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US Nuclear Regulatory Commission  
Washington, DC 20555  
Attn: Document Control Desk

Three Mile Island Nuclear Station, Unit 2 (TMI-2)  
Operating License No. DPR-73  
Docket No. 50-320  
Annual Update of Auxiliary Building Emergency Liquid Clean-up System  
(EPICOR II)  
System Description

Dear Sir:

As requested by NRC letter dated February 4, 1982, GPU Nuclear has performed the annual review of the Auxiliary Building Emergency Liquid Clean-up System (EPICOR II) System Description. Revision 10 of the System Description is attached for your information.

Sincerely,

R. L. Long  
Director, Corporate Services/TMI-2

EDS/dlb  
Attachment

cc: T. T. Martin - Regional Administrator, Region I  
M. T. Masnik - Project Manager, PDNP Directorate  
L. H. Thonus - Project Manager, TMI  
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100000

ADD

- ITS
- NSR
- NITS

**DIVISION**  
**SYSTEM DESCRIPTION**  
**FOR**

Auxiliary Building Emergency  
Liquid Clean-up System (EPICOR II)

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COG ENG	<u><i>R. F. ...</i></u>	DATE	<u>6/30/92</u>
RTR	<u><i>W. J. Marshall</i></u>	DATE	<u>6/30/92</u>
COG ENG MGR.	<u><i>J. J. B.</i></u>	DATE	<u>6/30/92</u>

FORM 4000-ENG-7310.06-1 (5/84)

Rev.	SUMMARY OF CHANGE	Approval	Date
0	Initial issue per GPU Nuclear letter 4410-82-L-0017.	<i>ES</i>	2/82
1	Updated per GPU Nuclear letter 4410-83-L-0078.	<i>ES</i>	4/83
2	Updated per GPU Nuclear letter 4410-84-L-0023.	<i>ES</i>	2/84
3	Updated per GPU Nuclear letter 4410-85-L-0074. Incorporated ECM 3475.B, Revision B.	<i>ES</i>	4/85
4	Updated per GPU Nuclear letter 4410-86-L-0069.	<i>ES</i>	4/86
5	Annual update to reflect the current operation configuration of the EPICOR II system. Adds further detail as to the operation of the Transfer Pump ALC-P-5 in Section 2.1.2. Revised the description of demineralizer ALC-F-1 in Section 2.1.3. Revised Section 2.1.19 concerning system isolation valves. Adds new Section 3.4.2 and 3.4.3.	<i>ES</i>	5/87
6	<p>Annual update to reflect the following:</p> <ul style="list-style-type: none"> <li>a. Clarification of Section 1.0 regarding approved receiving times for EPICOR II processed water and routine/non-routine operations.</li> <li>b. Installation of a stainless steel ALC-P-5 transfer pump has changed Section 2.1.2 and Table 2 regarding total dynamic head.</li> <li>c. Replacement of ALC-RE-1B (ALC Ventilation Rad Monitor) required modification to Section 2.2.4 and Table 10 and 12.</li> <li>d. Table 15 (ALC Valve List) has been expanded to include two new valves added for MMA 3516-87-0016 (ALC-F-1) Bypass.</li> <li>e. Table 15 also now includes the description of "WG" valves commonly used when processing MMWT, RCBTs, and Neutralizer Tanks through EPICOR II. When the "TANKFARM" S.D. #3230-003 was cancelled, these "WG" valves should have been incorporated into SO 3526-004.</li> </ul>	<i>ES</i>	6/88

Form 4000 (Rev. 1/10) 08 7 (10/81)

Rev.	SUMMARY OF CHANGE	Approval	Date
7	Annual update to reflect the current operating configuration of the EPICOR II System and to reflect the out of service (OOS) condition of the Submerged Demineralizer System (SDS). Table 12 was deleted for administrative purposes; Table 13 was deleted as being redundant to Table 16; and Table 14 was deleted because SDS is OOS.		7/89
8	Annual update to reflect the following: a. ALC-F-5 filter cartridge is not only 1 micron (nominal) and has been as "rough" as 10 micron (nominal). b. Radiation monitor ALC-RM-12 is no longer in service. c. Numerous other small corrections (e.g., typos, syntax, labels) were also made.		8/90
9	Annual update to reflect the following: a. Air compressors ALC-P-7 and ALC-P-8 were removed. b. Changes in the system for Processed Water Disposal System (PWDS) evaporator feed and return pathways to and from CC-1-1.		6/91
10	Annual update to reflect the following: a. Use of polyethylene High Integrity Containers (HICs). b. Use of BWST as feed or effluent storage tank. c. Delete NLB pump as end-user of EPICOR effluent. d. Delete references to DWCS system which is out-of-service. e. Numerous other small corrections (e.g., typos, syntax).		6/92

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## 1.0 INTRODUCTION

### 1.1 System Functions

The functions of the Auxiliary Building Emergency Liquid Clean-up (EPICOR II) System are:

1.1.1 To decontaminate, by filtration and ion exchange, radioactive waste water contained in TMI Unit 2. In the past, EPICOR II also served as a polishing ion exchanger system for the Submerged Demineralizer System (SDS). SDS has been taken out of service and will no longer process/filter contaminated liquids. Therefore, EPICOR II processes the waste water directly.

1.1.2 To transfer EPICOR II processed water from the Clean Water Receiving Tank (CC-T-2) to the following tanks:

- a. Processed Water Storage Tanks (PWSTs or PW-T-1 and 2).
- b. Off-Spec. Water Receiving/Batch Tank (CC-T-1) to be used for decontamination of the Reactor Building and Auxiliary/Fuel Handling Buildings. CC-T-1 is also used for recycle processing when required.
- c. Evaporator Condensate Test Tanks (ECTTs or WDL-T-9A and 9B) to be used for various decontamination activities and make-up water/chemical additions via the Boric Acid Mix Tank (BAMT).

NOTE: The transfer to WDL-T-9A/B passes through Unit 1 Turbine Building, but is physically isolated from all Unit 1 systems.

- d. On a non-routine basis to either the Condensate Storage Tank (CD-T-1A), Borated Water Storage Tank (BWST) or the Spent Fuel Storage Pools via the truck fill station.

1.1.3 To provide remote handling of spent resin containers from their position inside the Chemical Cleaning Building (CCB) to the transport cask and truck.

- 1.1.4 To limit releases of radioactive material to the environment to "as low as is reasonably achievable."
- 1.1.5 To provide for operation and maintenance of the liquid cleanup system in compliance with "as low as is reasonably achievable" radiation doses to personnel.
- 1.1.6 To provide a staging tank (CC-T-1) for the supply of water to, and the collection of distillate from, the Processed Water Disposal System (PWDS) evaporator.
- 1.1.7 To accomplish the above independently from TMI Unit-1 (for exception see NOTE above).

## 1.2 Summary Description of the System

The Auxiliary Building Emergency Liquid Clean-up System, as the name implies, was originally designed and constructed for the primary purpose of processing and cleaning up the accident-generated water that collected in the Auxiliary Building. The system is referred to as "EPICOR II."

The system consists of a liquid radwaste processing system which is located in the CCB. It decontaminates, by filtration and ion exchange, radioactive waste water contained in the Auxiliary Building, Fuel Handling Building, Service Building, and Reactor Building of TMI Unit 2. Contaminated water is pumped from a connection located on the Miscellaneous Waste Holdup Tank (MWHT) by a pump located in the CCB through the yard and into the process system; contaminated water can also be obtained from the Monitor Tanks (SDS-T-1A and 1B), the Contaminated Drain Tanks (CDTs), the Reactor Coolant Bleed Tanks (RCBTs), the Neutralizer Tanks (WDL-T-8A and 8B), or the Borated Water Storage Tank (BWST). Yard piping is shielded and enclosed within a guard pipe, the open end of which terminates inside the CCB.

The primary process system consists of three demineralizers (ALC-F-1, ALC-K-1, and ALC-K-2), connected in series. Waste liquid is transferred from the source tank (MWHT, WDL-T-8A/B, RCBT, CDT, BWST, or SDS-T-1A/B) through the demineralizers, to the CC-T-2. Change-out criteria for the various units are indicated in Table 15.



Processed water is typically delivered to CC-T-2 for sampling and analysis. The processed water is then pumped to one of the following, if within specification: the Liquid Waste Disposal System of TMI Unit 2, the Spent Fuel Storage Pools, the PWSIs, the BWST, CO-T-1A, or WDL-T-9 A/B. Additionally, the processed water can be transferred to the CC-T-1 for recycling through the process system or use in the decontamination of the Reactor Building, Auxiliary, and Fuel Handling Buildings. Reprocessing under a feed and bleed scheme (via CC-T-2) can be done if the water does not meet the end process criteria; this is not a routine operation since feed and bleed processing requires a long time to accomplish.

CC-T-1 may also be used to provide tankage for distillate water from the PWDS evaporator. In addition, feed water to the evaporator may be supplied from CC-T-1.

The CCB is a low leakage confinement building with an exhaust ventilation system to maintain the building at a negative pressure. Moisture separators, high efficiency particulate air (HEPA) filters, and charcoal filters have been provided in the exhaust ventilation system in order to filter the building air before it is released to the stack at the roof line of the CCB. All effluent air is monitored for radioactivity at this point. Provisions for grab samples are available.

Normal operation of the ion exchange processing system is by remote means except for infrequent operations such as sampling, spent resin container removal and new resin container installation. All remote system operations are controlled from the TV Monitor and Control Building located outside the northwest corner of the CCB.

Remote handling of spent resin containers from their position inside the CCB to the transport cask and truck is via a remotely-operated, twenty-ton monorail hoist system.

A fire protection system is installed in the HVAC equipment room, the TV Monitor and Control Building, and the CCB. A 4" tie-in to the existing fire main supplies a sprinkler system in the TV Monitor and Control Building and a hose station in the CCB, as well as the sprinkler line to the air filtration unit charcoal filters. The key to the lock on this sprayline valve is kept in the TV Monitor and Control Building. Line and grid pressure indication is provided in the TV Monitor and Control Building.

EPICOR II interfaces with the TMI Unit 2 Radwaste Disposal Miscellaneous Liquids System, the Demineralized Water System, the Processed Water Storage System, the BOP Electrical System, the Service Air System, the Unit 1 Liquid Waste Disposal System, the Fire Protection System, the Unit 2 Radwaste Disposal Reactor Coolant Liquid System, and the PWDS.

NOTE: Although there is an interface with the Unit 1 Liquid Waste Disposal System, the Unit 1 System will not be used. In this respect, Unit 2 will function independently. Valve ALC-V169 shall remain locked closed (unless transferring water from either CC-T-1 or CC-T-2 to the "B" Spent Fuel Pool) and a spectacle flange is installed downstream of valve ALC-V169 at the transition between Unit 1 and Unit 2 liquid radwaste systems.

### 1.3 System Design Requirements

#### 1.3.1 Process System Design Requirements

- 1.3.1.1 The ion exchange process line pipe size is nominally 2" schedule 40, based upon the EPICOR II System flow rate of 10-30 gpm. Other line sizes are based on service requirements and function, such as service air, demineralized water, recirculation and sampling.
- 1.3.1.2 Pumps ALC-P-1 through 4 have hose connections and are provided with drip trays to collect leakage. Drip trays have nozzles as close to the bottom of the tray as possible and are served by flexible tubing which leads to the nearest floor or equipment drain using the floor slope to induce flow. This tubing is placed well down into the floor drain.
- 1.3.1.3 Remote system operations are directed and controlled from outside of the CCB from the TV Monitor and Control Building. This area is provided with remote closed circuit television monitoring of the operating areas inside and outside the CCB.

- 1.3.1.4 Process instrumentation consists of pH and conductivity monitors. Resin bed radiation levels, process line radiation levels, process flow rates, process totalizers, and tank/demineralizer levels are also monitored. Accelerometers for pumps ALC-P-1 through 4 are provided for equipment protection and an alternate method to determine processing flowrates.
- 1.3.1.5 The system tank vents are provided with inline heaters, demister filters, and charcoal filters for adsorption of evolved iodine. These units are sloped to drain demisted liquids back into the system tanks.
- 1.3.1.6 Liquid waste feed to the system will be drawn from the source tank (MWHT, RCBT, SOS-T-1A/B, COT, BWST, WOL-T-8A/B, CC-T-2, or CC-T-1) to the first EPICOR II pump (ALC-P-1).
- 1.3.1.7 The EPICOR II System is contained within the CCB which was originally designed to meet seismic criteria per Zone 1 of the building code. The EPICOR II System and major components when constructed were considered to be non-Quality Control (QC) scope; however, the system has since been reclassified Important to Safety (ITS), in QC scope.
- 1.3.1.8 All system piping is welded stainless steel except for air piping which is welded carbon steel or copper tubing. Instrument tubing systems are 316 SS tubing and are made up using compression fittings. The process system piping is rated at 150 lbs. and is designed, installed and inspected in accordance with ANSI B31.1 (Power Piping).
- NOTE:** Flanged and screwed connections are used as necessary on certain components.
- 1.3.1.9 Capability is provided to obtain a representative sample of CC-T-1 and CC-T-2, and the effluents of demineralizers ALC-F-1, ALC-K-1 and ALC-K-2, while

in a low radiation area in accordance with Regulatory Guide 1.21. Representative sampling for either CC-T-1 or CC-T-2 is here defined as "after recirculating the tank contents for three volume changes". Also, the sample line for either CC-T-1 or CC-T-2 is purged to the sample sink for five line volumes prior to drawing the sample, and for demineralizers ALC-F-1, ALC-K-1 and ALC-K-2, the sample lines are flushed for a minimum of three (3) minutes prior to drawing the sample.

NOTE: Demineralizer ALC-F-1 is the first demineralizer, followed in series by demineralizers ALC-K-1 and ALC-K-2, respectively.

- 1.3.1.10 The building sump is a covered sump.
- 1.3.1.11 System blowdown air and demineralized water lines are provided with individual check valves ALC-V060 through V079 to minimize contamination of these systems.
- 1.3.1.12 The demineralized water supply header is provided with demineralized water from TMI Unit 2 in the range of 80-130 psig to meet EPICOR II requirements.
- 1.3.1.13 The system air supply header is provided with a pressure regulator operating in the range of 80-90 psig, and a moisture separator. An air oiler, and an anti-freeze injector are provided for the portion of the system air header servicing the EPICOR II pumps. The Plant Service Air System is the normal air supply.
- 1.3.1.14 If sampling indicates that the processed water is within limits for usage, the contents of CC-T-2 may be routed to one of the following: the TMI Unit 2 Liquid Waste Disposal System, the Spent Fuel Storage Pools, the PWSTs, the BWST or CC-T-1.

- 1.3.1.15 All system overflow lines discharge to the CCB sump. All floor drains also discharge to the sump. The water collected in the sump is staged in CC-T-1 by the sump pump for recycle through the cleanup system or it is drawn and processed directly through the EPICOR II System via existing valves and piping.
  - 1.3.1.16 Since the elevation of the discharge nozzle of CC-T-2 and the CCB floor were fixed prior to design and construction of EPICOR II, the hydraulic design for draining CC-T-2 is not adequate for complete draining of the tank. However, the system was designed to facilitate draining to the maximum extent possible. Final draining of CC-T-2 is accomplished with the manual drain line (valves ALC-V131 and V132).
  - 1.3.1.17 Three resin traps are installed downstream of the demineralizers.
  - 1.3.1.18 A ten micron (nominally rated) or finer cartridge filter (ALC-F-5) is installed downstream of the three resin traps.
  - 1.3.1.19 The system has personnel shielding on various components to reduce the radiation levels in the operating areas of the building.
  - 1.3.1.20 A resin trap is installed on the outlet from the liners' overflow line to prevent resin carryover into the sump.
- 1.3.2 Material Handling Design Requirements
- 1.3.2.1 Normal operation of the EPICOR II System is by remote methods.
  - 1.3.2.2 Demineralized water and service air connections are provided to flush and blowdown the entire system or portions of it to allow system maintenance.

1.3.2.3 Four (4) feet high by four (4) feet in diameter (4x4) liners or high integrity container (HIC) demineralizers with an adapter lift ring attached may be removed from the building by making use of the transfer bell designed for this purpose. The transfer bell is positioned over the radioactive liner; the shield doors on the bottom of the bell are opened and the liner is drawn up into the bell. The doors are closed and the bell is carried, by the crane, to the truck which may have a concrete shield vessel for isolating the bell during transportation to the staging facility. Monitoring of the area is carried on during these activities to assure the safety of personnel. Another liner is positioned in the vacated space. Shielding, process lines, and level instrumentation are repositioned and the unit is returned to service.

NOTE: The shielded transfer bell is no longer routinely used and will only be used if operation of the system results in radiation levels from the demineralizers exceeding limits for unshielded handling.

1.3.2.4 Six (6) feet high by six (6) feet in diameter (6x6) liners and lightly loaded 4x4 liners are handled in and out of the building without shielding. This is accomplished by remote operation and by establishing appropriate barriers limiting the approach of personnel to the handling operation. Spent resin containers are lifted directly from within substantial shielding barriers in the CCB and deposited directly in the transfer cask on the unmanned truck located immediately outside the building, or loaded unshielded on a transport truck depending on the liner's radiation levels.

### 1.3.3 Air Handling Design Requirements

- 1.3.3.1 A ventilation fan is provided to maintain the CCB at a negative pressure.
- 1.3.3.2 The MSA filtration unit is designed to meet the requirements of NRC Regulatory Guide 1.140.
- 1.3.3.3 The moisture separator is provided to remove water vapor droplets from the air.
- 1.3.3.4 An electric heater is provided within the MSA filtration unit to lower relative humidity (RH) to 30% with 100% RH inlet air.
- 1.3.3.5 The prefilter has an average atmospheric air strain efficiency of 85%.
- 1.3.3.6 The two HEPA filter banks are DOP tested in place to assure an efficiency of 99.95% for removing 0.3 micron particles.

## 2.0 DETAILED DESCRIPTION OF THE SYSTEM

### 2.1 Components

#### 2.1.1 EPICOR II Pumps ALC-P-1 through 4 (See Table 1)

Pumps ALC-P-1 through 4 are air-driven, positive displacement pumps with a capacity of 10 gpm to 120 gpm. Each pump is equipped with a pulsation dampener in the process outlet.

These pumps are utilized in the system to circulate the liquid through the demineralizers. The hoses furnished for the flexible connections to the pumps, filters, demineralizers, and traps have a design pressure of 100 psi.

Air supplied to the pumps passes through an air oiler and an anti-freeze injector to a valve manifold. Pump speed and capacity will be varied by the EPICOR II operator to achieve the desired flow through the radwaste process system. Pump speed is controlled by throttling the drive air at the Fava

Control Panel. Demineralized water and oil free air connections are provided on the suction and discharge side of each pump for flushing and blowdown purposes. Pump noise and vibration monitors are present for pumps ALC-P-1 through 4 and have a read-out on panel ALC-PNL-2 in the TV Monitor and Control Building.

#### 2.1.2 Transfer Pump ALC-P-5 (See Table 2)

Transfer pump ALC-P-5 is a single stage horizontal centrifugal pump with a capacity of 200 gpm at 100' head. The pump motor is rated at 10 HP and is powered from MCC 2-33A in the TV Monitor and Control Building. The pump is controlled by push buttons for START/STOP from MCC 2-33A, a hand selector switch for low level control of either CC-T-1 or CC-T-2 from the panel ALC-PNL-1 in the TV Monitor and Control Building and level switches in panel ALC-PNL-1 for CC-T-1 and CC-T-2. The level switches receive their signals from level transmitters ALC-LT-1 and ALC-LT-2 at CC-T-1 and CC-T-2, respectively. CC-T-1 and CC-T-2 also have high level cutouts to transfer pump ALC-P-5.

Demineralized water is supplied to the pump mechanical seal from a solenoid operated valve ALC-V136 controlled from the pump motor starting circuit. When the motor starts, the valve opens. The seal water flow rate is maintained at 1-2 gpm by throttling valve ALC-V134 when seal water injection is required. Seal water injection is only required if the pump is handling water which contains greater than 7000 ppm boron.

If the pump handles clean water, it is acceptable to allow the mechanical seal to be lubricated through the pump's internal passages. As long as the water has passed through filter ALC-F-5, the water is clean enough (from a grit standpoint) to lubricate the mechanical seal. Thus, as long as filter ALC-F-5 is in use, the demineralized seal water can be turned off with valve ALC-V134 to reduce the total volume of processed water or radwaste.

This pump is used to transfer water from either CC-T-1 or CC-T-2. It is also used to transfer water from CC-T-2 to CC-T-1.



Furthermore, this pump may be used for recirculating and sampling the contents of CC-T-2 or CC-T-1. (Recirculation of CC-T-1 may also be accomplished using ALC-P-11.) The sample connection terminates at the sample system sink. The pump is provided with a discharge pressure gauge, and a flow element on the discharge line to Units No. 1 and No. 2, the Spent Fuel Pools, the PWSIs and the truck fill station. Remote indication of flow (ALC-FI-2) and a flow totalizer (ALC-FQ-2) are located on panel ALC-PNL-1.

To protect the pump from operating at shutoff or low flow, it is provided with a solenoid-operated minimum flow control valve ALC-V291. The minimum flow line branches to both CC-T-1 and CC-T-2; the direction of the flow is to the tank from which the water originates. The operation of the minimum flow control valve is automatic, although manual control is provided as well. Automatic control is provided by differential pressure switch ALC-DPS-1. The switch measures the flow through the pump in terms of  $\Delta P$  across the equipment. When the flow is less than 40 gpm, the minimum flow control valve opens and will remain open until the flow has increased to approximately 90 gpm, at which time it will close. Manual control permits the opening and closing of the valve at any time.

#### 2.1.3 ALC-P-9 (See Table 3)

This pump provides water from CC-T-1 to the PWDS evaporator. It is located in the CCB, underneath CC-T-1. Discharge piping from this pump crosses the CCB, the yard, runs down the Unit 1/2 corridor and into the Evaporator Building. The design flowrate of this pump is 5 to 7 gpm.

#### 2.1.4 ALC-P-10 (See Table 3)

This pump discharges water from the PWDS evaporator to CC-T-1 for storage. Normally, this water is distillate water; however, flush water or other water may be transferred. This pump draws its suction from ALC-T-3, a small storage tank in the Unit 1/2 corridor. The discharge piping runs down the corridor, across the yard, and into the CCB, where it ties into the ALC-P-5 discharge piping routed to CC-T-1.

Normally this pump's operation is controlled by a level controller in ALC-T-3. When ALC-T-3 is full, the pump operates; when ALC-T-3 reaches low level, the pump stops. A handswitch in the Unit 1/2 corridor allows manual operation of the pump as well.

The design flowrate of this pump is 5 to 7 gpm.

#### 2.1.5 ALC-P-11 (See Table 4)

This single stage centrifugal pump provides the ability to recirculate CC-T-1. (This operation was at one time performed by ALC-P-5. At this time, ALC-P-5 recirculates CC-T-2 while ALC-P-11 recirculates CC-T-1. The use of separate pumps and piping to recirculate these tanks prevents their contents from mixing).

A sample line is provided on the discharge of the pump. This sample line is routed to the CCB Sample Sink.

ALC-P-11 is located beneath CC-T-1. It takes its suction on the tank discharge pipe at the bottom of the tank and discharges into a penetration at the top of the tank.

#### 2.1.6 Demineralizer ALC-F-1 (See Table 6)

This first stage demineralizer (also referred to as a "liner") is generally used to remove sodium, other non-radioactive chemicals, and low concentrations of radioactive isotopes. This demineralizer is either a 4x4 or 6x6 carbon steel liner.

Should conditions require gross cesium and strontium removal, a stainless steel HIC loaded with zeolite resins is placed in the first position to act as a roughing filter. This mode of operation precludes the need for SDS; thus, SDS has been placed out of service. The HIC is similar in size to the carbon steel 4x4 liner; the major difference in design being the materials used during fabrication of each type. HIC demineralizers are constructed of a very high grade stainless steel, enabling the container to meet the burial limits of Class B or Class C waste.

In all cases (4x4, 6x6, or HIC liners), the top of the liner has four (4) quick disconnect (QD) fittings: an inlet (pump discharge), an outlet (pump suction), a combination vent/overflow, and an air type QD fitting for the level bubbler tube. As a means of backup level indicator, a threaded level conductivity probe also penetrates the liner top.

An air connection is provided at the top of the 6x6 liner to allow removal of the plug from the top of the false bottom after final dewatering. The false bottom is filled with an approved sorbent to absorb water that may tend to accumulate. The false bottom is not required because the water volume absorbed is less than the 0.5% limit for shallow land burial. A manway with approximately a 20" diameter opening is installed on top of the liner.

The inlet nipple is connected to a full dispersion manifold in the top of the liner. The outlet nipple (pump suction line) connects to a single layer filter manifold which is located at the bottom of the liner.

The level probe or bubbler system maintains water level between 4" and 6" from the top of the liner by opening and closing solenoid valve ALC-V185 on the air supply to pump ALC-P-1, which is supplying the water; starting the pump on low level and stopping the pump and closing valves ALC-V043 or ALC-V242 on high level. On Hi Hi level 4" from the liner top, an audible alarm is sounded at the EPICOR II Monitoring Console, located in the TV Monitor and Control Building, valve ALC-V255 closes, and the pump motor operated valve closes. The EPICOR II operator may select either air bubbler or conductivity level control on the Fava Control Panel located in the TV Monitor and Control Building.

The demineralizer is vented, via hose connections, to a 2" vent header which leads into the top of CC-T-1.

A tee is provided in this vent line for a hose connection to a common header which discharges to the CCB sump. The line is provided as a demineralizer overflow line and demineralizer overpressure protection. A loop seal is provided to ensure that all liner gases are routed to CC-T-1

and its vent filters, rather than directly into the CCB. A level switch (ALC-LS-21) is installed in the loop seal for indication of flow in the header and provides an alarm at panel ALC-PNL-1 in the TV Monitor and Control Building.

The shielding in the ALC-F-1 position consists of a 5 1/8" thick, square lead brick wall (3 1/8" thick on south side) plus a 1/2" of shield-supporting steel. Radiation monitors (ALC-RM-1 and 2) are located inside this shield 180 degrees apart at different elevations to monitor accumulated radiation levels in the demineralizer. When the HIC is installed, a concrete shield (culvert) will provide additional shielding and a place to land the transfer bell while removing the spent HIC.

To avoid breakthrough of sodium to the second liner when demineralizer ALC-F-1 is organically loaded, the batch size through demineralizer ALC-F-1 is limited.

If a HIC is in service in the ALC-F-1 position, activity breakthrough will be limited through batch size or by the activity as measured by radiation monitor ALC-RM-7, installed at the influent header of demineralizer ALC-K-1. The second liner will then normally be organically loaded for sodium removal.

If the water source is very low in cesium and strontium, but still requires further polishing (i.e., recycle processing of either CC-T-1 or CC-T-2), a jumper hose may bypass the HIC demineralizer in the ALC-F-1 position. In this configuration, the first liner in the series will be demineralizer ALC-K-1 followed by demineralizer ALC-K-2 (i.e., two liners versus three). Processing relatively clean water will rinse cesium and/or strontium activity off of the HIC zeolites on to the downstream ALC-K-1 demineralizer. This is the purpose of the "BYPASS" mode. Refer to Section 2.1.23 for details regarding demineralizer level controls. Refer to Sections 3.4.2 and 3.4.3 regarding operations and systems that prepare a HIC/demineralizer for shipping and burial.

Remote indication is provided on the cleanup panel ALC-PNL-1 for radiation monitors ALC-RM-1 and 2. During system

operation, radiation levels as indicated on radiation monitors ALC-RM-1 and 2 should not be allowed to exceed 1 R/hr.

#### 2.1.7 Demineralizers ALC-K-1 and ALC-K-2 (See Table 6)

Two demineralizers are installed in series with demineralizer ALC-F-1 to further remove radioactivity from the waste liquid and polish the effluent.

Demineralizer ALC-K-1 is either a 4x4 or 6x6 liner or a polyethylene HIC and is primarily used to reduce the activity level of the process fluid through ion exchange and filtering. For this reason, the anticipated activity levels are high and the shielding around demineralizer ALC-K-1 is identical to shielding around demineralizer ALC-F-1 when demineralizer ALC-F-1 is a 6x6 liner.

Demineralizer ALC-K-2 is either a 4x4 or 6x6 liner and is primarily used to polish the effluent water from demineralizer ALC-K-1 and to act as a guard in the event of a resin breakthrough from demineralizer ALC-K-1. For this reason, the anticipated activity levels in demineralizer ALC-K-2 are lower than in demineralizer ALC-K-1.

Each demineralizer has the same external connections as demineralizer ALC-F-1. The demineralizer resin composition and quantity will be determined on the basis of system samples and operating data.

As with demineralizer ALC-F-1, two radiation detectors are located at different elevations 180 degrees apart inside the lead shield. Remote indication is provided in the TV Monitor and Control Building on panel ALC-PNL-1. During system operation, radiation levels on indicators ALC-RMI-3 and 4 for demineralizer ALC-K-1, should not be allowed to exceed 1 R/hr. Radiation levels on indicators ALC-RMI-5 and 6 for demineralizer ALC-K-2, should not be allowed to exceed 1R/hr.

**2.1.8 Miscellaneous Waste Hold-up Tank WDL-T-2 (See Table 7)**

The MWHT which has a capacity of 19,518 gallons, can receive liquid from the following sources:

- a. Auxiliary Building Sump Tank
- b. Neutralizer Tanks
- c. Contaminated Drain Tanks
- d. Reactor Building Sump
- e. Deborating Demineralizer back wash outlet
- f. Fuel Storage Pool Submersible Pump Discharge
- g. Demineralized Water System
- h. Condensate Polisher Sump
- i. Water Treatment Sump
- j. Reactor Coolant Bleed Tanks
- k. Concentrated Waste Storage Tank

The tank also has connections to the MWHT pump suction, recirculation capability, a caustic and sulphuric acid inlet, two nitrogen inlets, a vent, a gas sample connection and a relief valve. The tank is normally nitrogen blanketed, but may be vented to the Radwaste Disposal-Gas (WDG) System. To prevent acid splashing on the inner tank walls, the inlet piping extends eight (8) feet into the tank. The diameter of the tank is 10'-9 1/4". The MWHT is located in the Auxiliary Building at elevation 305'.

A tee connection is installed in place of the suction line strainer, WDL-U2028, on the MWHT pump (WDL-P-68) suction line. Connected to this tee is a 2" line which may supply the liquid from the MWHT to the suction side of pump ALC-P-1. An alternate connection from the discharge side of the MWHT pump to EPICOR may also be used to supply

EPICOR. A 4" guard pipe with a combination of lead and concrete shielding encloses the piping run from the Auxiliary Building corridor to the CCB penetration. The guard pipe is open to the atmosphere of the CCB, which is under a slight negative pressure.

#### 2.1.9 Clean Water Receiving Tank CC-T-2 (See Table 8)

CC-T-2 is a stainless steel atmospheric pressure tank with a capacity of 133,689 gallons located in the CCB. CC-T-2 receives the processed liquid from the discharge of pump ALC-P-4 via, in order, three resin traps, a filter, conductivity cell, pH meter, and an inlet flowmeter/totalizer.

An overflow line with a loop seal is provided near the top of CC-T-2. A demineralized water supply is provided to fill or flush the loop seal. A suction line from transfer pump ALC-P-5 penetrates the CC-T-2 skirt and connects to the bottom of CC-T-2. A connection on the top of CC-T-2 is also provided for the transfer pump recirculation line, a feature that enhances mixing of the contents. Level indication and high level alarm are provided on panel ALC-PNL-1. A future xenon hold-up tank connection is provided on the vent line. A 2" demineralized water line is also provided on top of CC-T-2 for whenever large quantities of demineralized water are required in CC-T-2. This would include preoperational testing or tank cleanup. A drain line is provided off transfer pump ALC-P-5 suction piping to drain the suction piping and the remaining water in CC-T-2 that the transfer pump cannot drain.

CC-T-2 has a 2" vent line exhausting to the CCB through a two-stage demister filter. The first stage consists of two moisture separators and a HEPA filter. The second stage consists of two charcoal filters and a HEPA filter. A normally energized heater in the common 2" vent line is controlled from power panel MP 2-33A.

Processed water is stored in CC-T-2 until a batch is completed. A representative sample of the processed water can be obtained from the discharge of the transfer pump at the sample sink after recirculating three volumes of CC-T-2

and purging the sample lines for five line volumes before drawing the sample. If the sample indicates the water quality is unsatisfactory, the water can be pumped to CC-T-1 for temporary storage or routed directly back into the suction line of pump ALC-P-1 for reprocessing through the filter and demineralizers until the quality is acceptable for discharge to the plant or storage tanks. If sampling indicates that the contents of CC-T-2 are satisfactory, the water is pumped normally into one of the following: the TMI Unit 2 Liquid Waste Disposal System, the Spent Fuel Storage Pools, the BWST, or the PWSTs; however, the water may be stored in CC-T-1, if desired. CC-T-1 is flushed clean with demineralized water or clean processed water before it is used for clean water storage.

#### 2.1.10 Off-Spec. Water Receiving/Batch Tank CC-T-1 (See Table 9)

CC-T-1 is a stainless steel tank with a capacity of 85,978 gallons designed for full vacuum to 75 psig. For the EPICOR II System, CC-T-1 is operated at atmospheric pressure only. CC-T-1 can receive the discharge from the CC-T-2 transfer pump whenever it is desired to either recycle the water for further processing, or store the purified water for future disposition.

CC-T-1 is piped to receive the discharge from the CCB sump pump, if desired, but normally the sump is drained by a 2" suction line to pump ALC-P-1 (see Section 2.1.12). A suction line at the bottom of CC-T-1 can be lined up either to pump ALC-P-1 for reprocessing the contents of CC-T-1 through the system, to transfer pump ALC-P-5 for recirculation and sampling, or discharge, or to pump ALC-P-11 for recirculation and sampling. The recirculation lines connect to the top of CC-T-1.

CC-T-1 is vented to the building in the same manner as CC-T-2. An overflow line with a loop seal is provided near the top of CC-T-1. A demineralized water supply is provided to the loop seal. A connection at the top of CC-T-1 receives vents from the prefilter, the demineralizers and the crud filter. Level indication and high level alarm are provided on panel ALC-PNL-1. A future xenon hold-up tank connection is provided on the vent line.



CC-T-1 has a 2" vent line exhausting to the CCB through a two-stage demister filter. The first stage consists of two moisture separators and a HEPA filter. The second stage consists of two charcoal filters and a HEPA filter. A normally energized heater in the common 2" vent line is controlled from power panel MP 2-33A.

CC-T-1 is piped to receive water discharged from the PWDS evaporator. In addition, CC-T-1 may be used to provide water to the PWDS evaporator by way of ALC-P-9.

#### 2.1.11 ALC-T-3 (See Table 10)

This stainless steel tank has a capacity of 100 gallons and is designed to receive water from the PWDS. The tank is located in the Unit 1/2 corridor and provides a suction volume for pump ALC-P-10 to forward water to CC-T-1, or pump PW-P-3 to forward water to the Processed Water Storage Tanks.

A ball-float level-controller installed in this tank normally controls the operation of ALC-P-10 or PW-P-3 (pumping out the tank when level is high, stopping the pump when the level is low). The overflow from this tank is routed to the Evaporator Building sump. The tank is operated at atmospheric pressure only and is placed in a stainless steel drip tray to capture any tank leakage. A sight glass is provided on the side of the tank to allow a visual check of water level.

#### 2.1.12 Chemical Cleaning Building Sump

The CCB sump is a stainless steel lined pit with a capacity of 4000 gallons located in the northwest corner of the CCB. All leakage from tank overflow, equipment, and floor drains is collected in the sump. One sump pump (see Table 11) is installed to permit the transfer of the liquid from the sump to CC-T-1, if desired. The pump is a single stage centrifugal pump with a capacity of 100 gpm. The pump motor is rated at 20 HP and is controlled from a selector switch (MAN-OFF-AUTO) located on MCC 2-33A. When in AUTO, the pump is controlled by conductivity type level switch ALC-LS-1 which starts and stops the pump automatically. A High Sump

Level Alarm is provided on cleanup panel ALC-PNL-1.

When in AUTO, the pump is started when the water level in the sump reaches a level that is 48 1/4 inches below the face of the pump mounting. The pump stops when the level of water has been lowered to a level that is 90 3/8 inches below the pump face. The high level alarm is actuated when the water level reaches 36 1/4 inches below the face of the pump mounting. The volume of water removed from pump START to pump STOP is approximately 1600 gallons. There is also a volume of nearly 1700 gallons above the High Alarm before the sump overflows.

The sump is normally drained by a 2" line provided from the sump to a 2" flushing line just upstream of its entry into the suction line of pump ALC-P-1. This permits the return of the sump water to the EPICOR II System directly from the sump without circulating through pump CC-P-2A and CC-T-1. A 3/4" branch connection is provided in this line with quick disconnects attached to permit ready access for flushing with demineralized water from an outlet downstream of valve ALC-V015 with a short length of hose.

#### 2.1.13 20 Ton Monorail Hoist System (See Table 12)

A 20 ton hoist is provided for removal and replacement of the demineralizers and other large pieces of auxiliary equipment in and out of the building. It is mounted on the monorail which extends from the north side of the CCB above the resin traps through the south end of the building, extending 18' outside of the building over the cask loading area.

In order to minimize the radiation exposure to personnel during demineralizer removal, the hoist is operated remotely using a remote pendant operating station in the TV Monitor and Control Building. Remote operation is aided through the use of a closed circuit TV (CCTV) system with six cameras. The pendant has six pushbuttons for trolley and hoist operation - one START, one STOP, two for north/south movement of the single speed trolley, and two for the hoist Quad-Speed Control System which are, a 4-step button for creep, low, medium and high speed RAISE, and a 4-step button

for creep, low, medium and high speed LOWER.

There is also a local monorail hoist pendant located on the CCB operating floor. This pendant is used for performing operations where there is little radiation exposure, such as bringing a new liner of resin into the building.

To aid positioning of the hoist remotely for demineralizer replacement, the monorail has visible target markings above the demineralizers and in the cask loading area, all of which can be viewed with the TV cameras.

#### 2.1.14 Resin Filters ALC-F-4A, B and C (See Table 5)

Three resin filters (i.e., traps) are provided downstream of pump ALC-P-4 to prevent resin fines from entering CC-T-2. If any filter's contact radiation level reaches 250 mR/hr (on any part of the filter), the system must be shutdown and the filter replaced. Four sides of the filters are shielded by 8" thick solid concrete blocks. The top is shielded with 1/2 inch of lead.

#### 2.1.15 Crud Filter ALC-F-5 (See Table 5)

A ten micron (nominally rated) or finer filter with isolation valves is provided between the resin filter and CC-T-2. The primary purpose of this filter is to eliminate most particulates present in the processed water. A vent line connected to CC-T-1 and a drain line to the floor drain system is provided for draining the filter housing prior to inserting or removing a filter cartridge. The filter is shielded by 3 1/8" lead bricks on three sides, and by a concrete wall on the fourth side.

During removal of the filter, it is handled as radioactive material. The filter is replaced whenever the contact radiation level reaches 250 mR/hr or when the pressure drop reduces the process flowrate below an acceptable value. A special lever is provided to aid in removal of the filter cartridge.

**2.1.16 Ventilation Heating Unit and Moisture Separator**

Heating unit ALC-E-H1 (see Table 13) is mounted on the inlet of the filtration unit at elevation 304' and consists of a moisture separator (ALC-E-F1) and a 60 KW 480 volt, 3 phase heater. The heater is powered from MCC 2-33A.

**2.1.17 Ventilation Filter Unit**

The filter unit consists of a single housing containing, in order: a prefilter (ALC-E-F2) (not used), a HEPA filter (ALC-E-F3), charcoal filter beds (ALC-E-F4) and a final HEPA filter (ALC-E-F5). A manually actuated fire protection water supply is provided for the charcoal beds.

**2.1.18 Ventilation Fan Assembly (See Table 13)**

Fan assembly ALC-E-1 is a 30HP, 460 volt, 3 phase, 60 cycle, radial flow centrifugal unit with a capacity of 8000 cfm. This fan, powered from MCC 2-33A, is mounted on the outlet of the filter unit and discharges the ventilation exhaust through ducting (monitored by a radiation detector) and out through the roof.

**2.1.19 Ventilation Radiation Monitor ALC-RMI-18 (See Table 13)**

This radiation monitor samples air in the fan discharge line isokinetically at a rate of 4 cfm to provide local (at monitor) and remote indication (on panel ALC-PNL-1) of discharge particulate and noble gas activity levels. Remote indication of these parameters is recorded on a strip chart recorder. The monitor will provide an alarm at a radiation level of  $4.11E-2$   $\mu$ Ci particulate or  $3.81E-4$   $\mu$ Ci/cc noble gas activity on the panel in the TV Monitor and Control Building. This radiation monitor is powered from MCC 2-33A. A splitter block has been provided in the line to the radiation monitor to provide a means of taking grab samples as may be required.

#### 2.1.20 Ventilation Weatherproof Enclosure

The weatherproof enclosure is located at grade level and houses the components discussed in Sections 2.1.16 through 2.1.19.

#### 2.1.21 Chemical Cleaning Building Radiation Monitors

Four area radiation monitors (ALC-RM-8 through 11) are provided in the CCB. These radiation monitors are provided with remote indication on the radiation monitoring panel ALC-PNL-1 in the TV Monitor and Control Building. The monitors provide a common alarm at a high radiation level and monitor failure on panel ALC-PNL-1. These radiation monitors are provided for operator information.

#### 2.1.22 Closed Circuit TV System

A CCTV system is provided to aid in remote handling of the demineralizers and to aid in system surveillance during operation. The system consists of seven TV cameras strategically located in the CCB. The TV monitors and necessary controls are mounted on the TV Monitor Console located in the TV Monitor and Control Building.

Camera No. 1 is mounted on the monorail support structure outside the CCB to allow viewing of the prefilter or demineralizer while being loaded into the transfer cask. Camera No. 2 is mounted directly on the 20 ton hoist and provides a direct view of the monorail. Target markings which can be viewed with this camera are provided on the monorail to aid in the positioning of the hoist. Camera No. 3 has a PAN-TILT control and is mounted to provide a view of demineralizer ALC-K-2 for remote handling. The PAN-TILT control allows remote movement of the camera to permit scanning a large area of the CCB for surveillance during system operation. Cameras No. 4 and No. 5 provide a view of the top area of demineralizers ALC-F-1 and ALC-K-1 to aid in remote handling of these casks and to provide a surveillance capability for these casks during operation of the system. Camera No. 6 is mounted to provide a view of the pumps ALC-P-1 through 4. This camera provides the operator with a remote surveillance capacity for viewing

this area of the building during system operation. Camera No. 7 has a PAN-TILT control and is mounted on the west wall between demineralizers ALC-K-1 and ALC-K-2 to provide remote monitoring of potential leak areas.

### 2.1.23 Major System Valves

#### Inlet Isolation Valve ALC-V043

One stainless steel, 2", 120V motor-operated ball valve is installed on the inlet line from the source tank to the EPICOR II System. The valve is powered from the 120/208V power panel MP 2-33A and controlled by a handswitch located on MCC 2-33A, Compartment 30 and a prefilter level probe. Valve position and control power availability indications are provided by red, green and white indicating lights also located on Compartment 30. The three lights will be on while the valve is in an intermediate position. The valve is provided with a manual override for "close" operation only. Valve ALC-V043 is interlocked with valve ALC-V242 to assure that only one of these two valves can be OPEN at a time. Valve ALC-V043 is also interlocked with the level monitor of demineralizers ALC-F-1 and ALC-K-1. The valve closes automatically when a high level occurs in the controlling demineralizer, to prevent overflowing of the vessel. The choice of the controlling demineralizer is dictated by the configuration of the processing train through selector switch ALC-SS-1 (F-1 ON LINE or F-1 BYPASSED). If demineralizer ALC-F-1 is in the processing train, its level controller will control valve ALC-V043; if demineralizer ALC-F-1 is bypassed, control of valve ALC-V043 is transferred to demineralizer ALC-K-1 level controller.

#### Service Air Regulator Valve ALC-V109

One 3" pressure regulating valve with a 150 lb. rating at 120°F is installed on the service air header supply to the EPICOR II System to reduce the pressure to 80 psig.

#### Process Supply Line Valve ALC-V255 to Demineralizer ALC-F-1

One 2" solenoid valve (ALC-V255) with a 150 lb. rating at 120°F is installed on the line between pump ALC-P-1 and

demineralizer ALC-F-1 between manual valves ALC-V191 and ALC-V207. Valve ALC-V255 is normally closed unless energized and is interlocked to close on high level in demineralizer ALC-F-1. Additionally, it closes on loss of electrical power or when the EPICOR II System is not running.

Off-Spec. Water Supply Isolation Valves ALC-V086 and ALC-V242 to Pump ALC-P-1

One stainless steel, 2", air-operated ball valve, ALC-V242, is installed on the supply line from CC-T-1 to the suction of pump ALC-P-1. The valve allows reprocessing of water from either CC-T-1 or CC-T-2. The valve is powered from the 120/208V power panel MP 2-33A and controlled by a handswitch located on MCC 2-33A, Compartment 3E. Valve position and power availability indications function in the same manner as for valve ALC-V043. Valve ALC-V242 is interlocked with valve ALC-V043 to assure that only one of these two valves can be OPEN at a time. Valve ALC-V242 is an air-operated ball valve which is energized to open. This valve will close on loss of power thus avoiding uncontrolled draining of either CC-T-1 or CC-T-2. The valve is interlocked with valve ALC-V043 such that only one valve can be opened at a time to prevent crossflow. It is also interlocked with the level controller of demineralizers ALC-F-1 and ALC-K-1, in the same arrangement as valve ALC-V043.

Valve ALC-V086 is a stainless steel, 2", 120V motor-operated ball valve which is also installed on the outlet line of CC-T-1. It is controlled by a manual handswitch mounted in MCC 2-33A, compartment 3E. By opening valve ALC-V086 and closing ALC-V242, clean water can be sent from CC-T-1 to the suction of transfer pump ALC-P-5 for transfer to the PWSs or other transfer points.

#### 2.1.24 Sample System

A sample system is provided to obtain a representative sample of CC-T-1, CC-T-2, and the effluents of demineralizers ALC-F-1, ALC-K-1 and ALC-K-2.

The samples from the demineralizers and the sample obtained from the feed tank are used to determine the isotopic inventory deposited on the resin beds. The determination is made by analyzing the influent and effluent isotopic concentrations, the difference of which is deposited on the bed. This information is required for shipment of the spent containers to the waste disposal site.

A common collection station shielded by an 8-inch thick solid block wall is located on the CCB mezzanine, and is provided for controlled and safe sampling.

The collection station consists of individual sample stations for CC-T-1 and CC-T-2; and for demineralizers ALC-F-1, ALC-K-1, and ALC-K-2; and a sample sink.

The sample sink is provided with demineralized water for the sink spray header and bottle washing. The drain from the sink is routed to the CCB sump. The sink is also provided with ventilation which consists of a hood and ductwork tied into the CCB ventilation system.

Recirculation of the sample lines from demineralizers ALC-F-1, ALC-K-1, and ALC-K-2 back to the suction of pump ALC-P-2, and the collection of samples is controlled by solenoid valves. The ability to obtain grab samples is provided in the recirculation line for flow verification. Piping for the sample lines is 1/2" stainless steel tubing with compression type connectors.

NOTE: See Sections 2.1.9 and 2.1.10 for further information on obtaining a sample from CC-T-1 and CC-T-2.

#### 2.1.25 ALC-F-1 Liner Breakthrough Monitor

Radiation monitor ALC-RMI-7 is installed on the discharge of demineralizer ALC-F-1 to monitor for activity breakthrough on the first demineralizer. The monitor has two alarm setpoints. The Alert Alarm setpoint is 68,000 cpm above background, and the High Alarm setpoint is 136,000 cpm above background.



## 2.2 Instruments, Controls, Alarms, and Protective Devices

### 2.2.1 Cleanup System

The EPICOR II System is normally operated and monitored from control panel ALC-PNL-1 located in the TV Monitor and Control Building which is a separate prefabricated building. The TV Monitor and Control Building is adjacent to the northwest corner of the CCB.

Electrical power is supplied to the EPICOR II System from 750 KVA Unit Substation USS 2-33 located on the mezzanine floor at elevation 305' in the southeast corner of the Turbine Building for Unit 2. USS 2-33 was originally the power supply to the Control Rod Drive Motors. 480V power from USS 2-33 is supplied to MCC 2-33A located inside the TV Monitor and Control Building. The HVAC system fan and heaters, the transfer pump, building sump pump, and the 20-ton hoist are powered from MCC 2-33A. A 480-120/208 Vac, 25 KVA transformer, supplied from MCC 2-33A, supplies all other system electrical loads from power panel MP 2-33A, except heat traces which are supplied from the control rod breaker MCC 2-43.

The EPICOR II pumps are controlled through an automatic control unit which provides AUTO/MANUAL on-off switches and indicating lights for the pumps, demineralizer high level alarms, and an ON/OFF switch for the unit. Control power is provided for the EPICOR II solenoid operated air supply valves through these units. The speed of the pumps is controlled by throttling motor operated valves ALC-V260, 261, 262 and 263. A turbine flowmeter (ALC-FI-1) is provided to monitor process flow rates.

All process instrumentation monitored in the control center is mounted on cleanup panel ALC-PNL-1. Audible alarms and indicating lights are provided on this panel for CCB Sump High Level, CCB Ventilation System Trouble, CCB Charcoal Filter High Temperature, CCB High Exhaust Radiation Level, CCB Radiation Monitor Failed, Building Radiation Level, and demineralizers ALC-F-1, ALC-K-1 and 2 Loop Seal Flow. Remote indication is provided for the area radiation monitors and the air sampler on the radiation monitoring

panel located adjacent to the cleanup panel.

## 2.2.2 Ventilation System

### 2.2.2.1 Heating Unit and Moisture Separator

The moisture separator is instrumented with a differential pressure indicator and switch, ALC-OPI-11 and ALC-DPS-11, respectively. The heating unit (ALC-E-H1) is provided with a temperature indicating controller and a high temperature switch.

The temperature indicating controller functions to maintain the heaters energized providing a heater outlet air temperature of no more than 146°F. If the air temperature rises to 160°F, the high temperature switch will automatically deenergize the heaters. If the heaters are to be reenergized, the reset button must be depressed when air temperature at the thermocouple drops below the 160°F temperature switch setpoint.

Indication of operation of the temperature indicating controller and high temperature switches are provided on the switches, both of which are located in the heater control panel near the heaters on the filtration unit.

Manual energizing/deenergizing of the heater control panel occurs at MCC 2-33A. The heater panel is also de-energized automatically should the system ventilation fan trip or in any other way fail to maintain minimum flow at the fan discharge flow switch.

A red light on the heater controller panel indicates power available to the heater control panel.

### 2.2.2.2 Filter Unit

Differential pressure indication is provided for the filter unit's prefilter (ALC-E-F2) (not used). While a differential pressure indication (ALC-DPI-11) is provided locally, a differential pressure switch (ALC-DPS-11) will actuate a remote "Trouble" alarm warning the operator of a restricted flow condition existing in the prefilter. (Note: The prefilter is replaced when it exhibits a pressure drop of 1" w.g.)

Two differential pressure switches (one not connected) and a differential pressure indicator (ALC-DPI-13) are located on the first HEPA filter (ALC-E-F3) in the filter unit for indication and alarm. Switch ALC-DPS-13 warns of a high differential pressure condition by actuating the ventilation unit common "Trouble" alarm at 3" w.g.

The charcoal filter is instrumented with a fire detection system. A prealarm (switch ALC-TS-15-1 set at 250°F) will actuate a local amber light, a remote high temperature alarm and a horn warning of increasing temperature in the charcoal bed. At 300°F, remote common "Trouble" and local red light alarms will be actuated from switch ALC-TS-15-2 indicating a Hi Hi temperature condition exists in the bed.

Indication of operability of the fire detection system is provided by an "Abnormal Detection" white light, located on the filtration unit fire detection panel.

Also provided on the charcoal absorber is a differential pressure indicating controller (ALC-DPI-14). This is not connected.

The final stage of filtration in the filtration unit occurs in the last HEPA filter (ALC-E-F5). In addition to being provided with local differential pressure indication (ALC-DPI-16), the

remote "Trouble" alarm is actuated on a high HEPA filter differential pressure of 3" w.g. by the locally mounted differential pressure switch (ALC-DPS-16).

#### 2.2.2.3 Fan Assembly

The fan assembly, as previously noted, is interlocked with the 60 KW heater. A control interlock is provided through the fan and heater circuitry such that the heater may not be energized unless the fan is running. A flow indicating switch (ALC-FIS-17) on the discharge of the fan provides a safety interlock: if the filtration unit is operating and the discharge flow of the fan falls below 4,000 cfm, the heater and fan monitor will trip. Switch ALC-FIS-17 is also tied into the common, remote panel mounted "Trouble" alarm. The fan is started and stopped from MCC 2-33A.

#### 2.2.2.4 Radiation Monitor (Controls)

Radiation monitor ALC-RMI-18 is energized and deenergized locally at the monitor cabinet. Separate control switches are provided: one on the unit itself and another for the monitor sample pump. (Note: During operation of the CCB Ventilation System, the radiation monitor must be energized at all times). A "Power Available" light is provided on the unit.

Local indication of the ventilation exhaust particulate and/or gaseous activity level is provided on the monitor. At a radiation level of  $4.11E-2 \mu\text{Ci}$  particulate or  $3.81E-4 \mu\text{Ci/cc}$  noble gas the High Radiation alarm will sound on the panel in the control shed.

### 3.0 PRINCIPAL MODES OF OPERATION

#### 3.1 Startup

##### 3.1.1 Ventilation System

Prior to startup of this unit, the manual dampers ALC-E-01 and D2 are checked open and the radiation monitor is energized and operational.

When the fan is started (at MCC 2-33A), sufficient air flow will exist (approximately 4000 cfm minimum) through the unit prior to energizing the heaters. After startup, ventilation unit temperature, flow, and activity indications are verified normal before the unit is left unattended.

##### 3.1.2 Cleanup System

Initial startup of the EPICOR II System is with the demineralizers empty of liquid. The CCB Ventilation System shall be in operation prior to operating the EPICOR II System.

Normal startup of the EPICOR II System is accomplished by supplying the system with the process feedwater from CC-T-1, CC-T-2, or the various source tanks. Except for the MWHT, the process feedwater is delivered to the process stream by the source tank's pumping system. If MWHT is the feedwater source, the supply header is primed initially. Depending on the source of the process feed, the feed supply valve (e.g., ALC-V043 or ALC-V242) is then opened and process pump ALC-P-1 started. Startup of pump ALC-P-1 is accomplished by opening the air supply valve ALC-V011, stop valve ALC-V185 and control valve ALC-V260; the latter is used to control the pump speed. The water drawn from the feedwater supply header by pump ALC-P-1 is pumped to demineralizer ALC-F-1. When demineralizer ALC-F-1 is full, pump ALC-P-1 will stop automatically on high level. Similarly, process pump ALC-P-2 is operated until demineralizer ALC-K-1 is full, then pump ALC-P-3 is operated until demineralizer ALC-K-2 is full. As soon as the demineralizers are full, processing is then commenced by starting pump ALC-P-4 and opening discharge valve ALC-V277. Using the process pumps

respective control valves (ALC-V260 through ALC-V263), the pump speed is adjusted to maintain a balanced flow of about 5 to 25 gpm through the demineralizers.

NOTE: The initial batch quantity will be determined by the efficiency of the demineralizer resin charge and may require a change in resin composition and/or flow rate to effectively process the radioactive waste water.

### 3.2 Normal Operation

#### 3.2.1 Ventilation System

During normal operation, the ventilation unit requires little operator action. The unit will be periodically checked to ensure that indication is operable and that temperatures, flows and radiation levels are within the normal ranges.

Increasing differential pressures across the moisture separator and HEPA filters are an indication that the components are retaining dirt, etc. These components will be replaced as required to ensure that flow through the ventilation unit is maximized.

The radiation monitor and recorder will be checked periodically and reviewed for evidence of trends indicating that increasing levels of activity are being discharged. A trend showing increasing discharge activity levels is indicative of carryover from the filter unit and will be treated accordingly.

#### 3.2.2 Cleanup System

Once the flow rate is established for the process, the system operates automatically by starting and stopping the pumps (ALC-P-1 through 4) in order to maintain the proper level in the demineralizers. Instrumentation is provided on the control panel to monitor system parameters and to balance the system to minimize pump cycling.

When a desired volume has been reached in CC-T-2, transfer pump ALC-P-5 is started to recirculate at least three tank

volumes of water after which a sample is drawn for analysis. Water acceptable for use in the plant will be pumped to the TMI Unit 2 Liquid Waste Disposal System, CC-T-1, CO-T-1A, BWST, or the PWSTs. Out of specification water may be pumped to CC-T-1 for reprocessing (See Sections 2.1.9 and 2.1.10) or it will be processed directly from CC-T-2 under a feed and bleed scheme.

### 3.3 Shutdown

#### 3.3.1 Ventilation System

The purpose of the ventilation system is to ensure that all air leaving the CCB is filtered and monitored for radiation. Shutdown of the ventilation system will preclude filtration and monitoring of the air and will not be performed unless dictated by other casualty/operational considerations. To shutdown the ventilation unit, the 60 KW heaters, fan (ALC-E-1) and radiation monitor are de-energized from their respective breakers in MCC 2-33A.

#### 3.3.2 Cleanup System

The system is shutdown and flow through the process system stopped by closing the air supply valves to pumps ALC-P-1 through 4. To shutdown the system upon completion of processing a batch, the pumps are secured and the liquid supply valve ALC-V043 or ALC-V086 is closed. Valves ALC-V242 and ALC-V255 close automatically as power is shutdown. Valve ALC-V277 is closed to prevent syphoning of the third demineralizer to CC-T-2.

The system is shut down and the affected unit replaced when radiation monitors on any of the demineralizers indicate the unit has collected a quantity of material which is limited by shipping regulations, or system sampling indicates that the resins are exhausted chemically. To replace one of the units, the liner is emptied of water, the three hoses, the level probe cable and the bubbler unit disconnected from the liner, and the remotely operated hoist used to transport the demineralizer to the outside of the CCB to the transfer cask. The replacement unit is then installed, the hoses, the level probe cable and the bubbler line reconnected and

the system started as described in Section 3.1. Each liner has its own level probe which is discarded with the liner. (NOTE: Polyethylene HICs do not have conductivity-type level probes.)

### 3.4 Special or Infrequent Operation

#### 3.4.1 Filter Change-out

When a filter bank requires changing, the EPICOR II System will be shutdown. The ventilation system will be shutdown during the filter change-out.

#### 3.4.2 HIC/Demineralizer Dewatering and Drying

The Zeolite Resin Drying System dries process media (i.e., zeolite resin, activated carbon and/or sand) in a 50 cu. ft. stainless steel HIC/demineralizer for transportation and disposal at a low level waste disposal facility.

This is accomplished in a three (3) step process. First, the bulk of the free water is removed using procedures associated with HIC installation and removal at the EPICOR II System. Second, the drying unit's sandpiper is started and its blower is energized to recirculate air down through the media. The air is heated as it passes through the blower and as this warm dry air passes through the media it entrains and vaporizes moisture. This warm air then passes through the entrainment separator, enroute to the blower inlet, where refrigeration coils condense the water vapor in the air and any entrained water is removed. Water is removed from the entrainment separator using the dewatering pump. Air is circulated down through the media for four (4) hours. Finally, the drying process shifts from downflow to upflow. This is done in order to have the driest media at the bottom of the container where they can best absorb any water generated through condensation as the container cools during storage and shipment. Air is circulated up through zeolite resin for 12 hours or, in the case of activated carbon, for 20 hours. At this point, the relative humidity of the air stream leaving the container should be at or below the required value, indicating that the media is dry. The system is then shut down and the container is ready to



be sealed and shipped.

The dewatering pump (sandpiper) not only removes entrained water from the separator tank but, for the most part, maintains the process under a vacuum thereby minimizing the potential spread of contamination due to hose/connection leaks. The excess air removed by the dewatering pump is directed through a filtered drain path/container approved by Radiological Controls personnel.

The drying system is a skid mounted unit. The services required for drying operations are 480 VAC (standard 4 pole welding receptacle), 100 psi service air and demineralized water or processed water needed to fill and flush the system. Polyethylene HICs are not dried using the Zeolite Resin Drying System. Rather, they are dewatered using approved procedures to meet the dewatering criteria for their burial.

#### 3.4.3 Remote Closure Device

The remote closure device is designed to provide a safe and efficient means of sealing an EPICOR 11 stainless steel HIC/demineralizer to meet the requirements for disposal at a low level waste disposal facility.

Performing this operation (installing the ENVIROALLOY lid) to a HIC/demineralizer is done remotely in order to minimize exposure of operating personnel to ionizing radiation. This is accomplished by means of a hydraulic skid. Aligning the closure head with the HIC/demineralizer is performed using the CCTV cameras and monitor. Maintaining proper alignment is important so that the eight wedges are driven evenly into their respective holes on top of the HIC/demineralizer. This operation pushes down on the lid and seals the container. Once the container is sealed, it can be removed from service for storage and/or shipment to the burial site.

The Remote Closure Device is not used on polyethylene HICs.

### 3.5 Emergency

#### 3.5.1 Loss of CCB Ventilation System

On loss of the CCB Ventilation System, the EPICOR II System will be shutdown.

#### 3.5.2 Loss of Electrical Power

On loss of electrical power to the CCB MCC 2-33A, pumps ALC-P-1 through 4 will automatically stop as the solenoid valves on the air supply lines fail closed on loss of power. Valves ALC-V043 and V086 fail "As Is". Valve ALC-V255 fails closed. Valve ALC-V242 fails closed on loss of power to stop flow from CC-T-1. If flow through the system is from the MWHHT, operator action is required to close valve WOL-V262B. Power will be lost to the CCB Ventilation System 60KW heaters, exhaust fan and radiation monitor.

On loss of power to the MCC 2-43 supply, backup air supply and heat traces will not be available.

When electrical power is lost, all automatically controlled equipment will be placed in the manual OFF position. When emergency power is available, the system will be restarted.

#### 3.5.3 Loss of System Air

Loss of system air causes the EPICOR II pumps to stop until the Service Air System is returned to service.

#### 3.5.4 Fire

##### 3.5.4.1 Ventilation System

The charcoal absorber beds in the ventilation unit ignite upon high temperature. Upon verification of ignition of the charcoal bed, the manually actuated fire protection sprays will be cut in.

### 3.5.4.2 Cleanup System

If a fire occurs in the TV Monitor and Control Building the sprinkler system will automatically initiate. The CCB is provided with a hose station on the mezzanine for manual firefighting.

## 4.0 HAZARDS AND PRECAUTIONS

Since the system is handling radioactivity contaminated fluids, all appropriate health physics precautions will be observed during operation and maintenance. Under no circumstances will discharges be made to the environment without proper authorization.

The CCB Ventilation System will process potentially contaminated air. As such, any operations or maintenance associated with the system will fully incorporate appropriate Radiological Controls Department guidelines/requirements. Any solid or liquid ventilation system waste will be sampled and cleared by Rad Con before release to the environment.

Positive verification of a charcoal bed fire will exist before manual initiation of fire protection spray system since water will damage the charcoal bed.

Flushing connections are provided at various locations in the system and provide a means for reducing the radiation levels in the piping. Flushing will be exercised when maintenance is performed.

TABLE 1  
EPICOR 11 PUMPS

Pump Details

Identification	ALC-P-1, 2, 3, 4
Number Installed	4
Manufacturer	Warren Rupp Co.
Model No.	SA 2-A
Type	Double opposed diaphragm
Maximum rated capacity at 90 psi air supply	120 gpm at 45 ft of head
Operating point capacity at 90 psi air supply	20 gpm at 170 ft of head
Max. air pressure	125 psi
Lubricant	Oil

TABLE 2  
TRANSFER PUMP

Pump Details

Identification	ALC-P-5
Number Installed	1
Manufacturer	Ingersoll Rand
Model No.	3 x 2 x 10 Type HOC, Group 2, ANSI A60
Type	Horizontal Centrifugal
Standard Material Designation	Col. DI
Rated Speed	1750 rpm
Rated Capacity	200 gpm
Rated Total Dynamic Head	100'
Shutoff Head	121'
Design Pressure, Casing	200 psig
Design Temperature	110°C
Lubricant	SAE 20 or 30 Oil

Motor Details

Manufacturer	Gould Century Elect. Div.
Type	F-C
Enclosure	TEFC
Rated Horsepower	10 HP
Speed	1700 rpm
Lubricant/Coolant	Grease/air
Power Requirements	480V AC/12.5A, 3 Phase, 60 Hz
Power Source	MCC 2-33A

TABLE 3

## PUMPS ALC-P-9 and ALC-P-10

Pump Details

Identification	ALC-P-9/ALC-P-10
Number Installed	2
Manufacturer	Price Pump Company
Model Number	HP-75-150B
Type	Single Stage Close Coupled Centrifugal
Rated Speed	3600 rpm (nominal)
Rated Capacity	7 gpm
Rated TDH	148'
Shutoff Head	165'

Motor Details

Manufacturer	Baldor
Type	Induction
Enclosure	ODP
Rated Horsepower	1-1/2 HP
Speed	3450 rpm
Insulation Class	B
Service	Continuous
Service Factor	1.3
Lubricant/Coolant	Grease/Air
Power Requirements	120 volt, single phase, 60 Hz

TABLE 4

## RECIRCULATION PUMP ALC-P-11

Pump Details

Identification	ALC-P-11
Number Installed	1
Manufacturer	Duriron Company, Inc.
Model No.	Durco Mark II (1.5" x 1" x 4-7/8" impeller)
Serial No.	228628
Type	Self-priming, recessed impeller
Standard Material Designation	316 Stainless
Rated Speed	3500 rpm
Rated Capacity	50 gpm
Rated Total Dynamic Head	65 ft
Shutoff Head	100 ft
Design Pressure, Casing	275 psig
Design Temperature	100°F
Lubricant	Modified stuffing box w/ packing

Motor Details

Manufacturer	U.S. Electrical Motors
Rated Horsepower	3 HP
Speed	3490 rpm
Lubricant/Coolant	Grease/Air
Power Requirements	230/460V, 3 Phase, 8.2/4.1 amps
Frame	145 T
10 No.	F-4606-02-750
Coupling	T.B. Woods Model SC4J
Shaft End Bearing	6205-22-J/C3
Opp. End Bearing	6203-22-J/C3

TABLE 5

## FILTERS

## Resin Filters (Traps)

Tank Details

Identification	ALC-F-4A, B, C
Number Installed	3
Manufacturer	GPUN
Installation	Horizontal
Outside diameter and height	Approx. 10" x 28"
Shell material	PVC
Design pressure	100 psig
Screening	100 Mesh, Stainless

## Crud Filters

Identification	ALC-F-5
Number Installed	1
Manufacturer of Housing	Pall Trinity Micro Corp.
Installation	Vertical
Outside diameter and height	7" x 34"
Shell thickness	0.165"
Shell material	SA-312 TP304
Design pressure, temperature	150 psi @ 180°F
Particle size rating	1 micron, nominal up to 10 micron, nominal
Model No.	5EHD-10702-261US48
National Board No.	22223
Year	1979



TABLE 6  
DEMINERALIZERS

Tank Details

Identification	ALC-F-1, ALC-K-1, ALC-K-2
Number Installed	3 (typically)
Manufacturer	(Various)
Installation	Vertical
Outside diameter and height	4'x4' or 6'x6'
Shell thickness	1/4"
Shell material	Carbon Steel
Design pressure	2 psi

OR

Identification	ALC-F-1 (HIC)
Number Installed	1 (typically)
Manufacturer	Nuclear Packaging Inc.
Installation	Vertical
Outside diameter and height	4'0" x 4'3"
Shell thickness	3/8"
Shell material	Ferralium (ASTM A240 UNS Desig S-32550)
Design pressure	10 psi

OR

Identification	ALC-K-1 (Polyethylene HIC)
Number Installed	1 (typically)
Manufacturer	SEG Corporation
Installation	Vertical
Outside diameter and height	6' x 6' (Radlok-179)
Shell thickness	0.57" minimum
Shell material	Cross-linked polyethylene
Design pressure	5 ft. H <sub>2</sub> O (while in service at EPICOR)

TABLE 7  
MISCELLANEOUS WASTE HOLD-UP TANK

Tank Details

Identification	WDL-T-2
Manufacturer	Richmond Engineering Co. Inc.
Capacity	19,518 gal.
Installation	Horizontal
Outside diameter and length	10' - 9 1/4"; 32' - 4 5/8"
Shell material	SA-240, 304 S/S
Shell thickness	3/8"
Design temperature	150°F
Design pressure	20 psig
Corrosion allowance	0"
Design code	1968 ASME, Sec. III, Class 3
Code stamp required	ASME Code

TABLE 8  
CLEAN WATER RECEIVING TANK\*

Tank Details

Identification	CC-T-2
Number Installed	1
Manufacturer	Chicago Bridge & Iron Co.
Capacity	133,689 gal.
Installation	Vertical
Outside diameter and height	25'; 35'
Shell material	304 Stainless Steel
Shell thickness	3/16" to 3/8"
Design pressure	Atmospheric
Corrosion allowance	0"
Code stamp required	No

\* Rinse Hold Tank for Once Through Steam Generator Chemical Cleaning System

TABLE 9

## OFF-SPEC. WATER RECEIVING/BATCH TANK\*

Tank Details

Identification	CC-T-1
Number Installed	1
Manufacturer	Chicago Bridge & Iron Co.
Capacity	85,978 gal.
Installation	Vertical
Outside diameter and height	71'-10"; 39'-0"
Shell material	304 Stainless Steel
Shell thickness	13/32" to 11/16"
Design temperature	250°F
Design pressure	Full vacuum to 75 psig
Corrosion allowance	0"
Code stamp required	Yes

\* Chemical Cleaning Solution Tank for Once Through Steam Generator Chemical Cleaning System

TABLE 10

ALC-T-3

Tank Details

Identification	ALC-T-3
Manufacturer	B&G Machine, Co., Inc.
Capacity	100 gallons
Installation	Vertical
Shell Material	304 S.S. (ASTM A240-87)
Outside Diameter and Height	30"/53"
Design Temperature	212°F
Design Pressure	Atmospheric

TABLE 11  
 SUMP PUMP  
 CHEMICAL CLEANING BUILDING

Pump Detail

Identification	CC-P-2A
Number Installed	1
Manufacturer	Gould
Model No.	3171
Type	Vertical
Rated speed	3600 rpm
Rated capacity	100 gpm
Rated total head	250'
Min. Submergence required	1'
Design pressure, casing	150 psig
Design temperature	450°F
Lubricant	Water

Motor Details

Manufacturer	General Electric
Type	Vertical Induction
Enclosure	TEFC
Rated Horsepower	20 HP
Speed	3600 rpm
Lubricant/Coolant	Grease/Air
Power Requirements	480V AC, 3 Phase, 60 Hz
Power Source	MCC 2-33A

TABLE 12  
MONORAIL HOIST SYSTEM

Number Installed	1
Manufacturer	Harnischfeger, Inc., P&H
Model	#36CS23E
Capacity	20 ton
Total Lift	25'-6"
Speed	
Hoist	20 fpm maximum (90% load) 10 fpm medium 5 fpm low 1 fpm creep
Trolley	50 fpm
Control	
Hoist	Quad - Speed
Trolley	Single Speed
Power Supply	460 V AC, 3 Phase, 60 Hz MCC 2-33A
Control Voltage	110 V AC
Control Station	
Local and Remote six pushbutton pendant control; deadman type element control	
Reeving	Four part single reeved

TABLE 13

## CHEMICAL CLEANING BUILDING VENTILATION SYSTEM NAMEPLATE DATA

## MSA Filter Unit

Identification No. ALC-E-H1

## 60KW Chromalox Heater Unit

480 volts AC, 3 Phase, 60 Hz

Cat. Number SCCP-080-3480

Type J 0-800°F Temperature Controller

Type J 0-800°F High Limit with Manual Reset

## Internal Industrial Fan

Identification No. ALC-E-1

## 8000 cfm Fan Unit

30 HP

460 volts AC, 3 Phase, 60 Hz

ID Number P28G353G-G7-XD

## Eberline Ping - 2A Off Line Effluent Monitor

3 Channel Readout - gaseous, particulate, iodine

110 volts AC, 1 Phase, 60 Hz

Self contained sample/return pump (4 cfm)



TABLE 14

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AUXILIARY BUILDING EMERGENCY LIQUID CLEANUP  
SYSTEM (EPICOR II)

## VALVE LIST

<u>VALVE NO.</u>	<u>SIZE (in.)</u>	<u>TYPE</u>	<u>DESCRIPTION</u>	<u>PO NO.</u>	<u>MANUFACTURER/ MODEL</u>	<u>DESIGN PRESSURE/ TEMPERATURE (psig / °F)</u>	<u>COMMENTS</u>
ALC-V0001	3/4	GLOBE-600#-SW-40S	Process Suction Line Vent	60017	LADDISH CAT.# 7661- 2407-07A	150/120	
ALC-V0002	3/4	GLOBE-600#-SW-40S	Process Suction Line Vent	60017	LADDISH CAT.# 7661- 2407-07A	150/120	
ALC-V0003	3/4	GLOBE-600#-SW-40S	Process Suction Line Prime and Fill Valve		HANCOCK CAT.# 5500W-1	150/120	
ALC-V0004	1	GLOBE-600#-SW-40S	Chemical Addition Line for CC-T-1		HANCOCK CAT.# 5500W-1	150/120	
ALC-V0005	2	GLOBE-600#-SW-40S	Discharge Line From CC-T-1		HANCOCK CAT.# 5500W-1	150/120	
ALC-V0006	2	GATE-600#-SW-40S	Clean Water Dis- charge Line to Units 1 & 2		ALOTCO FIG.# 110	150/120	
ALC-V0007	2	GATE-600#-SW-40S	Truck Fill Connection		ALOTCO FIG.# 110	150/120	
ALC-V0008	2	GATE-600#-SW-40S	Truck Fill Connection		ALOTCO FIG.# 110	150/120	
ALC-V0009	3/4	GLOBE-600#-SW-40	Service Air to ALC-P-2		HANCOCK CAT.# 5500W-1	150/120	
ALC-V0010	3/4	GLOBE-600#-SW-40	Service Air to ALC-P-1		HANCOCK CAT.# 5500W-1	150/120	
ALC-V0011	3/4	GLOBE-600#-SW-40	Oiled Air to ALC-P-1		HANCOCK CAT.# 5500W-1	150/120	

TABLE 14

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AUXILIARY BUILDING EMERGENCY LIQUID CLEANUP  
SYSTEM (EPICOR II)  
VALVE LIST

<u>VALVE NO.</u>	<u>SIZE (in.)</u>	<u>TYPE</u>	<u>DESCRIPTION</u>	<u>PO NO.</u>	<u>MANUFACTURER/ MODEL</u>	<u>DESIGN PRESSURE/ TEMPERATURE (psig / °F)</u>	<u>COMMENTS</u>
ALC-V0012	3/4	GLOBE-6000-SW-40	Service Air to ALC-P-1		HANCOCK CAT.# 5500W-1	150/120	
ALC-V0013	3/4	GLOBE-6000-SW-40S	Demin. Water to ALC-P-4	68817	LADDISH CAT.# 7661- 2407-07A	150/120	
ALC-V0014	3/4	GLOBE-6000-SW-40S	Demin. Water to ALC-P-4	68817	LADDISH CAT.# 7661- 2407-07A	150/120	
ALC-V0015	3/4	GLOBE-6000-SW-40S	Demin. Water to ALC-P-3	69001	OBERT TYPE# 103	150/120	
ALC-V0016	3/4	GLOBE-6000-SW-40S	Demin. Water to ALC-P-3	69001	OBERT TYPE# 103	150/120	
ALC-V0017	3/4	GLOBE-6000-SW-40S	Demin. Water to ALC-P-2	69001	OBERT TYPE# 103	150/120	
ALC-V0018	3/4	GLOBE-6000-SW-40S	Demin. Water to ALC-P-2	69001	OBERT TYPE# 103	150/120	
ALC-V0019	3/4	GLOBE-6000-SW-40S	Demin. Water to ALC-P-1	69001	OBERT TYPE# 103	150/120	
ALC-V0020	3/4	GLOBE-6000-SW-40S	Process Line Flush Connection	69001	OBERT TYPE# 103	150/120	
ALC-V0021	3/4	GLOBE-6000-SW-40	Service Air to ALC-P-4		HANCOCK CAT.# 5500W-1	150/120	
ALC-V0022	3/4	GLOBE-6000-SW-40	Oiled Air to ALC-P-4		HANCOCK CAT.# 5500W-1	150/120	
ALC-V0023	3/4	GLOBE-6000-SW-40	Service Air to ALC-P-4		HANCOCK CAT.# 5500W-1	150/120	

TABLE 14

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AUXILIARY BUILDING EMERGENCY LIQUID CLEANUP  
SYSTEM (EPICOR II)  
VALVE LIST

<u>VALVE NO.</u>	<u>SIZE (in.)</u>	<u>TYPE</u>	<u>DESCRIPTION</u>	<u>PO NO.</u>	<u>MANUFACTURER/ MODEL</u>	<u>DESIGN PRESSURE/ TEMPERATURE (psig / °F)</u>	<u>COMMENTS</u>
ALC-V0024	3/4	GLOBE-600#-SW-40	Service Air to ALC-P-3		HANCOCK CAT.# 5500W-1	150/120	
ALC-V0025	3/4	GLOBE-600#-SW-40	Oiled Air to ALC-P-3		HANCOCK CAT.# 5500W-1	150/120	
ALC-V0026	3/4	GLOBE-600#-SW-40	Service Air to ALC-P-3		HANCOCK CAT.# 5500W-1	150/120	
ALC-V0027	3/4	GLOBE-600#-SW-40	Service Air to ALC-P-2		HANCOCK CAT.# 5500W-1	150/120	
ALC-V0028	3/4	GLOBE-600#-SW-40	Oiled Air to ALC-P-2		HANCOCK CAT.# 5500W-1	150/120	
ALC-V0029	3/4	GLOBE-600#-SW-40S	Sampled Line From ALC-P-5	68817	LADISH CAT.# 7661- 2407-07A	150/120	
ALC-V0030	3/4	GLOBE-600#-SW-40S	Sampled Line From ALC-P-5	68817	LADISH CAT.# 7661- 2407-07A	150/120	
ALC-V0031	3/4	GLOBE-600#-SW-40S	Loop Seal Fill Connection On CC-T-1	68817	LADISH CAT.# 7661- 2407-07A	150/120	
ALC-V0032	2	BALCOX-600#-SW-40S	Discharge of CC-P-2A	69001	OBERT TYPE# 50	150/120	
ALC-V0033	2	GLOBE-600#-SW-40S	Discharge of ALC-P-5 to CC-T-1	69001	OBERT TYPE# 103	150/120	
ALC-V0034	3/4	GLOBE-600#-SW-40S	Pres. Ind. Root Va. On Dischg. of ALC-P-5	68817	LADISH CAT.#7661- 2407-07A	150/120	

TABLE 14

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AUXILIARY BUILDING EMERGENCY LIQUID CLEANUP  
SYSTEM (EPICOR II)  
VALVE LIST

VALVE NO.	SIZE (in.)	TYPE	DESCRIPTION	PO NO.	MANUFACTURER/ MODEL	DESIGN PRESSURE/ TEMPERATURE (psig / °F)	COMMENTS
ALC-V0035	2	GLOBE-6008-SW-403	Recirc. Line From ALC-P-5 to CC-T-2	69001	OBERT TYPE# 103	150/120	
ALC-V0036	3	GLOBE-1508-FLGD-403	Suction Line From CC-T-2 to ALC-P-5	69001	HEWCO CAT.# 6415R	150/120	
ALC-V0037	2	HALCHK-6008-SW-403	Inlet to CC-T-2	69001	OBERT TYPE# 50	150/120	
ALC-V0038	1/2	GLOBE-CMP-FIG	Sensing Line On Control Va. ALC-V-109		FAUKER HAN- NIFIN CAT.#-436	150/120	
ALC-V0039	3/4	GLOBE-6008-SW-403	Root Va. For CC-T-2 Level Indicator	69001	HANCOCK CAT.# 5500W-1	150/120	
ALC-V0040	1/2	GLOBE-6008-SW-403	Root Va. On ALC-P-5 Dischg. Flow Transmit		HANCOCK CAT.#5500W-1	150/120	
ALC-V0041	1/2	GLOBE-6008-SW-403	Root Va. On ALC-P-5 Dischg. Flow Transmit		HANCOCK CAT.# 5500W-1	150/120	
ALC-V0042	3/4	GLOBE-6008-SW-403	Loop Seal Fill Connection On CC-T-2	68817	LADISH CAT.# 7661- 2407-07A	150/120	
ALC-V0043	2	BALL-SW-403	Process Suction Line From WDL-T -2 to ALC-P-1	69000	QUARTROL CAT.# 5215880	150/120	Motor Operated, 120 Volts
ALC-V0044	3/4	GLOBE-SW-40	Blowdn. Line From Strainer ALC-U-1		HANCOCK CAT.# 5500W-1	150/120	

TABLE 14

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AUXILIARY BUILDING EMERGENCY LIQUID CLEANUP  
SYSTEM (EPICOR II)  
VALVE LIST

<u>VALVE NO.</u>	<u>SIZE (in.)</u>	<u>TYPE</u>	<u>DESCRIPTION</u>	<u>PC NO.</u>	<u>MANUFACTURER/ MODEL</u>	<u>DESIGN PRESSURE/ TEMPERATURE (psig / °F)</u>	<u>COMMENTS</u>
ALC-V0045	2	SWGCHK-150#-SW-40S	Process System Desin. Water Flush Supply		ALOYCO	150/120	
ALC-V0046	2	BALCHK-SW-40S	Process System From CC-T-1	69001	OBERT TYPE #50	150/120	Internals of Valve are Removed
ALC-V0047			Deleted				
ALC-V0048	3/4	GLOBE-7M-40S	Desin. Water To ALC-P-1	69001	OBERT TYPE #103	150/120	
ALC-V0049	1/2	GLOBE-600#-SW-40S	Root Va. On CC-T-2 Inlet Flow Transmit		HANCOCK CAT.#5500W-1	150/120	
ALC-V0050	1/2	GLOBE-600#-SW-40S	Root Va. On CC-T-2 Inlet Flow Transmit		HANCOCK CAT.#5500W-1	150/120	
ALC-V0051			Deleted				
ALC-V0052	3/4	GLOBE-SW-40S	Root Va. On CC-T-1 Level Indicator Line		HANCOCK CAT.#5500W-1	150/120	
ALC-V0053	2	GLOBE-SW-40S	Recirc Line From ALC-P-3 to CC-T-2	69001	OBERT TYPE# 103	150/120	
ALC-V0054	2	GLOBE-600#-SW-40S	Clean Water Discharge to Units 1 & 2		ALOYCO FIG.# 110	150/120	
ALC-V0055	2	GLOBE-600#-SW-40S	Inlet Line From CC-T-2 to ALC-F-2		HANCOCK CAT.# 5500W-1	150/120	

TABLE 14

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AUXILIARY BUILDING EMERGENCY LIQUID CLEANUP  
SYSTEM (EPICOR II)

## VALVE LIST

<u>VALVE NO.</u>	<u>SIZE (In.)</u>	<u>TYPE</u>	<u>DESCRIPTION</u>	<u>PO NO.</u>	<u>MANUFACTURER/ MODEL</u>	<u>DESIGN PRESSURE/ TEMPERATURE (psig / °F)</u>	<u>COMMENTS</u>
ALC-V0056	2	GLOBE-600#-SW-40S	Future Xenon Hold- Up Connect. On CC-T-2		HARCOCK CAT. # 5500W-1	150/120	
ALC-V0057	2	GLOBE-600#-SW-40S	Inlets Line From CC-T-1 to ALC-P-1		HARCOCK CAT. # 5500W-1	150/120	
ALC-V0058	2	GLOBE-600#-SW-40	Service Air Hdr./ Unit #2 Isolation Va.		HENRY VOGT DWG. # E-44248-RG	150/120	
ALC-V0059	2	BALCHK-600#-SW-40S	Process Sys. Suction Line	69001	WERT TYPE #50	150/120	
ALC-V0060	1	POPCHK-SCRD-40S	Service Air Supply to ALC-P-1	68819	MUPRO CAT. # B-16C4-1	150/120	
ALC-V0061	1	POPCHK-SCRD-40S	Demin. Water to to ALC-P-1	68819	MUPRO CAT. # B-16C4-1	150/120	
ALC-V0062	1	POPCHK-SCRD-40	Oiled Air to ALC-P-1	68819	MUPRO CAT. # B-16C4-1	150/120	
ALC-V0063	1	POPCHK-SCRD-40	Service Air to ALC-P-1	68819	MUPRO CAT. # B-16C4-1	150/120	
ALC-V0064	1	POPCHK-SCRD-40	Demin. Water to ALC-P-1	68819	MUPRO CAT. # B-16C4-1	150/120	
ALC-V0065	1	POPCHK-SCRD-40	Demin. Water to ALC-P-2	68819	MUPRO CAT. # B-16C4-1	150/120	
ALC-V0066	1	POPCHK-SCRD-40S	Service Air to ALC-P-2	68819	MUPRO CAT. # B-16C4-1	150/120	
ALC-V0067	1	POPCHK-SCRD-40	Oiled Air to ALC-P-2	68819	MUPRO CAT. # B-16C4-1	150/120	

TABLE 14

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AUXILIARY BUILDING EMERGENCY LIQUID CLEANUP  
SYSTEM (EPICOR II)  
VALVE LIST

<u>VALVE NO.</u>	<u>SIZE</u> <u>(in.)</u>	<u>TYPE</u>	<u>DESCRIPTION</u>	<u>PO NO.</u>	<u>MANUFACTURER/ MODEL</u>	<u>DESIGN PRESSURE/ TEMPERATURE</u> <u>(psig / °F)</u>	<u>COMMENTS</u>
ALC-V0068	1	POPCHK-SCRD-40S	Demin. Water To ALC-P-2	68819	MUPRO CAT.# B-16C4-1	150/120	
ALC-V0069	1	POPCHK-SCRD-40S	Service Air To ALC-P-2	68819	MUPRO CAT.# B-16C4-1	150/120	
ALC-V0070	1	POPCHK-SCRD-40S	Demin. Water To ALC-P-3	68819	MUPRO CAT.# B-16C4-1	150/120	
ALC-V0071	1	POPCHK-SCRD-40	Service Air To ALC-P-3	68819	MUPRO CAT.# B-16C4-1	150/120	
ALC-V0072	1	POPCHK-SCRD-40S	Oiled Air To ALC-P-3	68819	MUPRO CAT.# B-16C4-1	150/120	
ALC-V0073	1	POPCHK-SCRD-40S	Demin. Water To ALC-P-3	68819	MUPRO CAT.# B-16C4-1	150/120	
ALC-V0074	1	POPCHK-SCRD-40S	Service Air To ALC-P-3	68819	MUPRO CAT.# B-16C4-1	150/120	
ALC-V0075	1	POPCHK-SCRD-40S	Demin. Water To ALC-P-4	68819	MUPRO CAT.# B-16C4-1	150/120	
ALC-V0076	1	POPCHK-SCRD-40S	Service Air To ALC-P-4	68819	MUPRO CAT.# B-16C4-1	150/120	
ALC-V0077	1	POPCHK-SCRD-40S	Oiled Air To ALC-P-4	68819	MUPRO CAT.# B-16C4-1	150/120	
ALC-V0078	1	POPCHK-SCRD-40S	Demin. Water To ALC-P-4	68819	MUPRO CAT.# B-16C4-1	150/120	
ALC-V0079	1	POPCHK-SCRD-40S	Service Air To ALC-P-4	68819	MUPRO CAT.# B-16C4-1	150/120	

TABLE 14

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AUXILIARY BUILDING EMERGENCY LIQUID CLEANUP  
SYSTEM (EPICOR 11)  
VALVE LIST

<u>VALVE NO.</u>	<u>SIZE (in.)</u>	<u>TYPE</u>	<u>DESCRIPTION</u>	<u>PO NO.</u>	<u>MANUFACTURER/ MODEL</u>	<u>DESIGN PRESSURE/ TEMPERATURE (psig / °F)</u>	<u>COMMENTS</u>
ALC-V0080	3/4	GLOBE-600#-SW-40	Root Va. for Pres. Ind. on Damin. Water Header		HANCOCK CAT.# 5500W-1	150/120	
ALC-V0081	3/4	GLOBE-600#-SW-40	Root Va. for Pres. Ind. on Service Air Header		HENRY VOOT DWG.# E-44244-H7	150/120	
ALC-V0082	2	GLOBE-SW-40S	Futura Xenon Holdup Connect. On CC-T-1		HANCOCK CAT.# 5500W-1	150/120	
ALC-V0083	1 1/4	BALL-SW-40S	Root VA. for Conductivity Probe On CC-T-2 Inlet	68875	APOLLO CAT.# 316	150/120	
ALC-V0084	1 1/4	BALL-SW-40S	Root VA. for pH Probe On CC-T-2 Inlet	68875	APOLLO CAT.# 316	150/120	
ALC-V0085			Deleted				
ALC-V0086	2	BALL-SW-40S	Discharge from Tank CC-T-1	80322	QUANTROL CAT.# 5215580	150/120	Motor Operated. 120 Volts
ALC-V0087	1 1/2	BALL-SW-40S	Clean Water Dis Charge to Unit #2 Cond. Test Tks. WOL-T-9A & B	80792	QUANTROL CAT.# 5215550	150/120	Motor Operated. 120 Volts
ALC-V0088	1 1/2	BALL-SW-40S	Clean Water Dis Charge to Unit #2 Cond. Test Tks. WOL-T-9A & B	80792	QUANTROL CAT.# 5215550	150/120	Motor Operated. 120 Volts



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AUXILIARY BUILDING EMERGENCY LIQUID CLEANUP  
SYSTEM (EPICOR II)  
VALVE LIST

<u>VALVE NO.</u>	<u>SIZE (in.)</u>	<u>TYPE</u>	<u>DESCRIPTION</u>	<u>PO NO.</u>	<u>MANUFACTURER/ MODEL</u>	<u>DESIGN PRESSURE/ TEMPERATURE (psig / °F)</u>	<u>COMMENTS</u>
ALC-V0089	2	GLOBE-6000-SW-40S	Discharge Line From Sump Pump CC-P-2A		HARCOCK CAT.# 5500W-1	150/120	
ALC-V0290			Deleted				
ALC-V0091	1 1/4	BALL-SW-40S	Root Valve for Cond Probe at Inlet to Pump ALC-P-1	68875	APCELLO CAT.# 316	150/120	
ALC-V0092	1 1/4	BALL-SW-40S	Root Valve for Cond Probe at Inlet to Pump ALC-P-3	68875	APCELLO CAT.# 316	150/120	
ALC-V0393	1 1/4	BALL-SW-40S	Root Valve for Cond Probe at Inlet to Pump ALC-P-3	68875	APCELLO CAT.# 316	150/120	
ALC-V0094	3/4	GLOBE-6000-SW-40S	Root Valve for Pres. Ind. On Sump Pump CC-P-2A Discharge	69001	OBERT TYPE# 103	150/120	
ALC-V0095	2	GLOBE-6000-SW-40S	Process System Flush Line Near Inlet to ALC-P-1		HARCOCK CAT.# 5500W-1	150/120	
ALC-V0096			Deleted				
ALC-V0397	3/4	GLOBE-6000-SW-40	Oiled Air to ALC-P-6		HARCOCK CAT.# 5500W-1	150/120	
ALC-V0098	3/4	GLOBE-6000-SW-40S	Demin. Water to ALC-P-6		VELAN CAT.# 374B	150/120	

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AUXILIARY BUILDING EMERGENCY LIQUID CLEANUP  
SYSTEM (EPICOR II)  
VALVE LIST

<u>VALVE NO.</u>	<u>SIZE (in.)</u>	<u>TYPE</u>	<u>DESCRIPTION</u>	<u>PO NO.</u>	<u>MANUFACTURER/ MODEL</u>	<u>DESIGN PRESSURE/ TEMPERATURE (psig / °F)</u>	<u>COMMENTS</u>
ALC-V0099	3/4	GLOBE-6008-SW-40	Service Air to ALC-P-6		HANCOCK CAT.# 5500W-1	150/120	
ALC-V0100	3/4	GLOBE-6008-SW-40	Service Air to ALC-P-6		HENRY VOLT DWC.# E-44244-P11	150/120	
ALC-V0101	3/4	GLOBE-6008-SW-40S	Desin. Water to ALC-P-6	69001	OBERT TYPE# 10J	150/120	
ALC-V0102	2	POPCHK-SCRD-40	Oiled Air to ALC-P-6	68819	WUPRO CAT.# B-16C4-1	150/120	
ALC-V0103	1	BALCRH-6008-SW-40S	Filter ALC-P-1 Precoat Supply Line	69001	OBERT TYPE# 50	150/120	
ALC-V0104	1	POPCHK-SCRD-40	Service Air to ALC-P-6	68819	WUPRO CAT.# B-16C4-1	150/120	
ALC-V0105			Deleted				
ALC-V0106	2	GLOBE-6008-SW-40S	Discharge From One Micron Filter		HANCOCK CAT.# 5500W-1	150/120	
ALC-V0107	3/4	GLOBE-6008-SW-40S	Vent on One Micron Filter		HANCOCK CAT.# 5500W-1	150/120	
ALC-V0108	3/4	GLOBE-6008-SW-40S	Drain on One Micron Filter		HANCOCK CAT.# 5500W-1	150/120	
ALC-V0109	2	CONTROL-FLGD-40	Service Air Supply Header	69005	FISHER TYPE# 310-12	150/120	
ALC-V0110	3	GLOBE-FLGD-40S	Suction Line From CC-T-1 to ALC-P-5	69001	NEWCO CAT.# 6415R	150/120	

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AUXILIARY BUILDING EMERGENCY LIQUID CLEANUP  
SYSTEM (EPICOR II)  
VALVE LIST

<u>VALVE NO.</u>	<u>SIZE (in.)</u>	<u>TYPE</u>	<u>DESCRIPTION</u>	<u>PO NO.</u>	<u>MANUFACTURER/ MODEL</u>	<u>DESIGN PRESSURE/ TEMPERATURE (psig / °F)</u>	<u>COMMENTS</u>
ALC-V0111			Deleted				
ALC-V0112	2	GLOBE-6008-SW-40S	Inlet to One Micron Filter		HANCOCK CAT.# 5500W-1	150/120	
ALC-V0113	1	POPCHK-SW-40S	Chemical Addition Line to CC-T-1	68819	MUPRO CAT.# B-16C4-1	150/120	
ALC-V0114	2	BALCHK-6008-SW-40S	Discharge From ALC-P-5	69001	DBERT TYPE# 50	150/120	
ALC-V0115	3/4	GLOBE-SW-40S	Drain Line on Process Suction Line			150/120	
ALC-V0116	3/4	GLOBE-SW-40S	Drain Line on Process Suction Line			150/120	
ALC-V0117	3/4	GLOBE-6008-SW-40S	Pressure Test Connection Near Suction of ALC-P-1		HANCOCK CAT.# 5500W-1	150/120	
ALC-V0118 -123		No Longer in Use (Unaccessible)					Located in Unit 1
ALC-V0124	1	GLOBE-6008-SW-40S	Filter ALC-F-1 Precoat Supply Line		HANCOCK CAT.# 5500W-1	150/120	
ALC-V0125	3/4	GLOBE-6008-SW-40S	Pressure Test Connection On Demin. Water Header		HANCOCK CAT.# 5500W-1	150/120	
ALC-V0126	3/4	GLOBE-6008-SW-40S	Pressure Test Connection On Service Air Header		HANCOCK CAT.# 5500W-1	150/120	

**TABLE 14**  
**AUXILIARY BUILDING EMERGENCY LIQUID CLEANUP**  
**SYSTEM (EPICOR 11)**  
**VALVE LIST**

VALVE NO.	SIZE (in.)	TYPE	DESCRIPTION	PO. NO.	MANUFACTURER/ MODEL	DESIGN PRESSURE/ TEMPERATURE (psig / °F)	COMMENTS
ALC-V0127	3/4	GLOBE-6008-SW-408	Pressure Test Connection On Sleep Pump Discharge		HAMCOCK CAT.# 3500M-1	150/120	
ALC-V0128	3/4	GLOBE-6008-SW-408	Priming Vent For ALC-P-5	68817	LADIGH CAT.# 7661- 2407-07A	150/120	
ALC-V0129	3/4	GLOBE-6008-SW-408	Priming Vent For ALC-P-5	68817	LADIGH CAT.# 7661- 2407-07A	150/120	
ALC-V0130	3/4	BALCHER-6008-SW-408	Drain on One Micron Filter	69001	OBERT TYPE# 103	150/120	
ALC-V0131	3/4	BALCHER-6008-SW-408	Drain on Suction Line From CC-T-2 to ALC-P-5	69001	OBERT TYPE# 103	150/120	
ALC-V0132	3/4	GLOBE-6008-SW-408	Drain on Suction Line From CC-T-2 to ALC-P-5	69001	OBERT TYPE# 103	150/120	
ALC-V0133	3/4	GLOBE-6008-SW-408	ALC-DPS-1 LP Leg Root Valve	69001	OBERT TYPE# 103	150/120	
ALC-V0134	3/4	GLOBE-6008-SW-408	Demin. Water to ALC-P-5 Seals		HAMCOCK CAT.# 3500M-1	150/120	
ALC-V0135	1	PORTER-SCVP-408	Demin. Water to ALC-P-5 Seals	68819	MUPRO CAT.# B16C4-1	150/120	
ALC-V0136	3/4	SOLID-SCFD-408	Demin. Water to ALC-P-5 Seals	82188	ASCO CAT.# B210D9	150/120	2 Way Normally Closed Energized to Open

TABLE 14

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AUXILIARY BUILDING EMERGENCY LIQUID CLEANUP  
SYSTEM (EPICOR II)  
VALVE LIST

VALVE NO.	SIZE (in.)	TYPE	DESCRIPTION	PO NO.	MANUFACTURER/ MODEL	DESIGN PRESSURE/ TEMPERATURE (psig / °F)	COMMENTS
ALC-V0137	2	GLOBE-SW-40S	Desin. Water to Flush Line to CC-T-2			150/120	
ALC-V0138	2	BALCHER-6009-SW-40S	Discharge Line From CC-P-2A	69001	OBERT TYPE# 50	150/120	
ALC-V0139	2	GLOBE-6009-SW-40	Service Air Header		HANCOCK CAT.# 550CW-1	150/120	
ALC-V0140	2	GLOBE-6009-SW-40S	Future Waste Supply Line		HANCOCK CAT.# 550CW-1	150/120	
ALC-V0141	2	GLOBE-6009-SW-40S	Future Waste Supply Line		HANCOCK CAT.# 550CW-1	150/120	
ALC-V0142	2	LIFTER-SW-40S	Desin. Water Supply Header		VELAN SERIAL # 8-90-1	150/120	
ALC-V0143	1 1/2	RELIEF-SCRD-40S	Desin. Water Supply Header		J. E. LAMERGA CORP. MODEL LOT 11	150/120	Set Pressure at 150 psig
ALC-V0144	2	GLOBE-6009-SW-40S	Desin. Water Supply Header CC-T-2		HANCOCK CAT.# 550CW-1	150/120	
ALC-V0145	2	GLOBE-6009-SW-40S	Spare Plant Air/ EPICOR II Air Sup. Calc-P-758 Isolation Va.		HANCOCK CAT.# 550CW-1	150/120	
ALC-V0146	1/2	BALL-COM FTU	Sample Line From ALC-P-2	80498	WHITEY CAT.# 85-4588	150/120	
ALC-V0147	1/2	BALL-COM FTU	Sample Line From ALC-P-3	80498	WHITEY CAT.# 85-4588	150/120	

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AUXILIARY BUILDING EMERGENCY LIQUID CLEANUP  
SYSTEM (EPICOR II)  
VALVE LIST

VALVE NO.	SIZE (in.)	TYPE	DESCRIPTION	PO NO.	MANUFACTURER/ MODEL	DESIGN PRESSURE/ TEMPERATURE (psig / °F)	COMMENTS
ALC-V0148	1/2	BALL-COM FTG	Sample Line From ALC-P-4	80498	WHITEY CAT.# SS-4558	150/120	
ALC-V0149	1/2	GLOBE-COM FTG	Grab Sample From ALC-P-2		HOKE CAT.# N2811Q8Y15	150/120	
ALC-V0150	1/2	GLOBE-COM FTG	Grab Sample From ALC-P-3		HOKE CAT.# N2811Q8Y15	150/120	
ALC-V0151	1/2	GLOBE-COM FTG	Grab Sample From ALC-P-4		HOKE CAT.# N-811Q8Y15	150/120	
ALC-V0152	1/2	GLOBE-COM FTG	Grab Sample From ALC-P-5		HOKE CAT.# N2811Q8Y15	150/120	
ALC-V0153	1	BALL-COM FTG	Sample Recirc. Line	80498	WHITEY CAT.# SS-65P16	150/120	
ALC-V0154	1/2	BALL-COM FTG	Grab Sample From ALC-P-5	80498	WHITEY CAT.# SS-4558	150/120	
ALC-V0155	1/2	BALL-COM FTG	Grab Sample From ALC-P-4	80498	WHITEY CAT.# SS-4558	150/120	
ALC-V0156	1/2	BALL-COM FTG	Grab Sample From ALC-P-3		WHITEY CAT.# SS-4558	150/120	
ALC-V0157	1/2	BALL-COM FTG	Grab Sample From ALC-P-2	80498	WHITEY CAT.# SS-4558	150/120	
ALC-V0158	3/4	GLOBE-600F-SW-408	Demin. Water to Sample Sink Spray Header	68817	LADISH CAT.# 7661- 2407-07A	150/120	

TABLE 14  
 AUXILIARY BUILDING EMERGENCY LIQUID CLEANUP  
 SYSTEM (EPICOR II)  
 VALVE LIST

VALVE NO.	SIZE (In.)	TYPE	DESCRIPTION	PO NO.	MANUFACTURER/ MODEL	DESIGN PRESSURE/ TEMPERATURE (psig / °F)	COMMENTS
ALC-V0159	1/4	GLOBE-6008-SV-403	Demn. Water to Sample Bottle Wash Hose	60417	LADISH CAT.# 7661- 2407-07A	150/120	
ALC-V0160	1/2	LIFCIRK-COM PTO	Recirc. Line From ALC-P-2	80498	MILITREY CAT.# 83-5888	150/120	
ALC-V0161	1/2	LIFCIRK-COM PTO	Recirc. Line From ALC-P-3	80498	MILITREY CAT.# 83-5888	150/120	
ALC-V0162	1/2	LIFCIRK-COM PTO	Recirc. Line From ALC-P-4	80498	MILITREY CAT.# 83-5888	150/120	
ALC-V0163	1/2	SOLID SCRD	Recirc. Line From ALC-P-4	80348	ASCO CAT.# 8210C94	150/120	2 Way Normally Closed Energized to Open
ALC-V0164	1/2	SOLID SCRD	Sample Line From ALC-P-4	80348	ASCO CAT.# 8210C94	150/120	2 Way Normally Closed Energized to Open
ALC-V0165	1/2	SOLID SCRD	Recirc. Line From ALC-P-3	80348	ASCO CAT.# 8210C94	150/120	2 Way Normally Closed Energized to Open
ALC-V0166	1/2	SOLID SCRD	Sample Line From ALC-P-3	80348	ASCO CAT.# 8210C94	150/120	2 Way Normally Closed Energized to Open
ALC-V0167	1/2	SOLID SCRD	Recirc. Line From ALC-P-2	80348	ASCO CAT.# 8210C94	150/120	2 Way Normally Closed Energized to Open
ALC-V0168	1/2	SOLID SCRD	Sample Line From ALC-P-2	80348	ASCO CAT.# 8210C94	150/120	2 Way Normally Closed Energized to Open
ALC-V0169	2	GLOBE-6008-SV-403	Clean Water Dis- charge to Unit #1		POWELL P10-9 2474	150/120	
ALC-V0170	2	GLOBE-6008-SV-403	Clean Water Dis- charge to Unit #2		WESCO CAT.# 287P J2	150/120	

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AUXILIARY BUILDING EMERGENCY LIQUID CLEANUP  
SYSTEM (EPICOR II)  
VALVE LIST

VALVE NO.	SIZE (in.)	TYPE	DESCRIPTION	PO NO.	MANUFACTURER/ MODEL	DESIGN PRESSURE/ TEMPERATURE (psig / °F)	COMMENTS
ALC-V0171	3/4	GLOBE-6008-SW-40S	Clean Water Dis- charge to Unit #2 Drain Line	68817	LADISH CAT.# 7661- 2407-07A	150/120	
ALC-V0172	3/4	GLOBE-SW-40S	Clean Water Dis- charge to Unit #2 Vent Line			150/120	
ALC-V0173	3/4	GLOBE-SW-40S	Clean Water Dis- charge to Unit #2 Drain Line			150/120	
ALC-V0174	3/4	GLOBE-6008-SW-40S	Cask Overflow Loop Seal Leveling Line	68817	LADISH CAT.# 7661- 2407-07A	150/120	
ALC-V0175	3/4	GLOBE-6008-SW-40S	Cask Overflow Loop Seal Fill Line	68817	LADISH CAT.# 7661- 2407-07A	150/120	
ALC-V0176	3/4	GLOBE-6008-SW-40	Oiled Air Line For ALC-P-6		HENRY VOGT DWG.# E44244-R11	150/120	
ALC-V0177	1/2	POPCHEX-COM FTG	Sample Line From ALC-P-2	82033	MUPRO CAT.# 88-8C-1/3	150/120	
ALC-V0178	1/2	POPCHEX-COM FTG	Sample Line From ALC-P-3	82033	MUPRO CAT.# 88-8C-1/3	150/120	
ALC-V0179	1/2	POPCHEX-COM FTG	Sample Line From ALC-P-4	82033	MUPRO CAT.# 88-8C-1/3	150/120	



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AUXILIARY BUILDING EMERGENCY LIQUID CLEANUP  
SYSTEM (EPICOR II)  
VALVE LIST

VALVE NO.	SIZE (in.)	TYPE	DESCRIPTION	PO NO.	MANUFACTURER/ MODEL	DESIGN PRESSURE/ TEMPERATURE (psig / °F)	COMMENTS
ALC-V0180	2	BALL SCRD	Process Inlet To Pump ALC-P-1		JAMESBURY TYPE 1000 FIG. NO. 11-1100TT		Supplied by CAP-GUN
ALC-V0181	3/4	BALL SCRD	Service Air To Pump ALC-P-1		JAMESBURY TYPE 1000 FIG. NO. 11-1100TT		Supplied by CAP-GUN
ALC-V0182	3/4	BALL SCRD	Desin. Water To Pump ALC-P-1		JAMESBURY TYPE 1000 FIG. NO. 11-1100TT		Supplied by CAP-GUN
ALC-V0183	3/4	BALL SCRD	Service Air To Pump ALC-P-1		JAMESBURY TYPE 1000 FIG. NO. 11-1100TT		Supplied by CAP-GUN
ALC-V0184	3/4	BALL SCRD	Desin. Water To Pump ALC-P-1		JAMESBURY TYPE 1000 FIG. NO. 11-1100TT		Supplied by CAP-GUN
ALC-V0185	3/4	SOLID SCRD	Oiled Air To Pump ALC-P-1		ASCO. CAT. NO. 8210D95		Supplied by CAP-GUN
ALC-V0186	3/4	BALL SCRD	Oiled Air to Pump ALC-P-1		JAMESBURY TYPE 1000 FIG. NO. 11-1100TT		Supplied by CAP-GUN

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AUXILIARY BUILDING EMERGENCY LIQUID CLEANUP  
SYSTEM (EPICOR II)  
VALVE LIST

<u>VALVE NO.</u>	<u>SIZE (in.)</u>	<u>TYPE</u>	<u>DESCRIPTION</u>	<u>PO NO.</u>	<u>MANUFACTURER/ MODEL</u>	<u>DESIGN PRESSURE/ TEMPERATURE (psig / °F)</u>	<u>COMMENTS</u>
ALC-VO187	3/4	ASME SCRD	Oiled Air to Pump ALC-P-1		WARREN RUPP CO., PART # 893-048-162		Supplied by Mfr. of Pump ALC-P-1 (Warren Rupp)
ALC-VO188	3/4	BALL SCRD	Service Air to Pump ALC-P-1		JAMESBURY TYPE 1000 FIG. NO. 11-1100TT		Supplied by CAP-GUN
ALC-VO189	3/4	BALL SCRD	Sample Point Va. On Outlet Of Pump ALC-P-1		JAMESBURY TYPE 1000 FIG. NO. 11-1100TT		Supplied by CAP-GUN This Sample Point Not Used
ALC-VO190	3/4	BALL SCRD	Demin. Water to Pump ALC-P-1		JAMESBURY TYPE 1000 FIG. NO. 11-1100TT		Supplied by CAP-GUN
ALC-VO191	1	BALL SCRD	Process Outlet Pump ALC-P-1		JAMESBURY TYPE 1000 FIG. NO. 11-1100TT		Supplied by CAP-GUN
ALC-VO192	3/4	BALL SCRD	Service Air to Pump ALC-P-1		JAMESBURY TYPE 1000 FIG. NO. 11-1100TT		Supplied by CAP-GUN
ALC-VO193	3/4	BALL SCRD	Demin. Water to Pump ALC-P-1		JAMESBURY TYPE 1000 FIG. NO. 11-1100TT		Supplied by CAP-GUN

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AUXILIARY BUILDING EMERGENCY LIQUID CLEANUP  
SYSTEM (EPICOR 11)  
VALVE LIST

<u>VALVE NO.</u>	<u>SIZE (in.)</u>	<u>TYPE</u>	<u>DESCRIPTION</u>	<u>PO NO.</u>	<u>MANUFACTURER/ MODEL</u>	<u>DESIGN PRESSURE/ TEMPERATURE (psig / °F)</u>	<u>COMMENTS</u>
ALC-V0194	2	BALL SCRD	Process Inlet To Pump ALC-P-2		JAMESBURY TYPE 1000 FIG. NO. 11-1100TT		Supplied by CAP-GUN
ALC-V0195	3/4	BALL SCRD	Demin. Water To Pump ALC-P-2		JAMESBURY TYPE 1000 FIG. NO. 11-1100TT		Supplied by CAP-GUN
ALC-V0196	3/4	BALL SCRD	Service Air To Pump ALC-P-2		JAMESBURY TYPE 1000 FIG. NO. 11-1100TT		Supplied by CAP-GUN
ALC-V0197	3/4	BALL SCRD	Service Air To Pump ALC-P-2		JAMESBURY TYPE 1000 FIG. NO. 11-1100TT		Supplied by CAP-GUN
ALC-V0198	3/4	BALL SCRD	Service Air To Pump ALC-P-2		JAMESBURY TYPE 1000 FIG. NO. 11-1100TT		Supplied by CAP-GUN
ALC-V0199	3/4	SCREW SCRD	Oiled Air To Pump ALC-P-2		ASCO CAT. NO. B210D95		Supplied by CAP-GUN
ALC-V0200	3/4	BALL SCRD	Oiled Air To Pump ALC-P-2		WARREN RUPP CO., PART # 893-043-162		Supplied by Mfr. of Pump ALC-P-2 (Warren Rupp)
ALC-V0201	2	BALL SCRD	Process Supply From Pump ALC-P-2		JAMESBURY TYPE 1000 FIG. NO. 11-1100TT		Supplied by CAP-GUN

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AUXILIARY BUILDING EMERGENCY LIQUID CLEANUP  
SYSTEM (EPICOR II)  
VALVE LIST

<u>VALVE NO.</u>	<u>SIZE (in.)</u>	<u>TYPE</u>	<u>DESCRIPTION</u>	<u>PO NO.</u>	<u>MANUFACTURER/ MODEL</u>	<u>DESIGN PRESSURE/ TEMPERATURE (psig / °F)</u>	<u>COMMENTS</u>
ALC-V0202	3/4	BALL SCRD	Deain. Water To Pump ALC-P-2		JAMESBURY TYPE 1000 FIG. NO. 11-1100TT		Supplied by CAP-GUN
ALC-V0203			Deleted				
ALC-V0204	3/4	BALL SCRD	Service Air To Pump ALC-P-2		JAMESBURY TYPE 1000 FIG. NO. 11-1100TT		Supplied by CAP-GUN
ALC-V0205	3/4	BALL SCRD	Deain. Water To Pump ALC-P-2		JAMESBURY TYPE 1000 FIG. NO. 11-1100TT		Supplied by CAP-GUN
ALC-V0206	3/4	BALL SCRD	Service Air To Pump ALC-P-2		JAMESBURY TYPE 1000 FIG. NO. 11-1100TT		Supplied by CAP-GUN
ALC-V0207	2	BALL SCRD	Process Supply To ALC-F-1		JAMESBURY TYPE 1000 FIG. NO. 11-1100TT		Supplied by CAP-GUN
ALC-V0208	2	BALL SCRD	Process Supply To ALC-F-1		JAMESBURY TYPE 1000 FIG. NO. 11-1100TT		Supplied by CAP-GUN
ALC-V0209	2	BALL SCRD	Process Supply To ALC-R-1		JAMESBURY TYPE 1000 FIG. NO. 11-1100TT		Supplied by CAP-GUN

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AUXILIARY BUILDING EMERGENCY LIQUID CLEANUP  
SYSTEM (EPICOR 11)  
VALVE LIST

<u>VALVE NO.</u>	<u>SIZE (in.)</u>	<u>TYPE</u>	<u>DESCRIPTION</u>	<u>PO NO.</u>	<u>MANUFACTURER/ MODEL</u>	<u>DESIGN PRESSURE/ TEMPERATURE (psig / °F)</u>	<u>COMMENTS</u>
ALC-V0210	2	BALL SCRD	Process Supply To ALC-K-1		JAMESBURY TYPE 1000 FIG. NO. 11-1100TT		Supplied by CAP-GUN
ALC-V0211	2	BALL SCRD	Process Supply To ALC-K-2		JAMESBURY TYPE 1000 FIG. NO. 11-1100TT		Supplied by CAP-GUN
ALC-V0212	2	BALL SCRD	Process Supply To ALC-K-2		JAMESBURY TYPE 1000 FIG. NO. 11-1100TT		Supplied by CAP-GUN
ALC-V0213	2	BALL SCRD	Process Inlet To Pump ALC-P-3		JAMESBURY TYPE 1000 FIG. NO. 11-1100TT		Supplied by CAP-GUN
ALC-V0214	3/4	BALL SCRD	Desin. Water To Pump ALC-P-3		JAMESBURY TYPE 1000 FIG. NO. 11-1100TT		Supplied by CAP-GUN
ALC-V0215	3/4	BALL SCRD	Service Air To Pump ALC-P-3		JAMESBURY TYPE 1000 FIG. NO. 11-1100TT		Supplied by CAP-GUN
ALC-V0216	3/4	BALL SCRD	Desin. Water To Pump ALC-P-3		JAMESBURY TYPE 1000 FIG. NO. 11-1100TT		Supplied by CAP-GUN

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AUXILIARY BUILDING EMERGENCY LIQUID CLEANUP  
SYSTEM (EPICOR II)  
VALVE LIST

<u>VALVE NO.</u>	<u>SIZE (in.)</u>	<u>TYPE</u>	<u>DESCRIPTION</u>	<u>PO NO.</u>	<u>MANUFACTURER/ MODEL</u>	<u>DESIGN PRESSURE/ TEMPERATURE (psig / °F)</u>	<u>COMMENTS</u>
ALC-V0217	3/4	BALL SCRD	Service Air To Pump ALC-P-3		JAMESBURY TYPE 1000 FIG. NO. 11-1100TT		Supplied by CAP-GUN
ALC-V0218	3/4	SOLED SCRD	Oiled Air To Pump ALC-P-3		ASCO. CAT. NO. 8210095		Supplied by CAP-GUN
ALC-V0219	3/4	ANGLE SCRD	Oiled Air To Pump ALC-P-3		WARREN RUPP CO. PART # 893-068-162		Supplied by Mfr. of Pump ALC-P-3 (Warren Rupp)
ALC-V0220	3/4	BALL SCRD	Oiled Air To Pump ALC-P-3		JAMESBURY TYPE 1000 FIG. NO. 11-1100TT		Supplied by CAP-GUN
ALC-V0221	3/4	BALL SCRD	Dezin. Water To Pump ALC-P-3		JAMESBURY TYPE 1000 FIG. NO. 11-1100TT		Supplied by CAP-GUN
ALC-V0222	3/4	BALL SCRD	Service Air To Pump ALC-P-3		JAMESBURY TYPE 1000 FIG. NO. 11-1100TT		Supplied by CAP-GUN
ALC-V0223	3/4	BALL SCRD	Dezin. Water To Pump ALC-P-3		JAMESBURY TYPE 1000 FIG. NO. 11-1100TT		Supplied by CAP-GUN
ALC-V0224	3/4	BALL SCRD	Sample Point Va. on Outlet of Pump ALC-P-3		JAMESBURY TYPE 1000 FIG. NO. 11-1100TT		Supplied by CAP-GUN

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AUXILIARY BUILDING EMERGENCY LIQUID CLEANUP  
SYSTEM (EPICOR II)  
VALVE LIST

<u>VALVE NO.</u>	<u>SIZE (in.)</u>	<u>TYPE</u>	<u>DESCRIPTION</u>	<u>PO NO.</u>	<u>MANUFACTURER/ MODEL</u>	<u>DESIGN PRESSURE/ TEMPERATURE (psig / °F)</u>	<u>COMMENTS</u>
ALC-V0225	3/4	BALL SCRD	Service Air to Pump ALC-P-3		JAMESBURY TYPE 1000 FIG. NO. 11-1100TT		Supplied by CAP-GUN
ALC-V0226	2	BALL SCRD	Process Outlet From Pump ALC-P-3		JAMESBURY TYPE 1000 FIG. NO. 11-1100TT		Supplied by CAP-GUN
ALC-V0227	2	BALL SCRD	Process Inlet To Pump ALC-P-4		JAMESBURY TYPE 1000 FIG. NO. 11-1100TT		Supplied by CAP-GUN
ALC-V0228	3/4	BALL SCRD	Demin. Water To Pump ALC-P-4		JAMESBURY TYPE 1000 FIG. NO. 11-1100TT		Supplied by CAP-GUN
ALC-V0229	3/4	BALL SCRD	Service Air To Pump ALC-P-4		JAMESBURY TYPE 1000 FIG. NO. 11-1100TT		Supplied by CAP-GUN
ALC-V0230	3/4	BALL SCRD	Demin. Water To Pump ALC-P-4		JAMESBURY TYPE 1000 FIG. NO. 11-1100TT		Supplied by CAP-GUN
ALC-V0231	3/4	BALL SCRD	Service Air To Pump ALC-P-4		JAMESBURY TYPE 1000 FIG. NO. 11-1100TT		Supplied by CAP-GUN

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AUXILIARY BUILDING EMERGENCY LIQUID CLEANUP  
SYSTEM (EPICOR II)  
VALVE LIST

<u>VALVE NO.</u>	<u>SIZE</u> <u>(in.)</u>	<u>TYPE</u>	<u>DESCRIPTION</u>	<u>PO NO.</u>	<u>MANUFACTURER/ MODEL</u>	<u>DESIGN PRESSURE/ TEMPERATURE</u> <u>(psig / °F)</u>	<u>COMMENTS</u>
ALC-V0232	3/4	SOLND SCRD	Oiled Air To Pump ALC-P-4		ASCO CAT. NO. 0210095		Supplied by CAP-GUN
ALC-V0233	3/4	BALL SCRD	Oiled Air To Pump ALC-P-4		JAMESBURY TYPE 1000 FIG. NO. 11-1100TT		Supplied by CAP-GUN
ALC-V0234	3/4	BALL SCRD	Oiled Air To Pump ALC-P-4		WARREN RUPP CO., PART # 09J-040-16		Supplied by Mfr. of pump ALC-P-4 (Warren Rupp)
ALC-V0235	3/4	BALL SCRD	DeMin. Water To Pump ALC-P-4		JAMESBURY TYPE 1000 FIG. NO. 11-1100TT		Supplied by CAP-GUN
ALC-V0236	3/4	BALL SCRD	Service Air To Pump ALC-P-4		JAMESBURY TYPE 1000 FIG. NO. 11-1100TT		Supplied by CAP-GUN
ALC-V0237	3/4	BALL SCRD	DeMin. Water To Pump ALC-P-4		JAMESBURY TYPE 1000 FIG. NO. 11-1100TT		Supplied by CAP-GUN
ALC-V0238	3/4	BALL SCRD	Service Point Vs. On Outlet Of Pump ALC-P-4		JAMESBURY TYPE 1000 FIG. NO. 11-1100TT		Supplied by CAP-GUN
ALC-V0239	3/4	BALL SCRD	Service Air to Pump ALC-P-4		JAMESBURY TYPE 1000 FIG. NO. 11-1100TT		Supplied by CAP-GUN



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AUXILIARY BUILDING EMERGENCY LIQUID CLEANUP  
SYSTEM (EPICOR II)  
VALVE LIST

<u>VALVE NO.</u>	<u>SIZE (in.)</u>	<u>TYPE</u>	<u>DESCRIPTION</u>	<u>PO NO.</u>	<u>MANUFACTURER/ MODEL</u>	<u>DESIGN PRESSURE/ TEMPERATURE (psig / °F)</u>	<u>COMMENTS</u>
ALC-V0240	3/4	BALL SCRD	Process Outlet From Pump ALC-P-4		JAMESBURY TYPE 1000 FIG. NO. 11-1100TT		Supplied by CAP-GUN
ALC-V0241	3/4	BALL SCRD	Oiled Air To Pump ALC-P-2		JAMESBURY TYPE 1000 FIG. NO. 11-1100TT		Supplied by CAP-GUN
ALC-V0242	2	AIR OPERATED BALL SCRD-40S	Discharge From Tank CC-T-1		HILLS-MCCANNA FIG. S302-56-T-56	150/120	2 Way Normally Closed Energized To Open
ALC-V0243- 249			DELETED				
ALC-V0250	2	GLOBE-SW-40	Discharge Line From Compressor ALC-P-7		HENRY VOGT DWG. # E-44240-R6	150/120	
ALC-V0251	2	GLOBE-SW-40	Discharge Line From Compressor ALC-P-8		HENRY VOGT DWG. # E-44240-R5	150/120	
ALC-V0252	3/4	GLOBE-SW-40	Air Supply Line From ALC-P-7 & ALC-P-8 Drain	Stock	HANCOCK CAT. # 5500W-1	150/120	
ALC-V0253	3/4	GLOBE-SW-40S	Priming Vent Line			150/120	
ALC-V0254	1/2	GLOBE-SCRD-40S	Pressure Tap on Priming Vent Line			150/120	
ALC-V0255	2	AIR OPERATED BALL SCRD-40S	Process Supply Line to Prefilter ALC-P-1		HILLS-MCCANNA FIG. S302-56-T-56	150/120	2 Way Normally Closed Energized to Open

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AUXILIARY BUILDING EMERGENCY LIQUID CLEANUP  
SYSTEM (EPICOR II)

## VALVE LIST

<u>VALVE NO.</u>	<u>SIZE (in.)</u>	<u>TYPE</u>	<u>DESCRIPTION</u>	<u>PO NO.</u>	<u>MANUFACTURER/ MODEL</u>	<u>DESIGN PRESSURE/ TEMPERATURE (psig / °F)</u>	<u>COMMENTS</u>
ALC-V0256	2	CHECK	Sump to ALC-P-1 Suction				
ALC-V0257	2	GLOBE	Sump to ALC-P-1 Suction				
ALC-V0258		GATE	EPICOR to spent Fuel Pool 'B'				Located in Unit 1
ALC-V0259		GATE	EPICOR to spent Fuel Pool 'B'				Located in Unit 1
ALC-V0260	3/4	GLOBE	ALC-P-1 Air Supply Throttle				Motor Operated
ALC-V0261	3/4	GLOBE	ALC-P-2 Air Supply Throttle				Motor Operated
ALC-V0262	3/4	GLOBE	ALC-P-3 Air Supply Throttle				Motor Operated
ALC-V0263	3/4	GLOBE	ALC-P-4 Air Supply Throttle				Motor Operated
ALC-V0264	1/2	NEEDLE	ALC-P-1 Bubbler Air Isolation				
ALC-V0265	1/2	NEEDLE	ALC-K-1 Bubbler Air Isolation				
ALC-V0266	1/2	NEEDLE	ALC-K-2 Bubbler Air Isolation				
ALC-V0267	3/8	NEEDLE	Bubbler Air Isolation				

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AUXILIARY BUILDING EMERGENCY LIQUID CLEANUP  
 SYSTEM (EPICOR II)  
 VALVE LIST

<u>VALVE NO.</u>	<u>SIZE (in.)</u>	<u>TYPE</u>	<u>DESCRIPTION</u>	<u>PO NO.</u>	<u>MANUFACTURER/ MODEL</u>	<u>DESIGN PRESSURE/ TEMPERATURE (psig / °F)</u>	<u>COMMENTS</u>
ALC-V0268	1/2	PRESSURE REGULATOR	ALC-F-1 Bubbler Regulator				Self Contained (Int. Tap)
ALC-V0269	1/2	PRESSURE REGULATOR	ALC-K-1 Bubbler Regulator				Self Contained (Int. Tap)
ALC-V0270	1/2	PRESSURE REGULATOR	ALC-K-2 Bubbler Regulator				Self Contained (Int. Tap)
ALC-V0271	1	CHECK	Service Air to Bubblers/ALC-V-255				
ALC-V0272	3/8	GLOBE	Service Air to Bubblers/ALC-V-255				
ALC-V0273	2	GLOBE	Sump to ALC-P-1 Suction Isolation				
ALC-V0274	3/4	GLOBE	Sump to ALC-P-1 Suction Drain				
ALC-V0275	3/8	NEEDLE	Air to ALC-V-242 Isolation				
ALC-V0276	2	GLOBE	Sump to ALC-P-1 Suction Final Isolation				
ALC-V0277	2	GLOBE	ALC-P-4 Discharge				
ALC-V0278	1	GLOBE	ALC-F-1 Shield Drain				
ALC-V0279	1	GLOBE	ALC-K-1 Shield Drain				

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AUXILIARY BUILDING EMERGENCY LIQUID CLEANUP  
SYSTEM (EPICOR II)  
VALVE LIST

<u>VALVE NO.</u>	<u>SIZE (in.)</u>	<u>TYPE</u>	<u>DESCRIPTION</u>	<u>PO NO.</u>	<u>MANUFACTURER/ MODEL</u>	<u>DESIGN PRESSURE/ TEMPERATURE (psig / °F)</u>	<u>COMMENTS</u>
ALC-V0280	1	GLOBE	ALC-R-2 Shield Drain				
ALC-V0281			Deleted				
ALC-V0282			Deleted				
ALC-V0283			Deleted				
ALC-V0284	3/4	GLOBE	ALC-P-6 Discharge to ALC-P-2				
ALC-V0285	3/4	GLOBE	ALC-P-6 Discharge to ALC-P-3				
ALC-V0286	2	GLOBE	CC-T-2 Process Inlet Isolation				
ALC-V0287	2	BALL	PMFT Process Isolation				
ALC-V0290	1 1/4	GLOBE	Minimum Flow Shutoff	TP-034598			
ALC-V0291	1	SOLENOID	Minimum Flow Solenoid		Automatic		Cat #8400
ALC-V0292	1 1/4	GLOBE	CC-T-1 Minimum Flow Shutoff	TP-034598			
ALC-V0293	1 1/4	GLOBE	CC-T-2 Minimum Flow Shutoff	TP-034598			
ALC-V0294	3/4	GLOBE	ALC-DPS-1 HP Leg Root Valve	TP-034598			

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AUXILIARY BUILDING EMERGENCY LIQUID CLEANUP  
SYSTEM (EPICOR II)  
VALVE LIST

<u>VALVE NO.</u>	<u>SIZE</u> <u>(in.)</u>	<u>TYPE</u>	<u>DESCRIPTION</u>	<u>PO NO.</u>	<u>MANUFACTURER/ MODEL</u>	<u>DESIGN PRESSURE/ TEMPERATURE</u> <u>(psig / °F)</u>	<u>COMMENTS</u>
ALC-V0295	3/4	GLOBE	ALC-P-5 Vent Valve	TP-034398			
ALC-V0296	2	BALL	ALC-F-1 Bypass Inlet Isol.				NMA 3526-87-0016
ALC-V0297	2	BALL	ALC-F-1 Bypass Outlet Isol.				NMA 3526-87-0016
ALC-V298	3/4	BALL	ALC-P-9 Suction	527-I-42	WATTS		
ALC-V299	3/4		ALC-P-9 Recirc.	C-0080	Velan	300/	
ALC-V300	3/4	CHECK	ALC-P-9 Discharge	016163	Rockwell		
ALC-V301	3/4	BALL	ALC-P-9 Discharge	007971	Velan	600/	
ALC-V302	3/8	TUBING	ALC-P1-5/ALC-P-9 Discharge	055133	Parker 638F		
ALC-V303	3/4	BALL	CC-T-1/Evap/ FWST Cross-Tie		Velan	600/	
ALC-V304	3/4	BALL FPT	CC-T-1/Evap/ FWST Cross-Tie		Velan	600/	
ALC-V305	3/4	BALL	CC-T-1 to Evap. Isolation	053453	WATTS TYPE 88501	1000/	
ALC-V306	3/4	BALL	FWST Feed to Evaporator	053453	WATTS TYPE 88501	1000/	
ALC-V307	3/4	BALL SWE	Evaporator to FWST Isolation/ PW-P-1 Suction		WATTS TYPE 88501	1000/	

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AXILIARY BUILDING EMERGENCY LIQUID CLEANUP  
SYSTEM (EPICOR 11)  
VALVE LIST

<u>VALVE NO.</u>	<u>SIZE (in.)</u>	<u>TYPE</u>	<u>DESCRIPTION</u>	<u>PO NO.</u>	<u>MANUFACTURER/ MODEL</u>	<u>DESIGN PRESSURE/ TEMPERATURE (psig / °F)</u>	<u>COMMENTS</u>
ALC-V308	3/4	SWT BALL	ALC-T-3 Outlet	018148	JACOBY-TARBOX INTERNATIONAL 60152-C-20	235/475	Fig. #F14-W344
ALC-V309	3/4	SWE BALL	Evaporator to ALC-P-10	053533	WATTS	1000 WOG/	
ALC-V310	3/4	CHECK	ALC-P-10 Discharge	016163	ROCKWELL FIG. 36174		
ALC-V311	3/8		ALC-PI-6/ALC-P-10 Discharge	055333	PARKER 638F		
ALC-V312	1/4	SWT	ALC-P-10 Discharge	43749	HANCOCK 5500W1	1000/	316 S.S.
ALC-V313	3/4	BALL	ALC-P-9 Discharge Drain		MCT AR6677	1500/	
ALC-V314	1/2	BALL	ALC-P-9 Discharge Vent		JAMESBURY		
ALC-V315	1/2	BALL	ALC-P-10 Discharge Vent	064281	JAMESBURY		
ALC-V316	1/2	BALL	ALC-P-9 Suction Vent		JAMESBURY		
ALC-V317	1/2	NPT BALL	ALC-T-3 Drain	064303	JAMESBURY	800 WOG/	Type 1/2" 23-3600-MT-1
ALC-V318	2	GATE	ALC-P-11 Suction	052030	POWELL	200/	
ALC-V319	3/8	TUBING	ALC-PI-7/ALC-P-11 Discharge	0337	PARKER 638F		
ALC-V320	2	SWING CHECK	ALC-P-11 Discharge	C0076	CRANE	150/	Tagged "WGL-V368"

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AUXILIARY BUILDING EMERGENCY LIQUID CLEANUP  
SYSTEM (EPICOR 17)  
VALVE LIST

<u>VALVE NO.</u>	<u>SIZE</u> (in.)	<u>TYPE</u>	<u>DESCRIPTION</u>	<u>PO NO.</u>	<u>MANUFACTURER/ MODEL</u>	<u>DESIGN PRESSURE/ TEMPERATURE</u> (psig / °F)	<u>COMMENTS</u>
ALC-V321	2		ALC-P-11 Discharge	021475	HEWCO	800/	
ALC-V322	1/8	TUBING	CC-T-1 Recirc. Sample Isolation	055133	PARKER 638Y		
ALC-V323	2		ALC-P-5 to CC-T-1 Isolation		VELAN		
ALC-V324	1-1/2		ALC-P-5 Misc Recirc. Isolation	225123			
ALC-V325	3/4	BALL	ALC-T-3 Inlet	047900	MCF # SRS66TPSWE	1500/122	
ALC-V326			ALC-T-3 Outlet				Same as Valve ALC-V308
WG-V-05	2	BALL	Storage Tank Inlet from HWSI				ECA 3230-87-0442 FCR #87-079
WG-V-24	2	PLUG	WG Flush Conn.			150/	
WG-V-29	2	PLUG	SDS Filters Bypass			150/	
WG-V-34	1	PLUG	WG-U-3 Conn. Isol.			150/	
WG-V-47	2	PLUG	Fuel Pool Stor. to ALC Isol.			150/	
WG-V-71	2	PLUG	Feed to SDS Filters			150/	
WG-V-72	2	PLUG	Misc. Wst. Sys. Isol.			150/	
WG-V-87	1/2	CLOSE	CN-FE-22 Root VLV Hi Isol.			4000/	ECH-S-366 R.1 Capped Downstream Lines

**TABLE 14**  
**AUXILIARY BUILDING EMERGENCY LIQUID CLEANUP**  
**SYSTEM (BPCOR 1:)**  
**VALVE LIST**

<u>VALVE NO.</u>	<u>SIZE</u> <u>(in.)</u>	<u>TYPE</u>	<u>DESCRIPTION</u>	<u>PG. NO.</u>	<u>MANUFACTURER/ MODEL</u>	<u>DESIGN</u> <u>PRESSURE/ TEMPERATURE</u> <u>(PSI / °F)</u>	<u>COMMENTS</u>
WG-V-88	1/2	CLOSE	CM-FE-22 Root VLV Lo Isol.			4000/	SKH-3-366 R.1 Capped Downstream Lines
WG-V-99	2	BALL	WG Spool Piece Isol.				KCA J210-87-0442 FCN 887-011



TABLE 15

EPICOR II RADWASTE PROCESSING SYSTEM  
(HIC POLISHING MODE)

**Overall Objectives:**

- a. Polish influent water sufficiently to satisfy Technical Specifications criteria.
- b. Process water at 10 gpm.
- c. Minimize personnel exposure.
- d. Process water at the lowest possible cost.

**Special Objectives:**

<u>Container</u>	<u>Vessel Size</u>	<u>Primary Purpose</u>	<u>Typical Composition</u>	<u>Process Vessel Changeout Criteria</u>	<u>Gallons Processed to Reach Changeout Criteria</u>	<u>Projected Shipping Category</u>
#1 First Demin.	4'Dx4'H 6'Dx6'H	Cesium & Strontium Removal	Zeolite (top) Sand (bottom)	348 Ci Cs	dependent on feed	Class C based on integrated dose to HIC lid gasket
#2 Second Demin.	4'Dx4'H 6'Dx6'H	Na Removal Cation Removal Anion Removal	Cation (top) Anion (bottom)	<1 µCi/cc	dependent on feed	LSA
#3 Third Demin.	4'Dx4'H 6'Dx6'H	Polishing Guard Bed	Mixed Resin	<1 R/hr	dependent on feed	LSA
#4 Strainer	2'Hx1 ½'Wx 1 ½'L	Catch Resin Fines	Strainer	<1 R/hr	200,000	LSA
#5 Post Filter	2'Hx1 ½'Wx 1 ½'L	Colloid Removal	1-10 Micron Cartridge	<1 R/hr	150,000	LSA