



GPU Nuclear Corporation  
Post Office Box 480  
Route 441 South  
Middletown, Pennsylvania 17057-0191  
717 944-7621  
TELEX 84-2386  
Writer's Direct Dial Number:  
(717) 948-8461

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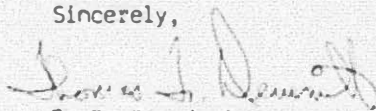
TMI-2 Cleanup Project Directorate  
Attn: Dr. W. D. Travers  
Director  
US Nuclear Regulatory Commission  
c/o Three Mile Island Nuclear Station  
Middletown, PA 17057

Dear Dr. Travers:

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

Pursuant to your letter dated February 4, 1982, attached is the annual update to the System Description for the Auxiliary Building Emergency Liquid Clean-Up System (EPICOR II). This update reflects the current operational requirements of the EPICOR II System.

Sincerely,

  
F. R. Standerfer  
Vice President/Director, TMI-2

FRS/RDW/eml

Attachment

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☒ ITS  
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DIVISION  
SYSTEM DESCRIPTION  
FOR

### Auxiliary Building Emergency

Liquid Clean-Up System (EPICOR 11)

COG ENG 1. Book 1011 per Intercom 84646, DATE 9/23/80

RTR Herbert J. Scheld DATE 4-24-86

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Title

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

| Rev. | SUMMARY OF CHANGE  | Approval | Date |
|------|--|----------|------|
| 0    | Initial issue per letter 4410-82-L-0017                              |          | 2/82 |
| 1    | Updated per letter 4410-83-L-0079                                    |          | 4/83 |
| 2    | Updated per letter 4410-84-L-0023                                    |          | 2/84 |
| 3    | Updated per letter 4410-85-L-0074<br>Incorporated ECM-3475.92 Rev. 8 |          | 4/85 |
| 4    | Update per letter 4410-86-L-0069                                     |          | 4/86 |

Recovery Program

System Description

Auxiliary Building Emergency

Liquid Clean-up System (EPICOR II)



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## 1.0 INTRODUCTION

### 1.1 System Functions

The functions of the Auxiliary Building Emergency Liquid Cleanup System are:

- a. To decontaminate, by filtration and ion exchange, radioactive waste water contained in the Auxiliary and or Reactor Buildings of IMI Unit 2, or to serve as a polishing ion exchanger system for the Submerged Demineralizer System (SDS).
- b. To transfer the decontaminated waste water from the Clean Water Receiving Tank to the Liquid Waste Disposal System of IMI Unit 2, to the Truck Fill Station, to the Spent Fuel Storage Pool, to the Processed Water Storage Tanks, to Condensate Storage Tank CC-T-1A, to CC-T-1 to be used for Reactor Building and Auxiliary/Fuel Handling Building Decontamination or for further treatment.

**NOTE:** The decontaminated waste water may be transferred to and from Evaporator Condensate Test Tank WDL-T-9A or 9B.

- c. To provide remote handling of spent resin containers from their position inside the Chemical Cleaning Building to the transport cask and truck.
- d. To limit releases of radioactive material to the environment to "as low as reasonably achievable."
- e. To provide for operation, and maintenance of the liquid cleanup system in compliance with "as low as reasonably achievable" radiation doses to personnel.
- f. To accomplish the above independently from IMI Unit-1.

### 1.2 Summary Description of the System

The Auxiliary Building Emergency Cleanup System, as the name implies, was designed and constructed originally for the primary purpose of processing and cleaning up the accident-generated water that collected in Auxiliary Building. It has, since then, evolved into a radwaste liquid processing system, differentiated from a regular radwaste liquid processing facility, in that the water processed by the former is accident - generated.

The system consists of a liquid radwaste process system which is located in the Chemical Cleaning Building. It decontaminates, by filtration and ion exchange, radioactive waste water contained in the Auxiliary Building, Fuel Handling Building and Reactor Building of IMI Unit 2. Contaminated water is pumped from a connection located

on the Miscellaneous Waste Holdup Tank (WDL-T-2) by a pump located in the Chemical Cleaning Building through the yard and into the process system, or it will be obtained from the Monitor Tanks SDS-T1A/T1B, or Reactor Coolant Bleed Tanks (RCBT's) or the Neutralizer Tanks WDL-T-8A and B. Yard piping is shielded and enclosed within a guard pipe, the open end of which terminates inside the Chemical Cleaning Building.

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, or SDS-T1A/T1B) through the demineralizers, to the Clean Water Receiving Tank (CC-T-2). Changeout Criteria for the various units are indicated in Table 13 and 14.

Processed water is delivered to the Clean Water Receiving Tank (CC-T-2) for sampling and analysis. The processed water is either pumped to the Liquid Waste Disposal System of IM Unit 2, the Spent Fuel Storage Pool, the PWS's, the BWS, CO-T-1A, WDL-T-9 A/B or the truck fill station for transfer to the NLB Pump if within specification. Additionally, the processed water can be transferred to the Off Spec Water Receiving Batch Tank (CC-T-1) for recycling through the process system or use in the decontamination of the Reactor Building or Auxiliary & Fuel Handling Buildings or reprocessed under a feed and bleed scheme if it does not meet the end process criteria.

The Chemical Cleaning Building (CCB) has been made into a low leakage confinement building and provided with an exhaust ventilation system to maintain the building at a negative pressure.

Molsture separators, 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 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 Control Building located outside the northwest corner of the Chemical Cleaning Building.

Remote handling of spent resin containers from their position inside the Chemical Cleaning Building 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 Control Building and the CCB. A new 4" tie-in to the existing fire main supplies a sprinkler system in the TV Monitor 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 the

valve for this sprayline is kept in the Auxiliary Building Emergency Liquid Clean-up System Control Room which is also known as the TV Monitor & Control Building. Line and grid pressure indication is provided in the Control Building.

The system interfaces with the IMI Unit 2 Radwaste Disposal Miscellaneous Liquids System, Demineralized Water System, the Submerged Demineralizer System, the Processed Water Storage System, the BOP Electrical System, Service Air System, the Unit 1 Liquid Waste Disposal System, Fire Protection System, and the Unit 2 Radwaste Disposal Reactor Coolant Liquid System.

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 11 will function independently. Valve ALC-VI69 shall remain locked closed (unless transferring CC-T-1 or -2 to the "B" Spent Fuel Pool) and a spectacle flange is installed downstream of valve ALC-VI69 at the transition between Unit 1 and Unit 2 Liquid Radwaste Systems. Valves downstream of ALC-VI69 are no longer accessible to Unit 2 operators due to unit separation.

### 1.3 System Design Requirements

#### 1.3.1 Process System Design Requirements

- 1.3.1.1 The 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 P-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 will be placed well down into the floor drain.
- 1.3.1.3 Remote system operations are directed and controlled from outside of the Chemical Cleaning Building from the TV Monitor & Control Building. This area is provided with remote closed circuit television monitoring of the operating areas inside and outside the Chemical Cleaning Building.
- 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 levels are also monitored. Accelerometers for P-1 thru P-4 are provided for equipment protection.



- 1.3.1.5 The system tank vents are provided with in line 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, SDS-T1A/T1B, WDL-T-11 A/B, WDL-TSA/B, CC-T-2, or CC-T-1) by the first EPICOR II pump (ALC-P-1). The Miscellaneous Waste Holdup Tank pump is not used. This provides better system pressure and flow control.
- 1.3.1.7 The Chemical Cleaning Building provides a seismically safe containment, the EPICOR II System and major components when constructed were considered to be non-Q.C. scope, however the system has since been reclassified I/S. to Q.C. 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. The instrument tubing system is made up using compression fittings. The process system piping is rated at 150 lb. 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 tanks CC-T-1 & 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 sample for CC-T-1 or 2 is here defined as "after recirculating the tank contents for three volume changes". Also the sample line for CC-T-1 & 2 shall be purged to the sample sink for five line volumes prior to drawing the sample, and for ALC-F-1, ALC-K-1 and ALC-K-2 the sample lines shall be recirculated for five line volumes prior to drawing the sample.

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

- 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 thru V079 to minimize contamination of these systems.
- 1.3.1.12 The demineralized water supply header is provided with demineralized water from IMI Unit 2 in the range of 80-90 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. Provisions are available to connect the plant Service Air System to the system if necessary. Also two air compressors (ALC-P-7/8) are available for use and tie into the air supply header via ALC-V145.

NOTE: The Plant Service Air System is the preferred air supply.

- 1.3.1.14 If sampling indicates that the processed water is within limits for usage, the decontaminated liquid from CC-T-2 can be routed to the IMI Unit 2 Liquid Waste Disposal System, the IMI Unit 2 Spent Fuel Storage Pool, the PWST's, CC-T-1, or a truck fill hose connection that is provided as a means of transferring decontaminated liquids for use in the decontamination of the Reactor, Auxiliary & Fuel Handling Buildings.
- 1.3.1.15 All system overflow lines discharge to the Chemical Cleaning Building sump. All floor drains also discharge to the sump. The water collected in the sump is staged in the Off-Spec Water Receiving Batch Tank CC-T-1 by the sump pump for recycle through the cleanup system or it is drawn and processed directly through the EPICOR system via existing valves and piping.
- 1.3.1.16 Since the elevation of the discharge nozzle of tank CC-T-2, and the Chemical Cleaning Building 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 one micron cartridge type filter is installed downstream of the three resin traps.
- 1.3.1.19 The system shall have 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 casks overflow line to prevent resin carryover into the sump.

### 1.3.2 Material Handling Design Requirements

- 1.3.2.1 Normal operation of the Auxiliary Building Liquid Processing 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 4' x 4' liners may be removed from the building by making use of the shield bell designed for this purpose. The shield bell is positioned over the contaminated liner. The shield doors on the bottom of the bell are opened and the liner is drawn up into the bell. The doors are reclosed and the bell is carried, by the crane, to the truck which has 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. A new liner is positioned in the vacated space. Shielding, process lines, and level instrumentation are repositioned and the unit is returned to service.

NOTE: The 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 6' x 6' liners and lightly loaded 4' x 4' 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 Chemical Cleaning Building and deposited directly in the transfer cask located 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 Chemical Cleaning Building 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 Filtration Unit to lower relative humidity 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)

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

Pumps ALC-P-1 thru 4 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 filter and an anti-freeze injector to a valve manifold. Pump speed and capacity will be varied by the EPICOR II operator to achieve the optimum 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. Refer to Table 1 for pump details. Pump noise and vibration monitors are present for pumps ALC-P-1 thru 4 and have a read-out on panel ALC-PNL-2 in the TV Monitor & Control Building.

#### 2.1.2 Transfer Pump ALC-P-5

The transfer pump (Table 2) is a single stage horizontal centrifugal pump with a capacity of 200 GPM at 90' head. The pump motor is rated at 10 HP and is powered from MCC 2-33A in the TV Monitor & 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 tank CC-T-1 or CC-T-2 from the panel ALC-PNL-1 in the TV Monitor Control Building and level switches in panel ALC-PNL-1 for tanks CC-T-1 and CC-T-2. The level switches receive their signals from level transmitters ALC-LT-1 and ALC-LT-2 at tanks CC-T-1 and CC-T-2, respectively. CC-T-1&2 also have high level cutouts to 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. The valve opens, when the motor is started, by energizing the solenoid. The seal water flow rate is maintained at 1-2 GPM by throttling 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, which pump ALC-P-5 handles, has passed through the one micron 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.

The pump is used to transfer water from the Clean Water Receiving Tank or the Off-Spec Water Receiving Batch Tank to the IMI Unit 2 Liquid Waste Disposal System, the Spent Fuel Storage Pool, the PWST's, or a hose connection at the truck fill station. It is also used to transfer water from the Clean Water Receiving Tank to the Off-Spec Water Receiving Batch Tank.

Furthermore, the pump is also be used for recirculating and sampling the contents of the Clean Water Receiving Tank and the Off Spec Water Receiving Batch Tank. The sample connection terminates at the Sample System sink. The pump is provided with a discharge pressure gage, and a flow element on the discharge line to Units No. 1, No. 2, the Spent Fuel Pool, the PWST's 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.

### 2.1.3 Demineralizer (ALC-F-1)

The demineralizer (Table 3) is the first stage of the Auxiliary Building Emergency Liquid Clean-up system. The demineralizer is used to remove sodium, other non-radioactive chemicals and radioisotopes when the system is used only as a polishing system. Otherwise, it is used to remove Cesium and Strontium as a roughing filter when the system is in the roughing/polishing configuration.

The demineralizer unit may be a carbon steel tank approximately 5 feet in diameter and 6 feet high or 4 feet in diameter and 4 feet high, or a High Integrity Container (4 x 4). The top of the tank has four quick disconnect type male fittings; an inlet (pump discharge), an outlet (pump suction), a threaded level probe connection, air bubbler level connection, and a combination vent/overflow connection.

An additional connection (mechanical) is provided at the top of the (6 x 6) liner to allow removal of the plug from the top of the false bottom after final dewatering. The false bottom is filled with vermiculite to absorb water that may tend to accumulate to meet shallow land burial requirements. A manway approximately 24" in diameter is installed on top of the tank.

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

The level probe or bubbler system maintains tank level between 4" and 6" from the top of the resin by opening and closing solenoid valve (ALC-V185) on the air supply to pump ALC-P-1, which is supplying the tank, 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 tank top, an audible alarm is sounded at the EPICOR Monitoring Console, located in the TV Monitor & Control Building. ALC-V255 closes, 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 tank is vented, via hose connections, to a 2" vent header which leads into the top of the Off Spec Water Receiving Batch Tank (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 cask gases are routed to tank CC-T-1 and its vent filters, rather than directly into the Chemical Cleaning Building. 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 & 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.

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

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

Remote indication is provided on the Cleanup Panel ALC-PNL-1 for ALC-RM-1 and 2. During system operation, radiation levels as indicated on ALC-RM-1 and 2 should not be allowed to exceed 1 R/HR.

#### 2.1.4 Demineralizer (ALC-K-1, ALC-K-2)

Two demineralizers (Table 4) are installed in series with ALC-F-1 to further remove radioactivity from the waste liquid and polish the effluent.

The demineralizer (ALC-K-1), a 4' x 4' or 6' x 6' liner, 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 ALC-K-1 is identical to shielding around the ALC-F-1 demineralizer.

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

Each demineralizer has the same external connections as ALC-F-1. As with ALC-F-1 (6 x 6 only), an additional connection (mechanical) is provided at the top of the liner to allow removal of the plug from the top of the false bottom after final dewatering. The false bottom is filled with vermiculite to absorb water that may tend to accumulate to meet shallow land burial requirements. The demineralizer outlet line (pump suction line) extends to the bottom of the tank. Filter elements on the end of the line keep resin inside of the demineralizer. The demineralizer resin composition and quantity will be determined on the basis of system samples and operating data.

As with the 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 & Control Building on Panel ALC-PNL-1. During system operation, radiation levels as indicated on ALC-RMI-3 and 4 for ALC-K-1, should not be allowed to exceed 1 R/HR. Radiation levels as indicated on ALC-RMI-5 and 6 for ALC-K-2, should not be allowed to exceed 1R/HR.



### 2.1.5 Miscellaneous Waste Hold-up Tank (WDL-T-2)

The Miscellaneous Waste Hold-up Tank (Table 5) 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. Submerged Demineralizer System (SDS)
- i. Cond. Polisher Sump
- j. Water Treatment Sump
- k. Reactor Coolant Bleed Tanks
- l. Concentrated Waste Storage Tank

The tank also has connections to the Miscellaneous Waste Tank Pump suction, recirculation, 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 WDG System. To prevent acid splashing on the inner tank walls, the inlet piping extends into the tank 8 ft. The diameter of the tank is 10'-9-1/4". The Miscellaneous Waste Hold-up Tank is located in the Auxiliary Building elevation 305'.

A temporary tee connection is installed in place of the suction line strainer, WDL-U202B, on the Miscellaneous Waste Tank Pump WDL-P-6B suction line. Connected to this tee is a 2" line which supplies the liquid from the Miscellaneous Waste Holdup Tank to the suction side of EPICGR II Pump ALC-P-1. A 4" guard pipe with a combination of lead and concrete shielding encloses the suction piping run from the Auxiliary Building corridor to the Chemical Cleaning Building penetration. The guard pipe is open to the atmosphere of the Chemical Cleaning Building, which is under a slight negative pressure.

### 2.1.6 Clean Water Receiving Tank (CC-T-2)

The Clean Water Receiving Tank (Table 6) is a stainless steel atmospheric pressure tank with a capacity of 133,700 gallons located in the Chemical Cleaning Building. The tank receives the processed liquid from the discharge of pump ALC-P-4 via, in order, three resin traps, a one-micron crud filter, conductivity cell, pH meter, and an inlet flowmeter/totalizer.

An overflow line with a loop seal is provided near the top of the tank. A demineralized water supply is provided for the loop seal. A suction line from the transfer pump (ALC-P-5) penetrates the tank skirt and connects to the bottom of the tank. A connection on the top of the tank is also provided for the transfer pump recirculation line, a feature that enhances mixing of the content. Level indication and high level alarm are provided on panel ACL-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 the tank for whenever large quantities of demineralized water are required in the tank. This would include preoperational testing or tank cleanup. A drain line is provided off the Transfer Pump (ALC-P-5) suction piping to drain the suction piping and the remaining water in the tank that the transfer pump cannot drain.

The tank has a 2" vent line exhausting to the Chemical Cleaning Building through a two-stage demister filter. The first stage consists of two moisture separators and an HEPA filter. The second stage consists of two charcoal filter's and an HEPA filter. A heater in the common 2" vent line is controlled from Power Panel MP-2-33A. The heater is normally energized.

Processed water is stored in the tank 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 the tank 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 the Off-Spec Water Receiving Batch Tank 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 tank's contents are satisfactory for use in the plant (e.g., decon flush or makeup to other plant processes) the water is pumped normally into the IMI Unit 2 Liquid Waste Disposal System, the Spent Fuel Storage Pool.

the PWST's or to the NLB pump from the truck fill station, however, it may be stored in the Off-Spec Water Receiving Batch Tank, if desired. The Off-Spec Water Receiving Batch Tank should be flushed clean with demineralized water or clean processed water before it is used for clean water storage.

#### 2.1.7 Off-Spec Water Receiving Batch Tank (CC-T-1)

The Off-Spec Water Receiving Batch Tank (Table 7) is a stainless steel tank with a capacity of approximately 86,000 gallons designed for full vacuum to 75 psig. For the Auxiliary Building Clean-up System, the tank is operated at atmospheric pressure only. The tank can receive the discharge from the Clean Water Receiving Tank 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 may also be used as a source of processed water to supply the NLB pump used for containment decon. This feature allows greater availability of the Clean Water Receiving Tank.

The Tank is piped up to receive the discharge from the sump pump, if desired, but normally the sump is drained by a 2" suction line to the Pump ALC-P-1 (see para. 2.1.3). A suction line at the bottom of the tank can be lined up either to Pump ALC-P-1 for reprocessing the tank's contents through the system or to the Transfer Pump ALC-P-5 for recirculation and sampling, or discharge. The recirculation line connects to the top of the tank.

The tank is vented to the building in the same manner as the Clean Water Receiving Tank. An over-flow line with a loopseal is provided near the top of the tank. A demineralized water supply is provided for the loop seal. A connection at the top of the tank receives vents from the prefilter, the demineralizers and the crud filter. Level indication and high level alarm are provided on panel ACL-PNL-1. A future xenon hold-up tank connection is provided on the vent line.

The tank has a 2" vent line exhausting to the Chemical Cleaning Building 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 heater in the common 2" vent line is controlled from Power Panel MP-2-33A. The heater is normally energized.

### 2.1.8 Chemical Cleaning Building Sump

The Chemical Cleaning Building sump is a stainless steel lined pit with a capacity of (4000) gallons located in the northwest corner of the building. All leakage from the tank overflow, equipment, and floor drains are collected in the sump. One sump pump (Table 8), is installed to permit the transfer of the liquid from the sump to the Off Spec Water Receiving Batch Tank, 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 (MAN-OFF-AUTO) selector switch located on MCC2-33A. 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.

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 50 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 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 clean up system directly from the sump without circulating through the pump CC-P-2A and the Off-Spec Water Receiving Batch Tank 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-VO15 with a short length of hose.

### 2.1.9 20 Ton Monorail Hoist System

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 Chemical Cleaning Building above the resin traps through the south end of the building, extending 18' outside of the building over the cask loading area. Table 9 provides specifications on the monorail hoist system.



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 & Control Building. Remote operation is aided through the use of a closed circuit TV 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.

#### 2.1.10 Resin Filter - ALC-F-4A, B & C

Three Resin Filters are provided downstream of EPICOR pump, ALC-P-4, to prevent resin fines from entering the Clean Water Receiving Tank. If the filters contact radiation level reaches 250 mR/HR on any part of the filter, the system must be shutdown and the filters replaced. Four sides of the filters are shielded by solid concrete blocks 8" thick. The top is shielded with 1/2 inch of lead.

#### 2.1.11 Crud Filter - ALC-F-5

A one micron filter with isolation valves is provided between the resin filter and the Clean Water Receiving Tank. The primary purpose of this filter is to eliminate any cobalt present in the processed water. A vent line connected to the Off-Spec Water Receiving Batch Tank and a drain line to the equipment 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 should be handled as radioactive material. The filter must be replaced whenever the contact radiation level reaches 250 mR/HR. A special lever is provided to aid in removal of the filter cartridge.

### 2.1.12 Ventilation Heating Unit & Moisture Separator

Heating unit no. ALC-E-H1 (Table 10) 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 MCC2-33A.

### 2.1.13 Ventilation Filter Unit

The filter unit consists of a single housing containing, in order: A prefilter (ALC-E-F2) (not used), A high efficiency particulate air (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.

### 2.1.14 Ventilation Fan Assembly

Fan assembly no. ALC-E-1 (Table 10) is a 30HP, 460 volt, 3 phase, 60 cycle, radial flow centrifugal unit with a capacity of 8000 cfm. The fan, powered from MCC2-33A, 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.

### 2.1.15 Ventilation Radiation Monitor

The radiation monitor (Table 10) 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 5,000 CPM, and 20,000 CPM for a particulate, or gaseous activity on the panel in the Control Building. The radiation monitor is powered from MCC2-33A. 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.

### 2.1.16 Ventilation Weatherproof Enclosures

The weatherproof enclosure is located at grade level and houses the components discussed in 2.1.12 thru 2.1.15 (above).

### 2.1.17 Chemical Cleaning Building Radiation Monitors

Four area radiation monitors (ALC-RM-8 thru 11 or equivalent) and an air sampler (ALC-RM-12) are provided in the Chemical Cleaning Building. The four area radiation monitors (ALC-RM-8 thru 11) are provided with remote

Indication on the Radiation Monitoring Panel ALC-PNL-1 in the Control Building. The air sampler (ALC-RM-12) is located in the HVAC Building, but draws its sample from the Chemical Cleaning Building near ALC-F-1. Remote indication for ALC-RM-12 is also provided on the Radiation Monitoring Panel ALC-PNL-1. The area monitors and air sampler will 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.

#### 2.1.18 Closed Circuit TV System

A closed circuit TV 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 Chemical Cleaning Building. The TV monitors and necessary controls are mounted on the TV Monitor Console located in the TV Monitor & Control Building. Camera No. 3 has a PAN-TILT control and is mounted to provide a view of ALC-K-2 for remote handling. The PAN-TILT control allows remote movement of the camera to permit scanning a large area of the Chemical Cleaning Building for surveillance during system operation. Camera No. 6 is mounted to provide a view of the EPICOR II pumps ALC-P-1 thru 4. This camera provides the operator with a remote surveillance capacity for viewing this area of the building during system operation.

Camera No. 1 mounted on the monorail support structure outside the Chemical Cleaning Building 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. Cameras No. 4 and No. 5 provide a view of the top area 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. 7 has a PAN-TILT control and is mounted on the west wall between ALC-K-1 and ALC-K-2 to provide remote monitoring of potential leak areas.

#### 2.1.19 Major System Valves

##### Inlet Isolation Valve to EPICOR II System - ALC-VC43

One stainless steel, 2", 120V motor operated ball valve is installed on the inlet line from the source tank to the EPICOR II radwaste processing 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 3D 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 3D. 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 interlocked with ALC-F-1 high level to prevent overfilling the demineralizer.

#### Service Air Regulator - ALC-V109

One 3" pressure regulating valve with a 300# rating 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 # rating at 120°F is installed on the line from ALC-P-1 to ALC-F-1 between manual valves ALC-V191 & ALC-V207. The valve ALC-V255 is normally closed unless energized and is interlocked to close on high level in ALC-F-1. Additionally it closes on loss of electrical power or when system is not running.

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

One stainless steel, 2", air operated ball valve, ALC-V242, is installed on the supply line from Off Spec Water Receiving Batch Tank CC-T-1 to the suction of Pump ALC-P-1. The valve allows reprocessing of water from 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 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 tanks CC-T-1 or CC-T-2.

Valve ALC-V086 is a stainless steel, 2", 120V motor operated ball valve which is also installed on the outlet line of the Off Spec. Water Receiving Batch Tank 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 tank CC-T-1 to the suction of the transfer pump (ALC-P-5) for transfer to the Processed Water Storage Tanks or other transfer points.

## 2.1.20 Sample System

A Sample System is provided to obtain a representative sample of tanks CC-T-1 & 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 Miscellaneous Waste Holdup Tank are used to determine the isotopic inventory held up on the resin beds. The determination is made by analyzing the influent and effluent isotopic concentrations, the difference of which is held up 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 Chemical Cleaning Building mezzanine, and is provided for controlled and safe sampling.

The collection station consists of individual sample stations for CC-T-1 & 2, 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 Chemical Cleaning Building sump. The sink is also provided with ventilation which consists of a hood and ductwork which is tied into the Chemical Cleaning Building ventilation system.

Recirculation of the sample lines from ALC-F-1, ALC-K-1 and ALC-K-2 back to the suction of 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 2.1.6 and 2.1.7 for obtaining a sample from CC-T-1 & 2.

## 2.1.21 Aux. Building Cleanup System Air Compressors

Rotary air compressors ALC-P-7 and 8 (Table 11) are provided as a backup air supply for the EPICOR II system, while the plant Service Air system is the normal air



supply. Either of these air compressors have sufficient capacity for the operation of the EPICOR II system. These compressors are located in the ventilation unit's building. These compressors are single stage rotary screw, electrically driven, packaged units (pre-wired and pre-plumbed) with capacities of 115 and 98 CFM at 100 psig (the compressors are not the same model).

The compressors are controlled by local hand switches which allow the choice of either START/STOP (for intermittent air demand) or CONTINUOUS (for continuous air demand) control modes for flexibility. The units are piped up so that they can be used individually when a small volume of air is required or in parallel to handle larger air demands. In all of the operating modes, the air pressure in each unit's reservoir is automatically maintained within preset limits.

#### 2.1.22 EPICOR II "F" Liner Breakthrough Monitor

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

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

#### 2.2.1 Cleanup System

The Auxiliary Building Emergency Liquid Cleanup System is normally operated and monitored from control panel ALC-PNL-1 located in the TV Monitor & Control Building which is a separate prefabricated building. The TV Monitor & Control Building is adjacent to the northwest corner of the Chemical Cleaning Building.

Electrical power is supplied to the Auxiliary Building Emergency Cleanup 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 & 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 MP2-33A, except heat traces and ALC-P-8 which are supplied from the control rod breaker (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-F1-1) 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 ALC-F-1, ALC-K-1 & 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. A complete instrument list including range and setpoints is provided in Table 12.

## 2.2.2 Ventilation System

### 2.2.2.1 Heating Unit & Moisture Separator

The moisture separator is instrumented with a differential pressure indicator and switch, ALC-DPI-11 and ALC-DPS-11. 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. Should the air temperature rise 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 MCC2-33A. The heater panel is also deenergized 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 moisture separator (ALC-E-F1). While a differential pressure indication (DPI-11) is provided locally, a differential pressure switch (DPS-11) will actuate a remote "Trouble" alarm warning the operator of a restricted flow condition existing in the moisture separator. (Note: The moisture separator should be replaced when it exhibits a pressure drop of 1" w.g.)

Two differential pressure switches (one not connected) and a differential pressure indicator (DPI-13) are located on the first HEPA filter (ALC-E-F3) in the Filter Unit for indication and alarm. 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 (IS-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 IS-15-2 indicating a 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 (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 (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 (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. FIS-17 is also tied into the common, remote panel mounted "Trouble" alarm. The fan is started and stopped from MCC2-33A.

#### 2.2.2.4 Radiation Monitor (Controls)

The Radiation Monitor (ALC-RE-15) is energized and deenergized locally at the monitor cabinet. Separate control switches are provided: one of the unit itself and another for the monitor sample pump. (Note: During operation of the Chemical Cleaning Building Ventilation System, the Radiation Monitor must be energized at all times). A "Power Available" light is provide on the unit.

Local indication of the ventilation exhaust particulate and/or gaseous activity level is provided on the monitor. Remote indication of the ventilation exhaust activity levels is provided on the panel in the control shed. At a level of 5,000 CPM particulate, or 20,000 CPM 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 shall be checked open. Ensure that the radiation monitor is energized and operational.

When the fan is started (at MCC2-33A) ensure sufficient air flow exists (approx. 4000 CFM minimum) through the unit before energizing the heaters (Note: Heaters should not energize if insufficient air flow exists). After startup, verify that ventilation unit temperature, flow and activity indications are normal before leaving unit unattended.

NOTE: Start push button will have to be depressed and held until flow increases above lower limit or fan will trip.

##### 3.1.2 Cleanup System

Initial startup of the Auxiliary Building Emergency Cleanup System will be with the Demineralizers empty of liquid. The Chemical Cleanup Building Ventilation System shall be in operation prior to operating the cleanup system.

Normal Startup of the Auxiliary Building Emergency Cleanup System is accomplished by supplying the system with the process feedwater from CC-T-1, CC-T-2, SDS, or the various source tanks. Except for the Miscellaneous Waste Holdup Tank (MWHHT) the process feedwater is delivered to the process stream by source tank's motive power system. In the case MWHHT 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, ALC-V242) is then opened and process pump ALC-P-1 started. Startup of 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 ALC-P-1 is pumped to demineralizer ALC-F-1. When 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 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 thru ALC-V263), the pump speed is adjusted to attain and maintain a balanced flow of about 10 gpm thru 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 should require little operator action. The unit should 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 should be replaced as required to ensure that flow through the ventilation unit is maximized.

The radiation monitor and recorder should 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 can be indicative of carryover from the filter unit and should 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, 2, 3 and 4) in order to maintain the proper level in the process tanks. Instrumentation is provided on the control panel to monitor system parameters and to balance the system to minimize pump cycling.

Upon completion of processing one batch, Transfer Pump ALC-P-5 is started to recirculate at least three tank volumes of water through the Clean Water Receiving Tank after which a sample is drawn for analysis by the FMJ water chemistry laboratory. Water acceptable for use in the plant will be pumped to the FMJ Unit 2 Liquid Waste Disposal System, CC-1-1, CC-1-4 or to the Processed Water Storage Tanks. Out of Specification water may be pumped to the Off-Spec Water Receiving Batch Tank for reprocessing (See para. 2.1.6 and 2.1.7) or it may be processed directly from CC-1-2 under a bleed and bleed scheme.

NOTE: Normal operation is the same whether the system is being used in the Auxiliary Liquid Cleanup Mode, or in the SDS Polishing Mode.

### 3.3 Shutdown

#### 3.3.1 Ventilation System

The purpose of the ventilation system is to ensure that all air leaving the Chemical Cleaning Building is filtered and monitored for radiation. Shutdown of the ventilation system will preclude filtration and monitoring of the air and should not be performed unless dictated by other casualty/operational considerations. To shutdown the ventilation unit, deenergize the 60 kW heaters, fan (ALC-E-1) and radiation monitor 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 Epicor II 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-V08b is closed. Valves ALC-V242 and ALC-V255 close automatically as power is shutdown. Close ALC-V277 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 noses, 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 Chemical Cleaning Building to the transfer cask. The replacement unit is then installed, the noses, the level probe cable and the bubbler line reconnected and the system started as described in paragraph 3.1. Each liner has its own level probe which will be discarded with the liner.

**NOTE:** Shutdown is the same whether the system is being used in the Auxiliary Building Liquid Cleanup mode or in the SDS Polishing mode.

### 3.4 Special or Infrequent Operation

#### 3.4.1 Filter Changeout

When a filter bank requires changing, the Aux. Building Emergency Liquid Clean-up System should be shutdown. The ventilation system shall be in operation during the filter change-out.

### 3.5 Emergency

#### 3.5.1 Loss of Chemical Building Ventilation System

On loss of the Chemical Cleaning Building Ventilation System, the Auxiliary Building Emergency Liquid Cleanup System shall be shutdown, and the Chemical Cleaning Building sealed.

#### 3.5.2 Loss of Electrical Power

On loss of electrical power to the Chemical Cleaning Building MCC 2-33A, EPICOR II Pumps ALC-P-1, 2, 3 & 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 tank CC-1-1. If flow through the system is from the Misc. Waste Holdup Tank, WDL-T-2, operator action is required to close valve WDL-V2626. Power will be lost to Ventilation System 60KW heaters, exhaust fan and radiation monitor. The ventilation unit inlet and outlet dampers should be closed. This same procedure should be followed in the event that only the exhaust fan is lost.

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

When electrical power is lost, place all automatically controlled equipment to the manual OFF position. Then, when emergency power is available, restart the system.

#### 3.5.3 Loss of System Air

Loss of System Air will cause the Epicor II Pumps to secure until either the system compressors can be put into service or the Service Air System can be returned to service.

NOTE: Epicor II uses in-plant service air as normal supply air.

#### 3.5.4 Fire

##### 3.5.4.1 Ventilation System

Should they become too hot, the charcoal absorber beds in the ventilation unit could ignite. Upon verification of ignition of the charcoal bed, the manually actuated fire protection sprays should be cut in.

#### 3.5.4.2 Cleanup System

If a fire occurs in the TV Monitor Control Building the sprinkler system will automatically initiate. The Chemical Cleaning Building 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 must be observed during operation and maintenance. Under no circumstances will discharges be made to the environment without proper authorization.

The Chemical Cleaning Soliding Ventilation System will process potentially contaminated air. As such, any operations or maintenance associated with the system should fully incorporate appropriate Health Physics guidelines/requirements. Any solid or liquid ventilation system waste must be sampled and cleared by HP before release to environment.

Ensure that positive verification of charcoal bed fire exists 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 should be exercised when maintenance is performed.



TABLE 1EPICOR II PUMPSPump Details

|   |                          |
|---|--------------------------|
| Identification                                | ALC-P-1, 2, 3, 4         |
| Number Installed                              | 4                        |
| Manufacturer                                  | Warren Supp 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, psi                        | 125                      |
| 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,<br>ANSI A60 |
| Type                          | Horizontal Centrifugal                    |
| Standard Material Designation | Col. DI                                   |
| Rated Speed, rpm              | 1750                                      |
| Rated Capacity, gpm           | 200                                       |
| Rated Total Dynamic Head, Ft  | 90  |
| Shutoff Head, Ft              | 121                                       |
| Design Pressure, Casing, psig | 200                                       |
| Design Temperature, °C        | 110                                       |
| Lubricant                     | SAE 20 or 30 Oil                          |

Motor Details

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

TABLE 3FILTERSResin Filters (Traps)Tank Details

|                             |                         |
|-----------------------------|-------------------------|
| Identification              | ALC-F-4A, B, C          |
| Number Installed            | 3                       |
| Manufacturer                | Capolupo & Gundal, Inc. |
| Installation                | Horizontal              |
| Outside diameter/height, ft | 10 x 28                 |
| Shell material              | PVC                     |
| Design pressure, psi        | 100                     |

CRUD FILTERS

|                                 |                          |
|---------------------------------|--------------------------|
| Identification                  | ALC-F-5                  |
| Number Installed                | 1                        |
| Manufacturer                    | Pall Trinity Micro Corp. |
| Installation                    | Vertical                 |
| Outside diameter/height, inches | 7 x 34                   |
| Shell thickness, inches         | 0.165                    |
| Shell material                  | SA-312 TP304             |
| Design pressure, psi            | 150                      |
| Particle size rating            | 1 micron, nominal        |

TABLE 4

DEMINERALIZERSTank Details

|                                |  |
|--------------------------------|--|
| Identification                 | ALC-F-1, ALC-K-1, ALC-K-2                                |
| Number Installed               | 3  |
| Manufacturer                   | EPICOR   |
| Installation                   | Vertical   |
| Outside diameter/height, ft-in | 6'0" x 6'0" (ALC-F-1 & ALC-K-1)<br>4'0" x 4'0" (ALC-K-2) |
| Shell thickness                | 1/4"   |
| Shell material                 | Carbon Steel   |
| Design pressure, psi           | 2  |

OR

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

TABLE 5MISCELLANEOUS WASTE HOLD-UP TANKTank Details

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



TABLE 6

• CLEAN WATER RECEIVING TANKTank Details

|                                |                           |
|--------------------------------|---------------------------|
| Identification                 | CC-T-2                    |
| Number Installed               | 1                         |
| Manufacturer                   | Chicago Bridge & Iron Co. |
| Capacity - gallons             | 133.689                   |
| Installation                   | Vertical                  |
| Outside diameter & height - ft | 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 O.T.S.G. Chem. Clean Sys.

TABLE 7

\* OFF-SPEC WATER RECEIVING/BATCH TANKTank Details

|                                   |                           |
|-----------------------------------|---------------------------|
| Identification                    | CC-T-1                    |
| Number Installed                  | 1                         |
| Manufacturer                      | Chicago Bridge & Iron Co. |
| Capacity - gallons                | 85,978                    |
| Installation                      | Vertical                  |
| Outside diameter & height, ft-in. | 21'-10" & 39'-0"          |
| Shell material                    | 304 Stainless Steel       |
| Shell thickness                   |                           |
| Design temperature, °F            | 250°F                     |
| Design pressure                   | Full vacuum to 75 psig    |
| Corrosion allowance               | 0                         |
| Code stamp required               | Yes                       |

- \* Chemical Cleaning Solution Tank for O.T.S.G. Chem. Clean Sys.

TABLE 8  
SUMP PUMP  
CHEMICAL CLEANING BUILDING

Pump Detail

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

Motor Details

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

TABLE 9

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)<br>10 FPM medium<br>5 FPM low<br>1 FPM creep |
| Trolley:  | 50 FPM   |
| Control:  |  |
| Hoist:  | Quad - Speed   |
| Trolley:  | Single Speed   |
| Power Supply:   | 460 V AC, 3 Phase, 60 Hz<br>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 1.1

CHEMICAL CLEANING BUILDING VENTILATION SYSTEM NAMEPLATE DATA

## MSA Filter Unit

Identification No. ALC-E-H1

60KW Chromolax Heater Unit

480v, 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

## Victoreen 840-3 Off Line Effluent Monitor

3 Channel Readout - gaseous, particulate, both

110 volts, AC, 1 Phase, 60 Hz

Self contained sample/return pump (4 cfm)

TABLE 11AIR COMPRESSORS

|                        |                                   |  |
|------------------------|-----------------------------------|--|
| Identification         | ALC-P-7                           | ALC-P-8                                    |
| Number Installed       | 1                                 | 1  |
| Vendor                 | Le Roi (Dresser Industries Inc.)  |  |
| Type                   | Single Stage Rotary Screw         |  |
| Model No.              | 30SS                              | 25SS                                       |
| Capacity (CFM at PSIG) | 115 at 100<br>110 at 125 (Max.)   | 98 at 100<br>95 at 125 (Max.)              |
| Rated Motor, HP, RPM   | 30, 1755                          | 25, 1760                                   |
| Power Source           | 460V, 3 Phase, 50 Hz<br>MCC 2-33A | 460V, 3 Phase, 60 Hz<br>Power Panel PDP-W2 |



TABLE 12  
INSTRUMENTATION AND CONTROL

| TAG NO.  | SERVICE  | LOCATION  | SUPPLIER | MODEL NO.                 | INPUT/SPAN<br>OUTPUT/SCALE | SET POINT | REMARKS |
|----------|--|-----------|----------|---------------------------|----------------------------|-----------|---------|
| ALC-AE-1 | EPICOR II Sys. influent conductivity cell      | Piping    | L&N      | 4909 010<br>44 088-1 02   | 0-1000MHQ/CM               | N/A       |         |
| ALC-AI-1 | EPICOR II Sys. influent conductivity indicator | ALC-PNL-1 | L&N      | 7075 1 011<br>120 001     | 0-1000MHQ/CM               | N/A       |         |
| ALC-AE-3 | ALC-K-1 demin. effluent conductivity cell      | Piping    | L&N      | 4909 10 44<br>088-1 02    | 0-1000MHQ/CM               | N/A       |         |
| ALC-AI-3 | ALC-K-1 demin. effluent conductivity indicator | ALC-PNL-1 | L&N      | 7075 1 011<br>120 001     | 0-1000MHQ/CM               | N/A       |         |
| ALC-AE-4 | EPICOR II Sys. effluent conductivity cell      | Piping    | L&N      | 4909 10 44<br>088-1 02    | 0-1000MHQ/CM               | N/A       |         |
| ALC-AI-4 | EPICOR II Sys. effluent conductivity indicator | ALC-PNL-1 | L&N      | 7075 1 011<br>120 001 000 | 0-1000MHQ/CM               | N/A       |         |
| ALC-AE-6 | ALC-K-1 demin. effluent pH cell                | Piping    | L&N      | 7774 3 1 01               | 0-14                       | N/A       |         |
| ALC-AI-6 | ALC-K-1 demin. effluent pH indicator           | ALC-PNL-1 | L&N      | 7075 1 011<br>120 001     | 0-14                       | N/A       |         |
| ALC-AE-7 | EPICOR II Sys. effluent pH cell                | Piping    | L&N      | 7774 3 1 01               | 0-14                       | N/A       |         |
| ALC-AI-7 | EPICOR II Sys. effluent pH indicator           | ALC-PNL-1 | L&N      | 7075 1 011<br>120 001     | 0-14                       | N/A       |         |

TABLE 12  
INSTRUMENTATION AND CONTROL

| TAG NO.   | SERVICE  | LOCATION  | SUPPLIER           | MODEL NO.                            | INPUT/SPAN<br>OUTPUT/SCALE           | SET POINT | REMARKS |
|-----------|--|-----------|--------------------|--------------------------------------|--------------------------------------|-----------|---------|
| ALC FE-1  | CC-T-2 inlet flow<br>turbine flow meter        | Piping    | Hoffer             | MO 3/4<br>2524 B F1                  | 2.5-24 GPM                           | N/A       |         |
| ALC FO1-1 | CC-T-2 inlet flow<br>totalizer/indicator       | ALC-PNL-1 | Hoffer             | 26ECPR1A                             | 0-99,999,999 GAL<br>0-999MGPM        | N/A       |         |
| ALC FE-2  | CC-T-2 discharge<br>flow orifice plate         | Piping    | Fo-boro            | DP F11                               | 0-100 GPM<br>0-250" WG               | N/A       |         |
| ALC FI-2  | CC-T-2 discharge<br>flow transmitter           | ALC-RCA-1 | Fo-boro            | ME 110M<br>11 H2 A E                 | 0-100" WG<br>4-20 MADC               | N/A       |         |
| ALC FY-3  | CC-T-2 discharge flow<br>square root converter | ALC-PNL-1 | Fo-boro            | 66AF DJ                              | 4-10-20 MADC                         | N/A       |         |
| ALC FO-2  | CC-T-2 discharge<br>flow integrator            | ALC-PNL-1 | Fisher &<br>Porter | 52 ET                                | 4-20 MADC<br>0-10' TBM               | N/A       |         |
| ALC FI-2  | CC-T-2 discharge<br>flow indicator             | ALC-PNL-1 | Fisher &<br>Porter | 51 1371                              | 4-20 MADC<br>0-100 GPM               | N/A       |         |
| ALC FY-4  | CC-T-2 discharge<br>flow power supply          | ALC-PNL-1 | Fo-boro            | 610 AT DJ                            | 120V 60 Hz<br>4-20 MADC              |           |         |
| ALC LI-1  | CC-T-1 tank level<br>indicator                 | ALC-PNL-1 | Fo-boro            | 257P 1C                              | 4-20 MADC<br>0-38 ft                 |           |         |
| ALC LI-1  | CC-T-1 tank level<br>transmitter               | Local     | Fo-boro            | ME 110M<br>11 H2 A E<br>24" 1/2" NPT | 4-20 MADC<br>0-140" H <sub>2</sub> O | N/A       |         |

TABLE 12  
INSTRUMENTATION AND CONTROL

| TAG NO.   | SERVICE                                 | LOCATION  | SUPPLIER           | MODEL NO.                            | INPUT/SPAN<br>OUTPUT/SCALE | SET POINT   | REMARKS                                       |
|-----------|---|-----------|--------------------|--------------------------------------|----------------------------|---|---|
| ALC LT-1  | CC T-1 tank level<br>transm. PWR supply | ALC-PNL-1 | Fo-boro            | 610A1 34                             | 120V 60 Hz<br>4-20 MADC    | N/A   |   |
| ALC LI-2  | CC T-2 tank level<br>indicator          | ALC-PNL-1 | Fo-boro            | 257P 1C                              | 4-20MADC<br>0-35 ft        |   |   |
| ALC LT-2  | CC T-2 tank level<br>transmitter        | Local     | Fo-boro            | NE13GM<br>11 H2 A 3<br>8" 42A"       | 0-414" H2O<br>4-20 MADC    | N/A   |   |
| ALC LT-2  | CC T-2 tank level<br>transm. PWR supply | ALC-PNL-1 | Fo-boro            | 610A1 (1J)                           | 120V 60 Hz<br>4-20 MADC    | N/A   |   |
| ALC LS-1  | Chem. Clean. Bldg.<br>sump level switch | Local     | Warrick            | 2C1FU                                | 0-35 ft                    | 36 1/4 in. Below entry<br>48 1/4 in. face<br>90 3/8 in. " |   |
| ALC LAM-1 | Chem. Clean. Bldg.<br>slump H2 alarm    | ALC-PNL-1 | ROCHESTER          |                                      |                            | 36 1/4 in. Below entry<br>face.                           |   |
| ALC PI-1  | ALC P-5 discharge<br>pressure gage      | ALC-RCL-1 | Arthur<br>Moore    | U.S. Gage<br>1981                    | 0-160PSIG                  | N/A   | Purchased with diaphragm<br>seal & capillary. |
| ALC PI-2  | Service air<br>pressure gage            | ALC-RCL-1 | Arthur<br>Moore    | U.S. Gage<br>1981                    | 0-160PSIG                  | N/A   |   |
| ALC FI-3  | ALC P-5 seal water<br>flow indicator    | Local     | Fisher &<br>Porter | 10A1152W/S<br>1 1400A & 50<br>WTA000 | 0-14.9 GPM<br>0-100%       | N/A   |   |
| ALC PI-3  | Demin. water header<br>pressure gage    | ALC-RCL-1 | Arthur<br>Moore    | U.S. Gage<br>1981                    | 0-160 PSIG                 | N/A   |   |

TABLE 12  
INSTRUMENTATION AND CONTROL

| TAG NO.   | SERVICE                                  | LOCATION  | SUPPLIER        | MODEL NO.         | INPUT/SPAN<br>OUTPUT/SCALE | SET POINT | REMARKS |
|-----------|--|-----------|-----------------|-------------------|----------------------------|-----------|---------|
| ALC PI 4  | CC P-2A discharge<br>pressure gage       | ALC HCK-1 | Arthur<br>Moore | U.S. Gage<br>1981 | 0-160 PSIG                 | N/A       |         |
| ALC RM 1  | ALC F-1 gamma detector<br>(left shield)  | Local     | Victoreen       | 847-1             | 1-10,000 REM/HR            | N/A       |         |
| ALC RM 2  | ALC F-1 gamma detector<br>(right shield) | Local     | Victoreen       | 847-1             | 1-10,000 REM/HR            | N/A       |         |
| ALC RM 3  | ALC K-1 gamma detector<br>(left shield)  | Local     | Victoreen       | 847-1             | 1-10,000 REM/HR            | N/A       |         |
| ALC RM 4  | ALC K-1 gamma detector<br>(right shield) | Local     | Victoreen       | 847-1             | 1-10,000 REM/HR            | N/A       |         |
| ALC RM 5  | ALC K-2 gamma detector<br>(left shield)  | Local     | Victoreen       | 847-1             | 1-10,000 REM/HR            | N/A       |         |
| ALC RM 6  | ALC K-2 gamma detector<br>(right shield) | Local     | Victoreen       | 847-1             | 1-10,000 REM/HR            | N/A       |         |
| ALC RM 7  | EPICOR II "F" liner<br>Effluent Monitor  | Local     | Victoreen       | 843-30            | 1-10E7 CPM                 | N/A       |         |
| ALC RM 8  | Area Monitor<br>ALC F-1                  | Local     | Victoreen       | 847-1             | 0.1 to 10E7 MR/MR          | N/A       |         |
| ALC RM 9  | Area Monitor<br>Mezzanine                | Local     | Victoreen       | 857-30            | 0.1 to 10E5 MR/MR          | N/A       |         |
| ALC RM 10 | Area Monitor<br>Tank Area                | Field     | Victoreen       | 857-30            | 0.1 to 10E5 MR/MR          | N/A       |         |

TABLE 12  
INSTRUMENTATION AND CONTROL

| TAG NO.   | SERVICE                                  | LOCATION  | SUPPLIER  | MODEL NO.       | INPUT/SPAN<br>OUTPUT/SCALE | SET POINT | REMARKS |
|-----------|--|-----------|-----------|-----------------|----------------------------|-----------|---------|
| ALC-RM-11 | Area Monitor -<br>Sump Area              | Field     | Victoreen | 857-30          | 0.1 to 10E5 MR/MR          | N/A       | 1       |
| ALC-RMI-1 | ALC-f-1 gamma read-out<br>(left shield)  | ALC-PNL-1 | Victoreen | 856-30<br>846-2 | 1-10,000 REM/MR            | N/A       |         |
| ALC-RMI-2 | ALC-f-1 gamma read-out<br>(right shield) | ALC-PNL-1 | Victoreen | 856-30<br>846-2 | 1-10,000 REM/MR            | N/A       |         |
| ALC-RMI-3 | ALC-k-1 gamma read-out<br>(left shield)  | ALC-PNL-1 | Victoreen | 856-30<br>846-2 | 1-10,000 REM/MR            | N/A       |         |
| ALC-RMI-4 | ALC-k-1 gamma read out<br>(right shield) | ALC-PNL-1 | Victoreen | 856-30<br>846-2 | 1-10,000 REM/MR            | N/A       |         |
| ALC-RMI-5 | ALC-k-2 gamma read-out<br>(left shield)  | ALC-PNL-1 | Victoreen | 856-30          | 1-100 REM/MR               | N/A       |         |
| ALC-RMI-6 | ALC-k-2 gamma read out<br>(right shield) | ALC-PNL-1 | Victoreen | 856-30          | 1-100 REM/MR               | N/A       |         |
| ALC-RMI-7 | EPICOR II "f" Liner<br>Effluent Monitor  | ALC-PNL-1 | Victoreen | 842-11          | 1-10E7 CPM                 | N/A       | 1       |
| ALC-RMI-8 | Area Monitor<br>Readout ALC-f-1          | ALC-PNL-2 | Victoreen | 846-2           | 0.1 to 10E7 MR/MR          | N/A       |         |
| ALC-RMI-9 | Area Monitor<br>Readout Mezzanine        | ALC-PNL-2 | Victoreen | 856-30          | 1 to 10E5 MR/M             | N/A       |         |

TABLE 12  
INSTRUMENTATION AND CONTROL

| TAG NO.     | SERVICE                                     | LOCATION    | SUPPLIER  | MODEL NO.                | INPUT/SPAN<br>OUTPUT/SCALE | SET POINT    | REMARKS |
|-------------|---|-------------|-----------|--------------------------|----------------------------|--------------|---------|
| ALC-RMI-10  | Area Monitor<br>Readout-Tank Area           | ALC-PNL-2   | Victoreen | 856-30                   | 1 to 1065 MH/M             | N/A          |         |
| ALC-RMI-11  | Area Monitor<br>Readout-Sump Area           | ALC-PNL-2   | Victoreen | 856-30                   | 1 to 1065 MH/M             | 10 MH/HR     |         |
| ALC-TI-1    | Influent Temp. Indicator                    | Local       |           |                          |                            |              |         |
| ALC-TS-10   | El. Heater Temp Switch                      | Filter Unit | Chronola  | C76 AX-1200<br>106-20 AA |                            | 160°F        |         |
| ALC-TIC-10  | El. Heater Temp Indicator<br>and Control    | Filter Unit | Chronola  |                          | 0-200F                     | 146°F        |         |
| ALC-DPI-11  | Prefilter<br>DP Indicator                   | Filter Unit | MSA       |                          | 0-1" WG.<br>0-2" WG.       | N/A          |         |
| ALC-DPS-11  | Prefilter<br>DP Switch                      | Filter Unit | Dwyer     | 1824-2                   | 0.5-2" WG.                 | 1-2 1/2" WG. |         |
| ALC-DPI-13  | HEPA Filter DP Indicator                    | Filter Unit | MSA       |                          | 0-4" WG.                   | N/A          |         |
| ALC-DPS-13  | HEPA Filter DP Switch                       | Filter Unit | Dwyer     | 1824-5                   | 1.5-5" WG.                 | 3" WG.       |         |
| ALC-TE-15   | Charcoal Filter Temp<br>Element             | Filter Unit | MSA       |                          |                            |              |         |
| ALC-TS-15-1 | Charcoal Filter Temp<br>Switch for Hi Alarm | Filter Unit | MSA       |                          |                            | 220°F        |         |



TABLE 12  
INSTRUMENTATION AND CONTROL

| TAG NO.     | SERVICE                              | LOCATION            | SUPPLIER  | MODEL NO             | INPUT/SPAN<br>OUTPUT/SCALE  | SET POINT | REMARKS  |
|-------------|--------------------------------------|---------------------|-----------|----------------------|-----------------------------|-----------|--|
| ALC TSM-15A | Charcoal Temp. Alarm                 | Filter Unit         |           |                      |                             |           |  |
| ALC TSM-15B | Charcoal Temp. Alarm                 | ALC PNL 1           |           |                      |                             |           |  |
| ALC TS 15-2 | Charcoal Filter Temp                 | Filter Unit         | MSA       |                      |                             | 325°F     |  |
| ALC TSM-15  | ALC-E-F4 Charcoal<br>Adsorber Temp.  | Filter Unit         |           |                      |                             |           |  |
| ALC DPI-16  | HEPA Filter DP Indicator             | Filter Unit         | MSA       |                      | 0-4" WG.                    |           |  |
| ALC DPS-16  | HEPA Filter DP Switch                | Filter Unit         | MSA       |                      | 1.5-5" WG.                  | 3" WG.    |  |
| ALC FE-17   | Exhaust Flow Element                 | Duct                | Dietrich  | AMR 76               | 0-0.3" WG.<br>(0-8000 scfm) |           |  |
| ALC FIS-17  | Exhaust Flow Indicator<br>and Switch | Local               | Dwyer     |                      | 0-0.5" WG.<br>0-0.5" WG.    | 0.1" WG.  |  |
| ALC RE-18   | Exhaust Radiation<br>Detector        | Duct                | MHC       | SC 2x2               |                             |           |  |
| ALC RI-18   | Exhaust Radiation<br>Indicator       | Control<br>Building | MHC       | AM 221F/CR<br>M 55MF | 10-10 <sup>6</sup> cpm      |           | 5,000 cpm Particulate<br>Iodine (not in service)<br>20,000 cpm Gas |
| ALC RR-18   | Exhaust Radiation<br>Recorder        | Control<br>Building | Victoreen |                      |                             |           |  |
| ALC UA-19   | Air Filtration Unit<br>Trouble       | ALC PNL 1           | Rochester | (Later)              |                             |           |  |
| ALC FMS-20  | Air Filtration Unit<br>Fan Control   | MCC                 | GE        | CR 2940              |                             |           |  |

TABLE 12  
INSTRUMENTATION AND CONTROL

| TAG NO.   | SERVICE   | LOCATION                | SUPPLIER  | MODEL NO.                   | INPUT/SPAN<br>OUTPUT/SCALE | SET POINT  | REMARKS                           |
|-----------|---|-------------------------|-----------|-----------------------------|----------------------------|--|-----------------------------------|
| ALC LS 21 | LOOP Seal Level High                                | Local                   | B/W       | 2-W                         |                            | 2 1/2"   |                                   |
| ALC UA-22 | Cap Gun Rad.<br>trouble                             | ALC-PNL-1               | Rochester |                             |                            |  | from WH 1-12                      |
| ALC FG 23 | Aux. Bldg. Liquid Clean<br>Up Sampling System Flow  | Piping                  |           |                             |                            | N/A  |                                   |
| ALC HS 24 | Tank CC T-1A2<br>Selector Switch<br>Level Interlock | ALC-PNL-1               | GE        | CW2440 W/UB<br>200A Contact |                            |  |                                   |
| N/A       | ALC-F-1 Level<br>controller                         | Field                   | CAP-GUN   | (Later)                     | (later)                    | High 5" from<br>top of tank<br>Low 12" from<br>top of tank | Controls air supply<br>to ALC P 1 |
| N/A       | ALC-K-1 Level<br>controller                         | Field                   | CAP-GUN   |                             | (later)                    | "  | Controls air supply<br>to ALC P 2 |
| N/A       | ALC-K-2 Level<br>controller                         | Field                   | CAP-GUN   |                             | (later)                    | "  | Controls air supply<br>to ALC P 3 |
| N/A       | ALC F 1 H1 H1<br>Level Alarm                        | Cap Gun<br>Control Unit | CAP-GUN   |                             |                            | 3" from top<br>of tank                                     |                                   |
| N/A       | ALC-K-1 H1 H1<br>Level Alarm                        | Cap Gun<br>Control Unit | CAP-GUN   |                             |                            | 3" from top<br>of tank                                     |                                   |
| N/A       | ALC-K-2 H1 H1<br>Level Alarm                        | Cap Gun<br>Control Unit | CAP-GUN   |                             |                            | 3" from top<br>of tank                                     |                                   |

TABLE 1)

EPICOR II  
RADWASTE PROCESSING SYSTEM  
AUX. BLOC- EMERGENCY LIQUID CLEANUP MODE

- OVERALL OBJECTIVES: (a) Achieve sufficiently high DF's to release processed water at 10 GPM to satisfy tech. spec. criteria.  
(b) Process water at 10 GPM.  
(c) Minimize personnel exposure.  
(d) Process water at the lowest possible cost.

## SPECIFIC OBJECTIVES:

| CONTAINER        | Vessel Size             | Primary Purpose  | Composition                                | Process Vessel Contact Radiation Level Changeout Criteria | Gallons Processed to Reach Changeout Criteria | Total Number of Containers Required(1) | Projected Shipping Category   |
|------------------|-------------------------|--|--|---|---|--|-------------------------------|
| #1 First Demin.  | 4'D x 4'H               | 1. Na Removal<br>2. Other Cation Removal<br>3. Anion Removal | Mixed Cation Resin on top/ Anion on bottom | 1,000 R/hr. (1)   | Up to 100,000                                 | 50                                     | Large Quantity (6) or Type B  |
| #2 Second Demin. | 4'D x 4'H               | Cation Polishing<br>Anion Polishing                          | Mixed Cation Resin<br>Anion Resin          | 400 R/hr. (2)   | Up to 150,000                                 | 15                                     | Type B or 15A<br>> Type A (6) |
| #3 Third Demin.  | 6'D x 6'H               | Water Polishing  | Mixed Resin                                | 20 R/hr. (3)  | Up to 250,000                                 | 7                                      | 15A > Type A                  |
| #4 Strainer      | 2'H x 1 1/2'W x 1 1/2'L | Guard Bed<br>Catch Resin fines                               | Strainer                                   | 2-3 R/hr. (4)   | 150,000                                       | -                                      | 15A                           |
| #5 Post Filter   | 2' x 1 1/2' x 1 1/2'    | Colloids Removal   | 1 Micron Cartridge                         | 2-3 R/hr.   | 150,000                                       | 2                                      | 15A                           |

NOTE: (1) The 1,000 R/hr. limit is based upon the 1,300 curie limit of the LL-60-150/TVA shipping cask projected for use.

TABLE 1) (Cont'd)

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- (2) The 400 R/hr. limit is based upon a level of margin required to prevent inadvertent contamination of the 6' x 6' demin. causing this larger demin. to become a large quantity versus an LSA shipment. This change in shipping category could be caused by excessive strontium loading occurring during breakthrough of the cation polishing first demin.
- (3) The 20 R/hr. limit is based upon a handling limit to control personnel exposure and a LSA category shipping limit (25 R/hr.).
- (4) The 2.3 R/hr. limit is a handling limit.
- (5) The total number of containers is based upon processing the 285,000 gallons of water existing on July 24, 1979. This value will change as the stored water from daily leakage increases.
- (6) A large quantity category will result since the liner will contain greater than 0.3 mc/gn of activity.
- (7) Table updated to conclusion of original EPICOR II design objectives, namely the completion of processing accident generated Auxiliaries and Fuel Handling Building water.

TABLE 14  
EPICOR II  
RADWASTE PROCESSING SYSTEM  
(SOS POLISHING MODE)

- OVERALL OBJECTIVES: (a) Polish the Submerged Demineralizer System effluent water sufficiently to satisfy tech. spec. criteria.  
(b) Process water at 10 GPM.  
(c) Minimize personnel exposure.  
(d) Process water at the lowest possible cost.

SPECIFIC OBJECTIVES:

| Container        | Vessel Size             | Primary Purpose                                     | Composition                     | Process Vessel Contact Radiation Level Changeout Criteria(1) | Gallons Processed to Reach Changeout Criteria | Total Number of Containers Required | Projected Shipping Category |
|------------------|-------------------------|---|---------------------------------|--|---|-------------------------------------|-----------------------------|
| #1 First Demin.  | 6'0" x 6'H              | Na Removal<br>Other Cation Removal<br>Anion Removal | Cation (top)/<br>Anion (bottom) | < 20R/m  | Up to 50,000                                  | 70                                  | LSA & Type A                |
| #2 Second Demin. | 6'0" x 6'H              | Anion Removal<br>Cation Removal                     | Mixed Resin                     | < 1 R/mr   | 200,000                                       | 20                                  | LSA or LSA & Type A         |
| #3 Third Demin.  | 4'0" x 4'H              | Polishing<br>Guard Bed                              | Mixed Resin                     | < 1 R/mr   | 200,000                                       | 15                                  | LSA                         |
| #4 Strainer      | 2'H x 1 1/2"W x 1 1/2"L | Catch Resin Fines                                   | Strainer                        | < 1 R/mr   | 150,000                                       |                                     | LSA                         |
| #5 Post Filter   | 2' x 1 1/2' x 1 1/2'    | Colloids Removal                                    | 1 Micron Cartridge              | < 1 R/mr   | 150,000                                       | 2                                   | LSA                         |

NOTE: (1) Process Vessels will not be changed out on radiation levels. Values shown are the anticipated dose rates when chemical analysis indicates change out.

(2) Reflects usage projecting through 1984.

AUXILIARY BUILDING EMERGENCY LIQUID CLEANUP  
SYSTEM (EPICOR II)

VALVE LIST

| VALVE NO. | SIZE | TYPE              | DESCRIPTION                                       | PO NO. | MANUFACTURER/<br>MODEL             | DESIGN<br>PRESSURE<br>TEMPERATURE | COMMENTS |
|-----------|------|-------------------|---|--------|------------------------------------|-----------------------------------|----------|
| ALC-V0001 | 3/4  | GLOBE-600#-SW-40S | Process Suction<br>Line Vent                      | 68817  | LADDISH<br>CAT.# 7661-<br>2407-07A | 150/120                           |          |
| ALC-V0002 | 3/4  | GLOBE-600#-SW-40S | Process Suction<br>Line Vent                      | 68817  | LADDISH<br>CAT.# 7661-<br>2407-07A | 150/120                           |          |
| ALC-V0003 | 3/4  | GLOBE-600#-SW-40S | Process Suction<br>Line Prime and<br>Fill Valve   |        | HANCOCK<br>CAT.# 5500W-1           | 150/120                           |          |
| ALC-V0004 | 1    | GLOBE-600#-SW-40S | Chemical Addition<br>Line for CC-1-1              |        | HANCOCK<br>CAT.# 5500W-1           | 150/120                           |          |
| ALC-V0005 | 2    | GLOBE-600#-SW-40S | Discharge Line<br>From CC-1-1                     |        | HANCOCK<br>CAT.# 5500W-1           | 150/120                           |          |
| ALC-V0006 | 2    | GATE-600#-SW-40S  | Clean Water Dis-<br>charge Line to<br>Units 1 & 2 |        | ALOYCO<br>FIG.# 110                | 150/120                           |          |
| ALC-V0007 | 2    | GATE-600#-SW-40S  | Truck Fill<br>Connection                          |        | ALOYCO<br>FIG.# 110                | 150/120                           |          |
| ALC-V0008 | 2    | GATE-600#-SW-40S  | Truck Fill<br>Connection                          |        | ALOYCO<br>FIG.# 110                | 150/120                           |          |
| ALC-V0009 | 3/4  | GLOBE-600#-SW-40  | Service Air to<br>ALC-P-2                         |        | HANCOCK<br>CAT.# 5500W-1           | 150/120                           |          |
| ALC-V0010 | 3/4  | GLOBE-600#-SW-40  | Service Air to<br>ALC-P-1                         |        | HANCOCK<br>CAT.# 5500W-1           | 150/120                           |          |



AUXILIARY BUILDING EMERGENCY LIQUID CLEANUP  
SYSTEM (EPICOR II)

## VALVE LIST

| VALVE NO. | SIZE | TYPE              | DESCRIPTION                      | PO NO. | MANUFACTURER/<br>MODEL             | DESIGN<br>PRESSURE<br>TEMPERATURE | COMMENTS |
|-----------|------|-------------------|----------------------------------|--------|------------------------------------|-----------------------------------|----------|
| ALC-V0011 | 3/4  | GLOBE-600#-SW-40  | Oiled Air to<br>ALC-P-1          |        | HANCOCK<br>CAT.# 5500H-1           | 150/120                           |          |
| ALC-V0012 | 3/4  | GLOBE-600#-SW-40  | Service Air to<br>ALC-P-1        |        | HANCOCK<br>CAT.# 5500H-1           | 150/120                           |          |
| ALC-V0013 | 3/4  | GLOBE-600#-SW-40S | Demin. Water to<br>ALC-P-4       | 68817  | LADDISH<br>CAT.# 7661-<br>2407-07A | 150/120                           |          |
| ALC-V0014 | 3/4  | GLOBE-600#-SW-40S | Demin. Water to<br>ALC-P-4       | 68817  | LADDISH<br>CAT.# 7661-<br>2407-07A | 150/120                           |          |
| ALC-V0015 | 3/4  | GLOBE-600#-SW-40S | Demin. Water to<br>ALC-P-3       | 69001  | OBERT<br>TYPE# 103                 | 150/120                           |          |
| ALC-V0016 | 3/4  | GLOBE-600#-SW-40S | Demin. Water to<br>ALC-P-3       | 69001  | OBERT<br>TYPE# 103                 | 150/120                           |          |
| ALC-V0017 | 3/4  | GLOBE-600#-SW-40S | Demin. Water to<br>ALC-P-2       | 69001  | OBERT<br>TYPE# 103                 | 150/120                           |          |
| ALC-V0018 | 3/4  | GLOBE-600#-SW-40S | Demin. Water to<br>ALC-P-2       | 69001  | OBERT<br>TYPE# 103                 | 150/120                           |          |
| ALC-V0019 | 3/4  | GLOBE-600#-SW-40S | Demin. Water to<br>ALC-P-1       | 69001  | OBERT<br>TYPE# 103                 | 150/120                           |          |
| ALC-V0020 | 3/4  | GLOBE-600#-SW-40S | Process Line Flush<br>Connection | 69001  | OBERT<br>TYPE# 103                 | 150/120                           |          |
| ALC-V0021 | 3/4  | GLOBE-600#-SW-40  | Service Air to<br>ALC-P-4        |        | HANCOCK<br>CAT.# 5500H-1           | 150/120                           |          |

AUXILIARY BUILDING EMERGENCY LIQUID CLEANUP  
SYSTEM (EPICOR II)

## VALVE LIST

| VALVE NO. | SIZE | TYPE              | DESCRIPTION                               | PO NO. | MANUFACTURER/<br>MODEL            | DESIGN<br>PRESSURE<br>TEMPERATURE | COMMENTS |
|-----------|------|-------------------|---|--------|-----------------------------------|-----------------------------------|----------|
| ALC-V0022 | 3/4  | GLOBE-600#-SW-40  | Oiled Air to<br>ALC-P-4                   |        | HANCOCK<br>CAT.# 5500W-1          | 150/120                           |          |
| ALC-V0023 | 3/4  | GLOBE-600#-SW-40  | Service Air to<br>ALC-P-4                 |        | HANCOCK<br>CAT.# 5500W-1          | 150/120                           |          |
| ALC-V0024 | 3/4  | GLOBE-600#-SW-40  | Service Air to<br>ALC-P-3                 |        | HANCOCK<br>CAT.# 5500W-1          | 150/120                           |          |
| ALC-V0025 | 3/4  | GLOBE-600#-SW-40  | Oiled Air to<br>ALC-P-3                   |        | HANCOCK<br>CAT.# 5500W-1          | 150/120                           |          |
| ALC-V0026 | 3/4  | GLOBE-600#-SW-40  | Service Air to<br>ALC-P-3                 |        | HANCOCK<br>CAT.# 5500W-1          | 150/120                           |          |
| ALC-V0027 | 3/4  | GLOBE-600#-SW-40  | Service Air to<br>ALC-P-2                 |        | HANCOCK<br>CAT.# 5500W-1          | 150/120                           |          |
| ALC-V0028 | 3/4  | GLOBE-600#-SW-40  | Oiled Air to<br>ALC-P-2                   |        | HANCOCK<br>CAT.# 5500W-1          | 150/120                           |          |
| ALC-V0029 | 3/4  | GLOBE-600#-SW-40S | Sampled Line from<br>ALC-P-5              | 68817  | LADISH<br>CAT.# 7661-<br>2407-07A | 150/120                           |          |
| ALC-V0030 | 3/4  | GLOBE-600#-SW-40S | Sampled Line from<br>ALC-P-5              | 68817  | LADISH<br>CAT.# 7661-<br>2407-07A | 150/120                           |          |
| ALC-V0031 | 3/4  | GLOBE-600#-SW-40S | Loop Seal Fill<br>Connection On<br>CC-T-1 | 68817  | LADISH<br>CAT.# 7661-<br>2407-07A | 150/120                           |          |
| ALC-V0032 | 2    | BALCH-600#-SW-40S | Discharge of<br>CC-P-2A                   | 69001  | OBERT<br>TYPE# 50                 | 150/120                           |          |

AUXILIARY BUILDING EMERGENCY LIQUID CLEANUP  
SYSTEM (EPICOR II)

## VALVE LIST

| VALVE NO. | SIZE | TYPE                | DESCRIPTION                                     | PO NO. | MANUFACTURER/<br>MODEL            | DESIGN<br>PRESSURE<br>TEMPERATURE | COMMENTS |
|-----------|------|---------------------|---|--------|-----------------------------------|-----------------------------------|----------|
| ALC-V0033 | 2    | GLOBE-600#-SW-40S   | Discharge of<br>ALC-P-5 to CC-T-1               | 69001  | OBERT<br>TYPE# 103                | 150/120                           |          |
| ALC-V0034 | 3/4  | GLOBE-600#-SW-40S   | Pres. Ind. Root<br>Va. On Dischg. of<br>ALC-P-5 | 68817  | LADISH<br>CAT.# 7661-<br>2407-07A | 150/120                           |          |
| ALC-V0035 | 2    | GLOBE-600#-SW-40S   | Recirc. Line From<br>ALC-P-5 to CC-T-2          | 69001  | OBERT<br>TYPE# 103                | 150/120                           |          |
| ALC-V0036 | 3    | GLOBE-150#-FLGD-40S | Suction Line From<br>CC-T-2 to ALC-P-5          | 69001  | NEWCO<br>CAT.# 6415R              | 150/120                           |          |
| ALC-V0037 | 2    | BALCHK-600#-SW-40S  | Inlet to CC-T-2                                 | 69001  | OBERT<br>TYPE# 50                 | 150/120                           |          |
| ALC-V0038 | 1/2  | GLOBE-CMP-FIG       | Sensing Line On<br>Control Va.<br>ALC-V-109     |        | PARKER HAN-<br>NIFIN CAT.#-436    | 150/120                           |          |
| ALC-V0039 | 3/4  | GLOBE-600#-SW-40S   | Root Va. For<br>CC-T-2 Level<br>Indicator       | 69001  | HANCOCK<br>CAT.# 5500W-1          | 150/120                           |          |
| ALC-V0040 | 1/2  | GLOBE-600#-SW-40S   | Root Va. On<br>ALC-P-5 Dischg.<br>Flow Transmit |        | HANCOCK<br>CAT.# 5500W-1          | 150/120                           |          |
| ALC-V0041 | 1/2  | GLOBE-600#-SW-40S   | Root Va. On<br>ALC-P-5 Dischg.<br>Flow Transmit |        | HANCOCK<br>CAT.# 5500W-1          | 150/120                           |          |
| ALC-V0042 | 3/4  | GLOBE-600#-SW-40S   | Loop Seal Fill<br>Connection On<br>CC-T-2       | 68817  | LADISH<br>CAT.# 7661-<br>2407-07A | 150/120                           |          |

AUXILIARY BUILDING EMERGENCY LIQUID CLEANUP  
SYSTEM (EPICOR II)

## VALVE LIST

| VALVE NO. | SIZE | TYPE               | DESCRIPTION   | PO NO. | MANUFACTURER/<br>MODEL    | DESIGN<br>PRESSURE<br>TEMPERATURE | COMMENTS                          |
|-----------|------|--------------------|---|--------|---------------------------|-----------------------------------|-----------------------------------|
| ALC-V0043 | 2    | BALL-SW-40S        | Process Suction<br>Line From HDL-1<br>-2 to ALC-P-1 | 69000  | QUARTROL<br>CAT.# 521SS50 | 150/120                           | Motor Operated,<br>120 Volts      |
| ALC-V0044 | 3/4  | GLOBE-SW-40        | Blowdn. Line From<br>Strainer ALC-U-1               |        | HANCOCK<br>CAT.# 5500W-1  | 150/120                           |                                   |
| ALC-V0045 | 2    | SWGCHK-150#-SW-40S | Process System<br>Demin. Water Flush<br>Supply      |        | ALOYCO                    | 150/120                           |                                   |
| ALC-V0046 | 2    | BALCHK-SW-40S      | Process System<br>From CC-T-1                       | 69001  | OBERT<br>TYPE #50         | 150/120                           | Internals of Valve<br>are Removed |
| ALC-V0047 |      |                    | Deleted   |        |                           |                                   |                                   |
| ALC-V0048 | 3/4  | GLOBE-SW-40S       | Demin. Water To<br>ALC-P-1                          | 69001  | OBERT<br>TYPE #103        | 150/120                           |                                   |
| ALC-V0049 | 1/2  | GLOBE-600#-SW-40S  | Root Va. On<br>CC-T-2 Inlet Flow<br>Transmit        |        | HANCOCK<br>CAT.#5500W-1   | 150/120                           |                                   |
| ALC-V0050 | 1/2  | GLOBE-600#-SW-40S  | Root Va. On<br>CC-T-2 Inlet Flow<br>Transmit        |        | HANCOCK<br>CAT.#5500W-1   | 150/120                           |                                   |
| ALC-V0051 |      |                    | Deleted   |        |                           |                                   |                                   |
| ALC-V0052 | 3/4  | GLOBE-SW-40S       | Root Va. On<br>CC-T-1 Level<br>Indicator Line       |        | HANCOCK<br>CAT.#5500W-1   | 150/120                           |                                   |

AUXILIARY BUILDING EMERGENCY LIQUID CLEANUP  
SYSTEM (EPICOR II)

## VALVE LIST

| VALVE NO. | SIZE | TYPE               | DESCRIPTION                                    | PO NO. | MANUFACTURER/<br>MODEL             | DESIGN<br>PRESSURE<br>TEMPERATURE | COMMENTS |
|-----------|------|--------------------|--|--------|------------------------------------|-----------------------------------|----------|
| ALC-V0053 | 2    | GLOBE-SH-40S       | Recirc Line<br>From ALC-P-5 to<br>CC-T-2       | 69001  | OBERT<br>TYPE# 103                 | 150/120                           |          |
| ALC-V0054 | 2    | GLOBE-600#-SW-40S  | Clean Water<br>Discharge to Units<br>1 & 2     |        | ALOYCO<br>FIG.# 110                | 150/120                           |          |
| ALC-V0055 | 2    | GLOBE-600#-SW-40S  | Inlet Line From<br>CC-T-2 to ALC-F-2           |        | HANCOCK<br>CAT.# 5500W-1           | 150/120                           |          |
| ALC-V0056 | 2    | GLOBE-600#-SW-40S  | Future Xenon Hold-<br>Up Connect. On<br>CC-T-2 |        | HANCOCK<br>CAT.# 5500W-1           | 150/120                           |          |
| ALC-V0057 | 2    | GLOBE-600#-SW-40S  | Inlete Line From<br>CC-T-1 to ALC-F-3          |        | HANCOCK<br>CAT. # 5500W-1          | 150/120                           |          |
| ALC-V0058 | 2    | GLOBE-600#-SW-40   | Service Air Hdr. /<br>Unit #2 Isolation<br>Va. |        | HENRY VOGT<br>DWG. #<br>E-44248-RG | 150/120                           |          |
| ALC-V0059 | 2    | BALCHK-600#-SW-40S | Process Sys.<br>Suction Line                   | 69001  | OVERT<br>TYPE #50                  | 150/120                           |          |
| ALC-V0060 | 1    | POPCHK-SCRD-40S    | Service Air Supply<br>to ALC-P-1               | 68819  | NUPRO<br>CAT.# B-16C4-1            | 150/120                           |          |
| ALC-V0061 | 1    | POPCHK-SCRD-40S    | Demin. Water to<br>to ALC-P-1                  | 68819  | NUPRO<br>CAT.# B-16C4-1            | 150/120                           |          |
| ALC-V0062 | 1    | POPCHK-SCRD-40     | Oiled Air to<br>ALC-P-1                        | 68819  | NUPRO<br>CAT.# B-16C4-1            | 150/120                           |          |

AUXILIARY BUILDING EMERGENCY LIQUID CLEANUP  
SYSTEM (EPICOR II)

VALVE LIST

| VALVE NO. | SIZE | TYPE            | DESCRIPTION                | PO NO. | MANUFACTURER/<br>MODEL  | DESIGN<br>PRESSURE<br>TEMPERATURE | COMMENTS |
|-----------|------|-----------------|----------------------------|--------|-------------------------|-----------------------------------|----------|
| ALC-V0063 | 1    | POPCHK-SCRO-40  | Service Air to<br>ALC-P-1  | 68819  | NUPRO<br>CAT.# B-16C4-1 | 150/120                           |          |
| ALC-V0064 | 1    | POPCHK-SCRD-40  | Demln. Water to<br>ALC-P-1 | 68819  | NUPRO<br>CAT.# B-16C4-1 | 150/120                           |          |
| ALC-V0065 | 1    | POPCHK-SCRD-40  | Demln. Water to<br>ALC-P-2 | 68819  | NUPRO<br>CAT.# B-16C4-1 | 150/120                           |          |
| ALC-V0066 | 1    | POPCHK-SCRD-40S | Service Air to<br>ALC-P-2  | 68819  | NUPRO<br>CAT.# B-16C4-1 | 150/120                           |          |
| ALC-V0067 | 1    | POPCHK-SCRD-40  | Oiled Air to<br>ALC-P-2    | 68819  | NUPRO<br>CAT.# B-16C4-1 | 150/120                           |          |
| ALC-V0068 | 1    | POPCHK-SCRD-40S | Demln. Water To<br>ALC-P-2 | 68819  | NUPRO<br>CAT.# B-16C4-1 | 150/120                           |          |
| ALC-V0069 | 1    | POPCHK-SCRD-40S | Service Air To<br>ALC-P-2  | 68819  | NUPRO<br>CAT.# B-16C4-1 | 150/120                           |          |
| ALC-V0070 | 1    | POPCHK-SCRD-40S | Demln. Water To<br>ALC-P-3 | 68819  | NUPRO<br>CAT.# B-16C4-1 | 150/120                           |          |
| ALC-V0071 | 1    | POPCHK-SCRO-40  | Service Air to<br>ALC-P-3  | 68819  | NUPRO<br>CAT.# B-16C4-1 | 150/120                           |          |
| ALC-V0072 | 1    | POPCHK-SCRD-40S | Oiled Air to<br>ALC-P-3    | 68819  | NUPRO<br>CAT.# B-16C4-1 | 150/120                           |          |
| ALC-V0073 | 1    | POPCHK-SCRD-40S | Demln. Water To<br>ALC-P-3 | 68819  | NUPRO<br>CAT.# B-16C4-1 | 150/120                           |          |
| ALC-V0074 | 1    | POPCHK-SCRD-40S | Service Air To<br>ALC-P-3  | 68819  | NUPRO<br>CAT.# B-16C4-1 | 150/120                           |          |



AUXILIARY BUILDING EMERGENCY LIQUID CLEANUP  
SYSTEM (EPICOR II)

VALVE LIST

| <u>VALVE NO.</u> | <u>SIZE</u> | <u>TYPE</u>      | <u>DESCRIPTION</u>                                    | <u>PO NO.</u> | <u>MANUFACTURER/<br/>MODEL</u>    | <u>DESIGN<br/>PRESSURE<br/>TEMPERATURE</u> | <u>COMMENTS</u> |
|------------------|-------------|------------------|---|---------------|-----------------------------------|--|-----------------|
| ALC-V0075        | 1           | POPCHK-SCRD-40S  | Demin. Water To<br>ALC-P-4                            | 68819         | NUPRO<br>CAT.# B-16C4-1           | 150/120                                    |                 |
| ALC-V0076        | 1           | POPCHK-SCRD-40S  | Service Air To<br>ALC-P-4                             | 68819         | NUPRO<br>CAT.# B-16C4-1           | 150/120                                    |                 |
| ALC-V0077        | 1           | POPCHK-SCRD-40S  | Oiled Air To<br>ALC-P-4                               | 68819         | NUPRO<br>CAT.# B-16C4-1           | 150/120                                    |                 |
| ALC-V0078        | 1           | POPCHK-SCRD-40S  | Demin. Water To<br>ALC-P-4                            | 68819         | NUPRO<br>CAT.# B-16C4-1           | 150/120                                    |                 |
| ALC-V0079        | 1           | POPCHK-SCRD-40S  | Service Air To<br>ALC-P-4                             | 68819         | NUPRO<br>CAT.# B-16C4-1           | 150/120                                    |                 |
| ALC-V0080        | 3/4         | GLOBE-600#-SW-40 | Root Va. for Pres.<br>Ind. on Demin.<br>Water Header  |               | HANCOCK<br>CAT.# 5500W-1          | 150/120                                    |                 |
| ALC-V0081        | 3/4         | GLOBE-600#-SW-40 | Root Va. for Pres.<br>Ind. on Service<br>Air Header   |               | HENRY VOGT<br>DWG.#<br>E-44244-R7 | 150/120                                    |                 |
| ALC-V0082        | 2           | GLOBE-SW-40S     | Future Xenon<br>Holdup Connect.<br>On CC-T-1          |               | HANCOCK<br>CAT.# 5500W-1          | 150/120                                    |                 |
| ALC-V0083        | 1 1/4       | BALL-SW-40S      | Root VA. for<br>Conductivity Probe<br>On CC-T-2 Inlet | 68875         | APOLLO<br>CAT.# 316               | 150/120                                    |                 |
| ALC-V0084        | 1 1/4       | BALL-SW-40S      | Root VA. for<br>pH Probe On<br>CC-T-2 Inlet           | 68875         | APOLLO<br>CAT.# 316               | 150/120                                    |                 |

AUXILIARY BUILDING EMERGENCY LIQUID CLEANUP  
SYSTEM (EPICOR II)

## VALVE LIST

| <u>VALVE NO.</u> | <u>SIZE</u> | <u>TYPE</u>       | <u>DESCRIPTION</u>   | <u>PO NO.</u> | <u>MANUFACTURER/<br/>MODEL</u> | <u>DESIGN<br/>PRESSURE<br/>TEMPERATURE</u> | <u>COMMENTS</u>              |
|------------------|-------------|-------------------|--|---------------|--------------------------------|--|------------------------------|
| ALC-V0085        |             |                   | Deleted  |               |                                |  |                              |
| ALC-V0086        | 2           | BALL-SW-40S       | Discharge from<br>Tank CC-T-1  | 80322         | QUARTROL<br>CAT.# 521SSSO      | 150/120                                    | Motor Operated.<br>120 Volts |
| ALC-V0087        | 1 1/2       | BALL-SW-40S       | Clean Water Dis-<br>charge to Unit #2<br>Cond. Test Tks.<br>HDL-T-9A & B | 80792         | QUARTROL<br>CAT.# 521SSSO      | 150/120                                    | Motor Operated.<br>120 Volts |
| ALC-V0088        | 1 1/2       | BALL-SW-40S       | Clean Water Dis-<br>charge to Unit #2<br>Cond. Test Tks.<br>HDL-T-9A & B | 80792         | QUARTROL<br>CAT.# 521SSSO      | 150/120                                    | Motor Operated.<br>120 Volts |
| ALC-V0089        | 2           | GLOBE-600#-SW-40S | Discharge Line<br>From Sump Pump<br>CC-P-2A                              |               | HANCOCK<br>CAT.# 5500N-1       | 150/120                                    |                              |
| ALC-V0090        |             |                   | Deleted  |               |                                |  |                              |
| ALC-V0091        | 1 1/4       | BALL-SW-40S       | Root Valve for<br>Cond Probe at<br>Inlet to Pump<br>ALC-P-1              | 68875         | APOLLO<br>CAT.# 316            | 150/120                                    |                              |
| ALC-V0092        | 1 1/4       | BALL-SW-40S       | Root Valve for<br>Cond Probe at<br>Inlet to Pump<br>ALC-P-3              | 68875         | APOLLO<br>CAT.# 316            | 150/120                                    |                              |
| ALC-V0093        | 1 1/4       | BALL-SW-40S       | Root Valve for<br>Cond Probe at<br>Inlet to Pump<br>ALC-P-3              | 68875         | APOLLO<br>CAT.# 316            | 150/120                                    |                              |

AUXILIARY BUILDING EMERGENCY LIQUID CLEANUP  
SYSTEM (EPICOR II)

## VALVE LIST

| VALVE NO. | SIZE | TYPE               | DESCRIPTION   | PO NO. | MANUFACTURER/<br>MODEL             | DESIGN<br>PRESSURE<br>TEMPERATURE | COMMENTS |
|-----------|------|--------------------|---|--------|------------------------------------|-----------------------------------|----------|
| ALC-V0094 | 3/4  | GLOBE-600#-SW-40S  | Root Valve for<br>Pres. Ind. On<br>Sump Pump CC-P-2A<br>Discharge | 69001  | OBERT<br>TYPE# 103                 | 150/120                           |          |
| ALC-V0095 | 2    | GLOBE-600#-SW-40S  | Process System<br>Flush Line Near<br>Inlet to ALC-P-1             |        | HANCOCK<br>CAT.# 5500W-1           | 150/120                           |          |
| ALC-V0096 |      |                    | Deleted   |        |                                    |                                   |          |
| ALC-V0097 | 3/4  | GLOBE-600#-SW-40   | Oiled Air to<br>ALC-P-6   |        | HANCOCK<br>CAT.# 5500W-1           | 150/120                           |          |
| ALC-V0098 | 3/4  | GLOBE-600#-SW-40S  | Demln. Water to<br>ALC-P-6  |        | VELAN<br>CAT.# 374B                | 150/120                           |          |
| ALC-V0099 | 3/4  | GLOBE-600#-SW-40   | Service Air to<br>ALC-P-6   |        | HANCOCK<br>CAT.# 5500W-1           | 150/120                           |          |
| ALC-V0100 | 3/4  | GLOBE-600#-SW-40   | Service Air to<br>ALC-P-6   |        | HENRY VOGT<br>DWG.#<br>E-44244-R11 | 150/120                           |          |
| ALC-V0101 | 3/4  | GLOBE-600#-SW-40S  | Demln. Water to<br>ALC-P-6  | 69001  | OBERT<br>TYPE# 103                 | 150/120                           |          |
| ALC-V0102 | 1    | POPCHK-SCRD-40     | Oiled Air to<br>ALC-P-6   | 6H819  | NUPRO<br>CAT.# B-16C4-1            | 150/120                           |          |
| ALC-V0103 | 1    | BALCKH-600#-SW-40S | Filter ALC-F-1<br>Precoat Supply<br>Line                          | 69001  | OBERT<br>TYPE# 50                  | 150/120                           |          |

AUXILIARY BUILDING EMERGENCY LIQUID CLEANUP  
SYSTEM (EPICOR II)

VALVE LIST

| <u>VALVE NO.</u> | <u>SIZE</u> | <u>TYPE</u>        | <u>DESCRIPTION</u>                       | <u>PO NO.</u> | <u>MANUFACTURER/<br/>MODEL</u> | <u>DESIGN<br/>PRESSURE<br/>TEMPERATURE</u> | <u>COMMENTS</u> |
|------------------|-------------|--------------------|--|---------------|--------------------------------|--|-----------------|
| ALC-V0104        | 1           | POPC#-SCRD-40      | Service Air to<br>ALC-P-6                | 68819         | HUPRO<br>CAT.# B-16C4-1        | 150/120                                    |                 |
| ALC-V0105        |             |                    | Deleted                                  |               |                                |  |                 |
| ALC-V0106        | 2           | GLOBE-600#-SW-40S  | Discharge From<br>One Micron Filter      |               | HANCOCK<br>CAT.# 5500W-1       | 150/120                                    |                 |
| ALC-V0107        | 3/4         | GLOBE-600#-SW-40S  | Vent on One Micron<br>Filter             |               | HANCOCK<br>CAT.# 5500W-1       | 150/120                                    |                 |
| ALC-V0108        | 3/4         | GLOBE-600#-SW-40S  | Drain on One<br>Micron Filter            |               | HANCOCK<br>CAT.# 5500W-1       | 150/120                                    |                 |
| ALC-V0109        | 2           | CONTROL-FLGD-40    | Service Air Supply<br>Header             | 69005         | FISHER<br>TYPE# 310-32         | 150/120                                    |                 |
| ALC-V0110        | 3           | GLOBE-FLGD-40S     | Suction Line From<br>CC-T-1 to ALC-P-5   | 69001         | NEHCO<br>CAT.# 6415R           | 150/120                                    |                 |
| ALC-V0111        |             |                    | Deleted                                  |               |                                |  |                 |
| ALC-V0112        | 2           | GLOBE-600#-SW-40S  | Inlet to One<br>Micron Filter            |               | HANCOCK<br>CAT.# 5500W-1       | 150/120                                    |                 |
| ALC-V0113        | 1           | POPC#-SW-40S       | Chemical Addition<br>Line to CC-T-1      | 68819         | HUPRO<br>CAT.# B-16C4-1        | 150/120                                    |                 |
| ALC-V0114        | 2           | BALCHK-600#-SW-40S | Discharge From<br>ALC-P-5                | 69001         | OBERT<br>TYPE# 50              | 150/120                                    |                 |
| ALC-V0115        | 3/4         | GLOBE-SW-40S       | Drain Line on<br>Process Suction<br>Line |               |                                | 150/120                                    |                 |

AUXILIARY BUILDING EMERGENCY LIQUID CLEANUP  
SYSTEM (EPICOR II)

VALVE LIST

| <u>VALVE NO.</u>  | <u>SIZE</u> | <u>TYPE</u>                        | <u>DESCRIPTION</u>   | <u>PU NO.</u> | <u>MANUFACTURER/<br/>MODEL</u>    | <u>DESIGN<br/>PRESSURE<br/>TEMPERATURE</u> | <u>COMMENTS</u>   |
|-------------------|-------------|------------------------------------|--|---------------|-----------------------------------|--|-------------------|
| ALC-V0116         | 3/4         | GLOBE-SW-40S                       | Drain Line on<br>Process Suction<br>Line                   |               |                                   | 150/120                                    |                   |
| ALC-V0117         | 3/4         | GLOBE-600#-SW-40S                  | Pressure Test<br>Connection Near<br>Suction of ALC-<br>P-1 |               | HANCOCK<br>CAT.# 5500W-1          | 150/120                                    |                   |
| ALC-V0118<br>-123 |             | No Longer in Use<br>(Unaccessible) |  |               |                                   |  | Located in Unit 1 |
| ALC-V0124         | 1           | GLOBE-600#-SW-40S                  | Filter ALC-F-1<br>Precoat Supply<br>Line                   |               | HANCOCK<br>CAT.# 5500W-1          | 150/120                                    |                   |
| ALC-V0125         | 3/4         | GLOBE-600#-SW-40S                  | Pressure Test<br>Connection On<br>Demin. Water<br>Header   |               | HANCOCK<br>CAT.# 5500W-1          | 150/120                                    |                   |
| ALC-V0126         | 3/4         | GLOBE-600#-SW-40S                  | Pressure Test<br>Connection On<br>Service Air<br>Header    |               | HANCOCK<br>CAT.# 5500W-1          | 150/120                                    |                   |
| ALC-V0127         | 3/4         | GLOBE-600#-SW-40S                  | Pressure Test<br>Connection On<br>Sump Pump<br>Discharge   |               | HANCOCK<br>CAT.# 5500W-1          | 150/120                                    |                   |
| ALC-V0128         | 3/4         | GLOBE-600#-SW-40S                  | Priming Vent<br>For ALC-P-5                                | 68817         | LADISH<br>CAT.# 7661-<br>2407-07A | 150/120                                    |                   |

AUXILIARY BUILDING EMERGENCY LIQUID CLEANUP  
SYSTEM (EPICOR II)

## VALVE LIST

| VALVE NO. | SIZE | TYPE               | DESCRIPTION  | PO NO. | MANUFACTURER/<br>MODEL            | DESIGN<br>PRESSURE<br>TEMPERATURE | COMMENTS                                   |
|-----------|------|--------------------|--|--------|-----------------------------------|-----------------------------------|--|
| ALC-V0129 | 3/4  | GLOBE-600#-SW-40S  | Priming Vent<br>For ALC-P-5                        | 68817  | LADISH<br>CAT.# 7661-<br>2407-07A | 150/120                           |  |
| ALC-V0130 | 3/4  | BALCHK-600#-SW-40S | Drain on One<br>Micron Filter                      | 69001  | OBERT<br>TYPE# 103                | 150/120                           |  |
| ALC-V0131 | 3/4  | BALCHK-600#-SW-40S | Drain on Suction<br>Line From CC-1-2<br>to ALC-P-5 | 69001  | OBERT<br>TYPE# 103                | 150/120                           |  |
| ALC-V0132 | 3/4  | GLOBE-600#-SW-40S  | Drain on Suction<br>Line From CC-1-2<br>to ALC-P-5 | 69001  | OBERT<br>TYPE# 103                | 150/120                           |  |
| ALC-V0133 | 3/4  | GLOBE-600#-SW-40S  | Spare Ins. Tap On<br>Suction for<br>ALC-P-5        | 69001  | OBERT<br>TYPE# 103                | 150/120                           |  |
| ALC-V0134 | 3/4  | GLOBE-600#-SW-40S  | Demin. Water to<br>ALC-P-5 Seals                   |        | HANCOCK<br>CAT.# 5500W-1          | 150/120                           |  |
| ALC-V0135 | 1    | PGPCHK-SCRF-40S    | Demin. Water to<br>ALC-P-5 Seals                   | 68819  | HUPRO<br>CAT.# B16C4-1            | 150/120                           |  |
| ALC-V0136 | 3/4  | SOLND-SCRD-40S     | Demin. Water to<br>ALC-P-5 Seals                   | B2188  | ASCO<br>CAT.# B21009              | 150/120                           | 2 Way Normally Closed<br>Energized to Open |
| ALC-V0137 | 2    | GLOBE-SW-40S       | Demin. Water to<br>Flush Line to<br>CC-1-2         |        |                                   | 150/120                           |  |
| ALC-V0138 | 2    | BALCHK-600#-SW-40S | Discharge Line<br>From CC-P-2A                     | 69001  | OBERT<br>TYPE# 50                 | 150/120                           |  |



AUXILIARY BUILDING EMERGENCY LIQUID CLEANUP  
SYSTEM (EPICOR II)

## VALVE LIST

| VALVE NO. | SIZE  | TYPE              | DESCRIPTION   | PO NO. | MANUFACTURER/<br>MODEL                  | DESIGN<br>PRESSURE<br>TEMPERATURE | COMMENTS                        |
|-----------|-------|-------------------|---|--------|---|-----------------------------------|---------------------------------|
| ALC-V0139 | 2     | GLOBE-600#-SW-40  | Service Air Header  |        | HANCOCK<br>CAT.# 5500H-1                | 150/120                           |                                 |
| ALC-V0140 | 2     | GLOBE-600#-SW-40S | Future Waste Supply Line  |        | HANCOCK<br>CAT.# 5500H-1                | 150/120                           |                                 |
| ALC-V0141 | 2     | GLOBE-600#-SW-40S | Future Waste Supply Line  |        | HANCOCK<br>CAT.# 5500H-1                | 150/120                           |                                 |
| ALC-V0142 | 2     | LIFCHK-SW-40S     | Demln. Water Supply Header  |        | VELAN<br>SERIAL # S-50-1                | 150/120                           |                                 |
| ALC-V0143 | 1 1/2 | RELIEF-SCRD-40S   | Demln. Water Supply Header  |        | J. E. LONERGAN<br>CORP. MODEL LOT<br>II | 150/120                           | Set Pressure at 150<br>P.S.I.G. |
| ALC-V0144 | 2     | GLOBE-600#-SW-40S | Demln. Water Supply Header<br>CC-T-2                                  |        | HANCOCK<br>CAT.# 5500H-1                | 150/120                           |                                 |
| ALC-V0145 | 2     | GLOBE-600#-SW-40S | Spare Plant Air/<br>EPICOR II Air<br>Sup. Calc-P-788<br>Isolation Va. |        | HANCOCK<br>CAT.# 5500H-1                | 150/120                           |                                 |
| ALC-V0146 | 1/2   | BALL-COM FTG      | Sample Line<br>From ALC-P-2   | 80492  | WHITEY<br>CAT.#<br>SS-4558              | 150/120                           |                                 |
| ALC-V0147 | 1/2   | BALL-COM FTG      | Sample Line<br>From ALC-P-3   | 80498  | WHITEY<br>CAT.#<br>SS-4558              | 150/120                           |                                 |

AUXILIARY BUILDING EMERGENCY LIQUID CLEANUP  
SYSTEM (EPICOR II)

VALVE LIST

| <u>VALVE NO.</u> | <u>SIZE</u> | <u>TYPE</u>   | <u>DESCRIPTION</u>          | <u>PO NO.</u> | <u>MANUFACTURER/<br/>MODEL</u> | <u>DESIGN<br/>PRESSURE<br/>TEMPERATURE</u> | <u>COMMENTS</u> |
|------------------|-------------|---------------|-----------------------------|---------------|--------------------------------|--|-----------------|
| ALC-V0148        | 1/2         | BALL-COM FTG  | Sample Line<br>From ALC-P-4 | 80498         | WHITEY<br>CAT.#<br>SS-45S8     | 150/120                                    |                 |
| ALC-V0149        | 1/2         | GLOBE-COM FTG | Grab Sample<br>From ALC-P-2 |               | HOKE<br>CAT.#<br>N2811Q8Y15    | 150/120                                    |                 |
| ALC-V0150        | 1/2         | GLOBE-COM FTG | Grab Sample<br>From ALC-P-3 |               | HOKE<br>CAT.#<br>N2811Q8Y15    | 150/120                                    |                 |
| ALC-V0151        | 1/2         | GLOBE-COM FTG | Grab Sample<br>From ALC-P-4 |               | HOKE<br>CAT.#<br>N2811Q8Y15    | 150/120                                    |                 |
| ALC-V0152        | 1/2         | GLOBE-COM FTG | Grab Sample<br>From ALC-P-5 |               | HOKE<br>CAT.#<br>N2811Q8Y15    | 150/120                                    |                 |
| ALC-V0153        | 1           | BALL-COM FTG  | Sample Recirc.<br>Line      | 80498         | WHITEY<br>CAT.#<br>SS-65F16    | 150/120                                    |                 |
| ALC-V0154        | 1/2         | BALL-COM FTG  | Grab Sample From<br>ALC-P-5 | 80498         | WHITEY<br>CAT.#<br>SS-45S8     | 150/120                                    |                 |
| ALC-V0155        | 1/2         | BALL-COM FTG  | Grab Sample From<br>ALC-P-4 | 80498         | WHITEY<br>CAT.#<br>SS-45S8     | 150/120                                    |                 |
| ALC-V0156        | 1/2         | BALL-COM FTG  | Grab Sample From<br>ALC-P-3 |               | WHITEY<br>CAT.#<br>SS-45S8     | 150/120                                    |                 |

AUXILIARY BUILDING EMERGENCY LIQUID CLEANUP  
SYSTEM (EPICOR II)

## VALVE LIST

| <u>VALVE NO.</u> | <u>SIZE</u> | <u>TYPE</u>       | <u>DESCRIPTION</u>                             | <u>PO NO.</u> | <u>MANUFACTURER/<br/>MODEL</u>    | <u>DESIGN<br/>PRESSURE<br/>TEMPERATURE</u> | <u>COMMENTS</u>                            |
|------------------|-------------|-------------------|--|---------------|-----------------------------------|--|--|
| ALC-V0157        | 1/2         | BALL-COM FTG      | Grab Sample From<br>ALC-P-2                    | 80498         | WHITEY<br>CAT.#<br>SS-4558        | 150/120                                    |  |
| ALC-V0158        | 3/4         | GLOBE-600#-SH-40S | Demin. Water to<br>Sample Sink Spray<br>Header | 68817         | LADISH<br>CAT.# 7661-<br>2407-07A | 150/120                                    |  |
| ALC-V0159        | 3/4         | GLOBE-600#-SH-40S | Demin. Water to<br>Sample Bottle<br>Wash Hose  | 68817         | LADISH<br>CAT.# 7661-<br>2407-07A | 150/120                                    |  |
| ALC-V0160        | 1/2         | LIFCHK-COM FTG    | Recirc. Line from<br>ALC-P-2                   | 80498         | WHITNEY<br>CAT.# SS-5858          | 150/120                                    |  |
| ALC-V0161        | 1/2         | LIFCHK-COM FTG    | Recirc. Line from<br>ALC-P-3                   | 80498         | WHITNEY<br>CAT.# SS-5858          | 150/120                                    |  |
| ALC-V0162        | 1/2         | LIFCHK-COM FTG    | Recirc. Line from<br>ALC-P-4                   | 80498         | WHITNEY<br>CAT.# SS-5858          | 150/120                                    |  |
| ALC-V0163        | 1/2         | SOLND SCRD        | Recirc. Line from<br>ALC-P-4                   | 80548         | ASCO<br>CAT.# 8210C94             | 150/120                                    | 2 Way Normally Closed<br>Energized to Open |
| ALC-V0164        | 1/2         | SOLND SCRD        | Sample Line from<br>ALC-P-4                    | 80548         | ASCO<br>CAT.# 8210C94             | 150/120                                    | 2 Way Normally Closed<br>Energized to Open |
| ALC-V0165        | 1/2         | SOLND SCRD        | Recirc. Line from<br>ALC-P-3                   | 80548         | ASCO<br>CAT.# 8210C94             | 150/120                                    | 2 Way Normally Closed<br>Energized to Open |
| ALC-V0166        | 1/2         | SOLND SCRD        | Sample Line from<br>ALC-P-3                    | 80548         | ASCO<br>CAT.# 8210C94             | 150/120                                    | 2 Way Normally Closed<br>Energized to Open |
| ALC-V0167        | 1/2         | SOLND SCRD        | Recirc. Line from<br>ALC-P-2                   | 80548         | ASCO<br>CAT.# 8210C94             | 150/120                                    | 2 Way Normally Closed<br>Energized to Open |

AUXILIARY BUILDING EMERGENCY LIQUID CLEANUP  
SYSTEM (EPICOR II)

VALVE LIST

| VALVE NO. | SIZE | TYPE              | DESCRIPTION   | PO NO. | MANUFACTURER/<br>MODEL            | DESIGN<br>PRESSURE<br>TEMPERATURE | COMMENTS                                   |
|-----------|------|-------------------|---|--------|-----------------------------------|-----------------------------------|--|
| ALC-V0168 | 1/2  | SOLND SCRD        | Sample Line From<br>ALC-P-2                         | 80548  | ASCO<br>CAT.# 8210C94             | 150/120                           | 2 Way Normally Closed<br>Energized to Open |
| ALC-V0169 | 2    | GLOBE-600#-SH-40S | Clean Water Dis-<br>charge to Unit #1               |        | POWEL<br>FIG.# 2474               | 150/120                           |  |
| ALC-V0170 | 2    | GLOBE-600#-SH-40S | Clean Water Dis-<br>charge to Unit #2               |        | NEWCO<br>CAT.# 28TF32             | 150/120                           |  |
| ALC-V0171 | 3/4  | GLOBE-600#-SH-40S | Clean Water Dis-<br>charge to Unit #2<br>Drain Line | 68817  | LADISH<br>CAT.# 7661-<br>2407-07A | 150/120                           |  |
| ALC-V0172 | 3/4  | GLOBE-SH-40S      | Clean Water Dis-<br>charge to Unit #2<br>Vent Line  |        |                                   | 150/120                           |  |
| ALC-V0173 | 3/4  | GLOBE-SH-40S      | Clean Water Dis-<br>charge to Unit #2<br>Drain Line |        |                                   | 150/120                           |  |
| ALC-V0174 | 3/4  | GLOBE-600#-SH-40S | Cask Overflow<br>Loop Seal Leveling<br>Line         | 68817  | LADISH<br>CAT.# 7661-<br>2407-07A | 150/120                           |  |
| ALC-V0175 | 3/4  | GLOBE-600#-SH-40S | Cask Overflow<br>Loop Seal Fill<br>Line             | 68817  | LADISH<br>CAT.# 7661-<br>2407-07A | 150/120                           |  |
| ALC-V0176 | 3/4  | GLOBE-600#-SH-40  | Oiled Air Line<br>For ALC-P-6                       |        | HENRY VOGT<br>DWG.#<br>E44244-R11 | 150/120                           |  |
| ALC-V0177 | 1/2  | POPCHK-COM FTG    | Sample Line From<br>ALC-P-2                         | 82033  | NUPRO<br>CAT.#<br>SS-8C-1/3       | 150/120                           |  |

AUXILIARY BUILDING EMERGENCY LIQUID CLEANUP  
SYSTEM (EPICOR II)

VALVE LIST

| <u>VALVE NO.</u> | <u>SIZE</u> | <u>TYPE</u>    | <u>DESCRIPTION</u>               | <u>PO NO.</u> | <u>MANUFACTURER/<br/>MODEL</u>                  | <u>DESIGN<br/>PRESSURE<br/>TEMPERATURE</u> | <u>COMMENTS</u>     |
|------------------|-------------|----------------|----------------------------------|---------------|---|--|---------------------|
| ALC-V0176        | 1/2         | POPCHK-COM FTG | Sample Line From<br>ALC-P-3      | 82033         | HUPRO<br>CAT.#<br>SS-8C-1/3                     | 150/120                                    |                     |
| ALC-V0179        | 1/2         | POPCHK-COM FTG | Sample Line From<br>ALC-P-4      | 82033         | HUPRO<br>CAT.#<br>SS-8C-1/3                     | 150/120                                    |                     |
| ALC-V0180        | 2           | BALL SCRD      | Process Inlet To<br>Pump ALC-P-1 |               | JAMESBURY<br>TYPE 1000<br>FIG. NO.<br>11-1100TT | /  | Supplied by CAP-GUN |
| ALC-V0181        | 3/4         | BALL SCRD      | Service Air To<br>Pump ALC-P-1   |               | JAMESBURY<br>TYPE 1000<br>FIG. NO.<br>11-1100TT | /  | Supplied by CAP-GUN |
| ALC-V0182        | 3/4         | BALL SCRD      | Demin. Water To<br>Pump ALC-P-1  |               | JAMESBURY<br>TYPE 1000<br>FIG. NO.<br>11-1100TT | /  | Supplied by CAP-GUN |
| ALC-V0183        | 3/4         | BALL SCRD      | Service Air To<br>Pump ALC-P-1   |               | JAMESBURY<br>TYPE 1000<br>FIG. NO.<br>11-1100TT | /  | Supplied by CAP-GUN |
| ALC-V0184        | 3/4         | BALL SCRD      | Demin. Water To<br>Pump ALC-P-1  |               | JAMESBURY<br>TYPE 1000<br>FIG. NO.<br>11-1100TT | /  | Supplied by CAP-GUN |

AUXILIARY BUILDING EMERGENCY LIQUID CLEANUP  
SYSTEM (EPICOR II)

## VALVE LIST

| <u>VALVE NO.</u> | <u>SIZE</u> | <u>TYPE</u> | <u>DESCRIPTION</u>                               | <u>PO NO.</u> | <u>MANUFACTURER/<br/>MODEL</u>                  | <u>DESIGN<br/>PRESSURE<br/>TEMPERATURE</u> | <u>COMMENTS</u>                                      |
|------------------|-------------|-------------|--|---------------|---|--|--|
| ALC-V0185        | 3/4         | SOLND SCRD  | Oiled Air To<br>Pump ALC-P-1                     |               | ASCO.<br>CAT. NO.<br>8210D95                    | /  | Supplied by CAP-GUN                                  |
| ALC-V0186        | 3/4         | BALL SCRD   | Oiled Air to<br>Pump ALC-P-1                     |               | JAMESBURY<br>TYPE 1000<br>FIG. NO.<br>11-1100TT | /  | Supplied by CAP-GUN                                  |
| ALC-V0187        | 3/4         | ANGLE SCRD  | Oiled Air to<br>Pump ALC-P-1                     |               | HARREN RUPP<br>CO., PART #<br>893-048-162       | /  | Supplied by Mfr. of<br>Pump ALC-P-1 (Harren<br>Rupp) |
| ALC-V0188        | 3/4         | BALL SCRD   | Service Air to<br>Pump ALC-P-1                   |               | JAMESBURY<br>TYPE 1000<br>FIG. NO.<br>11-1100TT | /  | Supplied by CAP-GUN                                  |
| ALC-V0189        | 3/4         | BALL SCRD   | Sample Point Va.<br>On Outlet of Pump<br>ALC-P-1 |               | JAMESBURY<br>TYPE 1000<br>FIG. NO.<br>11-1100TT | /  | Supplied by CAP-GUN<br>This Sample Point<br>Not Used |
| ALC-V0190        | 3/4         | BALL SCRD   | Demin. Water to<br>Pump ALC-P-1                  |               | JAMESBURY<br>TYPE 1000<br>FIG. NO.<br>11-1100TT | /  | Supplied by CAP-GUN                                  |
| ALC-V0191        | 1           | BALL SCRD   | Process Outlet<br>From Pump ALC-P-1              |               | JAMESBURY<br>TYPE 1000<br>FIG. NO.<br>11-1100TT |  | Supplied by CAP-GUN                                  |



AUXILIARY BUILDING EMERGENCY LIQUID CLEANUP  
SYSTEM (EPICOR II)

## VALVE LIST

| VALVE NO. | SIZE | TYPE      | DESCRIPTION                      | PO NO. | MANUFACTURER/<br>MODEL                          | DESIGN<br>PRESSURE<br>TEMPERATURE | COMMENTS            |
|-----------|------|-----------|----------------------------------|--------|---|-----------------------------------|---------------------|
| ALC-V0192 | 3/4  | BALL SCRD | Service Air to<br>Pump ALC-P-1   |        | JAMESBURY<br>TYPE 1000<br>FIG. NO.<br>11-1100TT |                                   | Supplied by CAP-GUN |
| ALC-V0193 | 3/4  | BALL SCRD | Demin. Water to<br>Pump ALC-P-1  |        | JAMESBURY<br>TYPE 1000<br>FIG. NO.<br>11-1100TT |                                   | Supplied by CAP-GUN |
| ALC-V0194 | 2    | BALL SCRD | Process Inlet To<br>Pump ALC-P-2 |        | JAMESBURY<br>TYPE 1000<br>FIG. NO.<br>11-1100TT |                                   | Supplied by CAP-GUN |
| ALC-V0195 | 3/4  | BALL SCRD | Demin. Water To<br>Pump ALC-P-2  |        | JAMESBURY<br>TYPE 1000<br>FIG. NO.<br>11-1100TT |                                   | Supplied by CAP-GUN |
| ALC-V0196 | 3/4  | BALL SCRD | Service Air To<br>Pump ALC-P-2   |        | JAMESBURY<br>TYPE 1000<br>FIG. NO.<br>11-1100TT |                                   | Supplied by CAP-GUN |
| ALC-V0197 | 3/4  | BALL SCRD | Service Air To<br>Pump ALC-P-2   |        | JAMESBURY<br>TYPE 1000<br>FIG. NO.<br>11-1100TT |                                   | Supplied by CAP-GUN |
| ALC-V0198 | 3/4  | BALL SCRD | Service Air To<br>Pump ALC-P-2   |        | JAMESBURY<br>TYPE 1000<br>FIG. NO.<br>11-1100TT |                                   | Supplied by CAP-GUN |

AUXILIARY BUILDING EMERGENCY LIQUID CLEANUP  
SYSTEM (EPICOR II)

## VALVE LIST

| VALVE NO. | SIZE | TYPE        | DESCRIPTION                         | PO NO. | MANUFACTURER/<br>MODEL                          | DESIGN<br>PRESSURE<br>TEMPERATURE | COMMENTS   |
|-----------|------|-------------|-------------------------------------|--------|---|-----------------------------------|--|
| ALC-V0199 | 3/4  | SOLEND SCRD | Oiled Air To<br>Pump ALC-P-2        |        | ASCO<br>CAT. NO.<br>B210D95                     |                                   | Supplied by CAP-GUN                                  |
| ALC-V0200 | 3/4  | ANGLE SCRD  | Oiled Air To<br>Pump ALC-P-2        |        | HARREN RUPP<br>CO., PART #<br>893-043-162       |                                   | Supplied by Mfr. of<br>Pump ALC-P-2 (Harren<br>Rupp) |
| ALC-V0201 | 2    | BALL SCRD   | Process Supply<br>From Pump ALC-P-2 |        | JAMESBURY<br>TYPE 1000<br>FIG. NO.<br>11-110011 |                                   | Supplied by CAP-GUN                                  |
| ALC-V0202 | 3/4  | BALL SCRD   | Demin. Water To<br>Pump ALC-P-2     |        | JAMESBURY<br>TYPE 1000<br>FIG. NO.<br>11-110011 |                                   | Supplied by CAP-GUN                                  |
| ALC-V0203 |      |             | Deleted                             |        |   |                                   |  |
| ALC-V0204 | 3/4  | BALL SCRD   | Service Air To<br>Pump ALC-P-2      |        | JAMESBURY<br>TYPE 1000<br>FIG. NO.<br>11-110011 |                                   | Supplied by CAP-GUN                                  |
| ALC-V0205 | 3/4  | BALL SCRD   | Demin. Water To<br>Pump ALC-P-2     |        | JAMESBURY<br>TYPE 1000<br>FIG. NO.<br>11-110011 |                                   | Supplied by CAP-GUN                                  |
| ALC-V0206 | 3/4  | BALL SCRD   | Service Air To<br>Pump ALC-P-2      |        | JAMESBURY<br>TYPE 1000<br>FIG. NO.<br>11-110011 |                                   | Supplied by CAP-GUN                                  |

AUXILIARY BUILDING EMERGENCY LIQUID CLEANUP  
SYSTEM (EPICOR II)

## VALVE LIST

| <u>VALVE NO.</u> | <u>SIZE</u> | <u>TYPE</u> | <u>DESCRIPTION</u>               | <u>PO NO.</u> | <u>MANUFACTURER/<br/>MODEL</u>                  | <u>DESIGN<br/>PRESSURE<br/>TEMPERATURE</u> | <u>COMMENTS</u>     |
|------------------|-------------|-------------|----------------------------------|---------------|---|--|---------------------|
| ALC-V0207        | 2           | BALL SCRD   | Process Supply<br>To ALC-F-1     |               | JAMESBURY<br>TYPE 1000<br>FIG. NO.<br>11-1100TT |  | Supplied by CAP-GUN |
| ALC-V0208        | 2           | BALL SCRD   | Process Supply<br>To ALC-F-1     |               | JAMESBURY<br>TYPE 1000<br>FIG. NO.<br>11-1100TT |  | Supplied by CAP-GUN |
| ALC-V0209        | 2           | BALL SCRD   | Process Supply<br>To ALC-K-1     |               | JAMESBURY<br>TYPE 1000<br>FIG. NO.<br>11-1100TT |  | Supplied by CAP-GUN |
| ALC-V0210        | 2           | BALL SCRD   | Process Supply<br>To ALC-K-1     |               | JAMESBURY<br>TYPE 1000<br>FIG. NO.<br>11-1100TT |  | Supplied by CAP-GUN |
| ALC-V0211        | 2           | BALL SCRD   | Process Supply<br>To ALC-K-2     |               | JAMESBURY<br>TYPE 1000<br>FIG. NO.<br>11-1100TT |  | Supplied by CAP-GUN |
| ALC-V0212        | 2           | BALL SCRD   | Process Supply<br>To ALC-K-2     |               | JAMESBURY<br>TYPE 1000<br>FIG. NO.<br>11-1100TT |  | Supplied by CAP-GUN |
| ALC-V0213        | 2           | BALL SCRD   | Process Inlet<br>To Pump ALC-P-3 |               | JAMESBURY<br>TYPE 1000<br>FIG. NO.<br>11-1100TT |  | Supplied by CAP-GUN |

AUXILIARY BUILDING EMERGENCY LIQUID CLEANUP  
SYSTEM (EPICOR II)

## VALVE LIST

| <u>VALVE NO.</u> | <u>SIZE</u> | <u>TYPE</u> | <u>DESCRIPTION</u>              | <u>PO NO.</u> | <u>MANUFACTURER/<br/>MODEL</u>                  | <u>DESIGN<br/>PRESSURE<br/>TEMPERATURE</u> | <u>COMMENTS</u>                                      |
|------------------|-------------|-------------|---------------------------------|---------------|---|--|--|
| ALC-V0214        | 3/4         | BALL SCRD   | Demin. Water To<br>Pump ALC-P-3 |               | JAMESBURY<br>TYPE 1000<br>FIG. NO.<br>11-110011 |  | Supplied by CAP-GUN                                  |
| ALC-V0215        | 3/4         | BALL SCRD   | Service Air To<br>Pump ALC-P-3  |               | JAMESBURY<br>TYPE 1000<br>FIG. NO.<br>11-110011 |  | Supplied by CAP-GUN                                  |
| ALC-V0216        | 3/4         | BALL SCRD   | Demin. Water To<br>Pump ALC-P-3 |               | JAMESBURY<br>TYPE 1000<br>FIG. NO.<br>11-110011 |  | Supplied by CAP-GUN                                  |
| ALC-V0217        | 3/4         | BALL SCRD   | Service Air To<br>Pump ALC-P-3  |               | JAMESBURY<br>TYPE 1000<br>FIG. NO.<br>11-110011 |  | Supplied by CAP-GUN                                  |
| ALC-V0218        | 3/4         | SOLND SCRD  | Oiled Air To<br>Pump ALC-P-3    |               | ASCO.<br>CAT. NO.<br>8210D95                    |  | Supplied by CAP-GUN                                  |
| ALC-V0219        | 3/4         | ANGLE SCRD  | Oiled Air To<br>Pump ALC-P-3    |               | WARREN RUPP<br>CO. PART #<br>893-048-162        |  | Supplied by Mfr. of<br>Pump ALC-P-3 (Warren<br>Rupp) |
| ALC-V0220        | 3/4         | BALL SCRD   | Oiled Air To<br>Pump ALC-P-3    |               | JAMESBURY<br>TYPE 1000<br>FIG. NO.<br>11-110011 |  | Supplied by CAP-GUN                                  |

AUXILIARY BUILDING EMERGENCY LIQUID CLEANUP  
SYSTEM (EPICOR II)

## VALVE LIST

| VALVE NO. | SIZE | TYPE      | DESCRIPTION                                      | PO NO. | MANUFACTURER/<br>MODEL                          | DESIGN<br>PRESSURE<br>TEMPERATURE | COMMENTS            |
|-----------|------|-----------|--|--------|---|-----------------------------------|---------------------|
| ALC-V0221 | 3/4  | BALL SCRD | Demln. Water To<br>Pump ALC-P-3                  |        | JAMESBURY<br>TYPE 1000<br>FIG. NO.<br>11-1100TT |                                   | Supplied by CAP-GUN |
| ALC-V0222 | 3/4  | BALL SCRD | Service Air To<br>Pump ALC-P-3                   |        | JAMESBURY<br>TYPE 1000<br>FIG. NO.<br>11-1100TT |                                   | Supplied by CAP-GUN |
| ALC-V0223 | 3/4  | BALL SCRD | Demln. Water To<br>Pump ALC-P-3                  |        | JAMESBURY<br>TYPE 1000<br>FIG. NO.<br>11-1100TT |                                   | Supplied by CAP-GUN |
| ALC-V0224 | 3/4  | BALL SCRD | Sample Point Va.<br>on Outlet of Pump<br>ALC-P-3 |        | JAMESBURY<br>TYPE 1000<br>FIG. NO.<br>11-1100TT |                                   | Supplied by CAP-GUN |
| ALC-V0225 | 3/4  | BALL SCRD | Service Air to<br>Pump ALC-P-3                   |        | JAMESBURY<br>TYPE 1000<br>FIG. NO.<br>11-1100TT |                                   | Supplied by CAP-GUN |
| ALC-V0226 | 2    | BALL SCRD | Process Outlet<br>From Pump ALC-P-3              |        | JAMESBURY<br>TYPE 1000<br>FIG. NO.<br>11-1100TT |                                   | Supplied by CAP-GUN |
| ALC-V0227 | 2    | BALL SCRD | Process Inlet<br>To Pump ALC-P-4                 |        | JAMESBURY<br>TYPE 1000<br>FIG. NO.<br>11-1100TT |                                   | Supplied by CAP-GUN |

AUXILIARY BUILDING EMERGENCY LIQUID CLEANUP  
SYSTEM (EPICOR II)

## VALVE LIST

| VALVE NO. | SIZE | TYPE       | DESCRIPTION                     | PO NO. | MANUFACTURER/<br>MODEL                          | DESIGN<br>PRESSURE<br>TEMPERATURE | COMMENTS   |
|-----------|------|------------|---------------------------------|--------|---|-----------------------------------|--|
| ALC-V0228 | 3/4  | BALL SCRD  | Demin. Water To<br>Pump ALC-P-4 |        | JAMESBURY<br>TYPE 1000<br>FIG. NO.<br>11-1100TT |                                   | Supplied by CAP-GUN.                                 |
| ALC-V0229 | 3/4  | BALL SCRD  | Service Air To<br>Pump ALC-P-4  |        | JAMESBURY<br>TYPE 1000<br>FIG. NO.<br>11-1100TT |                                   | Supplied by CAP-GUN                                  |
| ALC-V0230 | 3/4  | BALL SCRD  | Demin. Water To<br>Pump ALC-P-4 |        | JAMESBURY<br>TYPE 1000<br>FIG. NO.<br>11-1100TT |                                   | Supplied by CAP-GUN                                  |
| ALC-V0231 | 3/4  | BALL SCRD  | Service Air To<br>Pump ALC-P-4  |        | JAMESBURY<br>TYPE 1000<br>FIG. NO.<br>11-1100TT |                                   | Supplied by CAP-GUN                                  |
| ALC-V0232 | 3/4  | SOLID SCRD | Oiled Air To<br>Pump ALC-P-4    |        | ASCO<br>CAT. NO.<br>8210D95                     |                                   | Supplied by CAP-GUN                                  |
| ALC-V0233 | 3/4  | BALL SCRD  | Oiled Air To<br>Pump ALC-P-4    |        | JAMESBURY<br>TYPE 1000<br>FIG. NO.<br>11-1100TT |                                   | Supplied by CAP-GUN                                  |
| ALC-V0234 | 3/4  | BALL SCRD  | Oiled Air To<br>Pump ALC-P-4    |        | WARREN RUFP<br>CO., PART #<br>893-048-162       |                                   | Supplied by Mfr. of<br>pump ALC-P-4<br>(Warren Rupp) |



AUXILIARY BUILDING EMERGENCY LIQUID CLEANUP  
SYSTEM (EPICOR II)

VALVE LIST

| VALVE NO. | SIZE | TYPE      | DESCRIPTION                                      | PO NO. | MANUFACTURER/<br>MODEL                          | DESIGN<br>PRESSURE<br>TEMPERATURE | COMMENTS            |
|-----------|------|-----------|--|--------|---|-----------------------------------|---------------------|
| ALC-V0235 | 3/4  | BALL SCRD | Demin. Water To<br>Pump ALC-P-4                  |        | JAMESBURY<br>TYPE 1000<br>FIG. NO.<br>11-1100TT |                                   | Supplied by CAP-GUN |
| ALC-V0236 | 3/4  | BALL SCRD | Service Air To<br>Pump ALC-P-4                   |        | JAMESBURY<br>TYPE 1000<br>FIG. NO.<br>11-1100TT |                                   | Supplied by CAP-GUN |
| ALC-V0237 | 3/4  | BALL SCRD | Demin. Water To<br>Pump ALC-P-4                  |        | JAMESBURY<br>TYPE 1000<br>FIG. NO.<br>11-1100TT |                                   | Supplied by CAP-GUN |
| ALC-V0238 | 3/4  | BALL SCRD | Sample Point Va.<br>On Outlet Of Pump<br>ALC-P-4 |        | JAMESBURY<br>TYPE 1000<br>FIG. NO.<br>11-1100TT |                                   | Supplied by CAP-GUN |
| ALC-V0239 | 3/4  | BALL SCRD | Service Air to<br>Pump ALC-P-4                   |        | JAMESBURY<br>TYPE 1000<br>FIG. NO.<br>11-1100TT |                                   | Supplied by CAP-GUN |
| ALC-V0240 | 3/4  | BALL SCRD | Process Outlet<br>From Pump ALC-P-4              |        | JAMESBURY<br>TYPE 1000<br>FIG. NO.<br>11-1100TT |                                   | Supplied by CAP-GUN |
| ALC-V0241 | 3/4  | BALL SCRD | Oiled Air To<br>Pump ALC-P-2                     |        | JAMESBURY<br>TYPE 1000<br>FIG. NO.<br>11-1100TT |                                   | Supplied by CAP-GUN |

AUXILIARY BUILDING EMERGENCY LIQUID CLEANUP  
SYSTEM (EPICOR 11)

## VALVE LIST

| VALVE NO.         | SIZE | TYPE                          | DESCRIPTION  | PO NO. | MANUFACTURER/<br>MODEL                | DESIGN<br>PRESSURE<br>TEMPERATURE | COMMENTS                                   |
|-------------------|------|-------------------------------|--|--------|---------------------------------------|-----------------------------------|--|
| ALC-V0242         | 2    | AIR OPERATED BALL<br>SCRD-40S | Discharge from<br>Tank CC-T-1                      |        | HILLS-McCAHNA<br>FIG.<br>S302-56-1-S6 | 150/120                           | 2 Way Normally Closed<br>Energized To Open |
| ALC-V0243-<br>249 |      |                               | DELETED  |        |                                       |                                   |  |
| ALC-V0250         | 2    | GLOBE-SW-40                   | Discharge Line<br>From Compressor<br>ALC-P-7       |        | HENRY VOGT<br>DWG. #<br>E-44248-R6    | 150/120                           |  |
| ALC-V0251         | 2    | GLOBE-SW-40                   | Discharge Line<br>From Compressor<br>ALC-P-8       |        | HENRY VOGT<br>DWG. #<br>E-44248-R5    | 150/120                           |  |
| ALC-V0252         | 3/4  | GLOBE-SW-40                   | Air Supply Line<br>From ALC-P-7 &<br>ALC-P-8 Drain | Stock  | HANCOCK<br>CAT. #<br>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<br>Priming Vent Line               |        |                                       | 150/120                           |  |
| ALC-V0255         | 2    | AIR OPERATED BALL<br>SCRD-40S | Process Supply<br>Line to Prefilter<br>ALC-F-1     |        | HILLS-McCAHNA<br>FIG.<br>S302-56-T-S6 | 150/120                           | 2 Way Normally Closed<br>Energized to Open |
| ALC-V0256         | 2    | CHECK                         | Sump to ALC-P-1<br>Suction                         |        |                                       |                                   |  |
| ALC-V0257         | 2    | GLOBE                         | Sump to ALC-P-1<br>Suction                         |        |                                       |                                   |  |
| ALC-V0258         |      | GATE                          | EPICOR to spent<br>Fuel Pool 'B'                   |        |                                       |                                   | Located in Unit 1                          |

AUXILIARY BUILDING EMERGENCY LIQUID CLEANUP  
SYSTEM (EPICOR II)

## VALVE LIST

| VALVE NO. | SIZE | TYPE               | DESCRIPTION                      | PO NO. | MANUFACTURER/<br>MODEL | DESIGN<br>PRESSURE<br>TEMPERATURE | COMMENTS                     |
|-----------|------|--------------------|----------------------------------|--------|------------------------|-----------------------------------|------------------------------|
| ALC-V0259 |      | GATE               | EPICOR to spent<br>Fuel Pool 'B' |        |                        |                                   | Located in Unit 1            |
| ALC-V0260 | 3/4  | GLOBE              | ALC-P-1 Air Supply<br>Throttle   |        |                        |                                   | Motor Operated               |
| ALC-V0261 | 3/4  | GLOBE              | ALC-P-2 Air Supply<br>Throttle   |        |                        |                                   | Motor Operated               |
| ALC-V0262 | 3/4  | GLOBE              | ALC-P-3 Air Supply<br>Throttle   |        |                        |                                   | Motor Operated               |
| ALC-V0263 | 3/4  | GLOBE              | ALC-P-4 Air Supply<br>Throttle   |        |                        |                                   | Motor Operated               |
| ALC-V0264 | 1/2  | NEEDLE             | ALC-F-1 Bubbler<br>Air Isolation |        |                        |                                   |                              |
| ALC-V0265 | 1/2  | NEEDLE             | ALC-K-1 Bubbler<br>Air Isolation |        |                        |                                   |                              |
| ALC-V0266 | 1/2  | NEEDLE             | ALC-K-2 Bubbler<br>Air Isolation |        |                        |                                   |                              |
| ALC-V0267 | 3/8  | NEEDLE             | Bubbler Air<br>Isolation         |        |                        |                                   |                              |
| ALC-V0268 | 1/2  | PRESSURE REGULATOR | ALC-F-1 Bubbler<br>Regulator     |        |                        |                                   | Self Contained<br>(Int. Tap) |
| ALC-V0269 | 1/2  | PRESSURE REGULATOR | ALC-K-1 Bubbler<br>Regulator     |        |                        |                                   | Self Contained<br>(Int. Tap) |

AUXILIARY BUILDING EMERGENCY LIQUID CLEANUP  
SYSTEM (EPICOR II)

## VALVE LIST

| VALVE NO. | SIZE | TYPE               | DESCRIPTION                                   | PO NO. | MANUFACTURER/<br>MODEL | DESIGN<br>PRESSURE<br>TEMPERATURE | COMMENTS                     |
|-----------|------|--------------------|---|--------|------------------------|-----------------------------------|------------------------------|
| ALC-V0270 | 1/2  | PRESSURE REGULATOR | ALC-K-2 Bubbler<br>Regulator                  |        |                        |                                   | Self Contained<br>(Int. Tap) |
| ALC-V0271 | 1    | CHECK              | Service Air to<br>Bubblers/ALC-V-255          |        |                        |                                   |                              |
| ALC-V0272 | 3/8  | GLOBE              | Service Air to<br>Bubblers/ALC-V-255          |        |                        |                                   |                              |
| ALC-V0273 | 2    | GLOBE              | Sump to ALC-P-1<br>Suction Isolation          |        |                        |                                   |                              |
| ALC-V0274 | 3/4  | GLOBE              | Sump to ALC-P-1<br>Suction Drain              |        |                        |                                   |                              |
| ALC-V0275 | 3/8  | NEEDLE             | Air to ALC-V-242<br>Isolation                 |        |                        |                                   |                              |
| ALC-V0276 | 2    | GLOBE              | Sump to ALC-P-1<br>Suction Final<br>Isolation |        |                        |                                   |                              |
| ALC-V0277 | 2    | GLOBE              | ALC-P-4 Discharge                             |        |                        |                                   |                              |
| ALC-V0278 | 1    | GLOBE              | ALC-F-1 Shield<br>Drain                       |        |                        |                                   |                              |
| ALC-V0279 | 1    | GLOBE              | ALC-K-1 Shield<br>Drain                       |        |                        |                                   |                              |
| ALC-V0280 | 1    | GLOBE              | ALC-K-2 Shield<br>Drain                       |        |                        |                                   |                              |
| ALC-V0281 |      |                    | Deleted                                       |        |                        |                                   |                              |

AUXILIARY BUILDING EMERGENCY LIQUID CLEANUP  
SYSTEM (EPICOR 11)

## VALVE LIST

| <u>VALVE NO.</u> | <u>SIZE</u> | <u>TYPE</u> | <u>DESCRIPTION</u>                | <u>PO NO.</u> | <u>MANUFACTURER/<br/>MODEL</u> | <u>DESIGN<br/>PRESSURE<br/>TEMPERATURE</u> | <u>COMMENTS</u> |
|------------------|-------------|-------------|-----------------------------------|---------------|--------------------------------|--|-----------------|
| ALC-V0282        |             |             | Deleted                           |               |                                |  |                 |
| ALC-V0283        |             |             | Deleted                           |               |                                |  |                 |
| ALC-V0284        | 3/4         | GLOBE       | ALC-P-6 Discharge<br>to ALC-P-2   |               |                                |  |                 |
| ALC-V0285        | 3/4         | GLOBE       | ALC-P-6 Discharge<br>to ALC-P-3   |               |                                |  |                 |
| ALC-V0286        | 2           | GLOBE       | CC-1-2 Process<br>Inlet Isolation |               |                                |  |                 |
| ALC-V0287        | 2           | BALL        | MMHT Process<br>Isolation         |               |                                |  |                 |

TABLE 16  
EPICOR II  
RADWASTE PROCESSING SYSTEM  
(HIC POLISHING MODE)

- OVERALL OBJECTIVES:
- (a) Polish Influent water sufficiently to satisfy tech. spec. criteria.
  - (b) Process water at 10 GPM.
  - (c) Minimize personnel exposure.
  - (d) Process water at the lowest possible cost.

SPECIFIC OBJECTIVES:

| <u>Container</u> | <u>Vessel Size</u>          | <u>Primary Purpose</u>                        | <u>Composition</u>             | <u>Process Vessel Contact Radiation Level Changeout Criteria</u> | <u>Gallons Processed to Reach Changeout Criteria</u> | <u>Projected Shipping Category</u> |
|------------------|-----------------------------|---|--------------------------------|--|--|------------------------------------|
| #1 First Demin.  | 4'D x 4'H<br>(HIC)          | Cesium & Strontium Removal                    | Zeolite (top)<br>Sand (bottom) | < 300 Ci   | dependent on feed                                    | < Class C                          |
| #2 Second Demin. | 6'D x 6'H                   | Na Removal<br>Cation Removal<br>Anion Removal | Cation (top)<br>Anion (bottom) | < 1uCi/cc  | 25,000   | LSA                                |
| #3 Third Demin.  |                             | Polishing<br>Guard Bed                        | Mixed Resin                    | < 1 R/Hr   | 200,000  | LSA                                |
| #4 Strainer      | 2'H x 1 1/2'W x<br>1 1/2' L | Catch Resin Fines                             | Strainer                       | < 1 R/Hr   | 200,000  | LSA                                |
| #5 Post Filter   | 2' x 1 1/2' x 1 1/2'        | Celloid Removal                               | 1 Micron Cartridge             | < 1 R/Hr   | 150,000  | LSA                                |