>• Panel 127 input to run east line forward is active or Panel 129 input to run east line forward is active</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
Relay:	<p>CHB-CNVM-113 auto feed “east side” line A relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• Feed function selected storage line “East A”</li> <li>• “Auto process feed tray for storage” command is active</li> <li>• Container is present on CHB-CNVM-113 (96-ZS-072)</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
Relay:	<p>CHB-CNVM-113 auto unload “east side” line A relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• Unload function selected storage line “East A”</li> <li>• Crane 403 pendant load permissive</li> <li>• Container is not present on CHB-CNVM-121 (96-ZS-408)</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
Relay:	<p>CHB-CNVM-113 auto return east side line A relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• CHB-CNVM-133 auto return (reverse) relay is active</li> <li>• Container is present on CHB-CNVM-113 (96-ZS-072)</li> </ul>

**Table D.2. TOCDF CHB PLC Automatic Control Sequences  
 Panel View Screen: NSA**

Note: Once energized, the relay will remain active until the tray is transferred.

**Device:** CHB-CNVM-133A Conveyor Stop (XY-94)  
 Panel View Tag: X96XY94  
 CONR: C120  
 Driver Word: 0663  
 Driver Type: 3

**Auto Extend:** The auto extend relay will be active if the following conditions is satisfied:

- CHB-CNVM-133A conveyor stop (XY-94) auto retract relay is not active

**Auto Retract:** The auto retract relay will be active if either of the following conditions is satisfied:

- CHB-CNVM-133A auto retract (feed) “east side” line A relay (see below) is active
- CHB-CNVM-133A auto retract (return) “east side” line A relay (see below) is active

**Extend I-Lock:** The following conditions must be satisfied to allow the device to extend:

- Panel View E-Stop not active
- East side line A E-Stop not active

**Relay:** CHB-CNVM-133A auto retract (feed) “east side” line A relay is latched (see above) if the following conditions are satisfied:

- Feed function selected storage line “East A”
- “Auto process feed tray for storage” command is active
- Container is present on CHB-CNVM-113 (96-ZS-072)

Note: Once energized, the relay will remain active until the tray is transferred.

**Relay:** CHB-CNVM-133A auto retract (return) “east side” line A relay is latched (see above) if the following conditions are satisfied:

- Auto process return tray for storage command is active
- CHB-CNVM-125 is not operating in reverse
- Container is present on CHB-CNVM-125 (96-ZS-979)
- Container is present on CHB-CNVM-133 (96-ZS-082)
- Container is present on CHB-CNVM-133 (96-ZS-033)
- Return function selected storage line “East A”

Note: Once energized, the relay will remain active until the tray is transferred.

**Table D.2. TOCDF CHB PLC Automatic Control Sequences  
Panel View Screen: NSA**

<b>Device:</b>	<b>CHB-CNVM-122 Unload Conveyor</b>
Panel View Tag:	X96HS714
CONR:	C120
Driver Word:	0664
Driver Type:	7
Auto Forward:	The auto forward relay will be active if either of the following conditions is satisfied: <ul style="list-style-type: none"> <li>• CHB-CNVM-122 auto load east side line B relay (see below) is active</li> <li>• Load function selected storage line “East B”, Crane 403 pendant load permissive, and no container on CHB-CNVM-122 (96-ZS-051).</li> </ul>
Auto Reverse: satisfied:	The auto reverse relay will be active if the following condition is satisfied: <ul style="list-style-type: none"> <li>• CHB-CNVM-122 auto unload east side line B relay (see below) is active</li> </ul>
Forward I-Lock:	The following conditions must be satisfied to allow the device to operate forward: <ul style="list-style-type: none"> <li>• Panel View E-Stop not active</li> <li>• East side line B E-Stop not active</li> </ul>
Reverse I-Lock:	The following conditions must be satisfied to allow the device to operate reverse: <ul style="list-style-type: none"> <li>• Panel View E-Stop not active</li> <li>• East side line B E-Stop not active</li> <li>• Container not present on CHB-CVNM-122 (96-ZS-409)</li> </ul>
Relay:	CHB-CNVM-122 auto load east side line B relay is latched (see above) if the following conditions are satisfied: <ul style="list-style-type: none"> <li>• Load function selected storage line “East B”</li> <li>• CHB-CNVM-134A conveyor stop (96-ZS-96A) is raised</li> <li>• CHB-CNVM-134A conveyor stop (96-ZS-97A) is raised</li> <li>• Crane 403 pendant load permissive</li> <li>• Container is present on CHB-CNVM-122 (96-ZS-409)</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
Relay:	CHB-CNVM-122 auto unload east side line B relay is latched (see above) if the following conditions are satisfied: <ul style="list-style-type: none"> <li>• Unload function selected storage line “East B”</li> <li>• Crane 403 pendant load permissive</li> <li>• Container is not present on CHB-CNVM-122 (96-ZS-409)</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>

Table D.2. TOCDF CHB PLC Automatic Control Sequences  
Panel View Screen: **NSA**

<b>Device:</b>	<b>CHB-CNVM-118 Unload Conveyor</b>
Panel View Tag:	X96HS726
CONR:	C120
Driver Word:	0665
Driver Type:	7
Auto Forward:	The auto forward relay will be active if either of the following conditions is satisfied: <ul style="list-style-type: none"><li>• CHB-CNVM-118 auto load east side line B relay (see below) is active</li><li>• CHB-CNVM-118 auto feed east side line B relay (see below) is active</li></ul>
Auto Reverse:	The auto reverse relay will be active if either of the following conditions is satisfied: <ul style="list-style-type: none"><li>• CHB-CNVM-118 auto unload east side line B relay (see below) is active</li><li>• CHB-CNVM-118 auto return east side line B relay (see below) is active</li></ul>
Forward I-Lock:	The following conditions must be satisfied to allow the device to operate forward: <ul style="list-style-type: none"><li>• Panel View E-Stop not active</li><li>• East side line B E-Stop not active</li></ul>
Reverse I-Lock:	The following conditions must be satisfied to allow the device to operate reverse: <ul style="list-style-type: none"><li>• Panel View E-Stop not active</li><li>• East side line B E-Stop not active</li></ul>
Relay:	CHB-CNVM-118 auto load east side line B relay is latched (see above) if the following conditions are satisfied: <ul style="list-style-type: none"><li>• CHB-CNVM-122 auto load east side line B relay is active and a container is present on CHB-CNVM-122 (96-ZS-051)</li></ul> <p><b>OR</b></p> <ul style="list-style-type: none"><li>• Load function selected storage line “East B”</li><li>• CHB-CNVM-134A conveyor stop (96-ZS-96A) is raised</li><li>• CHB-CNVM-134A conveyor stop (96-ZS-97A) is raised</li><li>• Panel 127 input to run east line forward is active or Panel 129 input to run east line forward is active</li></ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>

Table D.2. TOCDF CHB PLC Automatic Control Sequences Panel View Screen: <b>NSA</b>	
Relay:	<p>CHB-CNVM-118 auto feed east side line B relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• Feed function selected storage line “East B”</li> <li>• “Auto process feed tray for storage” command is active</li> <li>• Container is present on CHB-CNVM-114 (96-ZS-075)</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
Relay:	<p>CHB-CNVM-118 auto unload east side line B relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• Unload function selected storage line “East B”</li> <li>• Crane 403 pendant load permissive</li> <li>• Container is not present on CHB-CNVM-122 (96-ZS-409)</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
Relay:	<p>CHB-CNVM-118 auto return east side line B relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• CHB-CNVM-134 auto return</li> <li>• Container is present on CHB-CNVM-114 (96-ZS-075)</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
<b>Device:</b>	<b>CHB-CNVM-114 Storage Conveyor</b>
Panel View Tag:	X96HS738
CONR:	C120
Driver Word:	0666
Driver Type:	7
Auto Forward:	<p>The auto forward relay will be active if either of the following conditions is satisfied:</p> <ul style="list-style-type: none"> <li>• CHB-CNVM-114 auto load “east side” line B relay (see below) is active</li> <li>• CHB-CNVM-114 auto feed “east side” line B relay (see below) is active</li> </ul>
Auto Reverse:	<p>The auto reverse relay will be active if either of the following conditions is satisfied:</p> <ul style="list-style-type: none"> <li>• CHB-CNVM-114 auto unload “east side” line B relay (see below) is active</li> <li>• CHB-CNVM-114 auto return “east side” line B relay (see below) is active</li> </ul>
Forward I-Lock:	<p>The following conditions must be satisfied to allow the device to operate forward:</p> <ul style="list-style-type: none"> <li>• Panel View E-Stop not active</li> <li>• East side line B E-Stop not active</li> </ul>

Table D.2. TOCDF CHB PLC Automatic Control Sequences  
Panel View Screen: **NSA**

Reverse I-Lock:	The following conditions must be satisfied to allow the device to operate reverse: <ul style="list-style-type: none"><li>• Panel View E-Stop not active</li><li>• East side line B E-Stop not active</li></ul>
Relay:	CHB-CNVM-114 auto load “east side” line B relay is latched (see above) if the following conditions are satisfied: <ul style="list-style-type: none"><li>• CHB-CNVM-122 auto load “east side” line B relay is active and a container is present on CHB-CNVM-122 (96-ZS-051)</li></ul> <p><b>OR</b></p> <ul style="list-style-type: none"><li>• Load function selected storage line “East B”</li><li>• CHB-CNVM-134A conveyor stop (96-ZS-96A) is raised</li><li>• CHB-CNVM-134A conveyor stop (96-ZS-97A) is raised</li><li>• Panel 127 input to run east line forward is active or Panel 129 input to run east line forward is active</li></ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
Relay:	CHB-CNVM-114 auto feed “east side” line B relay is latched (see above) if the following conditions are satisfied: <ul style="list-style-type: none"><li>• Feed function selected storage line “East B”</li><li>• “Auto process feed tray for storage” command is active</li><li>• Container is present on CHB-CNVM-114 (96-ZS-075)</li></ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
Relay:	CHB-CNVM-114 auto unload “east side” line B relay is latched (see above) if the following conditions are satisfied: <ul style="list-style-type: none"><li>• Unload function selected storage line “East B”</li><li>• Crane 403 pendant load permissive</li><li>• Container is not present on CHB-CNVM-122 (96-ZS-409)</li></ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
Relay:	CHB-CNVM-114 auto return east side line B relay is latched (see above) if the following conditions are satisfied: <ul style="list-style-type: none"><li>• CHB-CNVM-134 auto return (reverse) relay is active</li><li>• Container is present on CHB-CNVM-114 (96-ZS-075)</li></ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>

**Table D.2. TOCDF CHB PLC Automatic Control Sequences  
Panel View Screen: NSA**

<b>Device:</b>	<b>CHB-CNVM-134A Conveyor Stop (XY-96)</b>
Panel View Tag:	X96XY96
CONR:	C120
Driver Word:	0667
Driver Type:	3
Auto Extend:	The auto extend relay will be active if the following conditions is satisfied: <ul style="list-style-type: none"> <li>• CHB-CNVM-134A conveyor stop (XY-96) auto retract relay is not active</li> </ul>
Auto Retract:	The auto retract relay will be active if either of the following conditions is satisfied: <ul style="list-style-type: none"> <li>• CHB-CNVM-134A auto retract (feed) “east side” line B relay (see below) is active</li> <li>• CHB-CNVM-134A auto retract (return) “east side” line B relay (see below) is active</li> </ul>
Extend I-Lock:	The following conditions must be satisfied to allow the device to extend: <ul style="list-style-type: none"> <li>• Panel View E-Stop not active</li> <li>• East side line B E-Stop not active</li> </ul>
Relay:	CHB-CNVM-134A auto retract (feed) “east side” line B relay is latched (see above) if the following conditions are satisfied: <ul style="list-style-type: none"> <li>• Feed function selected storage line “East B”</li> <li>• Auto process feed tray for storage command is active</li> <li>• Container present on CHB-CNVM-114 (96-ZS-075)</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
Relay:	CHB-CNVM-134A auto retract (return) “east side” line B relay is latched (see above) if the following conditions are satisfied: <ul style="list-style-type: none"> <li>• Auto process return tray for storage command is active</li> <li>• CHB-CNVM-125 is not operating in reverse</li> <li>• Container is present on CHB-CNVM-126 (96-ZS-102)</li> <li>• Container is present on CHB-CNVM-134A (96-ZS-083)</li> <li>• Container is present on CHB-CNVM-134B (96-ZS-034)</li> <li>• Return function selected storage line “East B”</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
<b>Device:</b>	<b>CHB-CNVM-101 Unload Conveyor</b>
Panel View Tag:	X96HS663
CONR:	C120
Driver Word:	0668

Table D.2. TOCDF CHB PLC Automatic Control Sequences Panel View Screen: <b>NSA</b>	
Driver Type:	7
Auto Forward:	<p>The auto forward relay will be active if either of the following conditions is satisfied:</p> <ul style="list-style-type: none"> <li>• CHB-CNVM-101 auto load west side line A relay (see below) is active</li> <li>• Load function selected storage line “West A”, Crane 402 pendant load permissive, and no container on CHB-CNVM-101 (96-ZS-001).</li> </ul>
Auto Reverse:	<p>The auto reverse relay will be active if the following condition is satisfied:</p> <ul style="list-style-type: none"> <li>• CHB-CNVM-101 auto unload west side line A relay (see below) is active</li> </ul>
Forward I-Lock:	<p>The following conditions must be satisfied to allow the device to operate forward:</p> <ul style="list-style-type: none"> <li>• Panel View E-Stop not active</li> <li>• West side line A E-Stop not active</li> </ul>
Reverse I-Lock:	<p>The following conditions must be satisfied to allow the device to operate reverse:</p> <ul style="list-style-type: none"> <li>• Panel View E-Stop not active</li> <li>• West side line A E-Stop not active</li> <li>• Container not present on CHB-CVNM-101 (96-ZS-404)</li> </ul>
Relay:	<p>CHB-CNVM-101 auto load west side line A relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• Load function selected storage line “West A”</li> <li>• CHB-CNVM-133B conveyor stop (96-ZS-86A) is raised</li> <li>• CHB-CNVM-133B conveyor stop (96-ZS-87A) is raised</li> <li>• Crane 402 pendant load permissive</li> <li>• Container is present on CHB-CNVM-101 (96-ZS-404)</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
Relay:	<p>CHB-CNVM-101 auto unload west side line A relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• Unload function selected storage line “West A”</li> <li>• Crane 402 pendant load permissive</li> <li>• Container is not present on CHB-CNVM-101 (96-ZS-404)</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
<b>Device:</b>	<b>CHB-CNVM-105 Storage Conveyor</b>
Panel View Tag:	X96HS675
CONR:	C120

**Table D.2. TOCDF CHB PLC Automatic Control Sequences  
Panel View Screen: NSA**

Driver Word:	0669
Driver Type:	7
Auto Forward:	The auto forward relay will be active if either of the following conditions is satisfied: <ul style="list-style-type: none"> <li>• CHB-CNVM-105 auto load “west side” line A relay (see below) is active</li> <li>• CHB-CNVM-105 auto feed “west side” line A relay (see below) is active</li> </ul>
Auto Reverse:	The auto reverse relay will be active if either of the following conditions is satisfied: <ul style="list-style-type: none"> <li>• CHB-CNVM-105 auto unload “west side” line A relay (see below) is active</li> <li>• CHB-CNVM-105 auto return “west side” line A relay (see below) is active</li> </ul>
Forward I-Lock:	The following conditions must be satisfied to allow the device to operate forward: <ul style="list-style-type: none"> <li>• Panel View E-Stop not active</li> <li>• West side line A E-Stop not active</li> </ul>
Reverse I-Lock:	The following conditions must be satisfied to allow the device to operate reverse: <ul style="list-style-type: none"> <li>• Panel View E-Stop not active</li> <li>• West side line A E-Stop not active</li> </ul>
Relay:	CHB-CNVM-105 auto load “west side” line A relay is latched (see above) if the following conditions are satisfied: <ul style="list-style-type: none"> <li>• CHB-CNVM-101 auto load “west side” line A relay is active and a container is present on CHB-CNVM-101 (96-ZS-001)</li> </ul> <p align="center"><b>OR</b></p> <ul style="list-style-type: none"> <li>• Load function selected storage line “West A”</li> <li>• CHB-CNVM-133B conveyor stop (96-ZS-86A) is raised</li> <li>• CHB-CNVM-133B conveyor stop (96-ZS-87A) is raised</li> <li>• Panel 127 input to run east line forward is active or Panel 129 input to run east line forward is active</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
Relay:	CHB-CNVM-105 auto feed “west side” line A relay is latched (see above) if the following conditions are satisfied: <ul style="list-style-type: none"> <li>• Feed function selected storage line “West A”</li> <li>• “Auto process feed tray for storage” command is active</li> <li>• Container is present on CHB-CNVM-109 (96-ZS-023)</li> </ul>

Table D.2. TOCDF CHB PLC Automatic Control Sequences Panel View Screen: <b>NSA</b>	
Relay:	<p>Note: Once energized, the relay will remain active until the tray is transferred.</p> <p>CHB-CNVM-105 auto unload “west side” line A relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• Unload function selected storage line “West A”</li> <li>• Crane 402 pendant load permissive</li> <li>• Container is not present on CHB-CNVM-101 (96-ZS-404)</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
Relay:	<p>CHB-CNVM-105 auto return west side line A relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• CHB-CNVM-133 auto return (forward) relay is active</li> <li>• Container is present on CHB-CNVM-109 (96-ZS-023)</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
<b>Device:</b>	<b>CHB-CNVM-109 Storage Conveyor</b>
Panel View Tag:	X96HS687
CONR:	C120
Driver Word:	0670
Driver Type:	7
Auto Forward:	<p>The auto forward relay will be active if either of the following conditions is satisfied:</p> <ul style="list-style-type: none"> <li>• CHB-CNVM-109 auto load “west side” line A relay (see below) is active</li> <li>• CHB-CNVM-109 auto feed “west side” line A relay (see below) is active</li> </ul>
Auto Reverse:	<p>The auto reverse relay will be active if either of the following conditions is satisfied:</p> <ul style="list-style-type: none"> <li>• CHB-CNVM-105 auto unload “west side” line A relay (see below) is active</li> <li>• CHB-CNVM-105 auto return “west side” line A relay (see below) is active</li> </ul>
Forward I-Lock:	<p>The following conditions must be satisfied to allow the device to operate forward:</p> <ul style="list-style-type: none"> <li>• Panel View E-Stop not active</li> <li>• West side line A E-Stop not active</li> </ul>
Reverse I-Lock:	<p>The following conditions must be satisfied to allow the device to operate reverse:</p> <ul style="list-style-type: none"> <li>• Panel View E-Stop not active</li> <li>• West side line A E-Stop not active</li> </ul>

**Table D.2. TOCDF CHB PLC Automatic Control Sequences**  
**Panel View Screen: NSA**

Relay:	<p>CHB-CNVM-109 auto load “west side” line A relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• CHB-CNVM-101 auto load “west side” line A relay is active and a container is present on CHB-CNVM-101 (96-ZS-001)</li> </ul> <p><b>OR</b></p> <ul style="list-style-type: none"> <li>• Load function selected storage line “West A”</li> <li>• CHB-CNVM-133B conveyor stop (96-ZS-86A) is raised</li> <li>• CHB-CNVM-133B conveyor stop (96-ZS-87A) is raised</li> <li>• Panel 127 input to run east line forward is active or Panel 129 input to run east line forward is active</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
Relay:	<p>CHB-CNVM-109 auto feed “west side” line A relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• Feed function selected storage line “West A”</li> <li>• “Auto process feed tray for storage” command is active</li> <li>• Container is present on CHB-CNVM-109 (96-ZS-023)</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
Relay:	<p>CHB-CNVM-109 auto unload “west side” line A relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• Unload function selected storage line “West A”</li> <li>• Crane 402 pendant load permissive</li> <li>• Container is not present on CHB-CNVM-101 (96-ZS-404)</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
Relay:	<p>CHB-CNVM-109 auto return west side line A relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• CHB-CNVM-133 auto return (forward) relay is active</li> <li>• Container is present on CHB-CNVM-109 (96-ZS-023)</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
<b>Device:</b>	<b>CHB-CNVM-133B Conveyor Stop (XY-86)</b>
Panel View Tag:	X96XY86
CONR:	C120
Driver Word:	0671
Driver Type:	3

Table D.2. TOCDF CHB PLC Automatic Control Sequences Panel View Screen: <b>NSA</b>	
Auto Extend:	<p>The auto extend relay will be active if the following conditions is satisfied:</p> <ul style="list-style-type: none"> <li>• CHB-CNVM-133B conveyor stop (XY-86) auto retract relay is not active</li> </ul>
Auto Retract:	<p>The auto retract relay will be active if either of the following conditions is satisfied:</p> <ul style="list-style-type: none"> <li>• CHB-CNVM-133B auto retract (feed) “west side” line A relay (see below) is active</li> <li>• CHB-CNVM-133B auto retract (return) “west side” line A relay (see below) is active</li> </ul>
Extend I-Lock:	<p>The following conditions must be satisfied to allow the device to extend:</p> <ul style="list-style-type: none"> <li>• Panel View E-Stop not active</li> <li>• East side line A E-Stop not active</li> </ul>
Relay:	<p>CHB-CNVM-133B auto retract (feed) “west side” line A relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• Feed function selected storage line “West A”</li> <li>• Auto process feed tray for storage command is active</li> <li>• Container present on CHB-CNVM-109 (96-ZS-023)</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
Relay:	<p>CHB-CNVM-133B auto retract (return) “west side” line A relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• Auto process return tray for storage command is active</li> <li>• CHB-CNVM-125 is not operating in reverse</li> <li>• Container is present on CHB-CNVM-125 (96-ZS-979)</li> <li>• Container is present on CHB-CNVM-133A (96-ZS-082)</li> <li>• Container is present on CHB-CNVM-133B (96-ZS-033)</li> <li>• Return function selected storage line “West A”</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
<b>Device:</b>	<b>CHB-CNVM-102 Unload Conveyor</b>
Panel View Tag:	X96HS666
CONR:	C120
Driver Word:	0672
Driver Type:	7
Auto Forward:	<p>The auto forward relay will be active if either of the following conditions is satisfied:</p> <ul style="list-style-type: none"> <li>• CHB-CNVM-102 auto load west side line B relay (see below) is active</li> </ul>

Table D.2. TOCDF CHB PLC Automatic Control Sequences Panel View Screen: <b>NSA</b>	
Auto Reverse: satisfied:	<ul style="list-style-type: none"> <li>• Load function selected storage line “West B”, Crane 402 pendant load permissive, and no container on CHB-CNVM-102 (96-ZS-002).</li> </ul> <p>The auto reverse relay will be active if the following condition is satisfied:</p> <ul style="list-style-type: none"> <li>• CHB-CNVM-102 auto unload west side line B relay (see below) is active</li> </ul>
Forward I-Lock:	<p>The following conditions must be satisfied to allow the device to operate forward:</p> <ul style="list-style-type: none"> <li>• Panel View E-Stop not active</li> <li>• West side line B E-Stop not active</li> </ul>
Reverse I-Lock:	<p>The following conditions must be satisfied to allow the device to operate reverse:</p> <ul style="list-style-type: none"> <li>• Panel View E-Stop not active</li> <li>• West side line B E-Stop not active</li> <li>• Container not present on CHB-CVNM-102 (96-ZS-405)</li> </ul>
Relay:	<p>CHB-CNVM-102 auto load west side line B relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• Load function selected storage line “West B”</li> <li>• CHB-CNVM-134B conveyor stop (96-ZS-88A) is raised</li> <li>• CHB-CNVM-134B conveyor stop (96-ZS-89A) is raised</li> <li>• Crane 402 pendant load permissive</li> <li>• Container is present on CHB-CNVM-102 (96-ZS-405)</li> </ul>
Relay:	<p>Note: Once energized, the relay will remain active until the tray is transferred.</p> <p>CHB-CNVM-102 auto unload west side line B relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• Unload function selected storage line “West B”</li> <li>• Crane 402 pendant load permissive</li> <li>• Container is not present on CHB-CNVM-102 (96-ZS-405)</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
<b>Device:</b> Panel View Tag: CONR: Driver Word: Driver Type: Auto Forward:	<p><b>CHB-CNVM-106 Storage Conveyor</b></p> <p>X96HS678</p> <p>C120</p> <p>0673</p> <p>7</p> <p>The auto forward relay will be active if either of the following conditions is satisfied:</p> <ul style="list-style-type: none"> <li>• CHB-CNVM-106 auto load “west side” line B relay (see below) is active</li> <li>• CHB-CNVM-106 auto feed “west side” line B relay (see below) is active</li> </ul>

Table D.2. TOCDF CHB PLC Automatic Control Sequences  
Panel View Screen: **NSA**

Auto Reverse:	The auto reverse relay will be active if either of the following conditions is satisfied: <ul style="list-style-type: none"><li>• CHB-CNVM-106 auto unload “west side” line B relay (see below) is active</li><li>• CHB-CNVM-106 auto return “west side” line B relay (see below) is active</li></ul>
Forward I-Lock:	The following conditions must be satisfied to allow the device to operate forward: <ul style="list-style-type: none"><li>• Panel View E-Stop not active</li><li>• West side line B E-Stop not active</li></ul>
Reverse I-Lock:	The following conditions must be satisfied to allow the device to operate reverse: <ul style="list-style-type: none"><li>• Panel View E-Stop not active</li><li>• West side line B E-Stop not active</li></ul>
Relay:	CHB-CNVM-106 auto load “west side” line B relay is latched (see above) if the following conditions are satisfied: <ul style="list-style-type: none"><li>• CHB-CNVM-102 auto load “west side” line B relay is active and a container is present on CHB-CNVM-102 (96-ZS-002)</li></ul> <p><b>OR</b></p> <ul style="list-style-type: none"><li>• Load function selected storage line “West B”</li><li>• CHB-CNVM-134B conveyor stop (96-ZS-88A) is raised</li><li>• CHB-CNVM-134B conveyor stop (96-ZS-89A) is raised</li><li>• Panel 127 input to run east line forward is active or Panel 129 input to run east line forward is active</li></ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
Relay:	CHB-CNVM-106 auto feed “west side” line B relay is latched (see above) if the following conditions are satisfied: <ul style="list-style-type: none"><li>• Feed function selected storage line “West B”</li><li>• “Auto process feed tray for storage” command is active</li><li>• Container is present on CHB-CNVM-110 (96-ZS-026)</li></ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
Relay:	CHB-CNVM-106 auto unload “west side” line B relay is latched (see above) if the following conditions are satisfied: <ul style="list-style-type: none"><li>• Unload function selected storage line “West B”</li><li>• Crane 402 pendant load permissive</li><li>• Container is not present on CHB-CNVM-102 (96-ZS-405)</li></ul>

**Table D.2. TOCDF CHB PLC Automatic Control Sequences  
Panel View Screen: NSA**

Relay:	<p>Note: Once energized, the relay will remain active until the tray is transferred.</p> <p>CHB-CNVM-106 auto return west side line B relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• CHB-CNVM-134 auto return (forward) relay is active</li> <li>• Container is present on CHB-CNVM-110 (96-ZS-026)</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
<b>Device:</b> Panel View Tag: CONR: Driver Word: Driver Type: Auto Forward:	<p><b>CHB-CNVM-110 Storage Conveyor</b></p> <p>X96HS690</p> <p>C120</p> <p>0674</p> <p>7</p> <p>The auto forward relay will be active if either of the following conditions is satisfied:</p> <ul style="list-style-type: none"> <li>• CHB-CNVM-110 auto load “west side” line B relay (see below) is active</li> <li>• CHB-CNVM-110 auto feed “west side” line B relay (see below) is active</li> </ul>
Auto Reverse:	<p>The auto reverse relay will be active if either of the following conditions is satisfied:</p> <ul style="list-style-type: none"> <li>• CHB-CNVM-110 auto unload “west side” line B relay (see below) is active</li> <li>• CHB-CNVM-110 auto return “west side” line B relay (see below) is active</li> </ul>
Forward I-Lock:	<p>The following conditions must be satisfied to allow the device to operate forward:</p> <ul style="list-style-type: none"> <li>• Panel View E-Stop not active</li> <li>• West side line B E-Stop not active</li> </ul>
Reverse I-Lock:	<p>The following conditions must be satisfied to allow the device to operate reverse:</p> <ul style="list-style-type: none"> <li>• Panel View E-Stop not active</li> <li>• West side line B E-Stop not active</li> </ul>
Relay:	<p>CHB-CNVM-110 auto load “west side” line B relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• CHB-CNVM-102 auto load “west side” line B relay is active and a container is present on CHB-CNVM-102 (96-ZS-002)</li> </ul> <p align="center"><b>OR</b></p>

Table D.2. TOCDF CHB PLC Automatic Control Sequences Panel View Screen: <b>NSA</b>	
	<ul style="list-style-type: none"> <li>• Load function selected storage line “West B”</li> <li>• CHB-CNVM-134B conveyor stop (96-ZS-88A) is raised</li> <li>• CHB-CNVM-134B conveyor stop (96-ZS-89A) is raised</li> <li>• Panel 127 input to run east line forward is active or Panel 129 input to run east line forward is active</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
Relay:	<p>CHB-CNVM-110 auto feed “west side” line B relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• Feed function selected storage line “West B”</li> <li>• “Auto process feed tray for storage” command is active</li> <li>• Container is present on CHB-CNVM-110 (96-ZS-026)</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
Relay:	<p>CHB-CNVM-110 auto unload “west side” line B relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• Unload function selected storage line “West B”</li> <li>• Crane 402 pendant load permissive</li> <li>• Container is not present on CHB-CNVM-102 (96-ZS-405)</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
Relay:	<p>CHB-CNVM-110 auto return west side line B relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• CHB-CNVM-134 auto return (forward) relay is active</li> <li>• Container is present on CHB-CNVM-110 (96-ZS-026)</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
<b>Device:</b>	<b>CHB-CNVM-134B Conveyor Stop (XY-88)</b>
Panel View Tag:	X96XY88
CONR:	C120
Driver Word:	0675
Driver Type:	3
Auto Extend:	The auto extend relay will be active if the following conditions is satisfied: <ul style="list-style-type: none"> <li>• CHB-CNVM-134B conveyor stop (XY-88) auto retract relay is not active</li> </ul>
Auto Retract:	The auto retract relay will be active if either of the following conditions is satisfied: <ul style="list-style-type: none"> <li>• CHB-CNVM-134B auto retract (feed) “west side” line B relay (see below) is active</li> </ul>

Table D.2. TOCDF CHB PLC Automatic Control Sequences Panel View Screen: <b>NSA</b>	
Extend I-Lock:	<ul style="list-style-type: none"> <li>• CHB-CNVM-134B auto retract (return) “west side” line B relay (see below) is active</li> </ul> <p>The following conditions must be satisfied to allow the device to extend:</p> <ul style="list-style-type: none"> <li>• Panel View E-Stop not active</li> <li>• West side line B E-Stop not active</li> </ul>
Relay:	<p>CHB-CNVM-134B auto retract (feed) “west side” line B relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• Feed function selected storage line “West B”</li> <li>• “Auto process feed tray for storage” command is active</li> <li>• Container is present on CHB-CNVM-110 (96-ZS-026)</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
Relay:	<p>CHB-CNVM-134B auto retract (return) “west side” line B relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• Auto process return tray for storage command is active</li> <li>• CHB-CNVM-125 is not operating in reverse</li> <li>• Container is present on CHB-CNVM-126 (96-ZS-102)</li> <li>• Container is present on CHB-CNVM-134A (96-ZS-083)</li> <li>• Container is present on CHB-CNVM-134 B (96-ZS-034)</li> <li>• Return function selected storage line “West B”</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
<p><b>Device:</b>                  Panel View Tag:                  CONR:                  Driver Word:                  Driver Type:                  Auto Forward:</p>	<p><b>CHB-CNVM-133 Transfer Conveyor</b>                  X96HS699                  C120                  0676                  7</p> <p>The auto forward relay will be active if either of the following conditions is satisfied:</p> <ul style="list-style-type: none"> <li>• CHB-CNVM-133 auto feed (forward) “east side” line A relay (see below) is active</li> <li>• CHB-CNVM-133 auto return (forward) line A relay (see below) is active</li> </ul>
Auto Reverse:	<p>The auto reverse relay will be active if either of the following conditions is satisfied:</p> <ul style="list-style-type: none"> <li>• CHB-CNVM-133 auto feed (reverse) “west side” line A relay (see below) is active</li> <li>• CHB-CNVM-133 auto return (reverse) line A relay (see below) is active</li> </ul>

Table D.2. TOCDF CHB PLC Automatic Control Sequences Panel View Screen: <b>NSA</b>	
Forward I-Lock:	<p>The following conditions must be satisfied to allow the device to operate forward:</p> <ul style="list-style-type: none"> <li>• Panel View E-Stop not active</li> <li>• North transfer area E-Stop not active</li> <li>• Air to Roller (96-PSL-601 and 96-PSL-602) clear (on time delay)</li> </ul>
Reverse I-Lock:	<p>The following conditions must be satisfied to allow the device to operate reverse:</p> <ul style="list-style-type: none"> <li>• Panel View E-Stop not active</li> <li>• North transfer area E-Stop not active</li> <li>• Air to Roller (96-PSL-601 and 96-PSL-602) clear (on time delay)</li> </ul>
Relay:	<p>CHB-CNVM-133 auto feed (forward) “east side” line A relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• Feed function selected storage line “East A”</li> <li>• “Auto process feed tray for storage” command is active</li> <li>• Container is present on CHB-CNVM-113 (96-ZS-072)</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
Relay:	<p>CHB-CNVM-133 auto return (forward) line A relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• Return function selected storage line “West A”</li> <li>• “Auto process return tray for storage” command is active</li> <li>• CHB-CNVM-133B conveyor stop (XY-86) retracted</li> <li>• Container is present on CHB-CNVM-125 (96-ZS-979)</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
Relay:	<p>CHB-CNVM-133 auto feed (reverse) “west side” line A relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• Feed function selected storage line “West A”</li> <li>• Auto process feed tray for storage command is active</li> <li>• Container is present on CHB-CNVM-109 (96-ZS-023)</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
Relay:	<p>CHB-CNVM-133 auto return (reverse) line A relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• Return function selected storage line “East A”</li> <li>• Auto process return tray for storage command is active</li> <li>• CHB-CNVM-133A conveyor stop (XY-94) raised</li> <li>• Container is present on CHB-CNVM-125 (96-ZS-979)</li> </ul>

**Table D.2. TOCDF CHB PLC Automatic Control Sequences  
Panel View Screen: NSA**

Note: Once energized, the relay will remain active until the tray is transferred.

<b>Device:</b>	<b>CHB-CNVM-134 Transfer Conveyor</b>
Panel View Tag:	X96HS702
CONR:	C120
Driver Word:	0677
Driver Type:	7
Auto Forward:	<p>The auto forward relay will be active if either of the following conditions is satisfied:</p> <ul style="list-style-type: none"> <li>• CHB-CNVM-134 auto feed (forward) “east side” line B relay (see below) is active</li> <li>• CHB-CNVM-134 auto return (forward) line B relay (see below) is active</li> </ul>
Auto Reverse:	<p>The auto reverse relay will be active if either of the following conditions is satisfied:</p> <ul style="list-style-type: none"> <li>• CHB-CNVM-134 auto feed (reverse) “west side” line B relay (see below) is active</li> <li>• CHB-CNVM-134 auto return (reverse) line B relay (see below) is active</li> </ul>
Forward I-Lock:	<p>The following conditions must be satisfied to allow the device to operate forward:</p> <ul style="list-style-type: none"> <li>• Panel View E-Stop not active</li> <li>• North transfer area E-Stop not active</li> <li>• Air to Roller (96-PSL-601 and 96-PSL-602) clear (on time delay)</li> </ul>
Reverse I-Lock:	<p>The following conditions must be satisfied to allow the device to operate reverse:</p> <ul style="list-style-type: none"> <li>• Panel View E-Stop not active</li> <li>• North transfer area E-Stop not active</li> <li>• Air to Roller (96-PSL-601 and 96-PSL-602) clear (on time delay)</li> </ul>
Relay:	<p>CHB-CNVM-134 auto feed (forward) “east side” line B relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• Feed function selected storage line “East B”</li> <li>• “Auto process feed tray for storage” command is active</li> <li>• Container is present on CHB-CNVM-114 (96-ZS-075)</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>

Table D.2. TOCDF CHB PLC Automatic Control Sequences Panel View Screen: <b>NSA</b>	
Relay:	<p>CHB-CNVM-134 auto return (forward) line B relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• Return function selected storage line “West B”</li> <li>• “Auto process return tray for storage” command is active</li> <li>• CHB-CNVM-134A conveyor stop (XY-88) retracted</li> <li>• Container is present on CHB-CNVM-126 (96-ZS-102)</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
Relay:	<p>CHB-CNVM-134 auto feed (reverse) “west side” line B relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• Feed function selected storage line “West B”</li> <li>• Auto process feed tray for storage command is active</li> <li>• Container is present on CHB-CNVM-110 (96-ZS-026)</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
Relay:	<p>CHB-CNVM-134 auto return (reverse) line A relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• Return function selected storage line “East B”</li> <li>• Auto process return tray for storage command is active</li> <li>• CHB-CNVM-134A conveyor stop (XY-96) retracted</li> <li>• Container is present on CHB-CNVM-126 (96-ZS-102)</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
<b>Device:</b>	<b>CHB-CNVM-125 Transfer Conveyor</b>
Panel View Screen:	NSA
Panel View Tag:	X96HS753
CONR:	C120
Driver Word:	0678
Driver Type:	7
Auto Forward:	<p>The auto forward relay will be active if either of the following conditions is satisfied:</p> <ul style="list-style-type: none"> <li>• CHB-CNVM-125 auto feed (forward) “east side” lines A &amp; B relay (see below) is active</li> <li>• Conveyor initialize timer (see below) is active</li> </ul>
Auto Reverse:	<p>The auto reverse relay will be active if either of the following conditions is satisfied:</p> <ul style="list-style-type: none"> <li>• CHB-CNVM-125 north transfer lines A &amp; B auto reverse relay (see below) is active</li> </ul>

Table D.2. TOCDF CHB PLC Automatic Control Sequences Panel View Screen: <b>NSA</b>	
Forward I-Lock:	<p>The following conditions must be satisfied to allow the device to operate forward:</p> <ul style="list-style-type: none"> <li>• Panel View E-Stop not active</li> <li>• North transfer area E-Stop not active</li> <li>• Air to Roller (96-PSL-565, 96-PSL-566, 96-PSL-567 and 96-PSL-568) clear (on time delay)</li> </ul>
Reverse I-Lock:	<p>The following conditions must be satisfied to allow the device to operate reverse:</p> <ul style="list-style-type: none"> <li>• Panel View E-Stop not active</li> <li>• North transfer area E-Stop not active</li> <li>• Air to Roller (96-PSL-565, 96-PSL-566, 96-PSL-567 and 96-PSL-568) clear (on time delay)</li> </ul>
Relay:	<p>CHB-CNVM-125 auto feed (forward) “east side” lines A &amp; B relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• CHB-CNVM-127 central corridor conveyor auto feed forward not active</li> <li>• “Auto process feed tray for corridor and lift” command is active</li> <li>• “Auto process feed tray for storage” command is not active</li> <li>• Either of the following: <ul style="list-style-type: none"> <li>• Container is present on CHB-CNVM-133B (96-ZS-033) and Container is present on CHB-CNVM-133A (96-ZS-082)</li> <li>• Container is present on CHB-CNVM-134B (96-ZS-034) and Container is present on CHB-CNVM-134A (96-ZS-083)</li> </ul> </li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
Timer:	<p>Conveyor initialize timer (see above) is active (on time delay) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• Auto process start is active</li> <li>• Trays not found at the north transfer area, south transfer area, corridor or at the west lift.</li> </ul>
Relay:	<p>CHB-CNVM-125 north transfer lines A &amp; B auto reverse relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• Auto process return tray for storage command is active</li> <li>• Container is present on CHB-CNVM-130 (96-ZS-111)</li> <li>• Any of the following: <ul style="list-style-type: none"> <li>• Return function selected line “East A”</li> <li>• Return function selected line “East B”</li> <li>• Return function selected line “West A”</li> <li>• Return function selected line “West B”</li> </ul> </li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>

Table D.3. TOCDF CHB PLC Automatic Control Sequences Panel View Screen: <b>SSA</b>	
<b>Device:</b>	<b>CHB-CNVM-123 Unload Conveyor</b>
Panel View Tag:	X96HS717
CONR:	C120
Driver Word:	0860
Driver Type:	7
Auto Forward:	The auto forward relay will be active if either of the following conditions is satisfied: <ul style="list-style-type: none"> <li>• CHB-CNVM-123 auto load east side line C relay (see below) is active</li> <li>• Load function selected storage line “East C”, Crane 403 pendant load permissive, and no container on CHB-CNVM-123 (96-ZS-052).</li> </ul>
Auto Reverse:	The auto reverse relay will be active if the following condition is satisfied: <ul style="list-style-type: none"> <li>• CHB-CNVM-123 auto unload east side line C relay (see below) is active</li> </ul>
Forward I-Lock:	The following conditions must be satisfied to allow the device to operate forward: <ul style="list-style-type: none"> <li>• Panel View E-Stop not active</li> <li>• East side line C E-Stop not active</li> </ul>
Reverse I-Lock:	The following conditions must be satisfied to allow the device to operate reverse: <ul style="list-style-type: none"> <li>• Panel View E-Stop not active</li> <li>• East side line C E-Stop not active</li> <li>• Container not present on CHB-CVNM-123 (96-ZS-410)</li> </ul>
Relay:	CHB-CNVM-123 auto load east side line C relay is latched (see above) if the following conditions are satisfied: <ul style="list-style-type: none"> <li>• Load function selected storage line “East C”</li> <li>• CHB-CNVM-135A conveyor stop (96-ZS-98A) is raised</li> <li>• CHB-CNVM-135A conveyor stop (96-ZS-99A) is raised</li> <li>• Crane 403 pendant load permissive</li> <li>• Container is present on CHB-CNVM-123 (96-ZS-410)</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
Relay:	CHB-CNVM-123 auto unload east side line C relay is latched (see above) if the following conditions are satisfied: <ul style="list-style-type: none"> <li>• Unload function selected storage line “East C”</li> <li>• Crane 403 pendant load permissive</li> <li>• Container is not present on CHB-CNVM-123 (96-ZS-410)</li> </ul>

**Table D.3. TOCDF CHB PLC Automatic Control Sequences**  
**Panel View Screen: SSA**

Note: Once energized, the relay will remain active until the tray is transferred.

<b>Device:</b>	<b>CHB-CNVM-119 Storage Conveyor</b>
Panel View Tag:	X96HS729
CONR:	C120
Driver Word:	0861
Driver Type:	7
Auto Forward:	The auto forward relay will be active if either of the following conditions is satisfied: <ul style="list-style-type: none"> <li>• CHB-CNVM-119 auto load “east side” line C relay (see below) is active</li> <li>• CHB-CNVM-119 auto feed “east side” line C relay (see below) is active</li> </ul>
Auto Reverse:	The auto reverse relay will be active if either of the following conditions is satisfied: <ul style="list-style-type: none"> <li>• CHB-CNVM-119 auto unload “east side” line C relay (see below) is active</li> <li>• CHB-CNVM-119 auto return “east side” line C relay (see below) is active</li> </ul>
Forward I-Lock:	The following conditions must be satisfied to allow the device to operate forward: <ul style="list-style-type: none"> <li>• Panel View E-Stop not active</li> <li>• East side line C E-Stop not active</li> </ul>
Reverse I-Lock:	The following conditions must be satisfied to allow the device to operate reverse: <ul style="list-style-type: none"> <li>• Panel View E-Stop not active</li> <li>• East side line C E-Stop not active</li> </ul>
Relay:	CHB-CNVM-119 auto load “east side” line C relay is latched (see above) if the following conditions are satisfied: <ul style="list-style-type: none"> <li>• CHB-CNVM-123 auto load “east side” line C relay is active and a container is present on CHB-CNVM-123 (96-ZS-052)</li> </ul> <p align="center"><b>OR</b></p> <ul style="list-style-type: none"> <li>• Load function selected storage line “East C”</li> <li>• CHB-CNVM-135A conveyor stop (96-ZS-98A) is raised</li> <li>• CHB-CNVM-135A conveyor stop (96-ZS-99A) is raised</li> <li>• Panel 127 input to run east line forward is active or Panel 129 input to run east line forward is active</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>

Table D.3. TOCDF CHB PLC Automatic Control Sequences Panel View Screen: <b>SSA</b>	
Relay:	<p>CHB-CNVM-119 auto feed “east side” line C relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• Feed function selected storage line “East C”</li> <li>• “Auto process feed tray for storage” command is active</li> <li>• Container is present on CHB-CNVM-115 (96-ZS-078)</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
Relay:	<p>CHB-CNVM-119 auto unload “east side” line C relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• Unload function selected storage line “East C”</li> <li>• Crane 403 pendant load permissive</li> <li>• Container is not present on CHB-CNVM-123 (96-ZS-410)</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
Relay:	<p>CHB-CNVM-119 auto return east side line C relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• CHB-CNVM-135 auto return (reverse) relay is active</li> <li>• Container is present on CHB-CNVM-115 (96-ZS-078)</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
<b>Device:</b>	<b>CHB-CNVM-115 Storage Conveyor</b>
Panel View Tag:	X96HS741
CONR:	C120
Driver Word:	0862
Driver Type:	7
Auto Forward:	<p>The auto forward relay will be active if either of the following conditions is satisfied:</p> <ul style="list-style-type: none"> <li>• CHB-CNVM-115 auto load “east side” line C relay (see below) is active</li> <li>• CHB-CNVM-115 auto feed “east side” line C relay (see below) is active</li> </ul>
Auto Reverse:	<p>The auto reverse relay will be active if either of the following conditions is satisfied:</p> <ul style="list-style-type: none"> <li>• CHB-CNVM-115 auto unload “east side” line C relay (see below) is active</li> <li>• CHB-CNVM-115 auto return “east side” line C relay (see below) is active</li> </ul>
Forward I-Lock:	<p>The following conditions must be satisfied to allow the device to operate forward:</p> <ul style="list-style-type: none"> <li>• Panel View E-Stop not active</li> <li>• East side line C E-Stop not active</li> </ul>

**Table D.3. TOCDF CHB PLC Automatic Control Sequences**  
**Panel View Screen: SSA**

Reverse I-Lock:	<p>The following conditions must be satisfied to allow the device to operate reverse:</p> <ul style="list-style-type: none"> <li>• Panel View E-Stop not active</li> <li>• East side line C E-Stop not active</li> </ul>
Relay:	<p>CHB-CNVM-115 auto load “east side” line C relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• CHB-CNVM-123 auto load “east side” line C relay is active and a container is present on CHB-CNVM-123 (96-ZS-052)</li> </ul> <p align="center"><b>OR</b></p> <ul style="list-style-type: none"> <li>• Load function selected storage line “East C”</li> <li>• CHB-CNVM-135A conveyor stop (96-ZS-98A) is raised</li> <li>• CHB-CNVM-135A conveyor stop (96-ZS-99A) is raised</li> <li>• Panel 127 input to run east line forward is active or Panel 129 input to run east line forward is active</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
Relay:	<p>CHB-CNVM-115 auto feed “east side” line C relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• Feed function selected storage line “East C”</li> <li>• “Auto process feed tray for storage” command is active</li> <li>• Container is present on CHB-CNVM-115 (96-ZS-078)</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
Relay:	<p>CHB-CNVM-115 auto unload “east side” line C relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• Unload function selected storage line “East C”</li> <li>• Crane 403 pendant load permissive</li> <li>• Container is not present on CHB-CNVM-123 (96-ZS-410)</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
Relay:	<p>CHB-CNVM-115 auto return east side line C relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• CHB-CNVM-135 auto return (reverse) relay is active</li> <li>• Container is present on CHB-CNVM-115 (96-ZS-078)</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>

Table D.3. TOCDF CHB PLC Automatic Control Sequences  
 Panel View Screen: **SSA**

<b>Device:</b>	<b>CHB-CNVM-135A Conveyor Stop (XY-98)</b>
Panel View Tag:	X96XY98
CONR:	C120
Driver Word:	0863
Driver Type:	3
Auto Extend:	The auto extend relay will be active if the following conditions is satisfied: <ul style="list-style-type: none"> <li>• CHB-CNVM-135A conveyor stop (XY-98) auto retract relay is not active</li> </ul>
Auto Retract:	The auto retract relay will be active if either of the following conditions is satisfied: <ul style="list-style-type: none"> <li>• CHB-CNVM-135A auto retract (feed) “east side” line C relay (see below) is active</li> <li>• CHB-CNVM-135A auto retract (return) “east side” line C relay (see below) is active</li> </ul>
Extend I-Lock:	The following conditions must be satisfied to allow the device to extend: <ul style="list-style-type: none"> <li>• Panel View E-Stop not active</li> <li>• East side line C E-Stop not active</li> </ul>
Relay:	CHB-CNVM-135A auto retract (feed) “east side” line C relay is latched (see above) if the following conditions are satisfied: <ul style="list-style-type: none"> <li>• Feed function selected storage line “East C”</li> <li>• “Auto process feed tray for storage” command is active</li> <li>• Container is present on CHB-CNVM-115 (96-ZS-078)</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
Relay:	CHB-CNVM-135A auto retract (return) “east side” line C relay is latched (see above) if the following conditions are satisfied: <ul style="list-style-type: none"> <li>• Auto process return tray for storage command is active</li> <li>• CHB-CNVM-126 is not operating in reverse</li> <li>• Container is present on CHB-CNVM-126 (96-ZS-103)</li> <li>• Container is present on CHB-CNVM-135A (96-ZS-84)</li> <li>• Container is present on CHB-CNVM-135B (96-ZS-35)</li> <li>• Return function selected storage line “East C”</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
<b>Device:</b>	<b>CHB-CNVM-124 Unload Conveyor</b>
Panel View Tag:	X96HS720
CONR:	C120
Driver Word:	0864

Table D.3. TOCDF CHB PLC Automatic Control Sequences Panel View Screen: <b>SSA</b>	
Driver Type:	7
Auto Forward:	The auto forward relay will be active if either of the following conditions is satisfied: <ul style="list-style-type: none"> <li>• CHB-CNVM-124 auto load east side line D relay (see below) is active</li> <li>• Load function selected storage line "East D", Crane 403 pendant load permissive, and no container on CHB-CNVM-124 (96-ZS-960).</li> </ul>
Auto Reverse:	The auto reverse relay will be active if the following condition is satisfied: <ul style="list-style-type: none"> <li>• CHB-CNVM-124 auto unload east side line D relay (see below) is active</li> </ul>
Forward I-Lock:	The following conditions must be satisfied to allow the device to operate forward: <ul style="list-style-type: none"> <li>• Panel View E-Stop not active</li> <li>• East side line D E-Stop not active</li> </ul>
Reverse I-Lock:	The following conditions must be satisfied to allow the device to operate reverse: <ul style="list-style-type: none"> <li>• Panel View E-Stop not active</li> <li>• East side line D E-Stop not active</li> <li>• Container not present on CHB-CVNM-124 (96-ZS-411)</li> </ul>
Relay:	CHB-CNVM-124 auto load east side line D relay is latched (see above) if the following conditions are satisfied: <ul style="list-style-type: none"> <li>• Load function selected storage line "East D"</li> <li>• CHB-CNVM-136A conveyor stop (96-ZS-100A) is raised</li> <li>• CHB-CNVM-136A conveyor stop (96-ZS-101A) is raised</li> <li>• Crane 403 pendant load permissive</li> <li>• Container is present on CHB-CNVM-124 (96-ZS-411)</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
Relay:	CHB-CNVM-124 auto unload east side line D relay is latched (see above) if the following conditions are satisfied: <ul style="list-style-type: none"> <li>• Unload function selected storage line "East D"</li> <li>• Crane 403 pendant load permissive</li> <li>• Container is not present on CHB-CNVM-124 (96-ZS-411)</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
<b>Device:</b>	<b>CHB-CNVM-120 Storage Conveyor</b>
Panel View Tag:	X96HS732
CONR:	C120

Table D.3. TOCDF CHB PLC Automatic Control Sequences Panel View Screen: <b>SSA</b>	
Driver Word:	0865
Driver Type:	7
Auto Forward:	<p>The auto forward relay will be active if either of the following conditions is satisfied:</p> <ul style="list-style-type: none"> <li>• CHB-CNVM-120 auto load “east side” line D relay (see below) is active</li> <li>• CHB-CNVM-120 auto feed “east side” line D relay (see below) is active</li> </ul>
Auto Reverse:	<p>The auto reverse relay will be active if either of the following conditions is satisfied:</p> <ul style="list-style-type: none"> <li>• CHB-CNVM-120 auto unload “east side” line D relay (see below) is active</li> <li>• CHB-CNVM-120 auto return “east side” line D relay (see below) is active</li> </ul>
Forward I-Lock:	<p>The following conditions must be satisfied to allow the device to operate forward:</p> <ul style="list-style-type: none"> <li>• Panel View E-Stop not active</li> <li>• East side line D E-Stop not active</li> </ul>
Reverse I-Lock:	<p>The following conditions must be satisfied to allow the device to operate reverse:</p> <ul style="list-style-type: none"> <li>• Panel View E-Stop not active</li> <li>• East side line D E-Stop not active</li> </ul>
Relay:	<p>CHB-CNVM-120 auto load “east side” line D relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• CHB-CNVM-123 auto load “east side” line D relay is active and a container is present on CHB-CNVM-124 (96-ZS-960)</li> </ul> <p style="text-align: center;"><b>OR</b></p> <ul style="list-style-type: none"> <li>• Load function selected storage line “East D”</li> <li>• CHB-CNVM-136A conveyor stop (96-ZS-100A) is raised</li> <li>• CHB-CNVM-136A conveyor stop (96-ZS-101A) is raised</li> <li>• Panel 127 input to run east line forward is active or Panel 129 input to run east line forward is active</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
Relay:	<p>CHB-CNVM-120 auto feed “east side” line D relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• Feed function selected storage line “East D”</li> <li>• “Auto process feed tray for storage” command is active</li> <li>• Container is present on CHB-CNVM-116 (96-ZS-081)</li> </ul>

Table D.3. TOCDF CHB PLC Automatic Control Sequences Panel View Screen: <b>SSA</b>	
Relay:	<p>Note: Once energized, the relay will remain active until the tray is transferred.</p> <p>CHB-CNVM-120 auto unload “east side” line D relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• Unload function selected storage line “East D”</li> <li>• Crane 403 pendant load permissive</li> <li>• Container is not present on CHB-CNVM-124 (96-ZS-411)</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
Relay:	<p>CHB-CNVM-120 auto return east side line D relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• CHB-CNVM-136 auto return (reverse) relay is active</li> <li>• Container is present on CHB-CNVM-116 (96-ZS-081)</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
<b>Device:</b>	<b>CHB-CNVM-116 Storage Conveyor</b>
Panel View Tag:	X96HS744
CONR:	C120
Driver Word:	0866
Driver Type:	7
Auto Forward:	<p>The auto forward relay will be active if either of the following conditions is satisfied:</p> <ul style="list-style-type: none"> <li>• CHB-CNVM-116 auto load “east side” line D relay (see below) is active</li> <li>• CHB-CNVM-116 auto feed “east side” line D relay (see below) is active</li> </ul>
Auto Reverse:	<p>The auto reverse relay will be active if either of the following conditions is satisfied:</p> <ul style="list-style-type: none"> <li>• CHB-CNVM-116 auto unload “east side” line D relay (see below) is active</li> <li>• CHB-CNVM-116 auto return “east side” line D relay (see below) is active</li> </ul>
Forward I-Lock:	<p>The following conditions must be satisfied to allow the device to operate forward:</p> <ul style="list-style-type: none"> <li>• Panel View E-Stop not active</li> <li>• East side line D E-Stop not active</li> </ul>
Reverse I-Lock:	<p>The following conditions must be satisfied to allow the device to operate reverse:</p> <ul style="list-style-type: none"> <li>• Panel View E-Stop not active</li> <li>• East side line D E-Stop not active</li> </ul>

Table D.3. TOCDF CHB PLC Automatic Control Sequences Panel View Screen: <b>SSA</b>	
Relay:	<p>CHB-CNVM-116 auto load “east side” line D relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• CHB-CNVM-124 auto load “east side” line D relay is active and a container is present on CHB-CNVM-124 (96-ZS-960)</li> </ul> <p style="text-align: center;"><b>OR</b></p> <ul style="list-style-type: none"> <li>• Load function selected storage line “East D”</li> <li>• CHB-CNVM-136A conveyor stop (96-ZS-100A) is raised</li> <li>• CHB-CNVM-136A conveyor stop (96-ZS-101A) is raised</li> <li>• Panel 127 input to run east line forward is active or Panel 129 input to run east line forward is active</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
Relay:	<p>CHB-CNVM-116 auto feed “east side” line D relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• Feed function selected storage line “East D”</li> <li>• “Auto process feed tray for storage” command is active</li> <li>• Container is present on CHB-CNVM-116 (96-ZS-081)</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
Relay:	<p>CHB-CNVM-116 auto unload “east side” line D relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• Unload function selected storage line “East D”</li> <li>• Crane 403 pendant load permissive</li> <li>• Container is not present on CHB-CNVM-124 (96-ZS-411)</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
Relay:	<p>CHB-CNVM-116 auto return east side line D relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• CHB-CNVM-136 auto return (reverse) relay is active</li> <li>• Container is present on CHB-CNVM-116 (96-ZS-081)</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
<b>Device:</b>	<b>CHB-CNVM-136A Conveyor Stop (XY-100)</b>
Panel View Tag:	X96XY100
CONR:	C120
Driver Word:	0867
Driver Type:	3

Table D.3. TOCDF CHB PLC Automatic Control Sequences Panel View Screen: <b>SSA</b>	
Auto Extend:	The auto extend relay will be active if the following conditions is satisfied: <ul style="list-style-type: none"> <li>CHB-CNVM-136A conveyor stop (XY-100) auto retract relay is not active</li> </ul>
Auto Retract:	The auto retract relay will be active if either of the following conditions is satisfied: <ul style="list-style-type: none"> <li>CHB-CNVM-136A auto retract (feed) “east side” line D relay (see below) is active</li> <li>CHB-CNVM-136A auto retract (return) “east side” line D relay (see below) is active</li> </ul>
Extend I-Lock:	The following conditions must be satisfied to allow the device to extend: <ul style="list-style-type: none"> <li>Panel View E-Stop not active</li> <li>East side line D E-Stop not active</li> </ul>
Relay:	CHB-CNVM-136A auto retract (feed) “east side” line D relay is latched (see above) if the following conditions are satisfied: <ul style="list-style-type: none"> <li>Feed function selected storage line “East D”</li> <li>“Auto process feed tray for storage” command is active</li> <li>Container is present on CHB-CNVM-116 (96-ZS-081)</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
Relay:	CHB-CNVM-136A auto retract (return) “east side” line D relay is latched (see above) if the following conditions are satisfied: <ul style="list-style-type: none"> <li>Auto process return tray for storage command is active</li> <li>CHB-CNVM-126 is not operating in reverse</li> <li>Container is present on CHB-CNVM-126 (96-ZS-101)</li> <li>Container is present on CHB-CNVM-136A (96-ZS-085)</li> <li>Container is present on CHB-CNVM-136B (96-ZS-941)</li> <li>Return function selected storage line “East D”</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
<b>Device:</b>	<b>CHB-CNVM-103 Unload Conveyor</b>
Panel View Tag:	X96HS669
CONR:	C120
Driver Word:	0868
Driver Type:	7
Auto Forward:	The auto forward relay will be active if either of the following conditions is satisfied: <ul style="list-style-type: none"> <li>CHB-CNVM-103 auto load west side line C relay (see below) is active</li> <li>Load function selected storage line “West C”, Crane 402 pendant load permissive, and no container on CHB-CNVM-103 (96-ZS-003).</li> </ul>

Table D.3. TOCDF CHB PLC Automatic Control Sequences Panel View Screen: <b>SSA</b>	
Auto Reverse: satisfied:	<p>The auto reverse relay will be active if the following condition is satisfied:</p> <ul style="list-style-type: none"> <li>• CHB-CNVM-103 auto unload west side line C relay (see below) is active</li> </ul>
Forward I-Lock:	<p>The following conditions must be satisfied to allow the device to operate forward:</p> <ul style="list-style-type: none"> <li>• Panel View E-Stop not active</li> <li>• West side line C E-Stop not active</li> </ul>
Reverse I-Lock:	<p>The following conditions must be satisfied to allow the device to operate reverse:</p> <ul style="list-style-type: none"> <li>• Panel View E-Stop not active</li> <li>• West side line C E-Stop not active</li> <li>• Container not present on CHB-CVNM-103 (96-ZS-406)</li> </ul>
Relay:	<p>CHB-CNVM-103 auto load west side line C relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• Load function selected storage line “West C”</li> <li>• CHB-CNVM-135B conveyor stop (96-ZS-090A) is raised</li> <li>• CHB-CNVM-135B conveyor stop (96-ZS-091A) is raised</li> <li>• Crane 402 pendant load permissive</li> <li>• Container is present on CHB-CNVM-103 (96-ZS-406)</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
Relay:	<p>CHB-CNVM-103 auto unload west side line C relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• Unload function selected storage line “West C”</li> <li>• Crane 402 pendant load permissive</li> <li>• Container is not present on CHB-CNVM-103 (96-ZS-406)</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
<b>Device:</b> Panel View Tag: CONR: Driver Word: Driver Type: Auto Forward:	<p><b>CHB-CNVM-107 Storage Conveyor</b></p> <p>X96HS681</p> <p>C120</p> <p>0869</p> <p>7</p> <p>The auto forward relay will be active if either of the following conditions is satisfied:</p> <ul style="list-style-type: none"> <li>• CHB-CNVM-107 auto load “west side” line C relay (see below) is active</li> <li>• CHB-CNVM-107 auto feed “west side” line C relay (see below) is active</li> </ul>

**Table D.3. TOCDF CHB PLC Automatic Control Sequences  
Panel View Screen: SSA**

Auto Reverse:	<p>The auto reverse relay will be active if either of the following conditions is satisfied:</p> <ul style="list-style-type: none"> <li>• CHB-CNVM-107 auto unload “west side” line C relay (see below) is active</li> <li>• CHB-CNVM-107 auto return “west side” line C relay (see below) is active</li> </ul>
Forward I-Lock:	<p>The following conditions must be satisfied to allow the device to operate forward:</p> <ul style="list-style-type: none"> <li>• Panel View E-Stop not active</li> <li>• West side line C E-Stop not active</li> </ul>
Reverse I-Lock:	<p>The following conditions must be satisfied to allow the device to operate reverse:</p> <ul style="list-style-type: none"> <li>• Panel View E-Stop not active</li> <li>• West side line C E-Stop not active</li> </ul>
Relay:	<p>CHB-CNVM-107 auto load “west side” line C relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• CHB-CNVM-103 auto load “west side” line C relay is active and a container is present on CHB-CNVM-103 (96-ZS-003)</li> </ul> <p><b>OR</b></p> <ul style="list-style-type: none"> <li>• Load function selected storage line “West C”</li> <li>• CHB-CNVM-135B conveyor stop (96-ZS-090A) is raised</li> <li>• CHB-CNVM-135B conveyor stop (96-ZS-091A) is raised</li> <li>• Panel 127 input to run east line forward is active or Panel 129 input to run east line forward is active</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
Relay:	<p>CHB-CNVM-107 auto feed “west side” line C relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• Feed function selected storage line “West C”</li> <li>• “Auto process feed tray for storage” command is active</li> <li>• Container is present on CHB-CNVM-111 (96-ZS-029)</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
Relay:	<p>CHB-CNVM-107 auto unload “west side” line C relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• Unload function selected storage line “West C”</li> <li>• Crane 402 pendant load permissive</li> <li>• Container is not present on CHB-CNVM-103 (96-ZS-406)</li> </ul>

**Table D.3. TOCDF CHB PLC Automatic Control Sequences  
 Panel View Screen: SSA**

Relay:	<p>Note: Once energized, the relay will remain active until the tray is transferred.</p> <p>CHB-CNVM-107 auto return west side line C relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• CHB-CNVM-135 auto return (reverse) relay is active</li> <li>• Container is present on CHB-CNVM-111 (96-ZS-029)</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
<p><b>Device:</b>                  Panel View Tag:                  CONR:                  Driver Word:                  Driver Type:</p>	<p><b>CHB-CNVM-111 Storage Conveyor</b>                  X96HS693                  C120                  0870                  7</p>
Auto Forward:	<p>The auto forward relay will be active if either of the following conditions is satisfied:</p> <ul style="list-style-type: none"> <li>• CHB-CNVM-111 auto load “west side” line C relay (see below) is active</li> <li>• CHB-CNVM-111 auto feed “west side” line C relay (see below) is active</li> </ul>
Auto Reverse:	<p>The auto reverse relay will be active if either of the following conditions is satisfied:</p> <ul style="list-style-type: none"> <li>• CHB-CNVM-111 auto unload “west side” line C relay (see below) is active</li> <li>• CHB-CNVM-111 auto return “west side” line C relay (see below) is active</li> </ul>
Forward I-Lock:	<p>The following conditions must be satisfied to allow the device to operate forward:</p> <ul style="list-style-type: none"> <li>• Panel View E-Stop not active</li> <li>• West side line C E-Stop not active</li> </ul>
Reverse I-Lock:	<p>The following conditions must be satisfied to allow the device to operate reverse:</p> <ul style="list-style-type: none"> <li>• Panel View E-Stop not active</li> <li>• West side line C E-Stop not active</li> </ul>
Relay:	<p>CHB-CNVM-111 auto load “west side” line C relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• CHB-CNVM-103 auto load “west side” line C relay is active and a container is present on CHB-CNVM-103 (96-ZS-003)</li> </ul> <p><b>OR</b></p>

Table D.3. TOCDF CHB PLC Automatic Control Sequences Panel View Screen: <b>SSA</b>	
Relay:	<ul style="list-style-type: none"> <li>• Load function selected storage line “West C”</li> <li>• CHB-CNVM-135B conveyor stop (96-ZS-090A) is raised</li> <li>• CHB-CNVM-135B conveyor stop (96-ZS-091A) is raised</li> <li>• Panel 127 input to run east line forward is active or Panel 129 input to run east line forward is active</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
Relay:	<p>CHB-CNVM-111 auto feed “west side” line C relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• Feed function selected storage line “West C”</li> <li>• “Auto process feed tray for storage” command is active</li> <li>• Container is present on CHB-CNVM-111 (96-ZS-029)</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
Relay:	<p>CHB-CNVM-111 auto unload “west side” line C relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• Unload function selected storage line “West C”</li> <li>• Crane 402 pendant load permissive</li> <li>• Container is not present on CHB-CNVM-103 (96-ZS-406)</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
Relay:	<p>CHB-CNVM-111 auto return west side line C relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• CHB-CNVM-135 auto return (reverse) relay is active</li> <li>• Container is present on CHB-CNVM-111 (96-ZS-029)</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
<b>Device:</b> Panel View Tag: CONR: Driver Word: Driver Type:	<p><b>CHB-CNVM-135B Conveyor Stop (XY-90)</b>                      X96XY90                      C120                      0871                      3</p>
Auto Extend:	<p>The auto extend relay will be active if the following conditions is satisfied:</p> <ul style="list-style-type: none"> <li>• CHB-CNVM-135B conveyor stop (XY-90) auto retract relay is not active</li> </ul>

Table D.3. TOCDF CHB PLC Automatic Control Sequences Panel View Screen: <b>SSA</b>	
Auto Retract:	<p>The auto retract relay will be active if either of the following conditions is satisfied:</p> <ul style="list-style-type: none"> <li>• CHB-CNVM-135B auto retract (feed) “west side” line C relay (see below) is active</li> <li>• CHB-CNVM-135B auto retract (return) “west side” line C relay (see below) is active</li> </ul>
Extend I-Lock:	<p>The following conditions must be satisfied to allow the device to extend:</p> <ul style="list-style-type: none"> <li>• Panel View E-Stop not active</li> <li>• West side line C E-Stop not active</li> </ul>
Relay:	<p>CHB-CNVM-135B auto retract (feed) “west side” line C relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• Feed function selected storage line “West C”</li> <li>• “Auto process feed tray for storage” command is active</li> <li>• Container is present on CHB-CNVM-111 (96-ZS-029)</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
Relay:	<p>CHB-CNVM-135B auto retract (return) “west side” line C relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• Auto process return tray for storage command is active</li> <li>• CHB-CNVM-126 is not operating in reverse</li> <li>• Container is present on CHB-CNVM-126 (96-ZS-103)</li> <li>• Container is present on CHB-CNVM-135A (96-ZS-084)</li> <li>• Container is present on CHB-CNVM-135B (96-ZS-035)</li> <li>• Return function selected storage line “West C”</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
<b>Device:</b>	<b>CHB-CNVM-104 Unload Conveyor</b>
Panel View Tag:	X96HS672
CONR:	C120
Driver Word:	0872
Driver Type:	7
Auto Forward:	<p>The auto forward relay will be active if either of the following conditions is satisfied:</p> <ul style="list-style-type: none"> <li>• CHB-CNVM-104 auto load west side line D relay (see below) is active</li> <li>• Load function selected storage line “West D”, Crane 402 pendant load permissive, and no container on CHB-CNVM-104 (96-ZS-004).</li> </ul>

Table D.3. TOCDF CHB PLC Automatic Control Sequences Panel View Screen: <b>SSA</b>	
Auto Reverse:	The auto reverse relay will be active if the following condition is satisfied: <ul style="list-style-type: none"> <li>• CHB-CNVM-104 auto unload west side line D relay (see below) is active</li> </ul>
Forward I-Lock:	The following conditions must be satisfied to allow the device to operate forward: <ul style="list-style-type: none"> <li>• Panel View E-Stop not active</li> <li>• West side line D E-Stop not active</li> </ul>
Reverse I-Lock:	The following conditions must be satisfied to allow the device to operate reverse: <ul style="list-style-type: none"> <li>• Panel View E-Stop not active</li> <li>• West side line D E-Stop not active</li> <li>• Container not present on CHB-CVNM-104 (96-ZS-407)</li> </ul>
Relay:	CHB-CNVM-104 auto load west side line D relay is latched (see above) if the following conditions are satisfied: <ul style="list-style-type: none"> <li>• Load function selected storage line “West D”</li> <li>• CHB-CNVM-136B conveyor stop (96-ZS-092A) is raised</li> <li>• CHB-CNVM-136B conveyor stop (96-ZS-093A) is raised</li> <li>• Crane 402 pendant load permissive</li> <li>• Container is present on CHB-CNVM-104 (96-ZS-407)</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
Relay:	CHB-CNVM-104 auto unload west side line D relay is latched (see above) if the following conditions are satisfied: <ul style="list-style-type: none"> <li>• Unload function selected storage line “West D”</li> <li>• Crane 402 pendant load permissive</li> <li>• Container is not present on CHB-CNVM-104 (96-ZS-407)</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
<b>Device:</b>	<b>CHB-CNVM-108 Storage Conveyor</b>
Panel View Tag:	X96HS684
CONR:	C120
Driver Word:	0873
Driver Type:	7
Auto Forward:	The auto forward relay will be active if either of the following conditions is satisfied: <ul style="list-style-type: none"> <li>• CHB-CNVM-108 auto load “west side” line D relay (see below) is active</li> <li>• CHB-CNVM-108 auto feed “west side” line D relay (see below) is active</li> </ul>

Table D.3. TOCDF CHB PLC Automatic Control Sequences Panel View Screen: <b>SSA</b>	
Auto Reverse:	<p>The auto reverse relay will be active if either of the following conditions is satisfied:</p> <ul style="list-style-type: none"> <li>• CHB-CNVM-108 auto unload “west side” line D relay (see below) is active</li> <li>• CHB-CNVM-108 auto return “west side” line D relay (see below) is active</li> </ul>
Forward I-Lock:	<p>The following conditions must be satisfied to allow the device to operate forward:</p> <ul style="list-style-type: none"> <li>• Panel View E-Stop not active</li> <li>• West side line D E-Stop not active</li> </ul>
Reverse I-Lock:	<p>The following conditions must be satisfied to allow the device to operate reverse:</p> <ul style="list-style-type: none"> <li>• Panel View E-Stop not active</li> <li>• West side line D E-Stop not active</li> </ul>
Relay:	<p>CHB-CNVM-108 auto load “west side” line D relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• CHB-CNVM-104 auto load “west side” line D relay is active and a container is present on CHB-CNVM-104 (96-ZS-004)</li> </ul> <p style="text-align: center;"><b>OR</b></p> <ul style="list-style-type: none"> <li>• Load function selected storage line “West D”</li> <li>• CHB-CNVM-136B conveyor stop (96-ZS-092A) is raised</li> <li>• CHB-CNVM-136B conveyor stop (96-ZS-093A) is raised</li> <li>• Panel 127 input to run east line forward is active or Panel 129 input to run east line forward is active</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
Relay:	<p>CHB-CNVM-108 auto feed “west side” line D relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• Feed function selected storage line “West D”</li> <li>• “Auto process feed tray for storage” command is active</li> <li>• Container is present on CHB-CNVM-112 (96-ZS-032)</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
Relay:	<p>CHB-CNVM-108 auto unload “west side” line D relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• Unload function selected storage line “West D”</li> <li>• Crane 402 pendant load permissive</li> <li>• Container is not present on CHB-CNVM-104 (96-ZS-407)</li> </ul>

Table D.3. TOCDF CHB PLC Automatic Control Sequences Panel View Screen: <b>SSA</b>	
Relay:	<p>Note: Once energized, the relay will remain active until the tray is transferred.</p> <p>CHB-CNVM-108 auto return west side line D relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• CHB-CNVM-136 auto return (reverse) relay is active</li> <li>• Container is present on CHB-CNVM-112 (96-ZS-032)</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
<b>Device:</b> Panel View Tag: CONR: Driver Word: Driver Type: Auto Forward:	<p><b>CHB-CNVM-112 Storage Conveyor</b></p> <p>X96HS696</p> <p>C120</p> <p>0874</p> <p>7</p> <p>The auto forward relay will be active if either of the following conditions is satisfied:</p> <ul style="list-style-type: none"> <li>• CHB-CNVM-112 auto load “west side” line D relay (see below) is active</li> <li>• CHB-CNVM-112 auto feed “west side” line D relay (see below) is active</li> </ul>
Auto Reverse:	<p>The auto reverse relay will be active if either of the following conditions is satisfied:</p> <ul style="list-style-type: none"> <li>• CHB-CNVM-112 auto unload “west side” line D relay (see below) is active</li> <li>• CHB-CNVM-112 auto return “west side” line D relay (see below) is active</li> </ul>
Forward I-Lock:	<p>The following conditions must be satisfied to allow the device to operate forward:</p> <ul style="list-style-type: none"> <li>• Panel View E-Stop not active</li> <li>• West side line D E-Stop not active</li> </ul>
Reverse I-Lock:	<p>The following conditions must be satisfied to allow the device to operate reverse:</p> <ul style="list-style-type: none"> <li>• Panel View E-Stop not active</li> <li>• West side line D E-Stop not active</li> </ul>
Relay:	<p>CHB-CNVM-112 auto load “west side” line D relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• CHB-CNVM-104 auto load “west side” line D relay is active and a container is present on CHB-CNVM-104 (96-ZS-004)</li> </ul> <p><b>OR</b></p> <ul style="list-style-type: none"> <li>• Load function selected storage line “West D”</li> <li>• CHB-CNVM-136B conveyor stop (96-ZS-092A) is raised</li> <li>• CHB-CNVM-136B conveyor stop (96-ZS-093A) is raised</li> </ul>

Table D.3. TOCDF CHB PLC Automatic Control Sequences Panel View Screen: <b>SSA</b>	
Relay:	<ul style="list-style-type: none"> <li>• Panel 127 input to run east line forward is active or Panel 129 input to run east line forward is active</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p> <p>CHB-CNVM-112 auto feed “west side” line D relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• Feed function selected storage line “West D”</li> <li>• “Auto process feed tray for storage” command is active</li> <li>• Container is present on CHB-CNVM-112 (96-ZS-032)</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
Relay:	<p>CHB-CNVM-112 auto unload “west side” line D relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• Unload function selected storage line “West D”</li> <li>• Crane 402 pendant load permissive</li> <li>• Container is not present on CHB-CNVM-104 (96-ZS-407)</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
Relay:	<p>CHB-CNVM-112 auto return west side line D relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• CHB-CNVM-136 auto return (reverse) relay is active</li> <li>• Container is present on CHB-CNVM-112 (96-ZS-032)</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
<b>Device:</b>	<b>CHB-CNVM-136B Conveyor Stop (XY-92)</b>
Panel View Tag:	X96XY92
CONR:	C120
Driver Word:	0875
Driver Type:	3
Auto Extend:	The auto extend relay will be active if the following conditions is satisfied: <ul style="list-style-type: none"> <li>• CHB-CNVM-136B conveyor stop (XY-92) auto retract relay is not active</li> </ul>
Auto Retract:	The auto retract relay will be active if either of the following conditions is satisfied: <ul style="list-style-type: none"> <li>• CHB-CNVM-136B auto retract (feed) “west side” line D relay (see below) is active</li> <li>• CHB-CNVM-136B auto retract (return) “west side” line D relay (see below) is active</li> </ul>

**Table D.3. TOCDF CHB PLC Automatic Control Sequences**  
**Panel View Screen: SSA**

Extend I-Lock:	<p>The following conditions must be satisfied to allow the device to extend:</p> <ul style="list-style-type: none"> <li>• Panel View E-Stop not active</li> <li>• West side line D E-Stop not active</li> </ul>
Relay:	<p>CHB-CNVM-136B auto retract (feed) “west side” line D relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• Feed function selected storage line “West D”</li> <li>• “Auto process feed tray for storage” command is active</li> <li>• Container is present on CHB-CNVM-112 (96-ZS-032)</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
Relay:	<p>CHB-CNVM-136B auto retract (return) “west side” line D relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• Auto process return tray for storage command is active</li> <li>• CHB-CNVM-126 is not operating in reverse</li> <li>• Container is present on CHB-CNVM-126 (96-ZS-101)</li> <li>• Container is present on CHB-CNVM-136A (96-ZS-085)</li> <li>• Container is present on CHB-CNVM-136B (96-ZS-941)</li> <li>• Return function selected storage line “West D”</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
<b>Device:</b>	<b>CHB-CNVM-135 Transfer Conveyor</b>
Panel View Tag:	X96HS705
CONR:	C120
Driver Word:	0876
Driver Type:	7
Auto Forward:	<p>The auto forward relay will be active if either of the following conditions is satisfied:</p> <ul style="list-style-type: none"> <li>• CHB-CNVM-135 auto feed (forward) “east side” line C relay (see below) is active</li> <li>• CHB-CNVM-135 auto return (forward) line C relay (see below) is active</li> </ul>
Auto Reverse:	<p>The auto reverse relay will be active if either of the following conditions is satisfied:</p> <ul style="list-style-type: none"> <li>• CHB-CNVM-135 auto feed (reverse) “west side” line C relay (see below) is active</li> <li>• CHB-CNVM-135 auto return (reverse) line C relay (see below) is active</li> </ul>

Table D.3. TOCDF CHB PLC Automatic Control Sequences Panel View Screen: <b>SSA</b>	
Forward I-Lock:	<p>The following conditions must be satisfied to allow the device to operate forward:</p> <ul style="list-style-type: none"> <li>• Panel View E-Stop not active</li> <li>• North transfer area E-Stop not active</li> <li>• Air to Roller (96-PSL-603 and 96-PSL-604) clear (on time delay)</li> </ul>
Reverse I-Lock:	<p>The following conditions must be satisfied to allow the device to operate reverse:</p> <ul style="list-style-type: none"> <li>• Panel View E-Stop not active</li> <li>• North transfer area E-Stop not active</li> <li>• Air to Roller (96-PSL-603 and 96-PSL-604) clear (on time delay)</li> </ul>
Relay:	<p>CHB-CNVM-135 auto feed (forward) “east side” line C relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• Feed function selected storage line “East C”</li> <li>• “Auto process feed tray for storage” command is active</li> <li>• Container is present on CHB-CNVM-115 (96-ZS-078)</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
Relay:	<p>CHB-CNVM-133 auto return (forward) line C relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• Return function selected storage line “West C”</li> <li>• “Auto process return tray for storage” command is active</li> <li>• CHB-CNVM-135B conveyor stop (XY-90) retracted</li> <li>• Container is present on CHB-CNVM-126 (96-ZS-103)</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
Relay:	<p>CHB-CNVM-135 auto feed (reverse) “west side” line C relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• Feed function selected storage line “West C”</li> <li>• Auto process feed tray for storage command is active</li> <li>• Container is present on CHB-CNVM-111 (96-ZS-029)</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
Relay:	<p>CHB-CNVM-135 auto return (reverse) line C relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• Return function selected storage line “East C”</li> <li>• Auto process return tray for storage command is active</li> <li>• CHB-CNVM-135A conveyor stop (XY-98) raised</li> <li>• Container is present on CHB-CNVM-126 (96-ZS-103)</li> </ul>

**Table D.3. TOCDF CHB PLC Automatic Control Sequences  
Panel View Screen: SSA**

Note: Once energized, the relay will remain active until the tray is transferred.

<b>Device:</b>	<b>CHB-CNVM-136 Transfer Conveyor</b>
Panel View Tag:	X96HS708
CONR:	C120
Driver Word:	0877
Driver Type:	7
Auto Forward:	<p>The auto forward relay will be active if either of the following conditions is satisfied:</p> <ul style="list-style-type: none"> <li>• CHB-CNVM-136 auto feed (forward) “east side” line D relay (see below) is active</li> <li>• CHB-CNVM-136 auto return (forward) line D relay (see below) is active</li> </ul>
Auto Reverse:	<p>The auto reverse relay will be active if either of the following conditions is satisfied:</p> <ul style="list-style-type: none"> <li>• CHB-CNVM-136 auto feed (reverse) “west side” line D relay (see below) is active</li> <li>• CHB-CNVM-136 auto return (reverse) line D relay (see below) is active</li> </ul>
Forward I-Lock:	<p>The following conditions must be satisfied to allow the device to operate forward:</p> <ul style="list-style-type: none"> <li>• Panel View E-Stop not active</li> <li>• North transfer area E-Stop not active</li> <li>• Air to Roller (96-PSL-603 and 96-PSL-604) clear (on time delay)</li> </ul>
Reverse I-Lock:	<p>The following conditions must be satisfied to allow the device to operate reverse:</p> <ul style="list-style-type: none"> <li>• Panel View E-Stop not active</li> <li>• North transfer area E-Stop not active</li> <li>• Air to Roller (96-PSL-603 and 96-PSL-604) clear (on time delay)</li> </ul>
Relay:	<p>CHB-CNVM-136 auto feed (forward) “east side” line D relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• Feed function selected storage line “East D”</li> <li>• “Auto process feed tray for storage” command is active</li> <li>• Container is present on CHB-CNVM-116 (96-ZS-081)</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>

Table D.3. TOCDF CHB PLC Automatic Control Sequences Panel View Screen: <b>SSA</b>	
Relay:	<p>CHB-CNVM-136 auto return (forward) line D relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• Return function selected storage line “West D”</li> <li>• “Auto process return tray for storage” command is active</li> <li>• CHB-CNVM-136B conveyor stop (XY-92) retracted</li> <li>• Container is present on CHB-CNVM-126 (96-ZS-101)</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
Relay:	<p>CHB-CNVM-136 auto feed (reverse) “west side” line D relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• Feed function selected storage line “West D”</li> <li>• Auto process feed tray for storage command is active</li> <li>• Container is present on CHB-CNVM-112 (96-ZS-032)</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
Relay:	<p>CHB-CNVM-136 auto return (reverse) line D relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• Return function selected storage line “East D”</li> <li>• Auto process return tray for storage command is active</li> <li>• CHB-CNVM-136A conveyor stop (XY-100) raised</li> <li>• Container is present on CHB-CNVM-126 (96-ZS-101)</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
<b>Device:</b>	<b>CHB-CNVM-126 Transfer Conveyor</b>
Panel View Tag:	X96HS756
CONR:	C120
Driver Word:	0878
Driver Type:	7
Auto Forward:	<p>The auto forward relay will be active if either of the following conditions is satisfied:</p> <ul style="list-style-type: none"> <li>• CHB-CNVM-126 auto feed (forward) lines C &amp; D relay (see below) is active</li> <li>• Conveyor initialize timer (see below) is active</li> </ul>
Auto Reverse:	<p>The auto reverse relay will be active if either of the following conditions is satisfied:</p> <ul style="list-style-type: none"> <li>• CHB-CNVM-126 south transfer lines C &amp; D auto reverse relay (see below) is active</li> </ul>
Forward I-Lock:	<p>The following conditions must be satisfied to allow the device to operate forward:</p> <ul style="list-style-type: none"> <li>• Panel View E-Stop not active</li> </ul>

Table D.3. TOCDF CHB PLC Automatic Control Sequences Panel View Screen: <b>SSA</b>	
Reverse I-Lock:	<ul style="list-style-type: none"> <li>• North transfer area E-Stop not active</li> <li>• Air to Roller (96-PSL-569, 96-PSL-570, 96-PSL-571 and 96-PSL-572) clear (on time delay)</li> </ul> <p>The following conditions must be satisfied to allow the device to operate reverse:</p> <ul style="list-style-type: none"> <li>• Panel View E-Stop not active</li> <li>• North transfer area E-Stop not active</li> <li>• Air to Roller (96-PSL-569, 96-PSL-570, 96-PSL-571 and 96-PSL-572) clear (on time delay)</li> </ul>
Relay:	<p>CHB-CNVM-126 auto feed (forward) lines C &amp; D relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• CHB-CNVM-127 central corridor conveyor auto feed forward not active</li> <li>• “Auto process feed tray for corridor and lift” command is active</li> <li>• “Auto process feed tray for storage” command is not active</li> <li>• Any of the following:               <ul style="list-style-type: none"> <li>• Container is present on CHB-CNVM-135B (96-ZS-035) and Container is present on CHB-CNVM-135A (96-ZS-084)</li> <li>• Container is present on CHB-CNVM-136B (96-ZS-941) and Container is present on CHB-CNVM-136A (96-ZS-085)</li> <li>• CHB-CNVM-125 Lines A &amp; B auto feed (forward) relay is active</li> </ul> </li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
Timer:	<p>Conveyor initialize timer (see above) is active (on time delay) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• Auto process start is active</li> <li>• Trays not found at the north transfer area, south transfer area, corridor or at the west lift.</li> </ul>
Relay:	<p>CHB-CNVM-126 south transfer lines C &amp; D auto reverse relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• Auto process return tray for storage command is active</li> <li>• Container is present on CHB-CNVM-130 (96-ZS-111)</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>

Table D.4. TOCDF CHB PLC Automatic Control Sequences  
Panel View Screen: **CAC**

<b>Device:</b>	<b>CHB-CNVM-127 Central Corridor Conveyor</b>
Panel View Tag:	X96HS708
CONR:	C120
Driver Word:	1060
Driver Type:	7
Auto Forward:	The auto forward relay will be active if either of the following conditions is satisfied: <ul style="list-style-type: none"><li>• CHB-CNVM-127 auto feed (forward) relay (see below) is active</li><li>• Conveyor initialize timer (see below) is active</li></ul>
Auto Reverse:	The auto reverse relay will be active if the following condition is satisfied: <ul style="list-style-type: none"><li>• CHB-CNVM-127 auto reverse (latch) relay (see below) is active</li></ul>
Forward I-Lock:	The following conditions must be satisfied to allow the device to operate forward: <ul style="list-style-type: none"><li>• Panel View E-Stop not active</li><li>• Central Corridor E-Stop not active</li></ul>
Reverse I-Lock:	The following conditions must be satisfied to allow the device to operate reverse: <ul style="list-style-type: none"><li>• Panel View E-Stop not active</li><li>• Central Corridor E-Stop not active</li></ul>
Relay:	CHB-CNVM-127 auto feed (forward) relay is latched (see above) if the following conditions are satisfied: <ul style="list-style-type: none"><li>• “Auto process feed tray for corridor and lift” command is active</li><li>• Either of the following:<ul style="list-style-type: none"><li>• CHB-CNVM-125 auto feed (forward) relay is active</li><li>• CHB-CNVM-126 auto feed (forward) relay is active</li></ul></li></ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
Timer:	Conveyor initialize timer (see above) is active (on time delay) if the following conditions are satisfied: <ul style="list-style-type: none"><li>• Auto process start is active</li><li>• Trays not found at the north transfer area, south transfer area, corridor or at the west lift.</li></ul>
Relay:	CHB-CNVM-127 auto reverse (latch) relay is latched (see above) if the following conditions are satisfied: <ul style="list-style-type: none"><li>• “Auto process return tray for storage” command is active</li></ul>

Table D.4. TOCDF CHB PLC Automatic Control Sequences Panel View Screen: <b>CAC</b>	
	<ul style="list-style-type: none"> <li>• Container is present on CHB-CNVM-131A (96-ZS-980)</li> <li>• Leaker return auto sequence (panel-129) not active</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
<b>Device:</b>	<b>CHB-CNVM-128 Central Corridor Conveyor</b>
Panel View Tag:	X96HS762
CONR:	C120
Driver Word:	1061
Driver Type:	7
Auto Forward:	The auto forward relay will be active if either of the following conditions is satisfied: <ul style="list-style-type: none"> <li>• CHB-CNVM-128 auto feed (forward) relay (see below) is active</li> <li>• Conveyor initialize timer (see below) is active</li> </ul>
Auto Reverse:	The auto reverse relay will be active if the following condition is satisfied: <ul style="list-style-type: none"> <li>• CHB-CNVM-128 auto reverse (latch) relay (see below) is active</li> </ul>
Forward I-Lock:	The following conditions must be satisfied to allow the device to operate forward: <ul style="list-style-type: none"> <li>• Panel View E-Stop not active</li> <li>• Central Corridor E-Stop not active</li> </ul>
Reverse I-Lock:	The following conditions must be satisfied to allow the device to operate reverse: <ul style="list-style-type: none"> <li>• Panel View E-Stop not active</li> <li>• Central Corridor E-Stop not active</li> </ul>
Relay:	CHB-CNVM-128 auto feed (forward) relay is latched (see above) if the following conditions are satisfied: <ul style="list-style-type: none"> <li>• “Auto process feed tray for corridor and lift” command is active</li> <li>• Either of the following:                             <ul style="list-style-type: none"> <li>• CHB-CNVM-125 auto feed (forward) relay is active</li> <li>• CHB-CNVM-126 auto feed (forward) relay is active</li> </ul> </li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
Timer:	Conveyor initialize timer (see above) is active (on time delay) if the following conditions are satisfied: <ul style="list-style-type: none"> <li>• Auto process start is active</li> <li>• Trays not found at the north transfer area, south transfer area, corridor or at the west lift.</li> </ul>

Table D.4. TOCDF CHB PLC Automatic Control Sequences  
 Panel View Screen: **CAC**

Relay:	<p>CHB-CNVM-128 auto reverse (latch) relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• “Auto process return tray for storage” command is active</li> <li>• Container is present on CHB-CNVM-131A (96-ZS-980)</li> <li>• Leaker return auto sequence (panel-129) not active</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
<p><b>Device:</b>                  Panel View Tag:                  CONR:                  Driver Word:                  Driver Type:                  Auto Forward:</p>	<p><b>CHB-CNVM-129 Central Corridor Conveyor</b>                  X96HS765                  C120                  1062                  7</p> <p>The auto forward relay will be active if either of the following conditions is satisfied:</p> <ul style="list-style-type: none"> <li>• CHB-CNVM-129 auto feed (forward) relay (see below) is active</li> <li>• Conveyor initialize timer (see below) is active</li> </ul>
Auto Reverse:	<p>The auto reverse relay will be active if the following condition is satisfied:</p> <ul style="list-style-type: none"> <li>• CHB-CNVM-129 auto reverse (latch) relay (see below) is active</li> </ul>
Forward I-Lock:	<p>The following conditions must be satisfied to allow the device to operate forward:</p> <ul style="list-style-type: none"> <li>• Panel View E-Stop not active</li> <li>• Central Corridor E-Stop not active</li> </ul>
Reverse I-Lock:	<p>The following conditions must be satisfied to allow the device to operate reverse:</p> <ul style="list-style-type: none"> <li>• Panel View E-Stop not active</li> <li>• Central Corridor E-Stop not active</li> </ul>
Relay:	<p>CHB-CNVM-129 auto feed (forward) relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• “Auto process feed tray for corridor and lift” command is active</li> <li>• Either of the following:                         <ul style="list-style-type: none"> <li>• CHB-CNVM-125 auto feed (forward) relay is active</li> <li>• CHB-CNVM-126 auto feed (forward) relay is active</li> </ul> </li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>

Table D.4. TOCDF CHB PLC Automatic Control Sequences Panel View Screen: <b>CAC</b>	
Timer:	<p>Conveyor initialize timer (see above) is active (on time delay) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• Auto process start is active</li> <li>• Trays not found at the north transfer area, south transfer area, corridor or at the west lift.</li> </ul>
Relay:	<p>CHB-CNVM-129 auto reverse (latch) relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• “Auto process return tray for storage” command is active</li> <li>• Container is present on CHB-CNVM-131A (96-ZS-980)</li> <li>• Leaker return auto sequence (panel-129) not active</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>

Table D.5. TOCDF CHB PLC Automatic Control Sequences  
 Panel View Screen: **TAC**

<b>Device:</b>	<b>CHB-CNVM-130 South Corridor Conveyor</b>
Panel View Tag:	X96HS768
CONR:	C120
Driver Word:	1260
Driver Type:	7
Auto Forward:	The auto forward relay will be active if either of the following conditions is satisfied: <ul style="list-style-type: none"> <li>• CHB-CNVM-130 auto feed (in) relay (see below) is active</li> <li>• CHB-CNVM-130 auto feed (out) relay (see below) is active</li> <li>• Conveyor initialize timer (see below) is active</li> </ul>
Auto Reverse:	The auto reverse relay will be active if the following condition is satisfied: <ul style="list-style-type: none"> <li>• CHB-CNVM-130 auto reverse (latch) relay (see below) is active</li> </ul>
Forward I-Lock:	The following conditions must be satisfied to allow the device to operate forward: <ul style="list-style-type: none"> <li>• Panel View E-Stop not active</li> <li>• South area E-Stop not active</li> <li>• 96-PSL-637 (Air to roller) clear</li> <li>• 96-PSL-638 (Air to roller) clear</li> </ul>
Reverse I-Lock:	The following conditions must be satisfied to allow the device to operate reverse: <ul style="list-style-type: none"> <li>• Panel View E-Stop not active</li> <li>• South area E-Stop not active</li> <li>• 96-PSL-637 (Air to roller) clear and 96-PSL-638 (Air to roller) clear (on time delay)</li> </ul>
Relay:	CHB-CNVM-130 auto feed (in) relay is latched (see above) if the following conditions are satisfied: <ul style="list-style-type: none"> <li>• “Auto process feed tray for corridor and lift” command is active</li> <li>• Either of the following:                     <ul style="list-style-type: none"> <li>• CHB-CNVM-125 auto feed (forward) relay is active</li> <li>• CHB-CNVM-126 auto feed (forward) relay is active</li> </ul> </li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
Relay:	CHB-CNVM-130 auto feed (out) relay is latched (see above) if the following conditions are satisfied: <ul style="list-style-type: none"> <li>• “Auto process feed tray for corridor and lift” command is active</li> <li>• Either of the following:</li> </ul>

Table D.5. TOCDF CHB PLC Automatic Control Sequences	
Panel View Screen: <b>TAC</b>	
	<ul style="list-style-type: none"> <li>• Container is present on CHB-CNVM-130 (96-ZS-112)</li> <li>• CHB-CNVM-130 auto feed (in) relay is latched (see above)</li> <li>• CHB-CNVM-130 conveyor stop (XY-113) is retracted</li> <li>• CHB-GATE-147 LIFT-101 gate is open</li> <li>• CHB-CNVM-137A conveyor stop (XY-209) is retracted</li> <li>• CHB-CNVM-137B conveyor stop (XY-219) is extended</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
Timer:	<p>Conveyor initialize timer (see above) is active (on time delay) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• Auto process start is active</li> <li>• Trays not found at the north transfer area, south transfer area, corridor or at the west lift.</li> </ul>
Relay:	<p>CHB-CNVM-130 auto reverse (latch) relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• “Auto process return tray for storage” command is active</li> <li>• Container is present on CHB-CNVM-131A (96-ZS-980)</li> <li>• Leaker return auto sequence (panel-129) not active</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
<b>Device:</b>	<b>CHB-CNVM-130 Conveyor Stop (XY-113)</b>
Panel View Tag:	X96XY113
CONR:	C120
Driver Word:	1261
Driver Type:	3
Auto Extend:	<p>The auto extend relay will be active if the following condition is satisfied:</p> <ul style="list-style-type: none"> <li>• CHB-CNVM-130 conveyor stop auto retract relay is not active</li> </ul>
Auto Retract:	<p>The auto retract relay will be active if the following condition is satisfied:</p> <ul style="list-style-type: none"> <li>• CHB-CNVM-130 conveyor stop auto retract (latch) relay (see below) is active</li> </ul>
Extend I-Lock:	<p>The following conditions must be satisfied to allow the device to extend:</p> <ul style="list-style-type: none"> <li>• Panel View E-Stop not active</li> <li>• South area E-Stop not active</li> </ul>
Relay:	<p>CHB-CNVM-130 conveyor stop auto retract (latch) relay is latched (see above) if the following conditions are satisfied:</p>

Table D.5. TOCDF CHB PLC Automatic Control Sequences Panel View Screen: <b>TAC</b>	
	<ul style="list-style-type: none"> <li>• “Auto process feed tray for corridor and lift” command is active</li> <li>• Container is present on CHB-CNVM-130 (96-ZS-111)</li> <li>• Container is not present on CHB-CNVM-137 (96-ZS-121)</li> <li>• LIFT-101 is present at first floor</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
<p><b>Device:</b>                  Panel View Tag:                  CONR:                  Driver Word:                  Driver Type:                  Auto Forward:</p> <p>Auto Reverse:</p> <p>Forward I-Lock:</p> <p>Reverse I-Lock:</p> <p>Relay:</p>	<p><b>CHB-CNVM-131 Transition Conveyor</b>                  X96HS792                  C120                  1262                  7</p> <p>The auto forward relay will be active if either of the following conditions is satisfied:</p> <ul style="list-style-type: none"> <li>• CHB-CNVM-131 auto forward (latch) relay (see below) is active</li> </ul> <p>None.</p> <p>The following conditions must be satisfied to allow the device to operate forward:</p> <ul style="list-style-type: none"> <li>• Panel View E-Stop not active</li> <li>• South area E-Stop not active</li> <li>• Container not present on CHB-CNVM-131A (96-ZS-980)</li> <li>• 96-PSL-611 (Air to CHB-CNVM-130 roller) clear</li> <li>• 96-PSL-612 (Air to CHB-CNVM-130 drive) clear</li> <li>• 96-PSL-635 (Air to CHB-CNVM-132 roller) clear</li> <li>• 96-PSL-636 (Air to CHB-CNVM-132 drive) clear</li> </ul> <p>The following conditions must be satisfied to allow the device to operate reverse:</p> <ul style="list-style-type: none"> <li>• Panel View E-Stop not active</li> <li>• South area E-Stop not active</li> <li>• 96-PSL-611 (Air to CHB-CNVM-130 roller) clear</li> <li>• 96-PSL-612 (Air to CHB-CNVM-130 drive) clear</li> <li>• 96-PSL-635 (Air to CHB-CNVM-132 roller) clear</li> <li>• 96-PSL-636 (Air to CHB-CNVM-132 drive) clear</li> </ul> <p>CHB-CNVM-131 auto forward (latch) relay (see above) is latched (one-shot) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• “Auto process return tray for storage” command is active</li> <li>• Container is present on CHB-CNVM-132 (96-ZS-134)</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>

**Table D.5. TOCDF CHB PLC Automatic Control Sequences  
Panel View Screen: TAC**

<b>Device:</b>	<b>CHB-CNVM-132 Transition Conveyor</b>
Panel View Tag:	X96HS789
CONR:	C120
Driver Word:	1263
Driver Type:	7
Auto Forward:	The auto forward relay will be active if either of the following conditions is satisfied: <ul style="list-style-type: none"> <li>• CHB-CNVM-132 auto forward (latch) relay (see below) is active</li> </ul>
Auto Reverse:	None.
Forward I-Lock:	The following conditions must be satisfied to allow the device to operate forward: <ul style="list-style-type: none"> <li>• Panel View E-Stop not active</li> <li>• South area E-Stop not active</li> <li>• 96-PSL-637 (Air to CHB-CNVM-131A, B, C roller) clear</li> <li>• 96-PSL-638 (Air to CHB-CNVM-131A, B, C drive) clear</li> </ul>
Reverse I-Lock:	The following conditions must be satisfied to allow the device to operate reverse: <ul style="list-style-type: none"> <li>• Panel View E-Stop not active</li> <li>• South area E-Stop not active</li> <li>• 96-PSL-637 (Air to CHB-CNVM-131A, B, C roller) clear</li> <li>• 96-PSL-638 (Air to CHB-CNVM-131A, B, C drive) clear</li> </ul>
Relay:	CHB-CNVM-132 auto forward (latch) relay (see above) is latched if the following conditions are satisfied: <ul style="list-style-type: none"> <li>• Return discharge auto sequence started (Panel-129) active</li> <li>• Container is present on CHB-CNVM-138 (96-ZS-133)</li> <li>• Container is not present on CHB-CNVM-132 (96-ZS-134)</li> <li>• CHB-GATE-146 LIFT-102 gate is open</li> <li>• CHB-CNVM-138 conveyor stop (XY-53) retracted</li> <li>• MPF routine – send empty tray holders to MPF gate (Panel-129) not active</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
<b>Device:</b>	<b>CHB-CNVM-132 Conveyor Stop (XY-115)</b>
Panel View Tag:	X96XY115
CONR:	C120
Driver Word:	1264
Driver Type:	3
Auto Extend:	The auto extend relay is always active.

Table D.5. TOCDF CHB PLC Automatic Control Sequences Panel View Screen: <b>TAC</b>	
Auto Retract:	None
Extend I-Lock:	The following conditions must be satisfied to allow the device to extend: <ul style="list-style-type: none"><li>• Panel View E-Stop not active</li><li>• South area E-Stop not active</li></ul>

**Table D.6. TOCDF CHB PLC Automatic Control Sequences  
Panel View Screen: UPA**

<b>Device:</b>	<b>CHB-GATE-147 LIFT-101 Gate</b>
Panel View Tag:	X96HS440C
CONR:	C120
Driver Word:	1460
Driver Type:	7
Auto Open:	The auto open relay will be active if either of the following conditions is satisfied: <ul style="list-style-type: none"> <li>• CHB-GATE-147 auto open (latch) relay (see below) is active</li> </ul>
Auto Close:	The auto close relay will be active if the following condition is satisfied: <ul style="list-style-type: none"> <li>• CHB-GATE-147 auto close (latch) relay (see below) is active</li> </ul>
Open I-Lock:	The following conditions must be satisfied to allow the device to open: <ul style="list-style-type: none"> <li>• CHB-LIFT-101 not moving up</li> <li>• CHB-LIFT-101 not moving down</li> <li>• CHB-LIFT-101 on first floor (96-ZS-041A)</li> <li>• CHB-LIFT-101 on first floor (96-ZS-041B)</li> <li>• Panel View E-Stop not active</li> <li>• CHB-GATE-147 emergency override (96-HS-445) not active</li> <li>• CHB-GATE-203 closed</li> </ul>
Close I-Lock:	The following conditions must be satisfied to allow the device to close: <ul style="list-style-type: none"> <li>• Panel View E-Stop not active</li> <li>• CHB-GATE-147 emergency override (96-HS-445) not active</li> <li>• CHB-CNVM-137 “fail to arrive” alarm not active</li> </ul>
Relay:	CHB-GATE-147 auto open (latch) relay is latched (see above) if the following conditions are satisfied: <ul style="list-style-type: none"> <li>• “Auto process feed tray for corridor and lift” command is active</li> <li>• Container present on CHB-CNVM-130 (96-ZS-111)</li> <li>• Container not present on CHB-CNVM-137 (96-ZS-121)</li> <li>• LIFT-101 present at first floor</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
Relay:	CHB-GATE-147 auto close (latch) relay is latched (see above) if either of the following conditions is satisfied: <ul style="list-style-type: none"> <li>• “Stop Auto processing” command (Panel-129) is active</li> <li>• Container is present on CHB-CNVM-137 (96-ZS-121) and CHB-GATE-137 is open</li> </ul> <p>Note: Once energized, the relay will remain active until the gate is closed.</p>

Table D.6. TOCDF CHB PLC Automatic Control Sequences  
 Panel View Screen: **UPA**

<p><b>Device:</b>                  Panel View Tag:                  CONR:                  Driver Word:                  Driver Type:                  Auto Raise:</p>	<p><b>CHB-LIFT-101 Lift Car</b>                  X96HS486                  C120                  1461                  7                  The auto raise relay will be active if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• CHB-GATE-147 closed</li> <li>• Container present on CHB-CNVM-137 (96-ZS-121)</li> <li>• LIFT-101 present on first floor</li> </ul> <p>The auto lower relay will be active if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• CHB-GATE-203 closed</li> <li>• Container not present on CHB-CNVM-137 (96-ZS-121)</li> <li>• LIFT-101 present at second floor</li> <li>• CHB-CNVM-137 not running forward</li> </ul> <p>The following conditions must be satisfied to allow the device to raise:</p> <ul style="list-style-type: none"> <li>• CHB-LIFT-101 Gates closed</li> <li>• CHB-LIFT-101 not moving down</li> <li>• 96-PSL-621 (CHB-CNVM-137 Air Roller) clear</li> <li>• 96-PSL-622 (CHB-CNVM-137 Air Roller) clear</li> <li>• Panel View E-Stop not active</li> <li>• CHB-LIFT-101 first floor lockout not active</li> <li>• CHB-LIFT-101 second floor lockout not active</li> </ul> <p>The following conditions must be satisfied to allow the device to operate reverse:</p> <ul style="list-style-type: none"> <li>• CHB-LIFT-101 Gates closed</li> <li>• CHB-LIFT-101 not moving up (on time delay)</li> <li>• 96-PSL-621 (CHB-CNVM-137 Air Roller) clear</li> <li>• 96-PSL-622 (CHB-CNVM-137 Air Roller) clear</li> <li>• Panel View E-Stop not active</li> <li>• CHB-LIFT-101 first floor lockout not active</li> <li>• CHB-LIFT-101 second floor lockout not active</li> </ul>
<p><b>Device:</b>                  Panel View Tag:                  CONR:                  Driver Word:                  Driver Type:                  Auto Forward:</p>	<p><b>CHB-CNVM-137 Lift Conveyor</b>                  X96HS773                  C120                  1462                  7                  The auto forward relay will be active if either of the following conditions is satisfied:</p> <ul style="list-style-type: none"> <li>• CHB-CNVM-137 auto forward (load) relay (see below) is active</li> <li>• CHB-CNVM-137 auto forward (unload) relay (see below) is active</li> </ul>

**Table D.6. TOCDF CHB PLC Automatic Control Sequences  
Panel View Screen: UPA**

Auto Reverse:	None.
Forward I-Lock:	<p>The following conditions must be satisfied to allow the device to operate forward:</p> <ul style="list-style-type: none"> <li>• Panel View E-Stop not active</li> <li>• Lift E-Stop not active</li> <li>• Either of the following: <ul style="list-style-type: none"> <li>• LIFT-101 present at second floor (96-ZS-073A), LIFT-101 present at second floor (96-ZS-073B), and CHB-GATE-203 open</li> <li>• LIFT-101 present at first floor (96-ZS-041A), LIFT-101 present at first floor (96-ZS-041B), CHB-GATE-147 open, and CHB-CNVM-137B conveyor stop (XY-219) extended</li> </ul> </li> </ul>
Reverse I-Lock:	<p>The following conditions must be satisfied to allow the device to operate reverse:</p> <ul style="list-style-type: none"> <li>• Panel View E-Stop not active</li> <li>• Lift E-Stop not active</li> <li>• Either of the following: <ul style="list-style-type: none"> <li>• LIFT-101 present at second floor (96-ZS-073A), LIFT-101 present at second floor (96-ZS-073B), CHB-GATE-203 open, and CHB-CNVM-137A conveyor stop (XY-209) extended</li> <li>• LIFT-101 present at first floor (96-ZS-041A), LIFT-101 present at first floor (96-ZS-041B), CHB-GATE-147 open, and CHB-CNVM-137A conveyor stop (XY-209) retracted</li> </ul> </li> </ul>
Relay:	<p>CHB-CNVM-137 auto forward (load) relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• “Auto process feed tray for corridor” command is active</li> <li>• Container is present on CHB-CNVM-130 (96-ZS-112) or CHB-CNVM-130 auto feed (forward) relay is active</li> <li>• CHB-CNVM-130 conveyor stop (XY-113) is retracted</li> <li>• CHB-GATE-147 open</li> <li>• CHB-CNVM-137A conveyor stop (XY-209) retracted</li> <li>• CHB-CNVM-137B conveyor stop (XY-219) extended</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
Relay:	<p>CHB-CNVM-137 auto forward (unload) relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• Unpack area feed equipment is in auto</li> <li>• Container is present on CHB-CNVM-137 (96-ZS-121)</li> <li>• CHB-GATE-203 open</li> </ul>

Table D.6. TOCDF CHB PLC Automatic Control Sequences Panel View Screen: <b>UPA</b>	
<ul style="list-style-type: none"> <li>• CHB-CNVM-137B conveyor stop (XY-219) retracted</li> <li>• Container is not present on CHB-CNVM-140 (96-ZS-125) or Container is not present on CHB-CNVM-139 (96-ZS-123)</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>	
<p><b>Device:</b> <b>CHB-CNVM-137A Conveyor Stop (XY-209)</b>                  Panel View Tag: X96XY209                  CONR: C120                  Driver Word: 1463                  Driver Type: 3                  Auto Extend: The auto extend relay will be active if the following conditions is satisfied:</p> <ul style="list-style-type: none"> <li>• CHB-CNVM-137A conveyor stop (XY-209) auto retract relay is not active</li> </ul> <p>Auto Retract: The auto retract relay will be active if the following condition is satisfied:</p> <ul style="list-style-type: none"> <li>• CHB-CNVM-137A auto retract (latch) relay (see below) is active</li> </ul> <p>Extend I-Lock: The following conditions must be satisfied to allow the device to extend:</p> <ul style="list-style-type: none"> <li>• Panel View E-Stop not active</li> <li>• Lifts E-Stop not active</li> </ul> <p>Relay: CHB-CNVM-137A auto retract (latch) relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• “Auto process feed tray for corridor and lift” command is active</li> <li>• Container is present on CHB-CNVM-130 (96-ZS-111)</li> <li>• Container is not present on CHB-CNVM-137 (96-ZS-121)</li> <li>• LIFT-101 present at first floor</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>	
<p><b>Device:</b> <b>CHB-CNVM-137B Conveyor Stop (XY-219)</b>                  Panel View Tag: X96XY219                  CONR: C120                  Driver Word: 1464                  Driver Type: 3                  Auto Extend: The auto extend relay will be active if the following conditions is satisfied:</p> <ul style="list-style-type: none"> <li>• CHB-CNVM-137B conveyor stop (XY-219) auto retract relay is not active</li> </ul>	

**Table D.6. TOCDF CHB PLC Automatic Control Sequences**  
**Panel View Screen: UPA**

Auto Retract:	The auto retract relay will be active if the following condition is satisfied: <ul style="list-style-type: none"> <li>• CHB-CNVM-137B auto retract (latch) relay (see below) is active</li> </ul>
Extend I-Lock:	The following conditions must be satisfied to allow the device to extend: <ul style="list-style-type: none"> <li>• Panel View E-Stop not active</li> <li>• Lifts E-Stop not active</li> </ul>
Relay:	CHB-CNVM-137B auto retract (latch) relay is latched (see above) if the following conditions are satisfied: <ul style="list-style-type: none"> <li>• Unpack area feed equipment is in auto</li> <li>• Start auto sequence feed index (Panel-129) command is active</li> <li>• Container is present on CHB-CNVM-137 (96-ZS-121)</li> <li>• LIFT-101 present at second floor</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
<b>Device:</b>	<b>CHB-GATE-203 LIFT-101 Gate</b>
Panel View Tag:	X96HS540
CONR:	C120
Driver Word:	1465
Driver Type:	7
Auto Open:	The auto open relay will be active if either of the following conditions is satisfied: <ul style="list-style-type: none"> <li>• CHB-GATE-203 auto open (latch) relay (see below) is active</li> </ul>
Auto Close:	The auto close relay will be active if the following condition is satisfied: <ul style="list-style-type: none"> <li>• CHB-GATE-203 auto close (latch) relay (see below) is active</li> </ul>
Open I-Lock:	The following conditions must be satisfied to allow the device to open: <ul style="list-style-type: none"> <li>• CHB-LIFT-101 not moving up</li> <li>• CHB-LIFT-101 not moving down</li> <li>• CHB-LIFT-101 on second floor (96-ZS-073A)</li> <li>• CHB-LIFT-101 on second floor (96-ZS-073B)</li> <li>• Panel View E-Stop not active</li> <li>• CHB-GATE-203 emergency override (96-HS-080) not active</li> <li>• CHB-GATE-147 closed</li> </ul>
Close I-Lock:	The following conditions must be satisfied to allow the device to close: <ul style="list-style-type: none"> <li>• Panel View E-Stop not active</li> <li>• CHB-GATE-080 emergency override (96-HS-080) not active</li> <li>• CHB-CNVM-139 “fail to arrive” alarm not active</li> </ul>
Relay:	CHB-GATE-203 auto open (latch) relay is latched (see above) if the following conditions are satisfied: <ul style="list-style-type: none"> <li>• Unpack area feed equipment is in auto</li> </ul>

Table D.6. TOCDF CHB PLC Automatic Control Sequences Panel View Screen: <b>UPA</b>	
Relay:	<ul style="list-style-type: none"> <li>• Start auto sequence feed index (Panel-129) command is active</li> <li>• Container is present on CHB-CNVM-137 (96-ZS-121)</li> <li>• LIFT-101 present at second floor</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p> <p>CHB-GATE-203 auto close (latch) relay is latched (see above) if either of the following conditions is satisfied:</p> <ul style="list-style-type: none"> <li>• Unpack area feed equipment is in auto</li> <li>• CHB-CNVM-137 not running forward</li> <li>• Container is not present on CHB-CNVM-137 (96-ZS-121)</li> <li>• Container is present on CHB-CNVM-139 (96-ZS-122)</li> <li>• CHB-GATE-203 open</li> </ul> <p>Note: Once energized, the relay will remain active until the gate is closed.</p>
<b>Device:</b>	<b>CHB-GATE-149 LIFT-102 Gate</b>
Panel View Tag:	X96HS440B
CONR:	C120
Driver Word:	1466
Driver Type:	7
Auto Open:	The auto open relay will be active if either of the following conditions is satisfied:
Auto Close:	<p>The auto close relay will be active if the following condition is satisfied:</p> <ul style="list-style-type: none"> <li>• CHB-GATE-149 auto open (latch) relay (see below) is active</li> <li>• CHB-GATE-149 auto close (latch) relay (see below) is active</li> </ul>
Open I-Lock:	<p>The following conditions must be satisfied to allow the device to open:</p> <ul style="list-style-type: none"> <li>• CHB-LIFT-102 not moving up</li> <li>• CHB-LIFT-102 not moving down</li> <li>• CHB-LIFT-102 on first floor (96-ZS-203A)</li> <li>• CHB-LIFT-102 on first floor (96-ZS-203B)</li> <li>• Panel View E-Stop not active</li> <li>• CHB-GATE-149 emergency override (96-HS-447) not active</li> <li>• CHB-GATE-202 closed</li> <li>• CHB-GATE-146 closed</li> </ul>
Close I-Lock:	<p>The following conditions must be satisfied to allow the device to close:</p> <ul style="list-style-type: none"> <li>• Panel View E-Stop not active</li> <li>• CHB-GATE-149 emergency override (96-HS-447) not active</li> <li>• CHB-CNVM-138 “fail to arrive” alarm not active</li> </ul>
Relay:	<p>CHB-GATE-149 auto open (latch) relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• MPF feed auto sequence send empty lift (Panel-129) command active</li> </ul>

**Table D.6. TOCDF CHB PLC Automatic Control Sequences**  
**Panel View Screen: UPA**

Relay:	<ul style="list-style-type: none"> <li>• LIFT-102 present at first floor</li> <li>• LIFT-102 not lowering</li> <li>• CHB-GATE-149 closed</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p> <p>CHB-GATE-149 auto close (latch) relay is latched (see above) if either of the following conditions is satisfied:</p> <ul style="list-style-type: none"> <li>• MPF feed auto sequence call MPF tray (Panel-129) command is active</li> <li>• Container is present on CHB-CNVM-138 (96-ZS-133)</li> <li>• CHB-CNVM-138 not running forward</li> <li>• LIFT-102 on first floor</li> <li>• CHB-GATE-149 open</li> </ul> <p>Note: Once energized, the relay will remain active until the gate is closed.</p>
<b>Device:</b> Panel View Tag: CONR: Driver Word: Driver Type: Auto Raise:	<p><b>CHB-LIFT-102 Lift Car</b></p> <p>X96HS491</p> <p>C120</p> <p>1467</p> <p>7</p> <p>The auto raise relay will be active if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• CHB-GATE-149 closed</li> <li>• CHB-GATE-146 closed</li> <li>• Container not present on CHB-CNVM-138 (96-ZS-133)</li> <li>• LIFT-102 present on first floor</li> <li>• MPF feed auto sequence send empty lift (Panel-129) command is not active</li> <li>• MPF feed auto sequence call MPF tray (Panel-129) command is not active</li> </ul> <p><b>OR</b></p> <ul style="list-style-type: none"> <li>• MPF feed auto sequence call MPF tray (Panel-129) command is active</li> <li>• CHB-GATE-149 closed</li> <li>• LIFT-102 present on first floor</li> <li>• Container present on CHB-CNVM-138 (96-ZS-133)</li> </ul> <p>The auto lower relay will be active if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• Return discharge auto sequence started (Panel-129)</li> <li>• CHB-GATE-202 closed</li> </ul>
Auto Lower:	<p>The auto lower relay will be active if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• Return discharge auto sequence started (Panel-129)</li> <li>• CHB-GATE-202 closed</li> </ul>

Table D.6. TOCDF CHB PLC Automatic Control Sequences Panel View Screen: <b>UPA</b>	
Raise I-Lock:	<ul style="list-style-type: none"> <li>• Container present on CHB-CNVM-138 (96-ZS-133)</li> <li>• LIFT-102 present on second floor</li> </ul> <p style="text-align: center;"><b>OR</b></p> <ul style="list-style-type: none"> <li>• MPF feed auto sequence send empty lift (Panel-129) command is active</li> <li>• CHB-GATE-149 closed</li> <li>• LIFT-102 present on second floor</li> </ul> <ul style="list-style-type: none"> <li>• The following conditions must be satisfied to allow the device to raise:                             <ul style="list-style-type: none"> <li>• CHB-LIFT-102 Gates closed</li> <li>• CHB-LIFT-102 not moving down</li> <li>• 96-PSL-633 (CHB-CNVM-138 Air Roller) clear</li> <li>• 96-PSL-634 (CHB-CNVM-138 Air Roller) clear</li> <li>• Panel View E-Stop not active</li> <li>• CHB-LIFT-102 first floor lockout not active</li> <li>• CHB-LIFT-102 second floor lockout not active</li> </ul> </li> </ul>
Lower I-Lock:	<ul style="list-style-type: none"> <li>• The following conditions must be satisfied to allow the device to operate reverse:                             <ul style="list-style-type: none"> <li>• CHB-LIFT-102 Gates closed</li> <li>• CHB-LIFT-102 not moving up (on time delay)</li> <li>• 96-PSL-633 (CHB-CNVM-138 Air Roller) clear</li> <li>• 96-PSL-634 (CHB-CNVM-138 Air Roller) clear</li> <li>• Panel View E-Stop not active</li> <li>• CHB-LIFT-102 first floor lockout not active</li> <li>• CHB-LIFT-102 second floor lockout not active</li> </ul> </li> </ul>
<b>Device:</b>	<b>CHB-CNVM-138 Lift Conveyor</b>
Panel View Tag:	X96HS786
CONR:	C120
Driver Word:	1468
Driver Type:	7
Auto Forward:	The auto forward relay will be active if any of the following conditions is satisfied: <ul style="list-style-type: none"> <li>• CHB-CNVM-138 auto forward (load) relay (see below) is active</li> <li>• CHB-CNVM-138 auto forward (unload) relay (see below) is active</li> <li>• CHB-CNVM-138 auto forward (load/MPF) relay (see below) is active</li> </ul>
Auto Reverse:	The auto reverse relay will be active if either of the following conditions is satisfied: <ul style="list-style-type: none"> <li>• CHB-CNVM-138 auto reverse (unload) relay (see below) is active</li> <li>• CHB-CNVM-138 auto reverse (unload/MPF) relay (see below) is active</li> </ul>

**Table D.6. TOCDF CHB PLC Automatic Control Sequences  
Panel View Screen: UPA**

Forward I-Lock:	<p>The following conditions must be satisfied to allow the device to operate forward:</p> <ul style="list-style-type: none"> <li>• Panel View E-Stop not active</li> <li>• Lift E-Stop not active</li> <li>• Either of the following: <ul style="list-style-type: none"> <li>• LIFT-102 present at second floor (96-ZS-206A), LIFT-102 present at second floor (96-ZS-206B), CHB-GATE-202 open, CHB-CNVM-138 conveyor stop raised (96-ZS-053A) and CHB-CNVM-138 conveyor stop raised (96-ZS-058A)</li> <li>• LIFT-102 present at first floor (96-ZS-203A), LIFT-102 present at first floor (96-ZS-203B) and CHB-GATE-146 open or CHB-GATE-149 open, CHB-CNVM-138 conveyor stop raised (96-ZS-053A) and CHB-CNVM-138 conveyor stop raised (96-ZS-058A)</li> </ul> </li> </ul>
Reverse I-Lock:	<p>The following conditions must be satisfied to allow the device to operate reverse:</p> <ul style="list-style-type: none"> <li>• Panel View E-Stop not active</li> <li>• Lift E-Stop not active</li> <li>• Either of the following: <ul style="list-style-type: none"> <li>• LIFT-102 present at second floor (96-ZS-206A), LIFT-102 present at second floor (96-ZS-206B) and CHB-GATE-202 open</li> <li>• LIFT-102 present at first floor (96-ZS-203A), LIFT-102 present at first floor (96-ZS-203B) and CHB-GATE-149 open or CHB-GATE-146 open, CHB-CNVM-138 conveyor stop raised (96-ZS-063A) and CHB-CNVM-138 conveyor stop raised (96-ZS-068A)</li> </ul> </li> </ul>
Relay:	<p>CHB-CNVM-138 auto forward (load) relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• “Return discharge auto sequence started” (Panel-129) command is active</li> <li>• Container is present on CHB-CNVM-141 (96-ZS-132)</li> <li>• CHB-GATE-202 open</li> <li>• CHB-CNVM-141 conveyor stop (XY-117) is retracted</li> <li>• CHB-CNVM-138B conveyor stop (XY-63) retracted</li> </ul>
	<p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
Relay:	<p>CHB-CNVM-138 auto forward (unload) relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• “Return discharge auto sequence started” (Panel-129) command is active</li> <li>• Container is present on CHB-CNVM-138 (96-ZS-133)</li> </ul>

Table D.6. TOCDF CHB PLC Automatic Control Sequences Panel View Screen: <b>UPA</b>	
Relay:	<ul style="list-style-type: none"> <li>• Container is not present on CHB-CNVM-132 (96-ZS-134)</li> <li>• CHB-GATE-146 open</li> <li>• CHB-CNVM-138A conveyor stop (XY-53) is retracted</li> <li>• “MPF routine send empty tray holders to MPF gate” (Panel-129) command is not active</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
Relay:	<p>CHB-CNVM-138 auto forward (load/MPF) relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• “MPF feed auto sequence – call MPF tray” (Panel-129) command is active</li> <li>• Container is not present on CHB-CNVM-138 (96-ZS-133)</li> <li>• CHB-LIFT-102 is present on first floor</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
Relay:	<p>CHB-CNVM-138 auto reverse (unload) relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• “MPF feed auto sequence – call MPF tray” (Panel-129) command is active</li> <li>• CHB-GATE-202 is open</li> <li>• CHB-CNVM-138B conveyor stop (XY-63) is retracted</li> <li>• CHB-CNVM-141 conveyor stop (XY-117) is retracted</li> <li>• Container is present on CHB-CNVM-138 (96-ZS-133)</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
Relay:	<p>CHB-CNVM-138 auto reverse (unload/MPF) relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• “MPF routine send empty tray holders to MPF gate” (Panel-129) command is active</li> <li>• Container is present on CHB-CNVM-138 (96-ZS-133)</li> <li>• CHB-GATE-149 is open</li> <li>• CHB-CNVM-138B conveyor stop (XY-63) is retracted</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
<b>Device:</b>	<b>CHB-CNVM-138A Conveyor Stop (XY-53)</b>
Panel View Tag:	X96XY53
CONR:	C120
Driver Word:	1469
Driver Type:	3

**Table D.6. TOCDF CHB PLC Automatic Control Sequences**  
**Panel View Screen: UPA**

Auto Extend:	The auto extend relay will be active if the following conditions is satisfied: <ul style="list-style-type: none"> <li>• CHB-CNVM-138A conveyor stop (XY-53) auto retract relay is not active</li> </ul>
Auto Retract:	The auto retract relay will be active if the following condition is satisfied: <ul style="list-style-type: none"> <li>• CHB-CNVM-138A auto retract (latch) relay (see below) is active</li> </ul>
Extend I-Lock:	The following conditions must be satisfied to allow the device to extend: <ul style="list-style-type: none"> <li>• Panel View E-Stop not active</li> <li>• Lifts E-Stop not active</li> </ul>
Relay:	CHB-CNVM-138A auto retract (latch) relay is latched (see above) if the following conditions are satisfied: <ul style="list-style-type: none"> <li>• “Return discharge auto sequence started” (Panel-129) command is active</li> <li>• Container is present on CHB-CNVM-138 (96-ZS-133)</li> <li>• LIFT-102 present at first floor</li> <li>• Container is not present on CHB-CNVM-132 (96-ZS-134)</li> <li>• “MPF routine send empty tray holders to MPF gate” (Panel-129) command is not active</li> <li>• CHB-CNVM-131 auto forward relay is not active</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
<b>Device:</b>	<b>CHB-CNVM-138B Conveyor Stop (XY-63)</b>
Panel View Tag:	X96XY63
CONR:	C120
Driver Word:	1470
Driver Type:	3
Auto Extend:	The auto extend relay will be active if the following conditions is satisfied: <ul style="list-style-type: none"> <li>• CHB-CNVM-138B conveyor stop (XY-63) auto retract relay is not active</li> </ul>
Auto Retract:	The auto retract relay will be active if the following condition is satisfied: <ul style="list-style-type: none"> <li>• CHB-CNVM-138B auto retract (load) relay (see below) is active</li> <li>• CHB-CNVM-138B auto retract (unload/MPF) relay (see below) is active</li> <li>• CHB-CNVM-138B auto retract (unload) relay (see below) is active</li> </ul>
Extend I-Lock:	The following conditions must be satisfied to allow the device to extend: <ul style="list-style-type: none"> <li>• Panel View E-Stop not active</li> <li>• Lifts E-Stop not active</li> </ul>

Table D.6. TOCDF CHB PLC Automatic Control Sequences  
 Panel View Screen: **UPA**

Relay:	<p>CHB-CNVM-138B auto retract (load) relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• Any of the following                             <ul style="list-style-type: none"> <li>• “Start auto sequence return discharge” (Panel-129) command is active</li> <li>• “Start auto sequence leaker return” (Panel-129) command is active</li> <li>• “MPF routine send empty tray holders” (Panel-129) command is active</li> </ul> </li> <li>• Container is present on CHB-CNVM-141 (96-ZS-132)</li> <li>• Container is not present on CHB-CNVM-138 (96-ZS-133)</li> <li>• LIFT-102 present at second floor</li> <li>• Either of the following                             <ul style="list-style-type: none"> <li>• All devices are in auto (auto process start interlock)</li> <li>• “MPF routine send empty tray holders to MPF gate” (Panel-129) command is active and all devices required to perform MPF tray routines are in auto.</li> </ul> </li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
Relay:	<p>CHB-CNVM-138B auto retract (unload/MPF) relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• “MPF feed auto sequence send empty lift” (Panel-129) command active</li> <li>• LIFT-102 present at first floor</li> <li>• LIFT-102 not lowering</li> <li>• CHB-GATE-149 closed</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
Relay:	<p>CHB-CNVM-138B auto retract (unload) relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• “MPF feed auto sequence – call MPF tray” (Panel-129) command active</li> <li>• Container is present on CHB-CNVM-138 (96-ZS-133)</li> <li>• LIFT-102 present at second floor</li> <li>• LIFT-102 not moving up</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
<b>Device:</b>	<b>CHB-GATE-202 LIFT-102 Gate</b>
Panel View Tag:	X96HS580
CONR:	C120
Driver Word:	1471

**Table D.6. TOCDF CHB PLC Automatic Control Sequences  
Panel View Screen: UPA**

Driver Type:	7
Auto Open:	<p>The auto open relay will be active if either of the following conditions is satisfied:</p> <ul style="list-style-type: none"> <li>• CHB-GATE-202 auto open (load) relay (see below) is active</li> <li>• CHB-GATE-202 auto open (unload) relay (see below) is active</li> </ul>
Auto Close:	<p>The auto close relay will be active if the following condition is satisfied:</p> <ul style="list-style-type: none"> <li>• CHB-GATE-202 auto close (load) relay (see below) is active</li> <li>• CHB-GATE-202 auto close (unload) relay (see below) is active</li> </ul>
Open I-Lock:	<p>The following conditions must be satisfied to allow the device to open:</p> <ul style="list-style-type: none"> <li>• CHB-LIFT-102 not moving up</li> <li>• CHB-LIFT-102 not moving down</li> <li>• CHB-LIFT-102 on second floor (96-ZS-206A)</li> <li>• CHB-LIFT-102 on second floor (96-ZS-206B)</li> <li>• Panel View E-Stop not active</li> <li>• CHB-GATE-202 emergency override (96-HS-585) not active</li> <li>• CHB-GATE-146 closed</li> <li>• CHB-GATE-149 closed</li> </ul>
Close I-Lock:	<p>The following conditions must be satisfied to allow the device to close:</p> <ul style="list-style-type: none"> <li>• Panel View E-Stop not active</li> <li>• CHB-GATE-202 emergency override (96-HS-585) not active</li> <li>• CHB-CNVM-138 “fail to arrive” alarm not active</li> </ul>
Relay:	<p>CHB-GATE-202 auto open (load) relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• Any of the following <ul style="list-style-type: none"> <li>• “Start auto sequence return discharge” (Panel-129) command is active</li> <li>• “Start auto sequence leaker return” (Panel-129) command is active</li> <li>• “MPF routine send empty tray holders” (Panel-129) command is active</li> </ul> </li> <li>• Container is present on CHB-CNVM-141 (96-ZS-132)</li> <li>• Container is not present on CHB-CNVM-138 (96-ZS-133)</li> <li>• LIFT-102 present at second floor</li> <li>• Either of the following <ul style="list-style-type: none"> <li>• All devices are in auto (auto process start interlock)</li> <li>• “MPF routine send empty tray holders to MPF gate” (Panel-129) command is active and all devices required to perform MPF tray routines are in auto.</li> </ul> </li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>

Table D.6. TOCDF CHB PLC Automatic Control Sequences Panel View Screen: <b>UPA</b>	
Relay:	<p>CHB-GATE-202 auto open (unload) relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• “MPF auto sequence - call MPF tray” (Panel-129) command is active</li> <li>• Container is present on CHB-CNVM-138 (96-ZS-133)</li> <li>• LIFT-102 present at second floor</li> <li>• CHB-LIFT-102 not moving up</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
Relay:	<p>CHB-GATE-202 auto close (load) relay is latched (see above) if either of the following conditions is satisfied:</p> <ul style="list-style-type: none"> <li>• “Return discharge auto sequence started” (Panel-129) command is active</li> <li>• Container is present on CHB-CNVM-138 (96-ZS-133)</li> <li>• LIFT-102 on second floor</li> <li>• CHB-GATE-202 open</li> </ul> <p>Note: Once energized, the relay will remain active until the gate is closed.</p>
Relay:	<p>CHB-GATE-202 auto close (unload) relay is latched (see above) if either of the following conditions is satisfied:</p> <ul style="list-style-type: none"> <li>• “MPF auto sequence call MPF tray” (Panel-129) command is active</li> <li>• Container is present on CHB-CNVM-141 (96-ZS-131)</li> <li>• Container is not in transition to CHB-CNVM-141 (96-ZS-132)</li> <li>• Container is not present on CHB-CNVM-138 (96-ZS-133)</li> <li>• CHB-GATE-202 open</li> </ul> <p>Note: Once energized, the relay will remain active until the gate is closed.</p>
<b>Device:</b>	<b>CHB-GATE-146 LIFT-102 Gate</b>
Panel View Tag:	X96HS480
CONR:	C120
Driver Word:	1472
Driver Type:	7
Auto Open:	<p>The auto open relay will be active if either of the following conditions is satisfied:</p> <ul style="list-style-type: none"> <li>• CHB-GATE-146 auto open (latch) relay (see below) is active</li> </ul>
Auto Close:	<p>The auto close relay will be active if the following condition is satisfied:</p> <ul style="list-style-type: none"> <li>• CHB-GATE-146 auto close (latch) relay (see below) is active</li> </ul>

Table D.6. TOCDF CHB PLC Automatic Control Sequences Panel View Screen: <b>UPA</b>	
Open I-Lock:	<p>The following conditions must be satisfied to allow the device to open:</p> <ul style="list-style-type: none"> <li>• CHB-LIFT-102 not moving up</li> <li>• CHB-LIFT-102 not moving down</li> <li>• CHB-LIFT-102 on first floor (96-ZS-203A)</li> <li>• CHB-LIFT-102 on first floor (96-ZS-203B)</li> <li>• Panel View E-Stop not active</li> <li>• CHB-GATE-146 emergency override (96-HS-976) not active</li> <li>• CHB-GATE-202 closed</li> <li>• CHB-GATE-149 closed</li> </ul>
Close I-Lock:	<p>The following conditions must be satisfied to allow the device to close:</p> <ul style="list-style-type: none"> <li>• Panel View E-Stop not active</li> <li>• CHB-GATE-146 emergency override (96-HS-976) not active</li> <li>• CHB-CNVM-132 “fail to arrive” alarm not active</li> </ul>
Relay:	<p>CHB-GATE-146 auto open (latch) relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• “Return discharge auto sequence started” (Panel-129) command is active</li> <li>• Container is present on CHB-CNVM-138 (96-ZS-133)</li> <li>• LIFT-102 present at first floor</li> <li>• Container is not present on CHB-CNVM-132 (96-ZS-134)</li> <li>• “MPF routine send empty tray holders to MPF gate” (Panel-129) command is not active</li> <li>• CHB-CNVM-131 auto forward relay is not active</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
Relay:	<p>CHB-GATE-146 auto close (latch) relay is latched (see above) if either of the following conditions is satisfied:</p> <ul style="list-style-type: none"> <li>• “Return discharge auto sequence started” (Panel-129) command is active</li> <li>• Container is present on CHB-CNVM-132 (96-ZS-134)</li> <li>• Container is not present on CHB-CNVM-138 (96-ZS-133)</li> <li>• CHB-GATE-146 open</li> <li>• “MPF routine – send empty tray holders to MPF gate” (Panel-129) command is not active</li> </ul> <p>Note: Once energized, the relay will remain active until the gate is closed.</p>
<b>Device:</b>	<b>CHB-CNVM-139 UPA Delivery Conveyor</b>
Panel View Tag:	X96HS776
CONR:	C120
Driver Word:	1473
Driver Type:	7

Table D.6. TOCDF CHB PLC Automatic Control Sequences Panel View Screen: <b>UPA</b>	
Auto Forward:	The auto forward relay will be active if any of the following conditions is satisfied: <ul style="list-style-type: none"> <li>• CHB-CNVM-139 auto forward (latch) relay (see below) is active</li> </ul>
Auto Reverse:	None.
Forward I-Lock:	The following conditions must be satisfied to allow the device to operate forward: <ul style="list-style-type: none"> <li>• Panel View E-Stop not active</li> <li>• UPA E-Stop not active</li> </ul>
Reverse I-Lock:	The following conditions must be satisfied to allow the device to operate reverse: <ul style="list-style-type: none"> <li>• Panel View E-Stop not active</li> <li>• UPA E-Stop not active</li> </ul>
Relay:	<p>CHB-CNVM-139 auto forward (latch) relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• Unpack area feed equipment devices are in auto</li> <li>• Either of the following:                                     <ul style="list-style-type: none"> <li>• Tray transfer CHB-CNVM-137 to CHB-CNVM-139 (on time delay)</li> <li>• “Start auto sequence feed index” (Panel-129) command is active, Container is not present on CHB-CNVM-137 (96-ZS-121), and Container is present on CHB-CNVM-139 (96-ZS-122 or 96-ZS-123)</li> </ul> </li> <li>• Either of the following:                                     <ul style="list-style-type: none"> <li>• Container is not present on CHB-CNVM-139 (96-ZS-123)</li> <li>• Container is not present on CHB-CNVM-140 (96-ZS-125)</li> </ul> </li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
<b>Device:</b>	<b>CHB-CNVM-140 UPA Unpack Conveyor</b>
Panel View Tag:	X96HS779
CONR:	C120
Driver Word:	1474
Driver Type:	7
Auto Forward:	The auto forward relay will be active if any of the following conditions is satisfied: <ul style="list-style-type: none"> <li>• CHB-CNVM-140 auto forward (latch) relay (see below) is active</li> </ul>
Auto Reverse:	None.

**Table D.6. TOCDF CHB PLC Automatic Control Sequences**  
**Panel View Screen: UPA**

Forward I-Lock:	The following conditions must be satisfied to allow the device to operate forward: <ul style="list-style-type: none"> <li>• Panel View E-Stop not active</li> <li>• UPA E-Stop not active</li> <li>• Container not present on CHB-CNVM-140 (96-ZS-125)</li> </ul>
Reverse I-Lock:	The following conditions must be satisfied to allow the device to operate reverse: <ul style="list-style-type: none"> <li>• Panel View E-Stop not active</li> <li>• UPA E-Stop not active</li> </ul>
Relay:	CHB-CNVM-140 auto forward (latch) relay is latched (see above) if the following conditions are satisfied: <ul style="list-style-type: none"> <li>• Unpack area feed equipment devices are in auto</li> <li>• Either of the following: <ul style="list-style-type: none"> <li>• Tray transfer CHB-CNVM-137 to CHB-CNVM-139 (on time delay)</li> <li>• “Start auto sequence feed index” (Panel-129) command is active and Container is not present on CHB-CNVM-137 (96-ZS-121)</li> </ul> </li> <li>• Container is present on CHB-CNVM-139 (96-ZS-123)</li> <li>• Container is not present on CHB-CNVM-140 (96-ZS-125)</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
<b>Device:</b>	<b>CHB-CNVM-141 UPA Return Conveyor</b>
Panel View Tag:	X96HS783
CONR:	C120
Driver Word:	1475
Driver Type:	7
Auto Forward:	The auto forward relay will be active if any of the following conditions is satisfied: <ul style="list-style-type: none"> <li>• CHB-CNVM-141 auto forward (load) relay (see below) is active</li> <li>• CHB-CNVM-141 auto forward (unload) relay (see below) is active</li> </ul>
Auto Reverse:	<ul style="list-style-type: none"> <li>• CHB-CNVM-141 auto reverse (latch) relay (see below) is active</li> </ul>
Forward I-Lock:	The following conditions must be satisfied to allow the device to operate forward: <ul style="list-style-type: none"> <li>• Panel View E-Stop not active</li> <li>• UPA E-Stop not active</li> <li>• Container not present on CHB-CNVM-140 (96-ZS-125)</li> </ul>
Reverse I-Lock:	The following conditions must be satisfied to allow the device to operate reverse: <ul style="list-style-type: none"> <li>• Panel View E-Stop not active</li> <li>• UPA E-Stop not active</li> </ul>

**Table D.6. TOCDF CHB PLC Automatic Control Sequences  
 Panel View Screen: UPA**

Relay:	<p>CHB-CNVM-141 auto forward (load) relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• “Start auto sequence – return index” (Panel-129) command is active or CHB-CNVM-141 auto forward (load) relay is active (latch on time delay)</li> <li>• Container is not present on CHB-CNVM-141 (96-ZS-132)</li> <li>• CHB-CNVM-141 is in auto</li> </ul>
Relay:	<p>CHB-CNVM-141 auto forward (unload) relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• “Return discharge auto sequence started” (Panel-129) command is active</li> <li>• Container is present on CHB-CNVM-141 (96-ZS-132)</li> <li>• CHB-GATE-202 is open</li> <li>• CHB-CNVM-141 conveyor stop (XY-117) is retracted</li> <li>• CHB-CNVM-138B conveyor stop (XY-63) is retracted</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
Relay:	<p>CHB-CNVM-141 auto reverse (latch) relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• “MPF feed auto sequence – call MPF tray” (Panel-129) command is active</li> <li>• CHB-GATE-202 is open</li> <li>• CHB-CNVM-138B conveyor stop (XY-63) is retracted</li> <li>• CHB-CNVM-141 conveyor stop (XY-117) is retracted</li> <li>• Container is present on CHB-CNVM-138 (96-ZS-133)</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
<b>Device:</b>	<b>CHB-CNVM-141 Conveyor Stop (XY-117)</b>
Panel View Tag:	X96XY117
CONR:	C120
Driver Word:	1476
Driver Type:	3
Auto Extend:	<p>The auto extend relay will be active if the following conditions is satisfied:</p> <ul style="list-style-type: none"> <li>• CHB-CNVM-141 conveyor stop (XY-117) auto retract relay is not active</li> </ul>
Auto Retract:	<p>The auto retract relay will be active if the following condition is satisfied:</p> <ul style="list-style-type: none"> <li>• CHB-CNVM-141 auto retract (load) relay (see below) is active</li> <li>• CHB-CNVM-141 auto retract (unload) relay (see below) is active</li> </ul>

**Table D.6. TOCDF CHB PLC Automatic Control Sequences  
Panel View Screen: UPA**

Extend I-Lock:	<p>The following conditions must be satisfied to allow the device to extend:</p> <ul style="list-style-type: none"> <li>• Panel View E-Stop not active</li> <li>• Lifts E-Stop not active</li> </ul>
Relay:	<p>CHB-CNVM-141 auto retract (load) relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• Any of the following <ul style="list-style-type: none"> <li>• “Start auto sequence return discharge” (Panel-129) command is active</li> <li>• “Start auto sequence leaker return” (Panel-129) command is active</li> <li>• “MPF routine send empty tray holders” (Panel-129) command is active</li> </ul> </li> <li>• Container is present on CHB-CNVM-141 (96-ZS-132)</li> <li>• Container is not present on CHB-CNVM-138 (96-ZS-133)</li> <li>• LIFT-102 present at second floor</li> <li>• Either of the following <ul style="list-style-type: none"> <li>• All devices are in auto (auto process start interlock)</li> <li>• “MPF routine send empty tray holders to MPF gate” (Panel-129) command is active and all devices required to perform MPF tray routines are in auto.</li> </ul> </li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>
Relay:	<p>CHB-CNVM-141 auto retract (unload) relay is latched (see above) if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• “MPF feed auto sequence – call MPF tray” (Panel-129) command active</li> <li>• Container is present on CHB-CNVM-138 (96-ZS-133)</li> <li>• LIFT-102 present at second floor</li> <li>• LIFT-102 not moving up</li> </ul> <p>Note: Once energized, the relay will remain active until the tray is transferred.</p>



## APPENDIX E

### Operator Screens

Appendix E contains the TOCDF Panel View screens associated with operation and control of the CHB based on the TOCDF control code as of October 13, 1997. As control screens are generated for ANCDF, PBCDF, and UMCDF, they will be included in this appendix. Table E.1 provides an index to the screens.

Table E.1 TOCDF CHB Panel View Screens

Figure #	Panel View Screen Name	Process Screen
E-1	127-1	MAIN SCREEN
E-2	127-2	CHB STATUS NORTH
E-3	127-3	CHB STATUS SOUTH
E-4	127-4	NORTH STORAGE—LINES A&B
E-5	127-5	SOUTH STORAGE—LINES C&D
E-6	127-6	CORRIDOR CONTROL
E-7	127-10	UTILITY CONTROL
E-8	128-1	MAIN SCREEN
E-9	128-2	CHB STATUS NORTH
E-10	128-3	CHB STATUS SOUTH
E-11	128-4	TRANSITION CONTROL
E-12	129-1	MAIN SCREEN
E-13	129-2	CHB STATUS NORTH
E-14	129-3	CHB STATUS SOUTH
E-15	129-4	NORTH STORAGE—LINES A&B
E-16	129-5	SOUTH STORAGE—LINES C&D
E-17	129-6	CORRIDOR CONTROL
E-18	129-7	TRANSITION CONTROL
E-19	129-8	UPA CONTROL
E-20	129-9	AUTO PROCESSING
E-21	129-10	UTILITY CONTROL

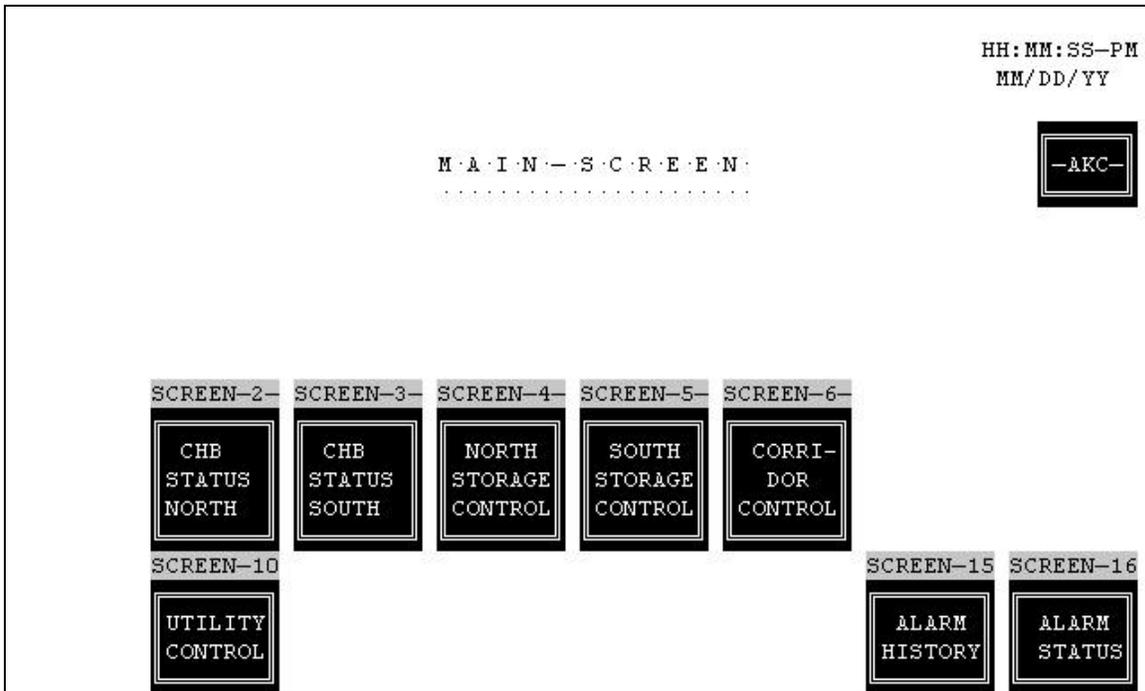


Figure E-1. TOCDF Panel View Screen, Main Screen (127-1)

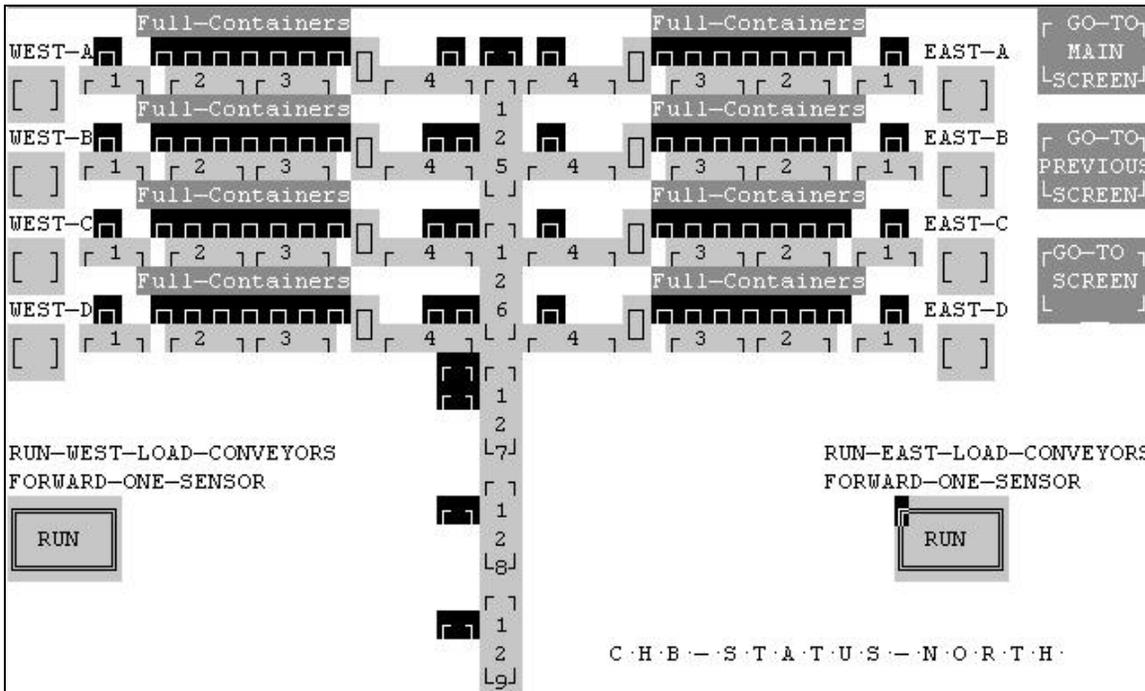


Figure E-2. TOCDF Panel View Screen, CHB Status North (127-2)

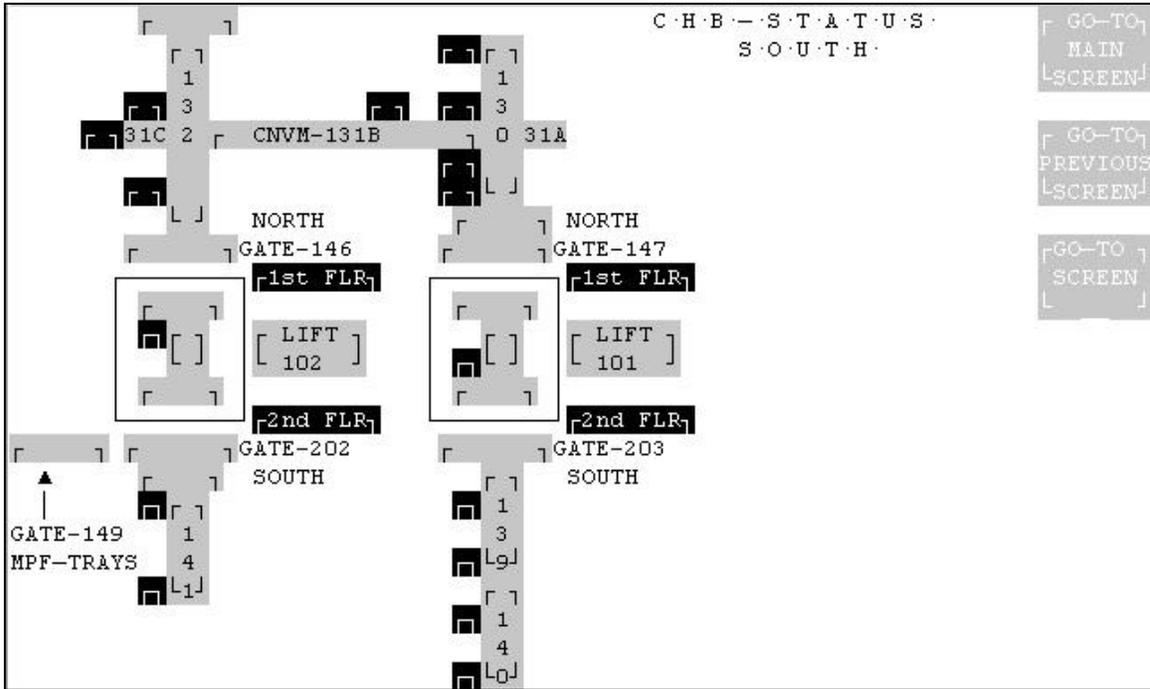


Figure E-3. TOCDF Panel View Screen, CHB Status South (127-3)

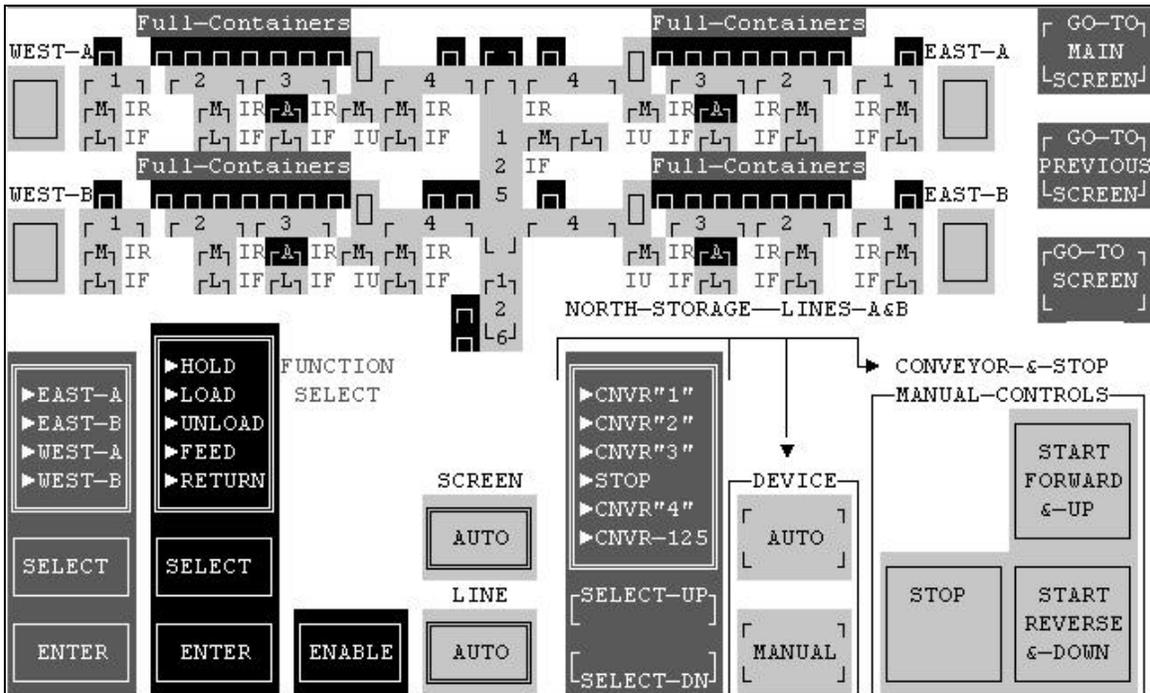


Figure E-4. TOCDF Panel View Screen, North Storage—Lines A&B (127-4)

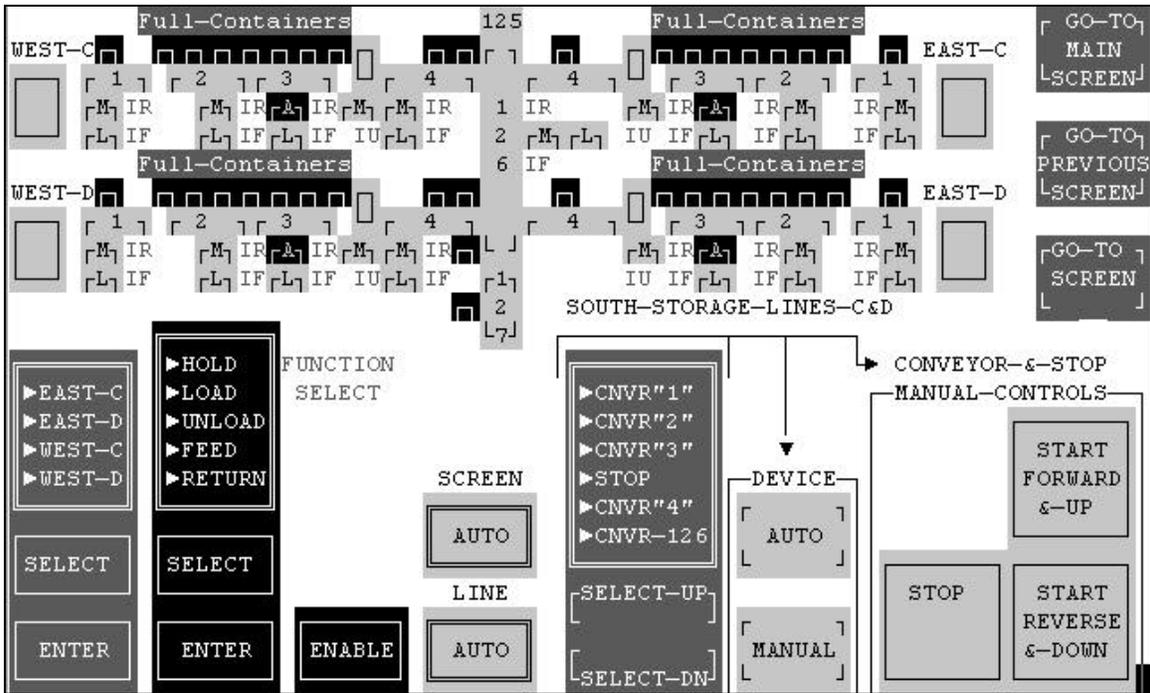


Figure E-5. TOCDF Panel View Screen, South Storage—Lines C&D (127-5)

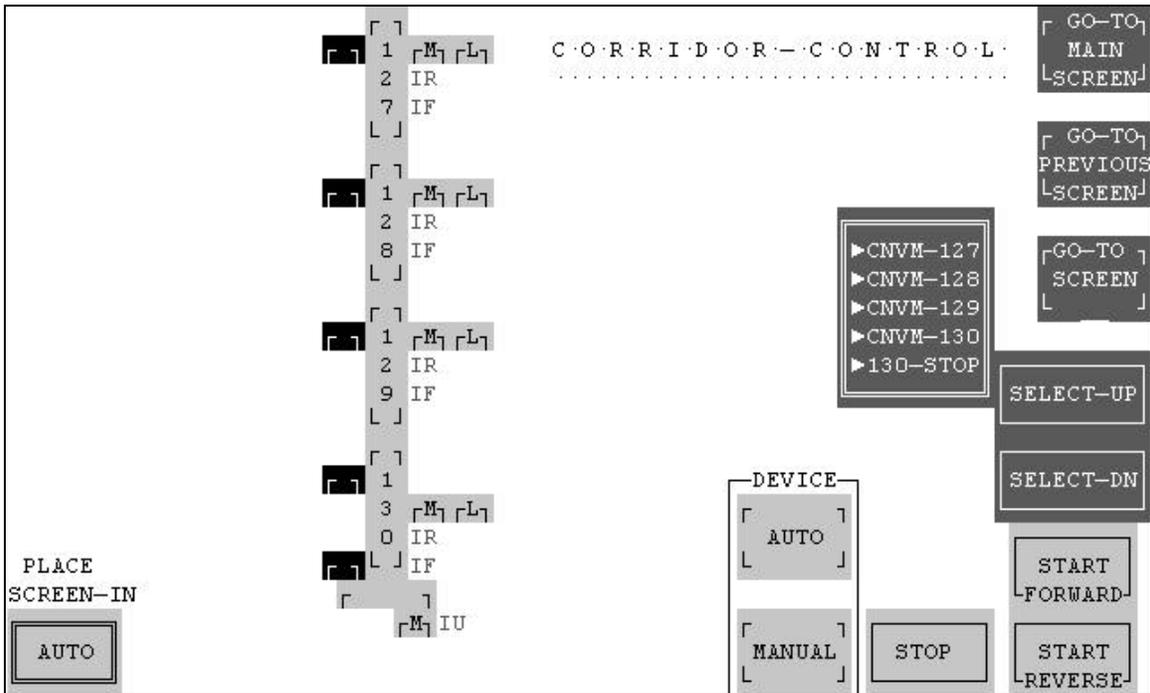


Figure E-6. TOCDF Panel View Screen, Corridor Control (127-6)

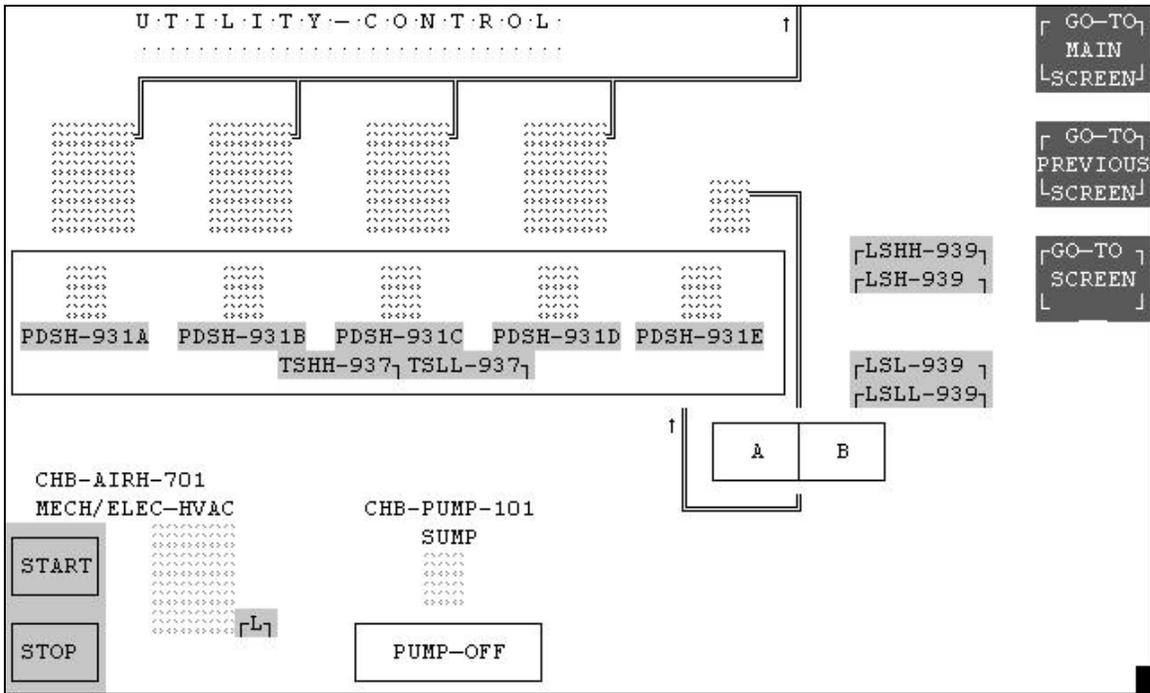


Figure E-7. TOCDF Panel View Screen, Utility Control (127-10)

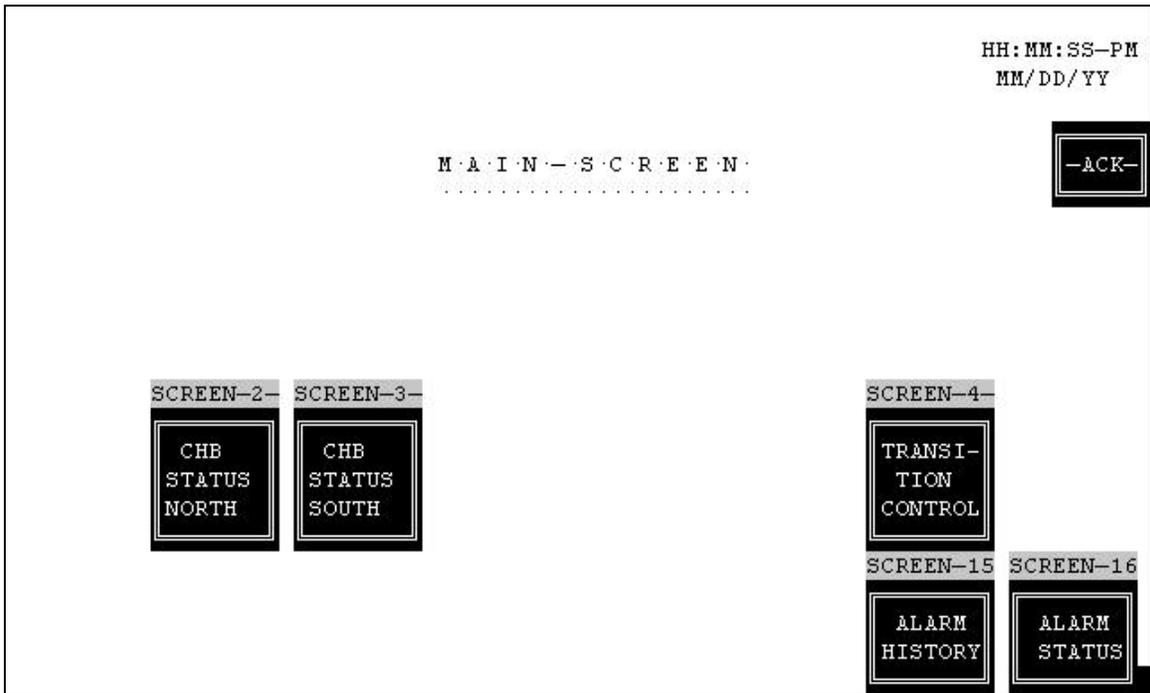


Figure E-8. TOCDF Panel View Screen, Main Screen (128-1)

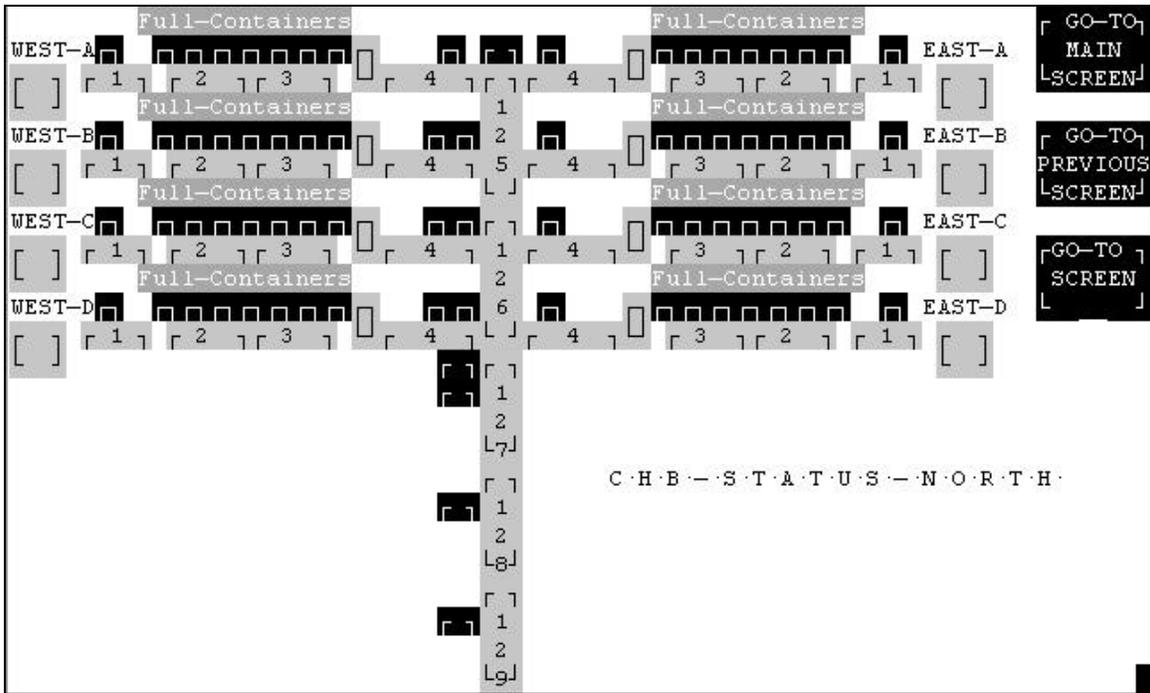


Figure E-9. TOCDF Panel View Screen, CHB Status North (128-2)

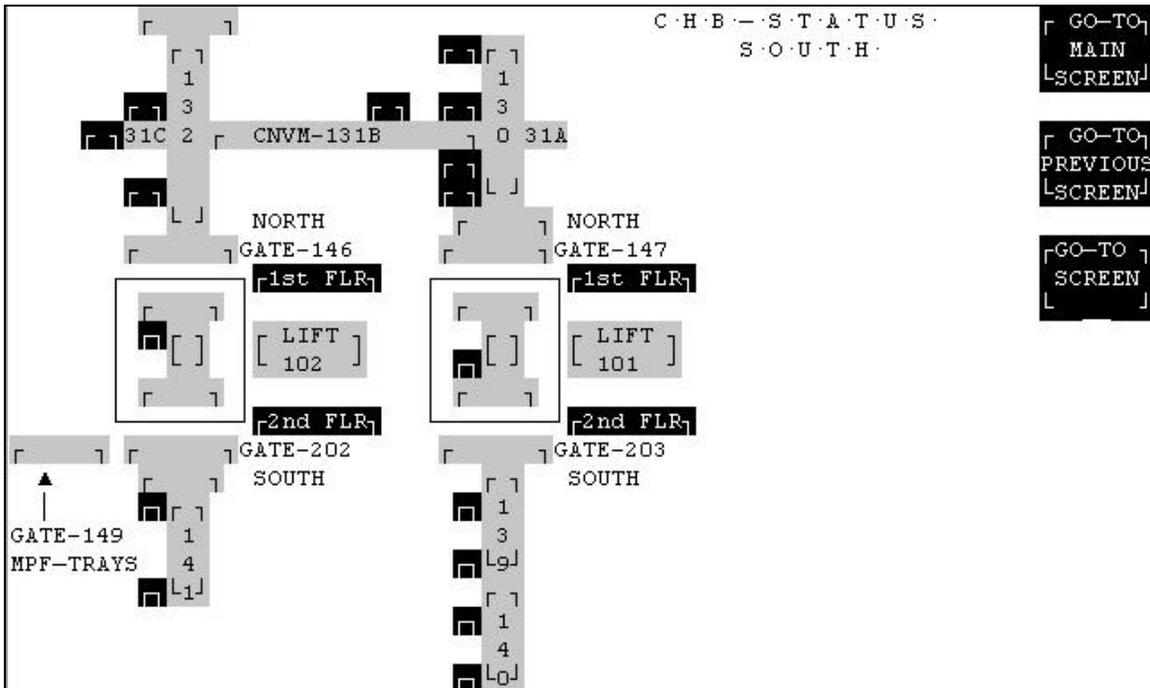


Figure E-10. TOCDF Panel View Screen, CHB Status South (128-3)

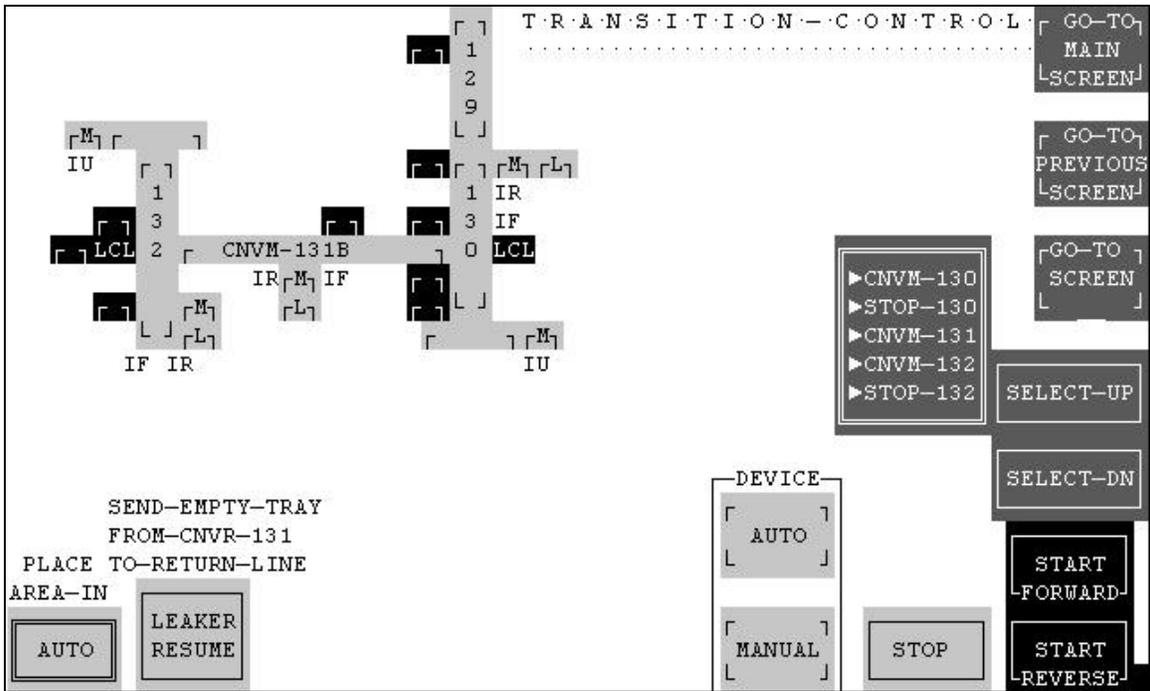


Figure E-11. TOCDF Panel View Screen, Transition Control (128-4)

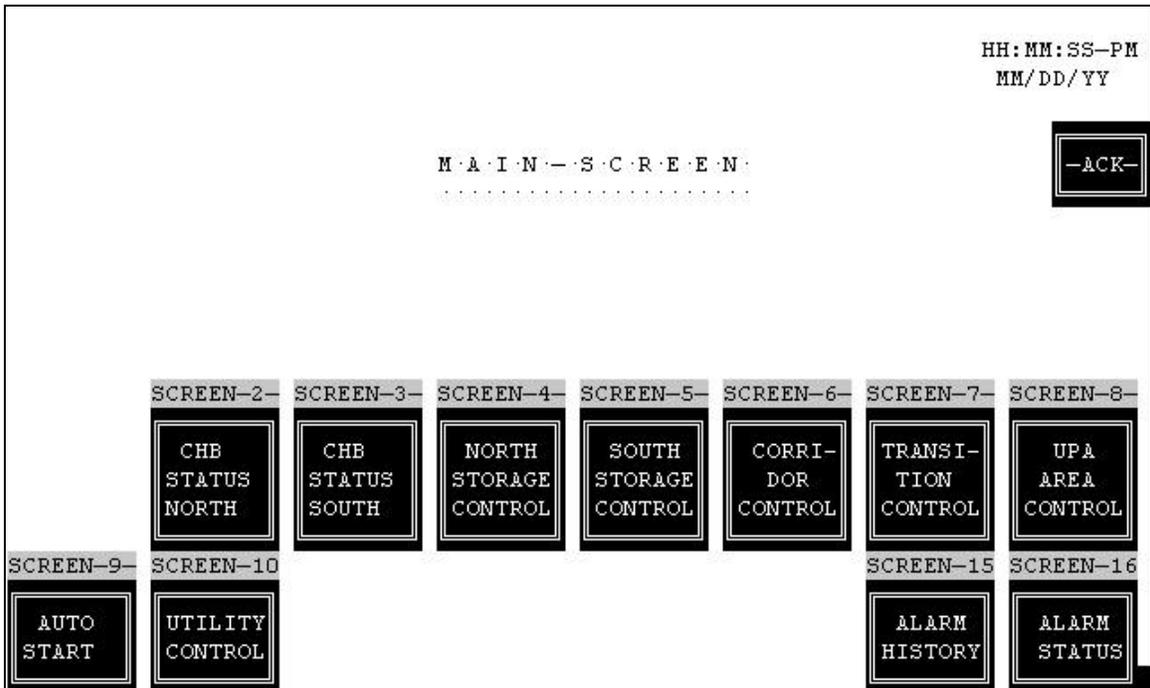


Figure E-12. TOCDF Panel View Screen, Main Screen (129-1)

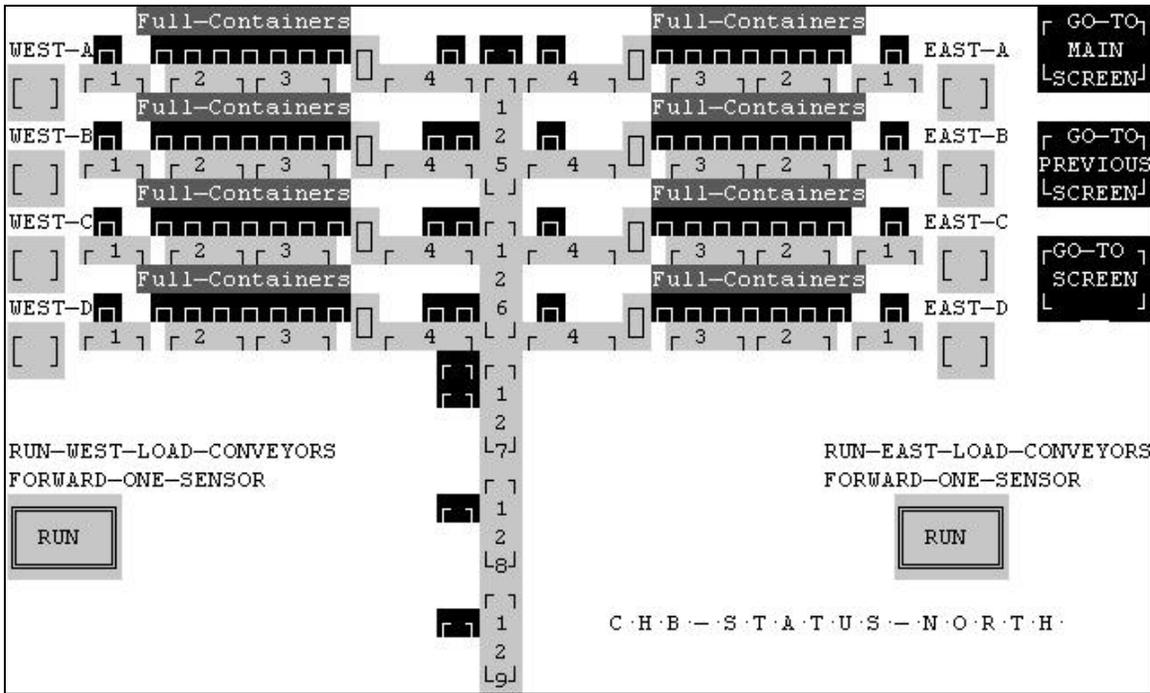


Figure E-13. TOCDF Panel View Screen, CHB Status North (129-2)

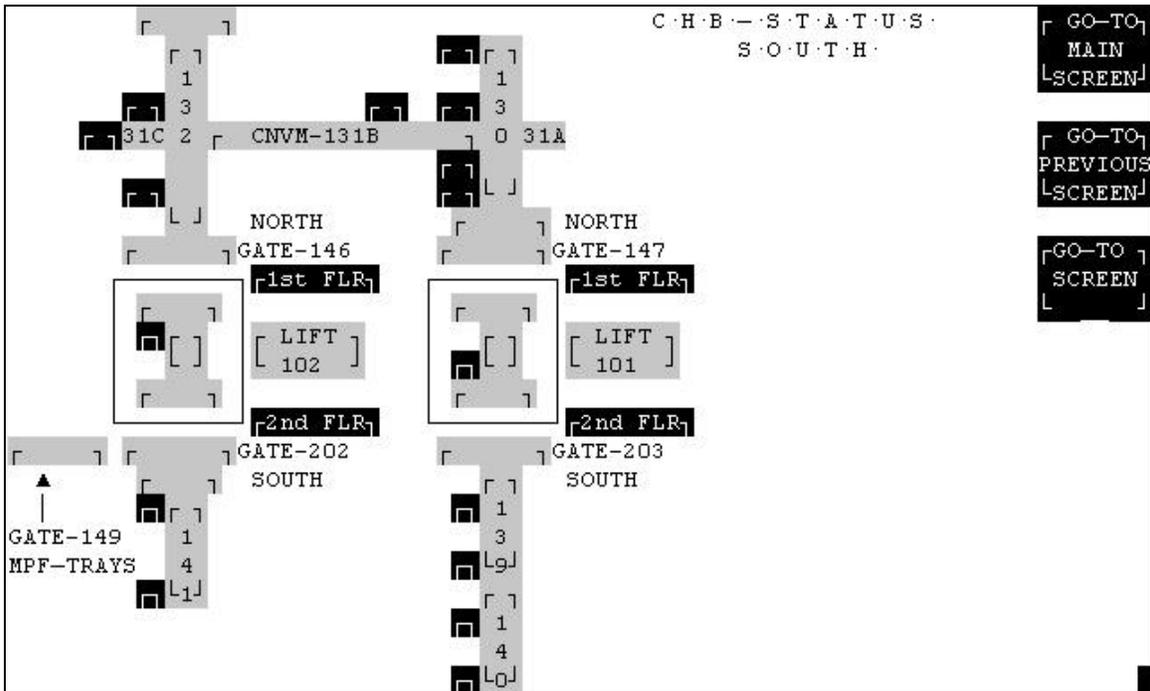


Figure E-14. TOCDF Panel View Screen, CHB Status South (129-3)

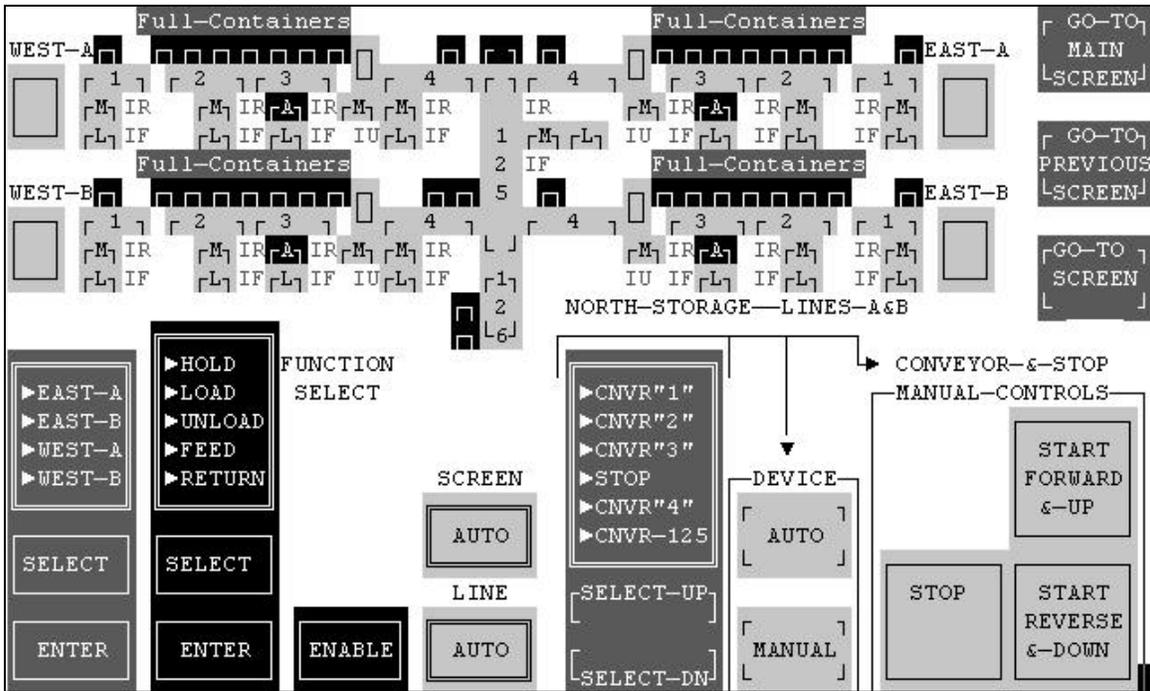


Figure E-15. TOCDF Panel View Screen, North Storage—Lines A&B (129-4)

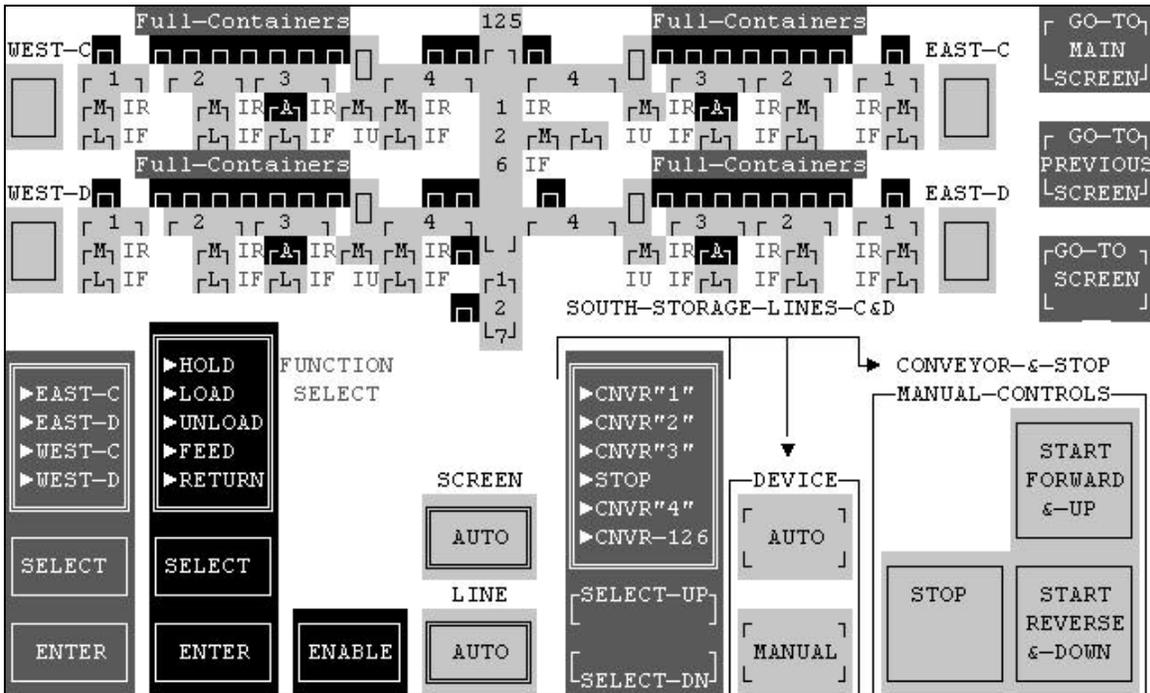


Figure E-16. TOCDF Panel View Screen, South Storage—Lines C&D (129-5)

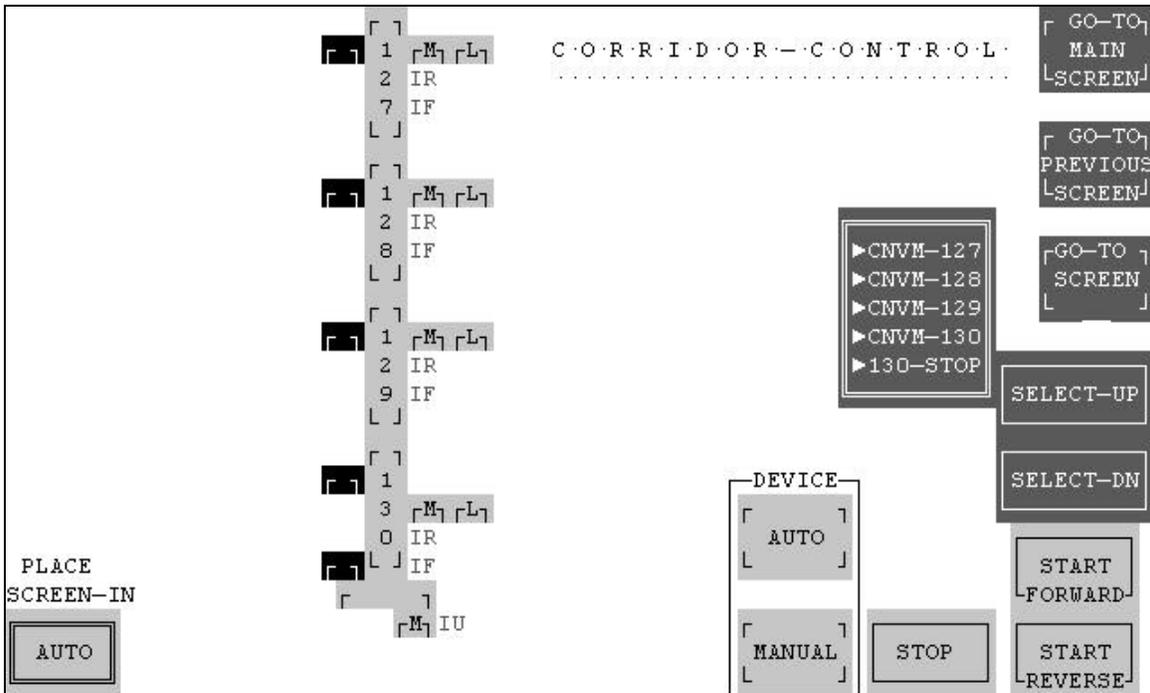


Figure E-17. TOCDF Panel View Screen, Corridor Control (129-6)

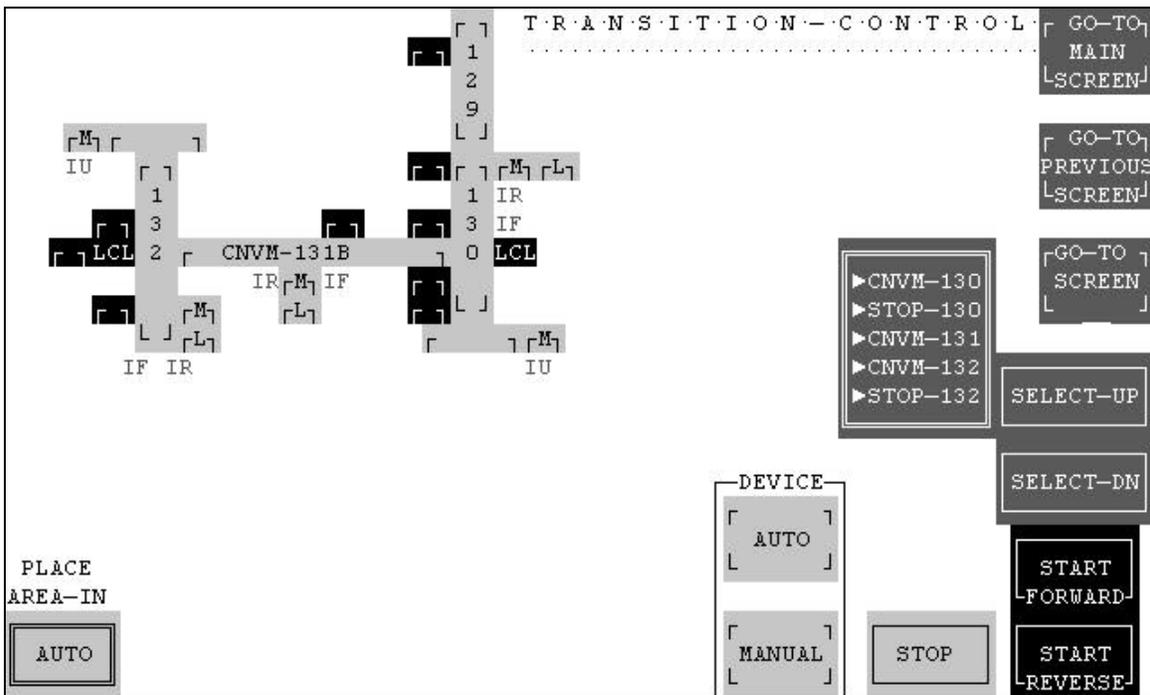


Figure E-18. TOCDF Panel View Screen, Transition Control (129-7)

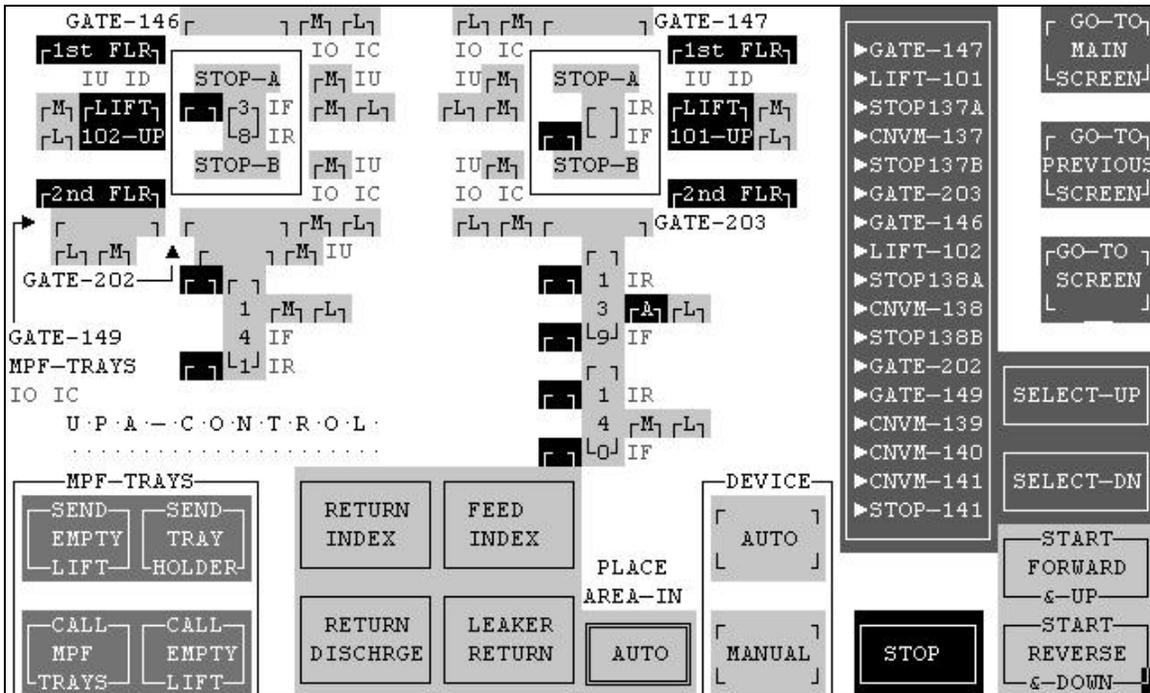


Figure E-19. TOCDF Panel View Screen, UPA Control (129-8)

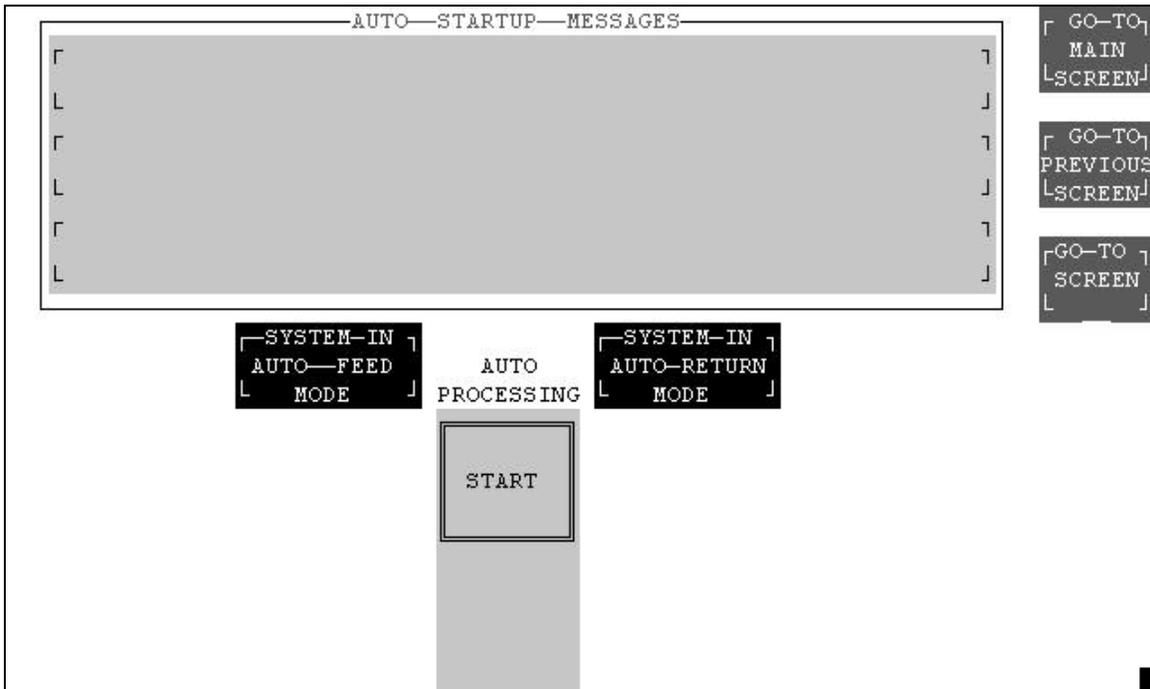


Figure E-20. TOCDF Panel View Screen, Auto Processing (129-9)

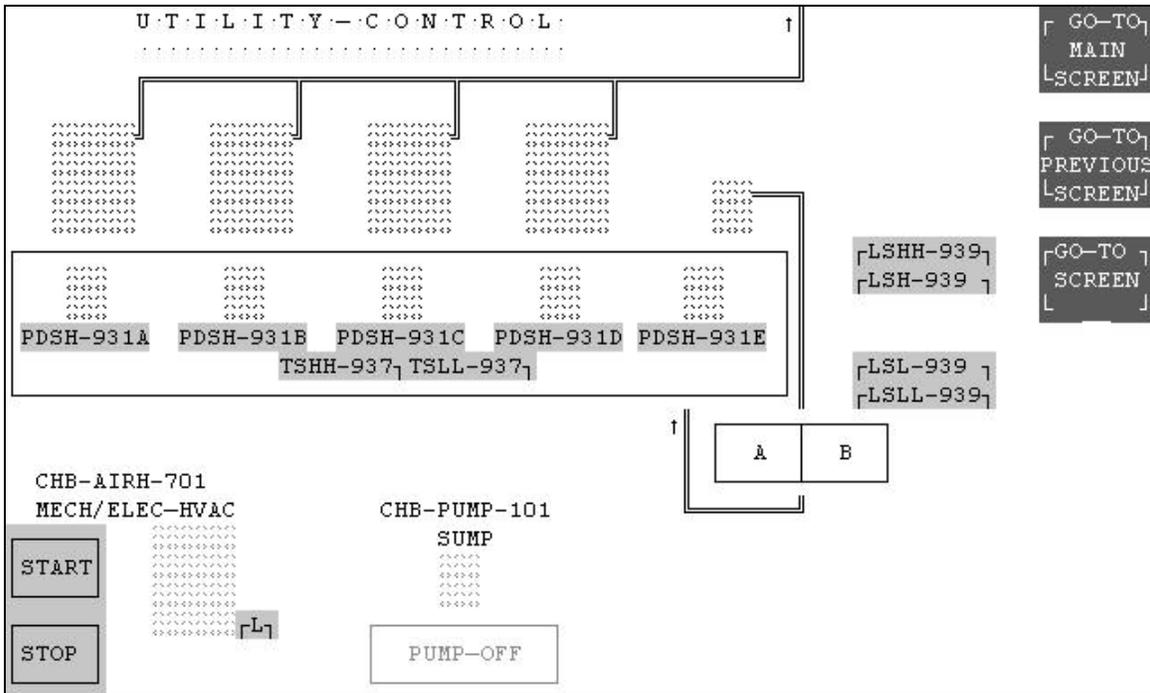


Figure E-21. TOCDF Panel View Screen, Utility Control (129-10)

**APPENDIX F****Instrument Ranges**

Table F.1 shows the instrument data extracted from the TOCDF Loveland calibration database for CHB instrumentation as of October 15, 1997. Not all instrument tag numbers listed are part of the design at ANCDF, PBCDF, and UMCDF.

Table F.1 CHB Instrumentation in TOCDF Loveland Instrument Calibration Database

INSTRUMENT TAG	RCRA	INPUT			OUTPUT			SET POINT	LOOP DEFINITION
		LOW	HI	UNIT	LOW	HI	UNIT		
96-PDSH-931A	No	20	90	psid	0			75	CHB-HYPU-101A Filter High Pressure
96-PDSH-931B	No	20	90	psid	0			75	CHB-HYPU-101B Filter High Pressure
96-PDSH-931C	No	20	90	psid	0			75	CHB-HYPU-101C Filter High Pressure
96-PDSH-931D	No	20	90	psid	0			75	CHB-HYPU-101D Filter High Pressure
96-PDSH-931E	No	20	90	psid	0			40	CHB-HYPU-101E Filter High Pressure
96-PSL-541	No	10	125	psig	0			35	CHB-CNVM-101 Roller Air Bag Press
96-PSL-542	No	10	125	psig	0			12	CHB-CNVM-101 Drive Air Bag Press
96-PSL-543	No	10	125	psig	0			35	CHB-CNVM-102 Roller Air Bag Press
96-PSL-544	No	10	125	psig	0			12	CHB-CNVM-102 Drive Air Bag Press
96-PSL-545	No	10	125	psig	0			35	CHB-CNVM-103 Roller Air Bag Press
96-PSL-546	No	10	125	psig	0			12	CHB-CNVM-103 Drive Air Bag Press
96-PSL-547	No	10	125	psig	0			35	CHB-CNVM-104 Roller Air Bag Press
96-PSL-548	No	10	125	psig	0			12	CHB-CNVM-104 Drive Air Bag Press
96-PSL-549	No	10	125	psig	0			35	CHB-CNVM-105 Roller Air Bag Press
96-PSL-550	No	10	125	psig	0			12	CHB-CNVM-105 Drive Air Bag Press
96-PSL-551	No	10	125	psig	0			35	CHB-CNVM-106 Roller Air Bag Press

Table F.1 (Cont'd)

INSTRUMENT TAG	RCRA	INPUT			OUTPUT			SET POINT	LOOP DEFINITION
		LOW	HI	UNIT	LOW	HI	UNIT		
96-PSL-552	No	10	125	psig	0			12	CHB-CNVM-106 Drive Air Bag Press
96-PSL-553	No	10	125	psig	0			35	CHB-CNVM-107 Roller Air Bag Press
96-PSL-554	No	10	125	psig	0			12	CHB-CNVM-107 Drive Air Bag Press
96-PSL-555	No	10	125	psig	0			35	CHB-CNVM-108 Roller Air Bag Press
96-PSL-556	No	10	125	psig	0			12	CHB-CNVM-108 Drive Air Bag Press
96-PSL-557	No	10	125	psig	0			35	CHB-CNVM-109 Roller Air Bag Press
96-PSL-558	No	10	125	psig	0			12	CHB-CNVM-109 Drive Air Bag Press
96-PSL-559	No	10	125	psig	0			35	CHB-CNVM-110 Roller Air Bag Press
96-PSL-560	No	0	100	psig	0			12	CHB-CNVM-110 Drive Air Bag Press
96-PSL-561	No	10	125	psig	0			35	CHB-CNVM-111 Roller Air Bag Press
96-PSL-562	No	10	125	psig	0			12	CHB-CNVM-111 Drive Air Bag Press
96-PSL-563	No	10	125	psig	0			35	CHB-CNVM-112 Roller Air Bag Press
96-PSL-564	No	10	125	psig	0			12	CHB-CNVM-112 Drive Air Bag Press
96-PSL-565	No	10	125	psig	0			35	CHB-CNVM-133 Roller Air Bag Press
96-PSL-566	No	10	125	psig	0			12	CHB-CNVM-133 Drive Air Bag Press
96-PSL-567	No	10	125	psig	0			35	CHB-CNVM-134 Roller Air Bag Press
96-PSL-568	No	10	125	psig	0			12	CHB-CNVM-134 Drive Air Bag Press
96-PSL-569	No	10	125	psig	0			35	CHB-CNVM-135 Roller Air Bag Press
96-PSL-570	No	10	125	psig	0			12	CHB-CNVM-135 Drive Air Bag Press
96-PSL-571	No	10	125	psig	0			35	CHB-CNVM-136 Roller Air Bag Press
96-PSL-572	No	10	125	psig	0			12	CHB-CNVM-136 Drive Air Bag Press
96-PSL-573	No	10	125	psig	0			35	CHB-CNVM-121 Roller Air Bag Press

Table F.1 (Cont'd)

INSTRUMENT TAG	RCRA	INPUT			OUTPUT			SET POINT	LOOP DEFINITION
		LOW	HI	UNIT	LOW	HI	UNIT		
96-PSL-574	No	0	100	psig	0			12	CHB-CNVM-121 Drive Air Bag Press
96-PSL-575	No	10	125	psig	0			35	CHB-CNVM-122 Roller Air Bag Press
96-PSL-576	No	10	125	psig	0			12	CHB-CNVM-122 Drive Air Bag Press
96-PSL-577	No	10	125	psig	0			35	CHB-CNVM-123 Roller Air Bag Press
96-PSL-578	No	10	125	psig	0			12	CHB-CNVM-123 Drive Air Bag Press
96-PSL-579	No	10	125	psig	0			35	CHB-CNVM-124 Roller Air Bag Press
96-PSL-581	No	10	125	psig	0			35	CHB-CNVM-117 Roller Air Bag Press
96-PSL-582	No	10	125	psig	0			12	CHB-CNVM-117 Drive Air Bag Press
96-PSL-583	No	10	125	psig	0			35	CHB-CNVM-118 Roller Air Bag Press
96-PSL-584	No	10	125	psig	0			12	CHB-CNVM-118 Drive Air Bag Press
96-PSL-586	No	10	125	psig	0			12	CHB-CNVM-119 Drive Air Bag Press
96-PSL-587	No	10	125	psig	0			35	CHB-CNVM-120 Roller Air Bag Press
96-PSL-588	No	10	125	psig	0			12	CHB-CNVM-120 Drive Air Bag Press
96-PSL-589	No	10	125	psig	0			35	CHB-CNVM-113 Roller Air Bag Press
96-PSL-590	No	10	125	psig	0			12	CHB-CNVM-113 Drive Air Bag Press
96-PSL-591	No	10	125	psig	0			35	CHB-CNVM-114 Roller Air Bag Press
96-PSL-592	No	10	125	psig	0			12	CHB-CNVM-114 Drive Air Bag Press
96-PSL-593	No	10	125	psig	0			35	CHB-CNVM-115 Roller Air Bag Press
96-PSL-594	No	10	125	psig	0			12	CHB-CNVM-115 Drive Air Bag Press
96-PSL-595	No	10	125	psig	0			35	CHB-CNVM-116 Roller Air Bag Press
96-PSL-596	No	10	125	psig	0			12	CHB-CNVM-116 Drive Air Bag Press
96-PSL-601	No	10	125	psig	0			35	CHB-CNVM-125 Roller Air Bag Press

Table F.1 (Cont'd)

INSTRUMENT TAG	RCRA	INPUT			OUTPUT			SET POINT	LOOP DEFINITION
		LOW	HI	UNIT	LOW	HI	UNIT		
96-PSL-602	No	10	125	psig	0			25	CHB-CNVM-125 Drive Air Bag Press
96-PSL-603	No	10	125	psig	0			35	CHB-CNVM-126 Roller Air Bag Press
96-PSL-604	No	10	125	psig	0			25	CHB-CNVM-126 Drive Air Bag Press
96-PSL-605	No	10	125	psig	0			35	CHB-CNVM-127 Roller Air Bag Press
96-PSL-606	No	10	125	psig	0			25	CHB-CNVM-127 Drive Air Bag Press
96-PSL-607	No	10	125	psig	0			35	CHB-CNVM-128 Roller Air Bag Press
96-PSL-608	No	10	125	psig	0			25	CHB-CNVM-128 Drive Air Bag Press
96-PSL-609	No	10	125	psig	0			35	CHB-CNVM-129 Roller Air Bag Press
96-PSL-610	No	10	125	psig	0			25	CHB-CNVM-129 Drive Air Bag Press
96-PSL-611	No	10	125	psig	0			35	CHB-CNVM-130 Roller Air Bag Press
96-PSL-612	No	4	200	psig	0			25	CHB-CNVM-130 Drive Air Bag Press
96-PSL-621	No	10	125	psig	0			35	CHB-CNVM-137 Roller Air Bag Press
96-PSL-622	No	10	125	psig	0			25	CHB-CNVM-137 Drive Air Bag Press
96-PSL-623	No	4	200	psig	0			35	CHB-CNVM-139 Roller Air Bag Press
96-PSL-624	No	10	125	psig	0			25	CHB-CNVM-139 Drive Air Bag Press
96-PSL-625	No	4	200	psig	0			35	CHB-CNVM-140 Roller Air Bag Press
96-PSL-626	No	10	125	psig	0			25	CHB-CNVM-140 Drive Air Bag Press
96-PSL-631	No	4	200	psig	0			35	CHB-CNVM-141 Roller Air Bag Press
96-PSL-632	No	10	125	psig	0			25	CHB-CNVM-141 Drive Air Bag Press
96-PSL-633	No	10	125	psig	0			35	CHB-CNVM-138 Roller Air Bag Press
96-PSL-634	No	10	125	psig	0			25	CHB-CNVM-138 Drive Air Bag Press
96-PSL-635	No	10	125	psig	0			35	CHB-CNVM-132 Roller Air Bag Press

Table F.1 (Cont'd)

INSTRUMENT TAG	RCRA	INPUT			OUTPUT			SET POINT	LOOP DEFINITION
		LOW	HI	UNIT	LOW	HI	UNIT		
96-PSL-636	No	10	125	psig	0			25	CHB-CNVM-132 Drive Air Bag Press
96-PSL-637	No	10	125	psig	0			35	CHB-CNVM-131 Roller Air Bag Press
96-PSL-638	No	10	125	psig	0			25	CHB-CNVM-131 Drive Air Bag Press
96-PSL-953	No	10	125	psig	0			12	CHB-CNVM-124 Drive Air Bag Press
96-PSL-954	No	10	125	psig	0			35	CHB-CNVM-119 Roller Air Bag Press
96-TSH-937	No	80	145	°F	0			114	CHB-HYPU-101 Hyd Unit Fluid Temp
96-TSHH-937	No	80	145	°F	0			125	CHB-HYPU-101 Hyd Unit Fluid Temp
96-TSL-937	No	80	145	°F	0			111	CHB-HYPU-101 Hyd Unit Fluid Temp
96-TSLL-937	No	80	145	°F	0			90	CHB-HYPU-101 Hyd Unit Fluid Temp
96-ZS-627	No	10	125	psig	0			80	TBD
96-ZS-628	No	10	125	psig	0			80	TBD



## APPENDIX G

### Intercontroller Communications

CHB operations are or will be controlled by the same PLC, ICS-CONR-120, at all four sites. Table G.1 lists the digital intercontroller inputs and outputs (DICIs/DICOs) for ICS-CONR-120. The DICIs/DICOs listed are based on the TOCDF code as of March 1999. The TOCDF code was used since site-specific code currently exists for TOCDF only.

Table G.1 TOCDF CHB DICIs and DICOs (ICS-CONR-120)

To Controller			From Controller			Description	Interpretation		
CONR	Input Word (B4:)	Safe Mask (B4:)	CONR	Output Word	Bit		0	1	Safe
110	043	144	120	077	15	Received Campaign Select Data		Received	0
110	043	143	120	077	16	Request Campaign Select Update		Request	0
110	044	143	120	078	00	Screen D12 Diagnostic Adv Alarm		Alarm	0
110	044	144	120	078	01	Screen D12 Diagnostic Adv Unacknowledge		Unack.	0
120	025	125	109	093	00	Elec. System Power Loss		Power Lost	0
120	025	125	109	093	01	Start Essential Power Equip.		Start	0



## APPENDIX H

### References

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AN-7-D-506, Rev. 0, 1-2-96	CHB Storage Area (East) Conveyors P&ID
AN-7-D-507, Rev. 2, 11-1-96	CHB Loading Dock and Storage Area (East) Conveyors P&ID
AN-7-D-508, Rev. 0, 1-2-96	CHB Right Angle Transfer & Corridor Conveyors P&ID
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