ATTACHMENT 1

PROPOSED TECHNICAL SPECIFICATION CHANGES

5. Two service water flowpaths to the charging pump service water subsystem are operable.

6. Two service water flowpaths to the recirculation spray subsystems are operable.

B. The requirements of Specification 3.14.A.4 may be modified to allow one Emergency Service Water pump to remain inoperable for a period not to exceed 7 days. If this pump is not operable in 7 days, then place both units in Hot Shutdown within the next 6 hours and Cold Shutdown within the next 30 hours.

The requirements of 3.14.A.4 may be modified to have two Emergency Service Water pumps operable with one unit in Cold Shutdown with combined Spent Fuel pit and shutdown unit decay heat loads of 25 million BTU/HR or less. One of the two remaining pumps may be inoperable for a period not to exceed 7 days. If this pump is not operable in 7 days, then place the operating unit in Hot Shutdown within the next 6 hours and Cold Shutdown within the next 30 hours.

C. There shall be an operating service water flow path to and from one operating main control and emergency switchgear rooms air conditioning condenser and at least one operable service water flow path to and from at least one operable main control and emergency switchgear rooms air conditioning condenser whenever fuel is loaded in reactor core. Refer to Section 3.23.C for air conditioning system operability requirements above cold shutdown.

1.* A service water supply line can be removed from service for 24 hours as part of the Service Water System upgrades** provided that a temporary service water supply line, with sufficient capacity

* Action Statement 3.14.C.1 will expire on March 31, 1990.

** The Service Water System upgrades include the replacement of the two (2) existing six inch fiberglass supply lines (line numbers - 6"-WS-42-136 and 6"-WS-151-136) with three eight inch copper-nickel lines. The action statement will only be used to perform the necessary service water tie-ins. The temporary supply line will be maintained under administrative control when placed in service.

to provide full flow to one control room and emergency switchgear room chiller service water pump, is placed into service prior to removing the line from service. If the temporary line or the operating line becomes inoperable during the 24 hour time period, the provisions of Section 3.0.1 shall apply.

D. The requirements of Specifications A-5 and A-6 may be modified to allow unit operation with only one operable flow path to the charging pump service water subsystem and to the recirculation spray subsystems. If the affected systems are not restored to the requirements of Specifications A-5 and A-6 within 24 hours,

ATTACHMENT 2

DISCUSSION AND SIGNIFICANT HAZARDS CONSIDERATION EVALUATION

TECHNICAL SPECIFICATION CHANGE REQUEST
SURRY POWER STATION - UNITS 1 AND 2
24-HOUR SERVICE WATER ACTION STATEMENT
TEMPORARY SERVICE WATER SUPPLY LINE

1.0 BACKGROUND

Service water for Surry Units 1 and 2 is supplied from the main circulating water systems upstream of the 96-inch isolation valves at the condensers on each unit. Service water is provided to various components by gravity flow due to the elevation difference between the intake canal and the discharge canal, and in some cases is assisted by in-line pumps. Equipment and systems cooled by service water include the recirculation spray heat exchangers, component cooling heat exchangers, bearing cooling heat exchangers, control room air conditioning chiller condensers, charging pump service water subsystems, and various other heat loads. Service water to the charging pump service water subsystems and the control and relay room air conditioning chiller condensers is supplied by two six-inch fiberglass lines, one from each unit. Each of these lines, 6"-WS-42-136 (Unit 1) and 6"-WS-151-136 (Unit 2), is buried under the turbine building floor and is classified as nuclear safety related. These six-inch lines are used to provide cooling water to the charging pump lube oil coolers and intermediate seal coolers as well as the three control room air conditioning chiller units.

The existing six-inch piping is susceptible to silting and biological fouling, causing reduced suction pressure at the inlet of the charging pump service water pumps. This buildup of sediment and biological products has required cleaning of the fiberglass pipe to maintain adequate pump suction conditions. The method of cleaning has utilized high pressure water (hydrolasing) which has caused internal erosion in the fiberglass piping. The existing fiberglass piping layout also makes cleaning using this method difficult due to its arrangement and length as well as the lack of access points for cleaning equipment. Following a hydrolaser cleaning in early 1987, the Unit 2 service water pipe was replaced when through wall leakage was detected. Since both lines must remain operable to allow power operation of either unit and since periodic cleaning is required, the present piping system needs improvement.

To resolve the above concerns a Design Change Package was prepared to replace the six-inch fiberglass piping with larger diameter metallic piping. A third supply line was also included as part of this design change to provide operating flexibility through the use of a spare line during periodic cleaning.

Implementation of the above design improvements will require that one of the existing six-inch fiberglass lines be taken out of service in order to make tie-ins for the new system piping. Implementation also requires use of the action statements allowed by Technical Specifications 3.23.C and the new proposed temporary action statement 3.14.C.1 (see discussion of Technical Specifications in Section 2.0).

To effect the tie-in of the new system without requiring a two-unit shutdown, it is proposed that a temporary service water supply line be provided to ensure a sufficient supply of service water is provided to permit operating two control and relay room air conditioning chiller units and two charging pump service water pumps at their design conditions. The temporary line will be dedicated to providing full flow to one control and relay room chiller service water pump. It will be required to use the temporary line during operating periods of 24 hours or less to effect the necessary tie-ins of the upgraded service water lines. These entries will be controlled by the proposed Technical Specification change.

It is our intention to limit the number of entries into this proposed action statement to those specified in the sequence of work identified below. If construction difficulties are encountered which require an early termination of planned work, the system will be restored operable and the action statement will be exited. Re-entry into the action statement to complete deferred work will occur only after evaluation of the construction difficulty and reconsideration of the planned work. If additional entries into the action statement are required, we will notify the NRC prior to such action.

2.0 EVALUATION OF TECHNICAL SPECIFICATIONS

Technical Specification 3.14.A.5 requires that two service water flow paths to the charging pump service water subsystem of a unit be operable whenever the reactor is critical or RCS temperature and pressure are above 350°F and 450

psig, respectively. Technical Specification 3.14.C permits unit operation with only one operable flow path to the charging pump service water subsystem for 24 hours. If two flow paths are not restored within 24 hours, the reactor must be placed in a hot shutdown condition. Therefore, the requirements of Technical Specifications 3.14 which address the charging pump service water system can be met if one existing 6" supply line is taken out of service for less than 24 hours.

Interim Technical Specification 3.23.C.1 addresses operation of the Main Control Room and Emergency Switchgear Room chiller units. All three chiller units must be operable whenever either unit is above cold shutdown. If one chiller unit becomes inoperable, it must be restored to operable status within 7 days or both units must be placed in a hot shutdown condition. Technical Specification 3.23.C.1 control and emergency switchgear room chillers will be entered to install the temporary supply line. In addition to this interim technical specification, system operating restrictions have been placed on the control and relay room air conditioning system until permanent system improvements have been implemented. The restrictions include requiring the operation of two chiller units. However, use of only one service water supply line is not sufficient for operation of two chillers and two charging pump service water pumps at design basis accident conditions i.e., maximum heat loads and a post-accident low canal water level. A temporary source of service water is required during those periods of time in which one permanent service water supply is taken out of service to make the new system tie-ins.

Therefore, the proposed Technical Specification establishes an action statement for the Service Water supply lines to the Main Control Room and Emergency Switchgear Room air conditioning condensers. The action statement requires the temporary supply line to be in service under administrative control prior to entering the action statement to perform the necessary connections for the new service water lines. The action statement will be entered to complete the tie-ins for the Unit 2 line and the new common line, no additional entries will be necessary for the Unit 1 line. The new 24-hour action statement is consistent with the 24-hour action statement associated with the charging pump service water pumps supplied from the the same Service Water supply lines. From the time the Technical Specification is issued by the

NRC it will take an extended period of time to install the two service water lines, thus an expiration date of March 31, 1990 is included.

3.0 SEQUENCE OF WORK

The following sequence provides a conceptual outline of the major steps and discusses the contingency measures required based on performing the major portion of the construction work during power operation of Unit 1 and/or Unit 2. Prior to any entry into a 24-hour action statement the temporary line will be placed in service. The procedure will involve installing a spool piece on the temporary line and opening the isolation valves, at which time there will be three SW flow paths to the chillers. The existing SW flow path can then be removed from service, reducing the number of flow paths to two; one being the temporary line. At the end of each step requiring the use of the 24-hour action statement, two qualified flow paths will be reinstated before exiting the action statement. At no time during the procedure will there be less than two independent SW flow paths, however, during the 24-hour action statement, one of the flow paths will be the temporary line.

Construction Sequence

The following sequence outlines the general concept and steps for performing the design change; the exact sequence for installation may differ from the information outlined below:

1. Prefabricate the new common line and the new Units 1 and 2 lines to maximum practical extent.

2. Prefabricate the new Unit 1, Unit 2, and the new common line eight-inch pipe sections to be located in the Turbine Building-Mechanical Equipment Room (TB-MER).

3. Remove plates, excavate and enlarge existing Unit 2 trench and core drill TB-MER and MER-3 walls. During excavation, the existing operating line will be protected by backfill and the existing

metal plate. The following contingency measures will be in place during this work.

a. Fire watches posted as required.

b. No heavy lifting outside the scope of this replacement will be permitted over or near the excavation while it is open. Lifting of material required for this replacement project over the existing fiberglass line will be minimized.

4. Remove existing Unit 2 line from service and enter 24-hour action statement. Eliminate the cross connect line in the Unit 2 SW valve pit. This allows the two Unit 2 sources to be isolated independently. Reinstate the Unit 2 line (via 2-SW-11) and exit the 24-hour action statement.

5. Install new common line in trench and tie-in new 8" common line to the new common line source (valve 2-SW-474) at Unit 2 SW valve pit and a valve manifold which was already installed (see Figure 3). During line installation, the existing operating line will be protected by backfill and a steel plate.

6. Remove Unit 2 line from service and enter the 24-hour action statement. Install a temporary jumper between new 8" common line and existing Unit 2 fiberglass line in the trench. The Unit 2 alternate flow path now consists partially of 8" copper-nickel and partially 6" fiberglass. Exit the 24-hour action statement.

7. Install new 8" Unit 2 line in trench, at the TB-MER wall and tie-in new 8" Unit 2 line to the new Unit 2 8-inch source (8" valve 2-SW-11) at the Unit 2 SW valve pit. The original 6 inch valve 2-SW-11 is blanked off.

8. Remove Unit 2 alternate line from service and enter 24-hour action statement. Make tie-in through new core drill in the TB-MER/MER-

3 wall. Shift flow from the alternate Unit 2 line to the new Unit 2 line. Exit the 24-hour action statement.

9. Replace the temporary jumper of step 6 with permanent 8" Cu-Ni piping. Complete installation of new 8" common line.

10. Remove the existing Unit 1 line from service and enter 24-hour action statement. Make the permanent Cu-Ni tie-in for the Unit 1 line in the TB-MER 3 room. At this point, two new independent flow paths exist. Both originate in the Unit 2 SW valve pit from separate sources, travel in separate lines and supply the MER-3 components. Exit the 24-hour action statement.

11. Install the permanent Unit 1 8-inch line without any impact on system operation i.e., installation of the new Unit 1 line will not require use of the 24-hour action statement.

12. During the next Unit 2 refueling outage, stop-log screenwell 2A and permanently remove the original 6-inch Unit 2 supply valve (2-SW-11) and upstream piping in the Unit 2 SW valve pit.

Upon completion of this work, three new eight-inch copper-nickel supply lines will be operable.

The temporary line will be fabricated and installed in accordance with the design criteria given in Section 4.0 and routed as shown by the sketches given in Section 9.0. The temporary line emanates as a 6 inch line from the Unit 2 B condenser waterbox inlet piping. The 6 inch line runs through the Unit 2 turbine building to the wall of the turbine building mechanical equipment room (TB-MER), where it is reduced in size to 4 inches. It then passes through the TB-MER and enters MER-3 where it is connected via a removable spool piece to the suction of control and relay room chiller service water pump 1-VS-P-1C.

The 24-hour action statement for use of the temporary line occur during the performance of steps 4, 6, 8, 10.

The temporary line will be permanently removed following the completion of step 10.

4.0 DESIGN CONSIDERATIONS OF THE TEMPORARY SERVICE WATER LINE

The temporary service water supply line to the control and relay room chiller service water pump (1-VS-P-1C) has been designed with the following features:

1. The line is fabricated and installed in accordance with Surry Plant Piping Specification NUS-20 for safety-related piping and Pipe Class Design Standard STD-MEN-0004 for Class 151 piping.

2. Class 151 (150 lb carbon steel) is suitable for the design condition of 25 psig and 95°F. Carbon steel is suitable for use with service water in this application. Corrosion of carbon steel is not a concern since the line will be in service for short durations.

3. Piping materials are specified to ASTM requirements and are provided with CMTRs.

4. The temporary line is tested prior to use in accordance with the design change package requirements.

5. The line generally meets the "safety-related" requirements of service water piping, except the line is not seismic and is not missile protected.

6. Calculations have been performed to verify that the line supplies cooling water with adequate net positive suction head.

The rationale for accepting the temporary line as operable, although nonseismic and nonmissile protected, is based on the following considerations and expected plant conditions when the line is in service.

1. The service water system is a moderate energy system, and postulated failure of the piping is limited to through wall cracks.

The impact of the flooding of safety-related components due to failure of the circulating water piping has been evaluated in the UFSAR and exceeds the potential flooded volume of the temporary line and is therefore bounding.

2. The action statement and temporary line will only be used to perform the necessary service water tie-ins. The use of the temporary line will be controlled by the proposed temporary action statement.The probability of a seismic event during this period is small. Although the line has not been seismically designed, its failure during a seismic event is not expected.

5.0 CONSTRUCTION CONSIDERATIONS OF TEMPORARY LINE

The temporary line will be placed in service during the 24-hour action statement serving as one of the two service water supply lines. Construction work requiring the use of this line will be completed within this time period due to the following considerations.

1. Required replacement equipment will be on hand prior to starting work.

2. Detailed schedules will define the work to be accomplished during the 24-hour time periods.

3. Pre-staging requirements ensure that proper procedures, personnel and equipment are coordinated to meet or exceed the established schedules. Pre-staging includes contingency measures such as the availability of patch kits for fiberglass pipe in the unlikely event that a fiberglass pipe sustained localized damage during construction.

6.0 OPERATIONAL CONSIDERATIONS OF TEMPORARY LINES

Continued operation of two service water supply lines is necessary when either unit is at power. The potential impact of a loss of service water to the control and relay room chiller units has been reviewed. The following actions will be taken to reduce the vulnerability to a loss of service water:

1. Operators will be assigned to control and monitor system operation in accordance with special operating procedures when the temporary line is in service. The operators will carry out actions as directed by the Control Room.

2. Prior to entering the 24-hour action statements, the operating shifts will be briefed on contingency actions that would be used upon loss of service water.

3. Anticipated operational concerns are minimized by the short duration (24 hours or less) of use of the temporary line.

4. Final connection of the temporary supply line to the service water system in MER-3 is made by use of a flanged spoolpiece. When the temporary line is not in service, its isolation valves will be closed and the spoolpiece will be removed.

5. In the extremely unlikely event of failure of the temporary line due to a seismic event, the line would be isolated if directed by the control room. Shutdown of both units would proceed in accordance with Technical Specifications, if two service water supply lines are not available.

SIGNIFICANT HAZARDS CONSIDERATION EVALUATION

Installation of the temporary service water supply line to the control and relay room chiller service water pump does not involve a significant hazards consideration as defined in 10 CFR 50.92. Operation of the facility in accordance with the proposed technical specification change using the alternate service water flow path would not:

1. Involve a significant increase in the probability or consequences of an accident previously evaluated.

   The probability of a loss of service water to the control and relay room chiller service water pump is not significantly increased since the temporary line will be installed and operated in accordance with the compensatory measures identified in this document which establishes relative equivalence for the temporary line.

2. Create the possibility of a new or different kind of accident from any accident previously evaluated.

   The possibility for accidents or malfunctions created by these activities has been evaluated in the UFSAR. Flooding of safety-related components due to failure in the circulating water system has been evaluated in the UFSAR. The flooding source which would result from a crack in the temporary line is bounded by the current evaluation. The temporary service water line does not generate any new or unreviewed accident precursors.

3. Involve a significant reduction in a margin of safety.

   The temporary line will be used only for short periods of time (less than 24 hours) and be controlled by the proposed action statement. Operation of the temporary line under the conditions imposed will provide sufficient service water flow to meet the design basis requirements for two unit operation without any reduction in Technical Specification margin.

   Construction and operations of the temporary line will be accomplished in accordance with applicable station procedures to ensure that plant safety is maintained.

CONCLUSION

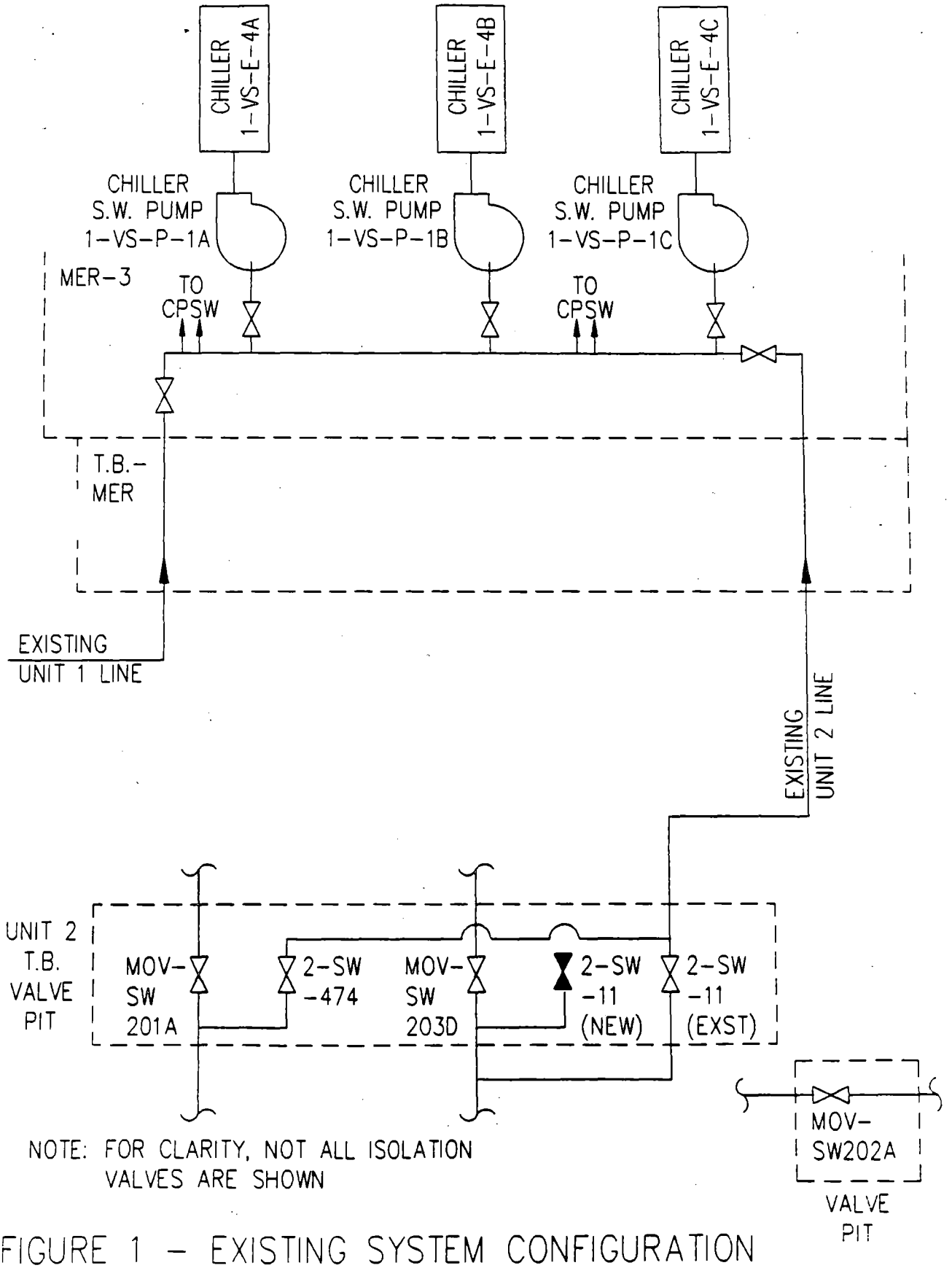
The existing six-inch fiberglass piping to the control and relay room chiller service water pump and the charging pump service water pumps has experienced problems with respect to sediment and biological fouling. This buildup of sediment and biological products has required cleaning of the fiberglass pipe to maintain adequate pump suction conditions. The method of cleaning has utilized high pressure water (hydrolasing) which has caused internal erosion of the piping. To alleviate this problem, the six-inch fiberglass piping will be replaced with larger diameter metallic piping. A third supply line is being incorporated into the design to provide operating flexibility through the use of a spare line during periodic cleaning.

To effect the tie-in of the improved service water system design, a temporary service water supply line will be utilized. This line will be used when the 24-hour action statement is entered. The temporary line is designed to provide full flow to one control and relay room chiller service water pump, will be constructed with safety-related material, and will be hydrostatically tested prior to use. Use of this line in combination with one of the new or existing lines will provide the cooling water necessary for two chiller units to remain operational.

SKETCHES AND SYSTEM PIPING CONFIGURATION

- Current - Figure 1
- During Sequence - Figures 2-8
- Final - Figure 9

SURRY POWER STATION
SERVICE WATER PIPE REPLACEMENT



NOTE: FOR CLARITY, NOT ALL ISOLATION VALVES ARE SHOWN

FIGURE 1 – EXISTING SYSTEM CONFIGURATION

SURRY POWER STATION
SERVICE WATER PIPE REPLACEMENT

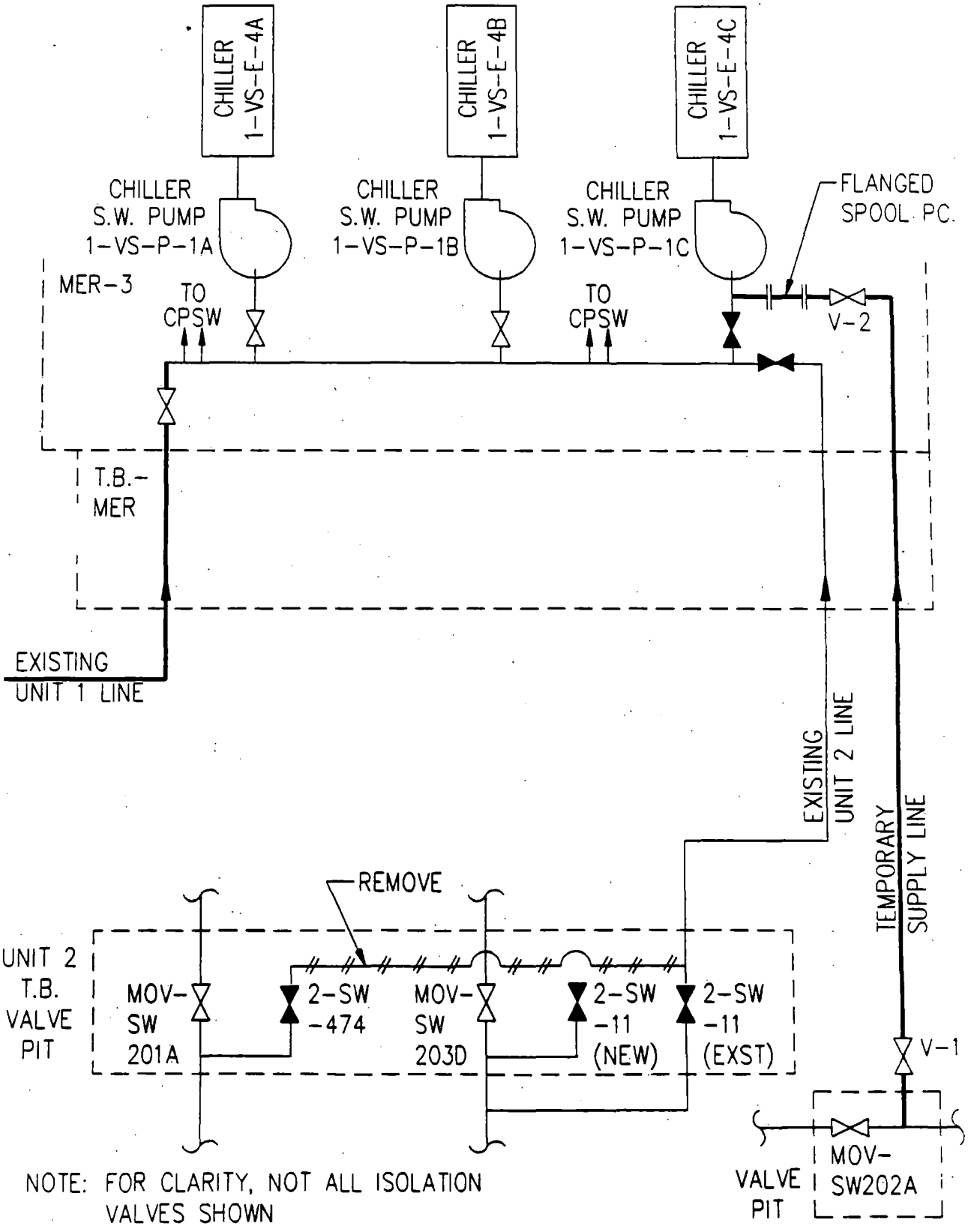


FIGURE 2 – SYSTEM CONFIGURATION FOR STEP 4

SURRY POWER STATION
SERVICE WATER PIPE REPLACEMENT

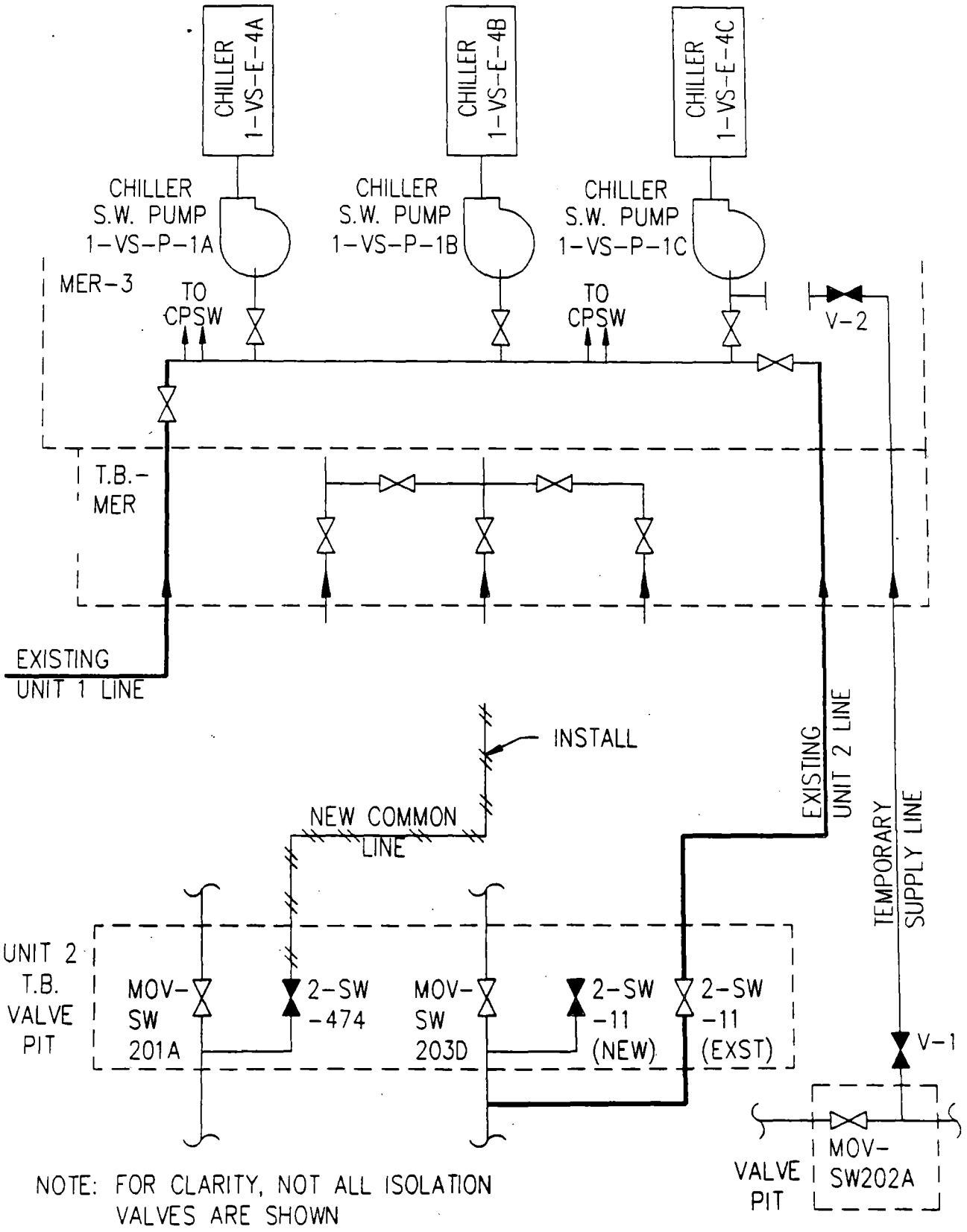


FIGURE 3 – SYSTEM CONFIGURATION AFTER STEP 5

SURRY POWER STATION
SERVICE WATER PIPE REPLACEMENT

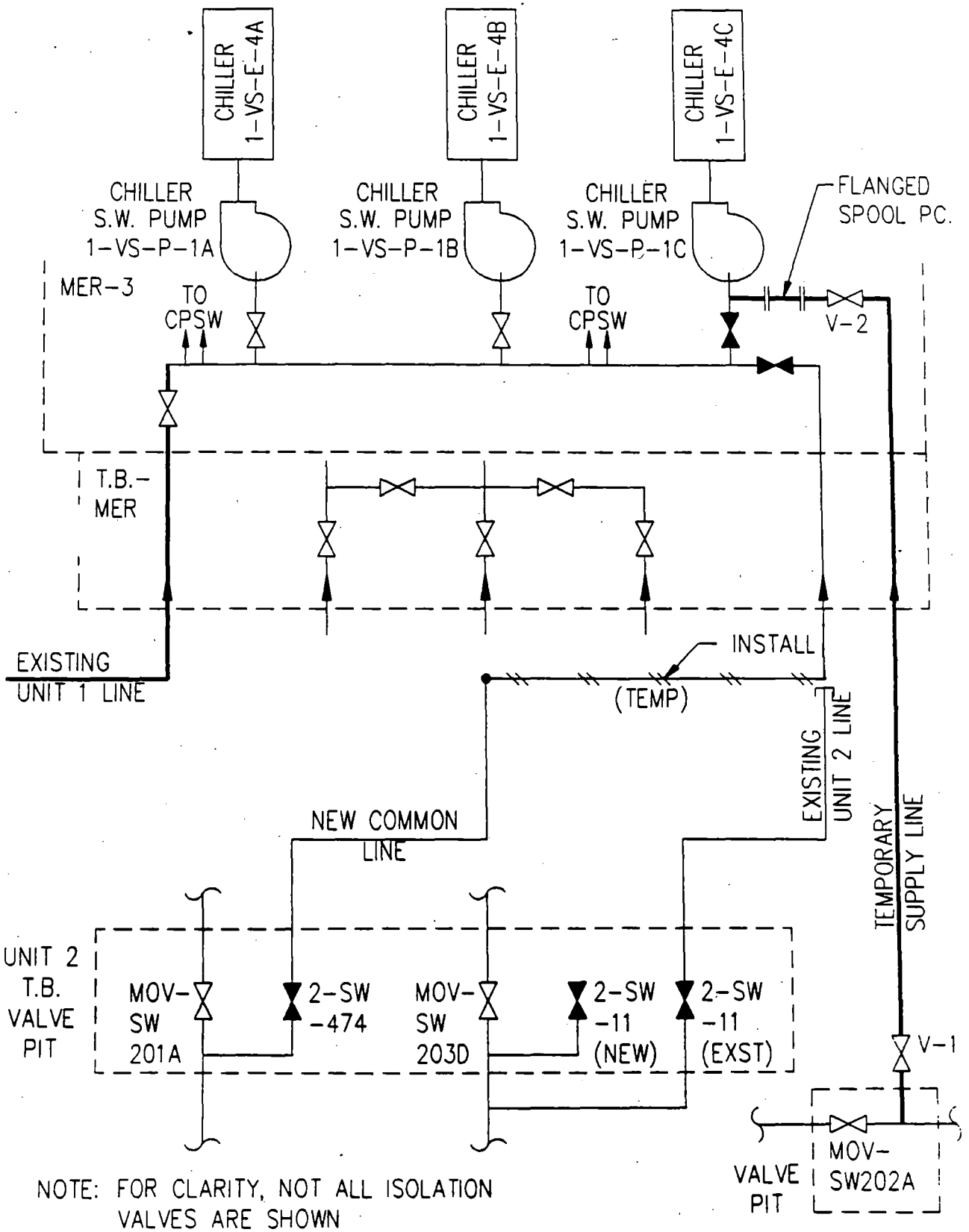


FIGURE 4 – SYSTEM CONFIGURATION FOR STEP 6

SURRY POWER STATION
SERVICE WATER PIPE REPLACEMENT

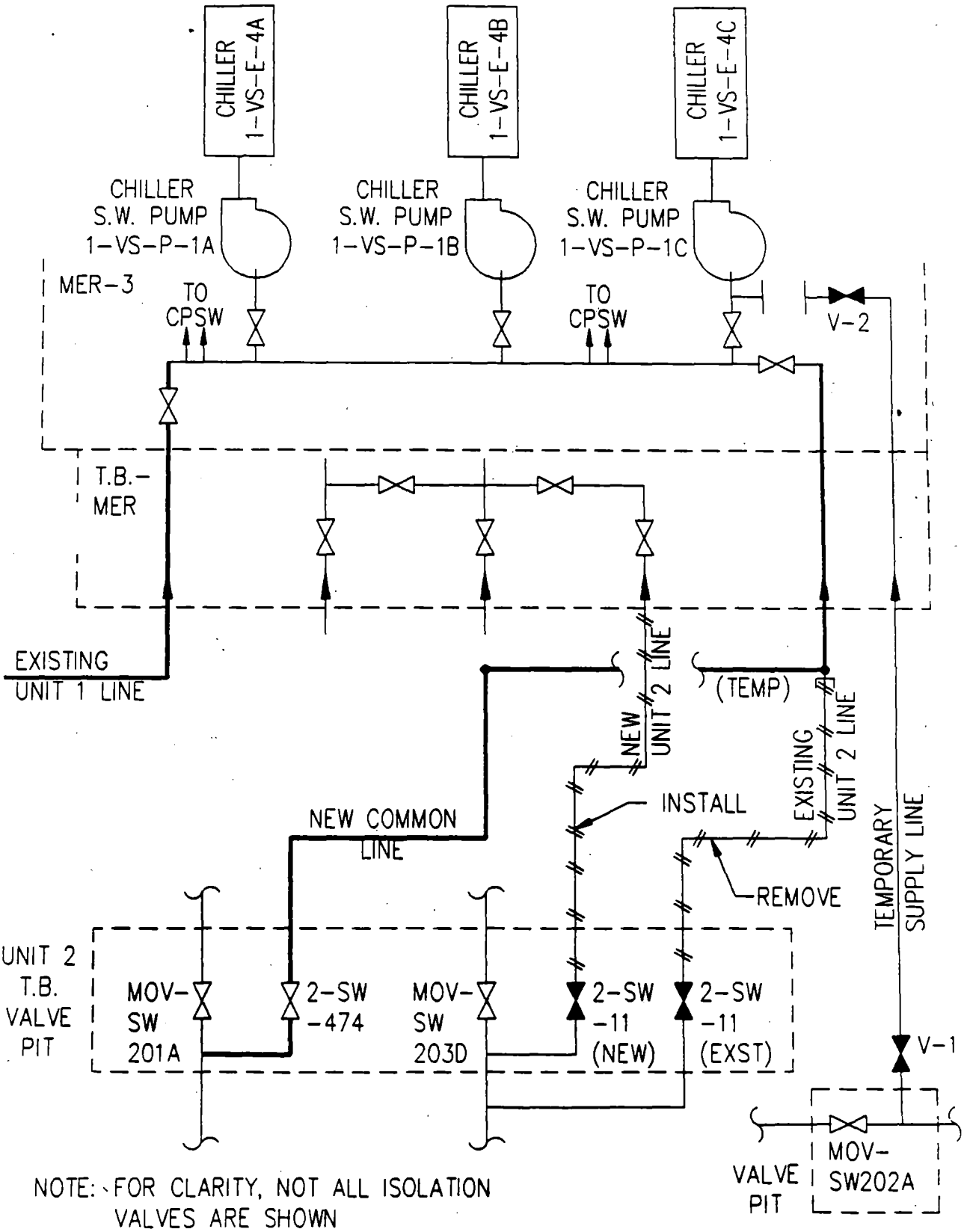
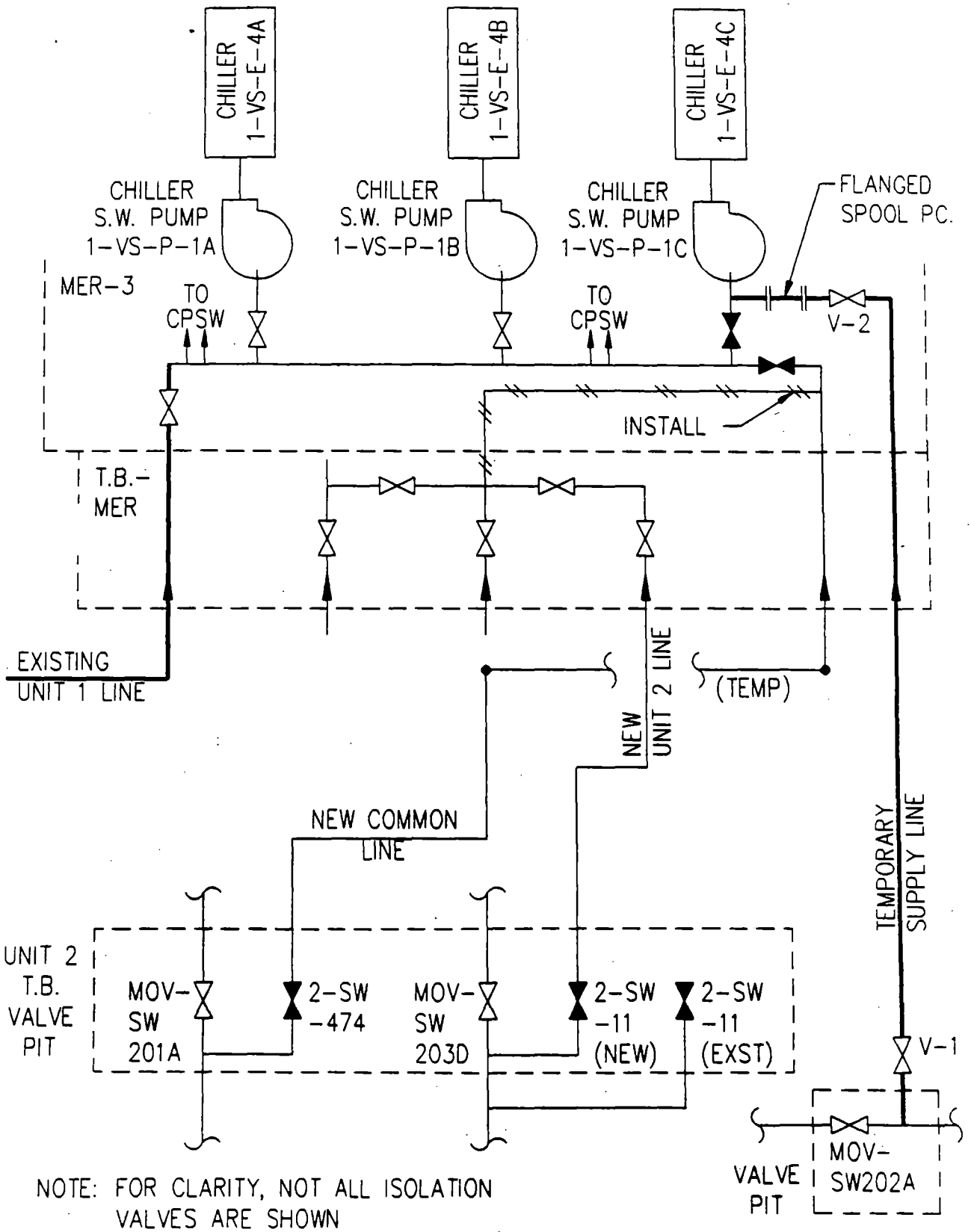


FIGURE 5 – SYSTEM CONFIGURATION FOR STEP 7

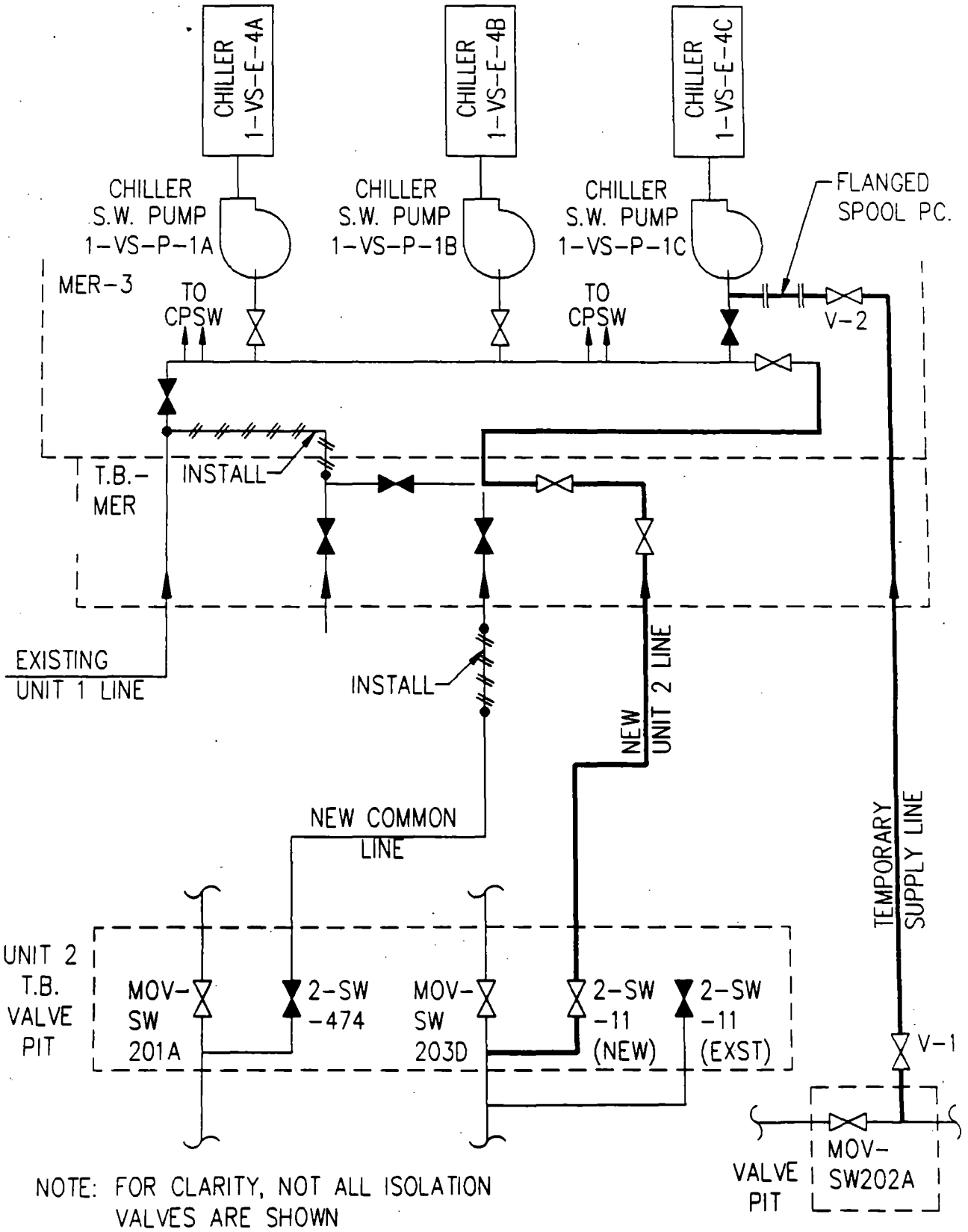
SURRY POWER STATION
SERVICE WATER PIPE REPLACEMENT



NOTE: FOR CLARITY, NOT ALL ISOLATION VALVES ARE SHOWN

FIGURE 6 – SYSTEM CONFIGURATION FOR STEP 8

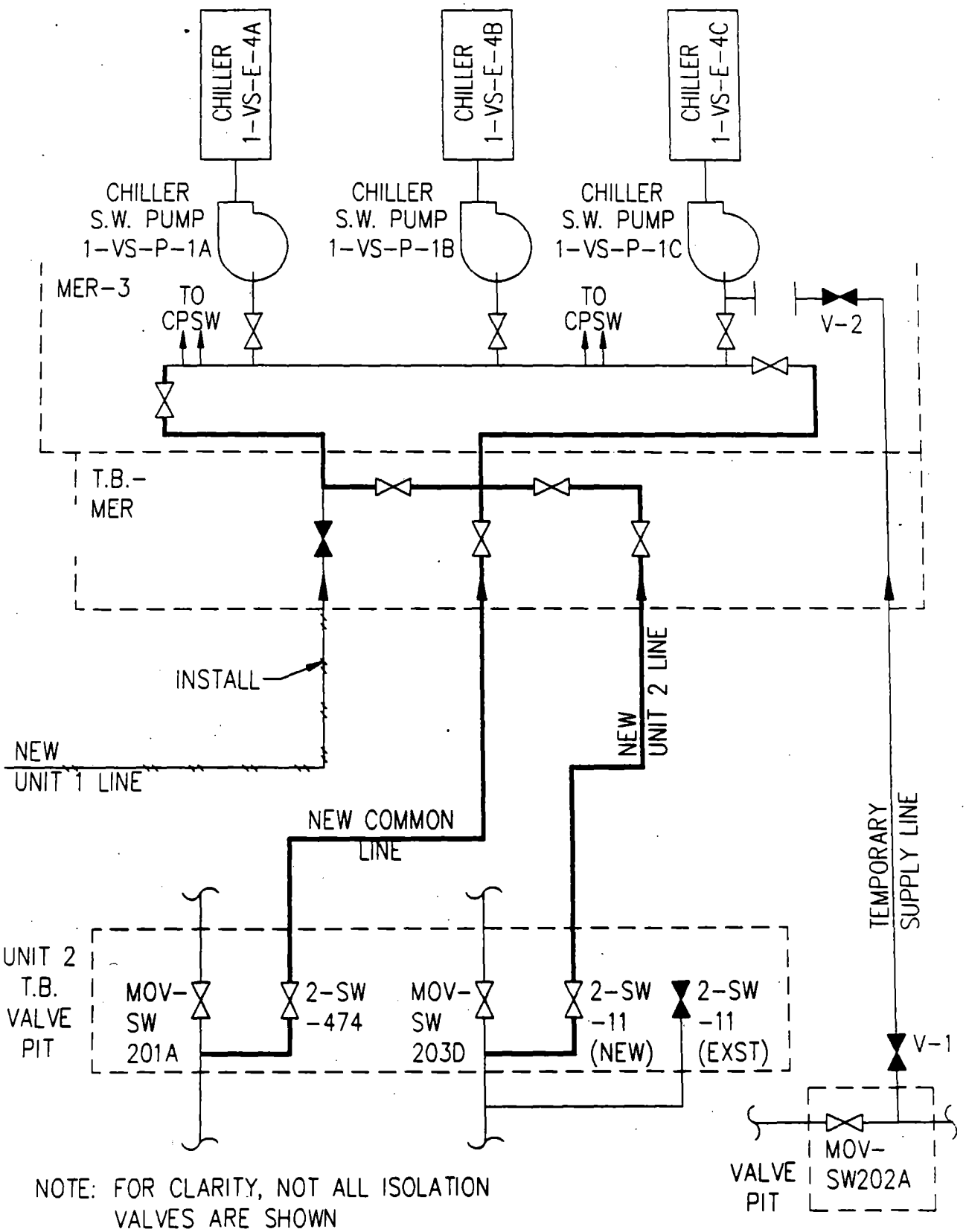
SURRY POWER STATION
SERVICE WATER PIPE REPLACEMENT



NOTE: FOR CLARITY, NOT ALL ISOLATION VALVES ARE SHOWN

FIGURE 7 – SYSTEM CONFIGURATION FOR STEP 10

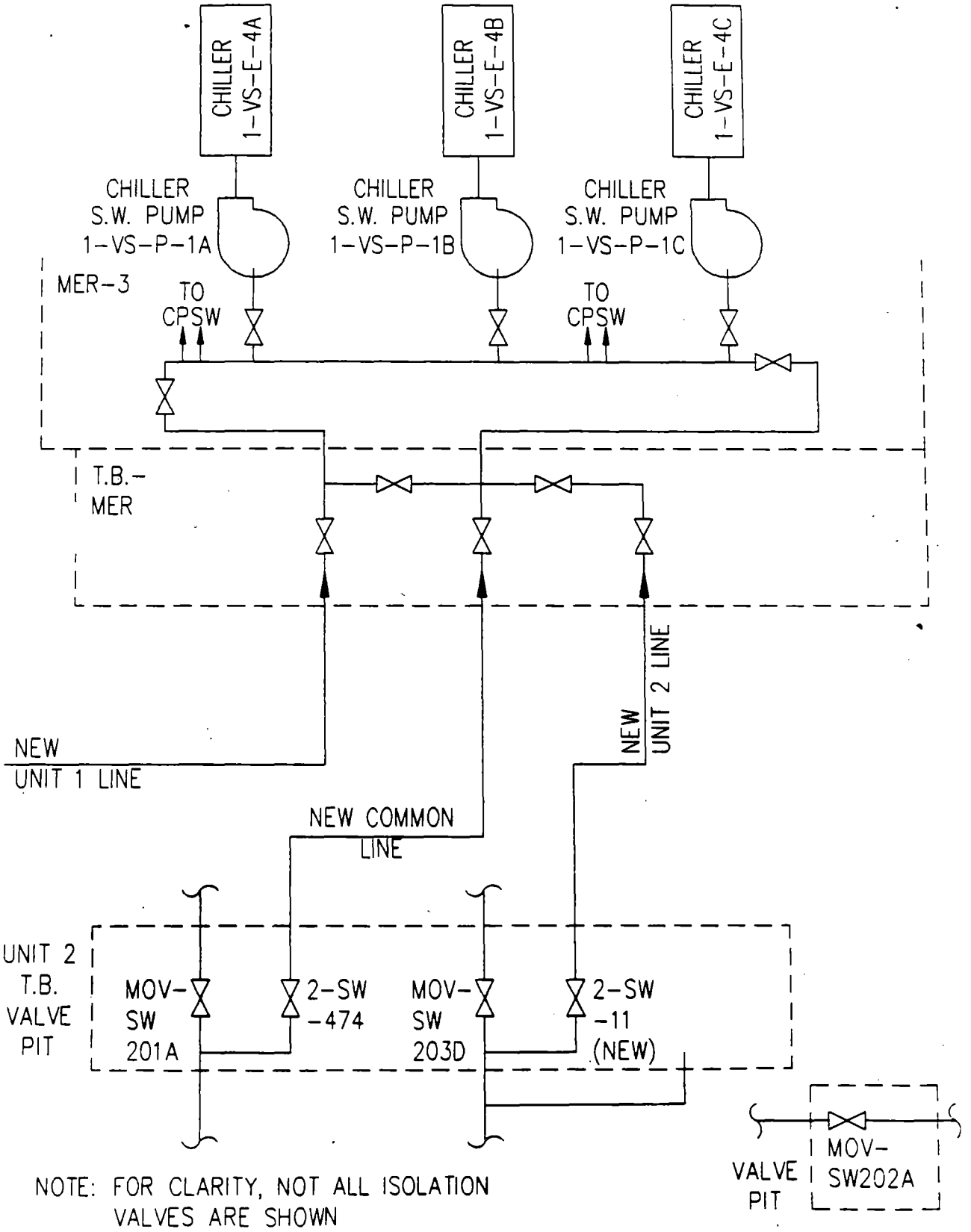
SURRY POWER STATION
SERVICE WATER PIPE REPLACEMENT



NOTE: FOR CLARITY, NOT ALL ISOLATION VALVES ARE SHOWN

FIGURE 8 – SYSTEM CONFIGURATION AFTER STEP 11

SURRY POWER STATION
SERVICE WATER PIPE REPLACEMENT



NOTE: FOR CLARITY, NOT ALL ISOLATION VALVES ARE SHOWN

FIGURE 9 – FINAL SYSTEM CONFIGURATION