CP&L

CAROLINA POWER & LIGHT COMPANY
BRUNSWICK NUCLEAR PLANT

C
Continuous
Use

PLANT OPERATING MANUAL

VOLUME XXIII

ALTERNATIVE SAFE SHUTDOWN PROCEDURE

UNIT
2

2ASSD-05

REACTOR BUILDING NORTH

REVISION 21

EFFECTIVE DATE
7/18/97

Sponsor _____ 7-17-97
Date

Approval _____ 7-17-97
Manager - Operations Date

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A. TITLE

Reactor Building North

B. ENTRY CONDITIONS

_____ 1. This procedure is entered from Unit 2 Alternative Safe Shutdown Index ASSD-01.

_____ 2. Unit SCO has determined that the Reactor is to be brought to cold shutdown from outside the Control Room using Alternative Safe Shutdown Train B.

C. OPERATOR ACTIONS

NOTE

The following minimum manpower is required to perform this procedure.

1 Unit SCO
1 Unit 2 RSDP/PMI Reactor Operator
1 Unit 1 BOP Reactor Operator
1 Unit 2 Rx Bldg MCC Operator
1 Diesel Generator Operator
1 Emergency Switchgear Operator DG Bldg
1 Service Water Building Operator

_____ 1. CONTINUE implementation of this procedure by performing the steps in Section "A."

SECTION "A"

UNIT 2 SCO ACTIONS

****

CAUTION

Interlocks that would normally prevent inadvertent draining of the reactor coolant to the suppression pool, due to improper valve positioning, are bypassed when operating the valves manually or with the ASSD switches selected for local operation. Caution must be exercised when performing RHR valve operations in this procedure to ensure that each valve operation is fully completed prior to performing the next sequential operation.

(This caution is a result of SOER 87-2 "Inadvertent draining of reactor vessel to suppression pool at BWRs", and may not be removed without concurrence of Regulatory Affairs.)

****

_____ 1. OBTAIN the ASSD equipment cabinet key from the Unit SCO key locker.

_____ 2. OBTAIN seven (7) security access keys from the CAS locker.

_____ 3. PROVIDE the Unit 1 BOP Reactor Operator with the following.

_____ a. Security access key

_____ b. Section "B" of this procedure

_____ 4. DIRECT the Unit 1 BOP Operator to PERFORM Section "B" of this procedure.

_____ 5. DIRECT Unit 1 RSDP PMI Monitor to ESTABLISH communication with Unit 2 Remote Shutdown Panel using phone jack labeled "REMOTE SHUTDOWN TRAIN 'B' (UNIT #1) SOUND POWERED PHONE CKT." located on Unit 1 RTGB.

_____ 6. NOTIFY all personnel that in the event the ASSD sound-powered phone system fails to operate, THEN USE hand-held portable radios or the plant Gai-tronics system to establish communications.

_____ 7. DIRECT the following personnel to OBTAIN their security access key and equipment from the ASSD equipment cabinet for implementation of Unit 2 ASSD-05.

_____ a. Unit 2 RSDP/PMI Reactor Operator (Remote Shutdown Panel Operator)

_____ b. Unit 2 Rx Bldg MCC Operator

_____ c. Service Water Building Operator

_____ d. Emergency Switchgear Operator DG Bldg

_____ e. Diesel Generator Operator

_____ 8. PROCEED to AND OPEN the ASSD equipment cabinet.

_____ 9. PLACE the security keys on the key holder in the ASSD equipment cabinet.

_____ 10. OBTAIN a security access key and equipment from ASSD equipment cabinet.

_____ 11. USE appropriate figures in the back of this section to provide access/egress routes, equipment, and communication locations AND PROCEED to Unit 2 Remote Shutdown Panel.

_____ 12. ESTABLISH communication with other remote shutdown stations using the "ASSD UNIT 2 TRAIN B SOUND POWERED PHONE CKT." on the RSDP.

_____ 13. IF the ASSD sound-powered phone system fails to operate, THEN USE hand-held portable radios or the plant Gai-tronics system to establish communications.

_____ 14 OBSERVE parameters on instruments listed below while performing actions to achieve and maintain cold shutdown.

Instrument	Location
2-C32-PI-3332 Reactor Pressure	Remote Shutdown Panel
2-B21-LI-R604BX Reactor Water Level	Remote Shutdown Panel
2-B21-LI-5977 Reactor Level	Remote Shutdown Panel
2-CAC-TR-778 Drywell Temp (Pts. 1, 3, and 4)	Remote Shutdown Panel
2-E51-FIC-3325 RCIC Flow Controller	Remote Shutdown Panel
2-E11-FI-3338 RHR System B Flow	Remote Shutdown Panel
2-CAC-TR-778 Suppression Pool Water Temp. (Pt. 6 and 7)	Remote Shutdown Panel
2-CAC-LI-3342 Suppression Pool Level	Remote Shutdown Panel
2-CAC-PI-3341 Drywell Pressure	Remote Shutdown Panel
2-CO-LIT-1160 CST Level	CST
2-SW-TI-808 RHR HX B Service Water Outlet Temp Ind	Reactor Bldg-El. 20' South 2B RHR HX Room

_____ 15. IF any of the following conditions should occur THEN rapidly DEPRESSURIZE the reactor vessel using Attachment 1.

_____ a. IF reactor water level cannot be maintained above 10 inches.

_____ b. IF drywell temperature monitored on CAC-TR-778, Point 1, is higher than reactor temperature AND reactor water level cannot be maintained above 20 inches.

_____ c. IF average drywell air temperature cannot be maintained below 300°F as determined by Calculation Sheet 1.

NOTE

The loss of drywell cooling can be confirmed by monitoring Points #1, #3 and #4 on recorder CAC-TR-778 located on the Remote Shutdown Panel. The time the event occurred can be determined from the chart paper speed.

_____ d. IF average drywell temperature cannot be calculated AND

_____ (1) A loss of drywell cooling has occurred AND

_____ (2) Reactor vessel cool down rate of 100°F/hr or greater has NOT started within one hour of the loss of drywell cooling.

_____ 16. WHEN:

_____ a. RCIC is operational AND

_____ b. N_2 Backup Switch and circuit alignment for SRV operation is complete AND

_____ c. 4 KV Bus E4 is energized to provide N_2 backup for SRV operation AND

_____ d. Reactor water level is being maintained greater than 20 inches, THEN

_____ e. DIRECT Unit 2 RSDP/PMI Reactor Operator to START reactor depressurization and cooldown using SRVs and RCIC.

NOTE

The RSDP and Emergency Switchgear Operators will direct most activities in this procedure.

_____ 17. MONITOR communications AND VERIFY the following conditions and events take place:

_____ a. Conditions do not approach rapid depressurization requirements.

_____ b. Reactor water level is being maintained above 20 inches by RCIC.

_____ c. WHEN RCIC and SRV pneumatics are available, reactor depressurization and cooldown have been initiated.

_____ d. INFORM the RSDP and MCC Operators WHEN 4 KV Buses E2 and E4 are energized from the diesel generators.

_____ e. Nuclear service water is made available.

_____ f. Suppression pool cooling is placed in service.

_____ g. 4 KV Bus E3 is deenergized AND Diesel Generator 3 is stopped, if running.

_____ h. Suppression pool cooling is stopped when reactor pressure has decreased to 120 psig.

_____ i. Shutdown cooling is placed in service when reactor pressure has decreased to 120 psig.

_____ 18. CONTINUE shutdown cooling as required to achieve and maintain reactor pressure at 0 psig until an alternate method of determining reactor water temperature is provided.

_____ 19. DIRECT the Unit 1 BOP Reactor Operator to manually CLOSE HPCI and RCIC Combined Suction From CST Isolation Valve, 2-CO-V127, locally at Unit 2 CST.

_____ 20. RETURN plant to general operating condition as directed by plant management.

ATTACHMENT 1

A. TITLE

UNIT 2 REACTOR VESSEL RAPID DEPRESSURIZATION

B. ENTRY CONDITION

_____ 1. IF any of the following conditions should occur THEN rapidly DEPRESSURIZE the reactor vessel.

_____ a. IF reactor water level cannot be maintained above 10 inches.

_____ b. IF drywell temperature monitored on CAC-TR-778, Point 1, is higher than reactor temperature AND reactor water level cannot be maintained above 20 inches.

_____ c. IF average drywell air temperature cannot be maintained below 300°F as determined by Calculation Sheet 1.

NOTE

The loss of drywell cooling can be confirmed by monitoring Points #1, #3 and #4 on recorder CAC-TR-778 located on the Remote Shutdown Panel. The time the event occurred can be determined from the chart paper speed.

_____ d. IF average drywell temperature cannot be calculated AND

_____ (1) A loss of drywell cooling has occurred AND

_____ (2) Reactor vessel cool down rate of 100°F/hr or greater has NOT started within one hour of the loss of drywell cooling.

C. OPERATOR ACTION

_____ 1. Inform all stations that conditions exist that require rapid depressurization of Unit 2 reactor vessel.

_____ 2. DIRECT the Unit 2 RSDP/PMI Reactor Operator to INITIATE a rapid depressurization using Attachment 1 of Section C.

_____ 3. IF any of the entry conditions to this attachment no longer apply AND NO other conditions are present that require rapid depressurization, THEN EXIT this attachment and RETURN to Section "A" to a compatible step for plant conditions.

_____ 4. WHEN reactor water level has been increased to between 200 and 210 inches and rapid depressurization or LPCI injection are no longer needed, THEN DIRECT Unit 2 RSDP/PMI Reactor Operator to ESTABLISH shutdown cooling.

_____ 5. EXIT this attachment AND RETURN to Section "A" to a compatible step for plant conditions.

Calculation Sheet 1

Values Obtained From Recorder CAC-TR-778

80' elev

PT No. 1	_____	_____	_____	_____	_____	_____	_____	_____
	x 0.14	x 0.14	x 0.14	x 0.14	x 0.14	x 0.14	x 0.14	X 0.14
	A _____	A _____	A _____	A _____	A _____	A _____	A _____	A _____

28' elev

PT No. 3	_____	_____	_____	_____	_____	_____	_____	_____
	x 0.4	x 0.4	x 0.4	x 0.4	x 0.4	x 0.4	x 0.4	X 0.4
	B _____	B _____	B _____	B _____	B _____	B _____	B _____	B _____

13' elev

PT No. 4	_____	_____	_____	_____	_____	_____	_____	_____
	x 0.46	x 0.46	x 0.46	x 0.46	x 0.46	x 0.46	x 0.46	X 0.46
	C _____	C _____	C _____	C _____	C _____	C _____	C _____	C _____

Add the numbers obtained in lines A, B, and C, to obtain average DW temp.

Average DW Temp	_____	_____	_____	_____	_____	_____	_____	_____

TABLE 1

Reactor Pressure Vs Saturation Temperature

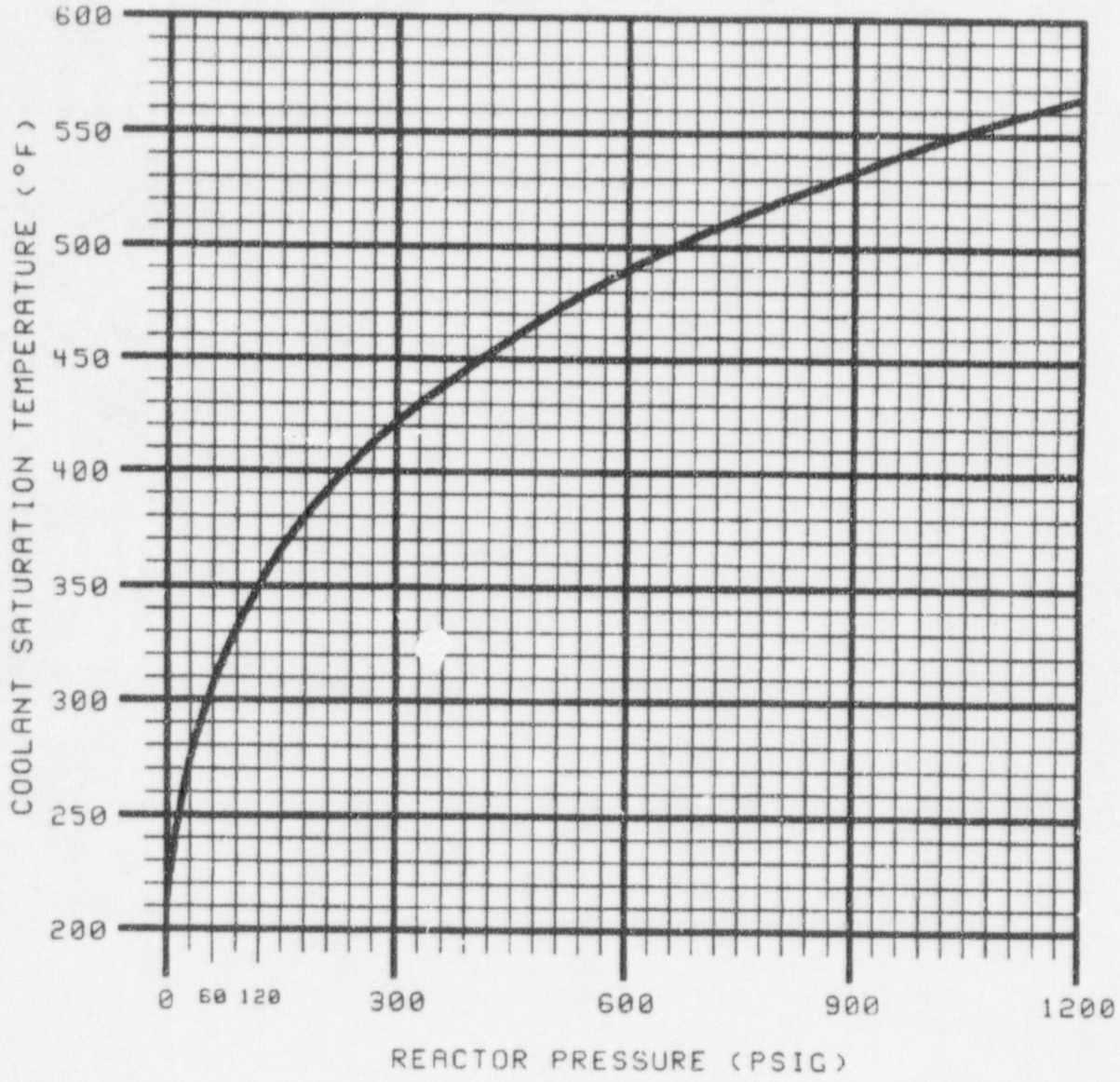


FIGURE 1

Control Building 49'and 23' Elevation Access/Egress

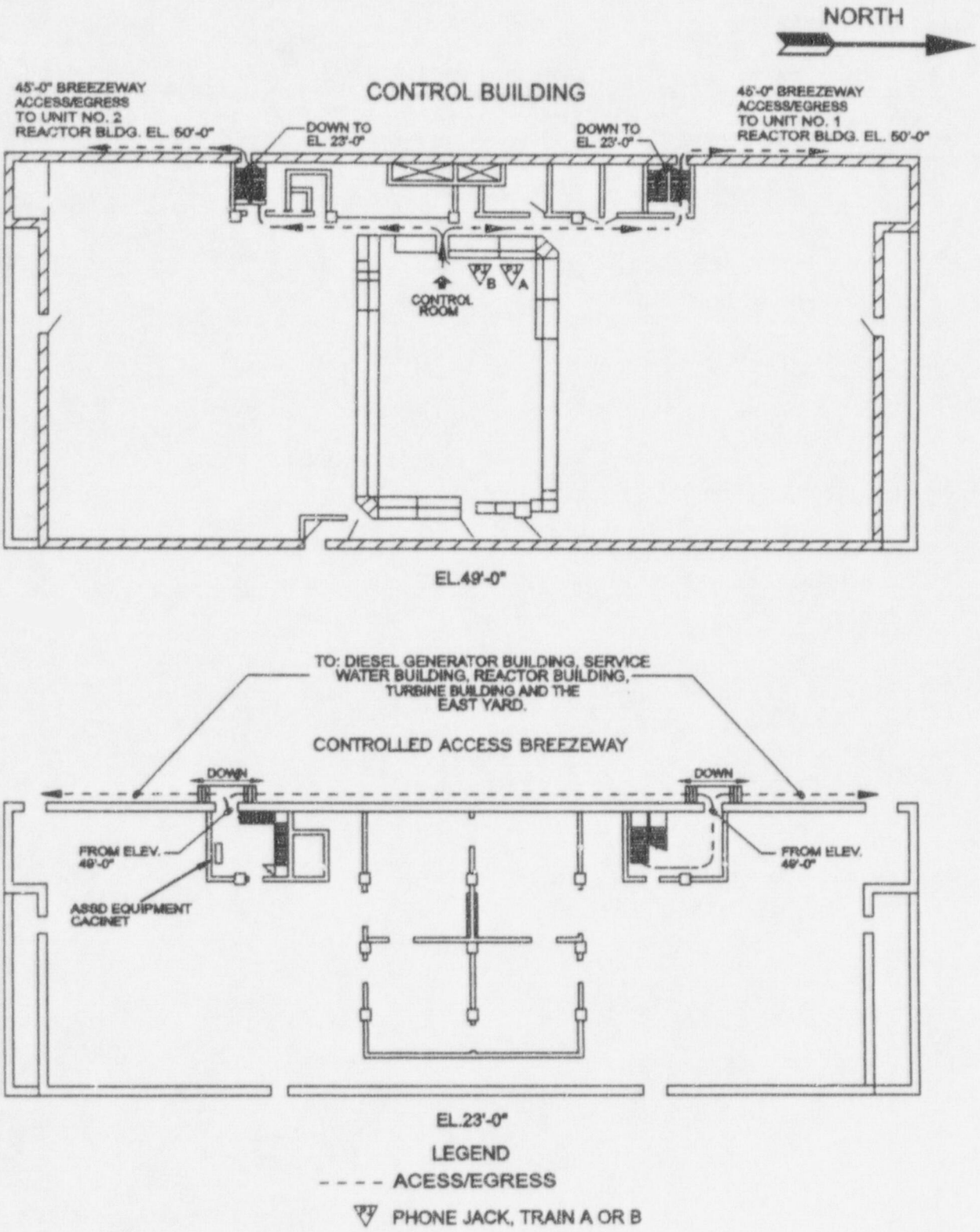


FIGURE 2

Unit 2 Reactor Building 50' Elevation Access/Egress

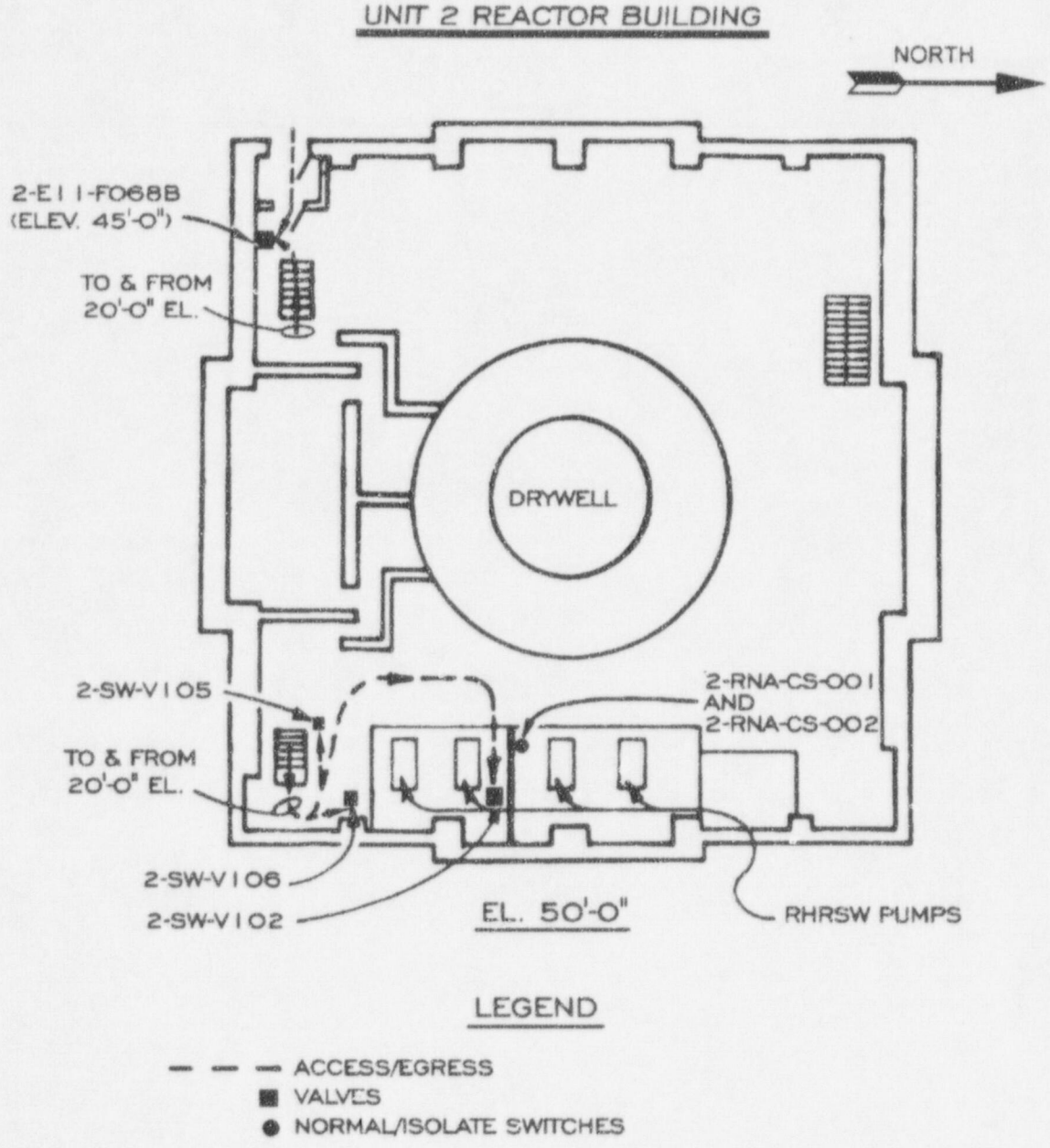
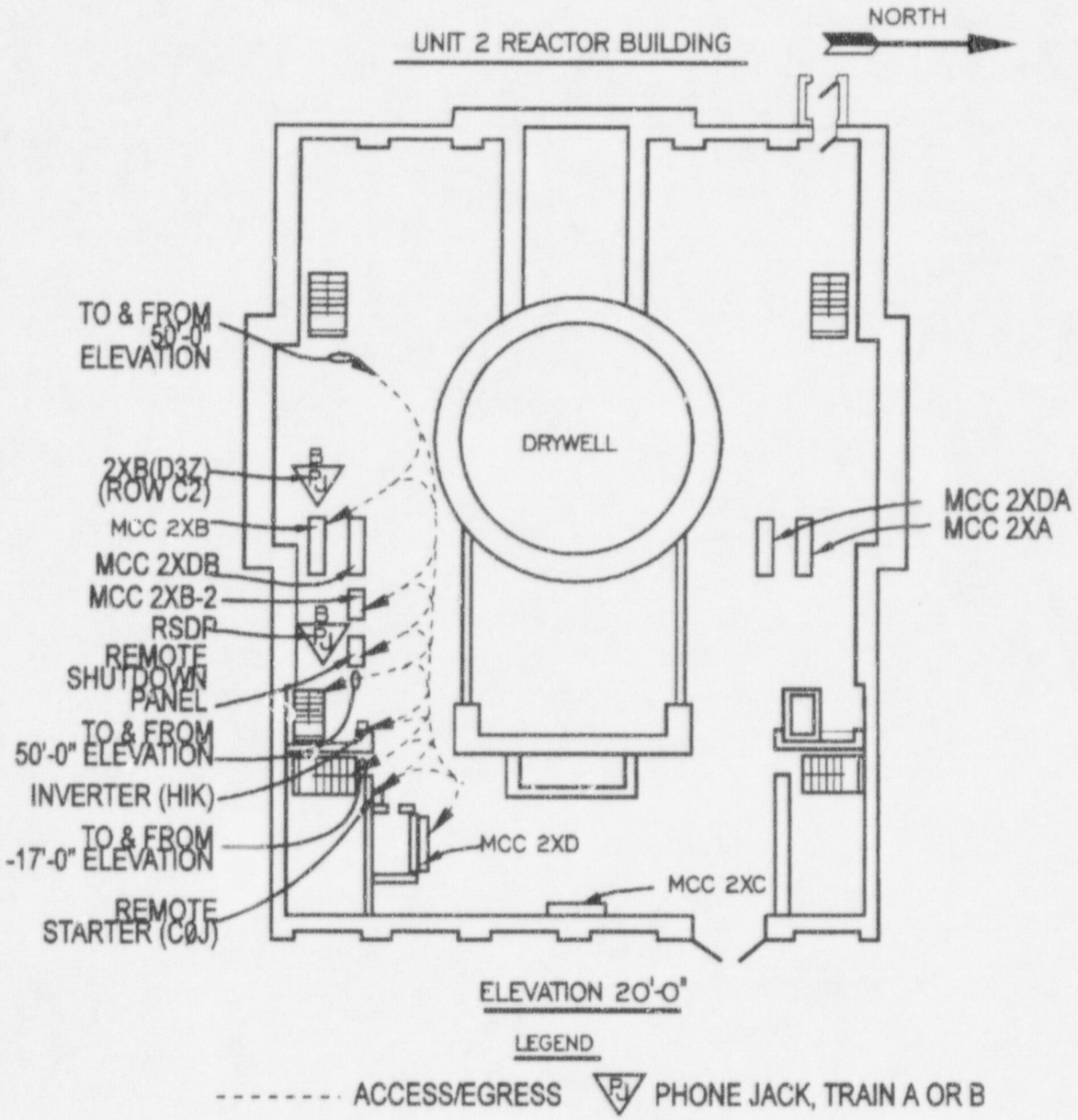


FIGURE 3

Unit 2 Reactor Building 20' Elevation Access/Egress
and
Sound Powered Phone Communications



SECTION "B"

UNIT 1 BOP REACTOR OPERATOR ACTIONS

_____ 1. UPON receiving this procedure, PERFORM the steps in the order listed.

_____ 2. OBTAIN a security key from the Unit 2 SCO.

_____ 3. OBTAIN the following keys from the Unit SCO key locker

_____ 1 CO Key, Key Number 202 OR 203

_____ 1 T112 Outboard MSIV AC Power Isolate Switch Key, Key Number 214

_____ 1 T112 Inboard MSIV AC Power Isolate Switch Key, Key Number 215

_____ 4. At the Unit 2 RTGB, PLACE the keylock switch to "OVRD/RESET" for Div II Noninterruptible Instrument RNA Valve, 2-RNA-SV-5261.

_____ 5. USE appropriate figures in the back of this section to provide access/egress routes and equipment.

_____ 6. At the Control Room back panels, REMOVE power to the MSIVs and SRVs to prevent spurious operation AND REMOVE power to HPCI flow control circuits as follows:

_____ a. At Panel 2-H12-P623, PLACE the Normal/Isolate keylock switch to "ISOLATE" for Outboard MSIV AC Power Isolation Switch.

_____ b. At Panel 2-H12-P622, PLACE the Normal/Isolate keylock switch to "ISOLATE" for Inboard MSIV AC Power Isolation Switch.

_____ c. At Control Building 125V DC Distribution Panel 4A:

_____ (1) PLACE CKT 11 to "OFF" for ADS Relay Logic B.

_____ (2) PLACE CKT 2 to "OFF" for HPCI Flow Controller, E41-F053, E41-F054, E41-F026, E41-F028, E51-F005, E51-F025.

_____ (3) PLACE CKT 12 to "OFF" for Inboard Isolation Valve Logic Control Panel 2-H12-P622.

_____ d. At Control Building 125V DC Distribution Panel 4B:

_____ (1) PLACE CKT 11 to "OFF" for ADS Relay Logic A and B Control Panel 2-H12-P628.

_____ (2) PLACE CKT 12 to "OFF" for Outboard Isolation Valve Logic Control Panel 2-H12-P623.

_____ 7. PROCEED to the ASSD equipment cabinet AND OBTAIN the Unit 1 BOP Reactor Operator equipment bag from the ASSD equipment cabinet.

_____ 8. PROCEED to Unit 2 Cable Spread Room 120V AC Emergency Distribution Panel 2D, THEN

_____ a. PLACE all breakers to the "OFF" position.

_____ b. VERIFY reset OR RESET the main power supply breaker.

_____ c. PLACE CKT 25 to "ON" for Div II PNS/N2 Backup Valves 2-RNA-SV-5261, 5251, and 5481.

_____ 9. PROCEED to 2B Battery Room AND PERFORM the following:

_____ a. OPEN Battery Charger 2B-1 transfer switch cover.

_____ b. PLACE Normal/Emergency switch for Battery Charger 2B-1 to "EMERGENCY."

_____ c. OPEN Battery Charger 2B-2 transfer switch cover.

_____ d. PLACE Normal/Emergency switch for Battery Charger 2B-2 to "EMERGENCY."

_____ 10. PROCEED to Unit 2 Turbine Building 4 KV switchgear room.

_____ 11. REMOVE the control power fuses, THEN manually TRIP the following breakers using mechanical trip push button.

At 4 KV Switchgear Bus 2B

_____ a. Compt AB3 (Row S), MG Set 2A Drive Motor

_____ b. Compt AA9 (Row O), MG Set 2B Drive Motor

At 4 KV Switchgear Bus 2C

_____ c. Compt AC1 (Row KK), Condensate Booster Pump 2A

_____ d. Compt AC2 (Row LL), Condensate Booster Pump 2C

_____ e. Compt AC7 (Row QQ), Condensate Pump 2B

At 4 KV Switchgear Bus 2D

_____ f. Compt AD9 (Row J), Condensate Booster Pump 2B

_____ g. Compt AD3 (Row D), Condensate Pump 2A

_____ h. Compt AD2 (Row C), Condensate Pump 2C

_____ 12. PROCEED to Unit 2 Remote Shutdown Panel AND INFORM Unit 2 SCO that the following actions have been completed.

_____ a. Power has been removed to MSIVs and SRVs to prevent spurious operations AND power has been removed to HPCI flow control circuits.

_____ b. Battery Chargers 2B-1 and 2B-2 have been transferred to alternate power.

_____ c. The N_2 Backup Switch AND circuit alignment has been completed for continuous SRV pneumatic supply.

_____ d. Power has been removed to Recirculation Pumps, Condensate, and Condensate Booster Pumps.

_____ 13. IF not in progress, THEN PERFORM Unit 2 Rx Bldg MCC Operator's Section D2 for Manual Service Water Valve Operations.

_____ 14. WHEN directed by the Unit 2 RSDP/PMI Reactor Operator, THEN PERFORM the following:

_____ a. PROCEED to 2B RHR HX Room.

_____ b. MONITOR RHR HX B Service Water Outlet Temp Ind, 2-SW-TI-808.

****

CAUTION

Failure to maintain RHR Heat Exchanger service water outlet temperature below 180°F may challenge the short term seismic qualification of the RHR Service Water System and associated support structures.

****

_____ c. IF RHR HX 2B service water outlet temperature approaches 180°F, THEN NOTIFY Unit 2 RSDP/PMI Reactor Operator.

_____ 15. ASSIST Unit 2 SCO as directed.

FIGURE 1

Control Building 49' and 23' Elevation Access/Egress

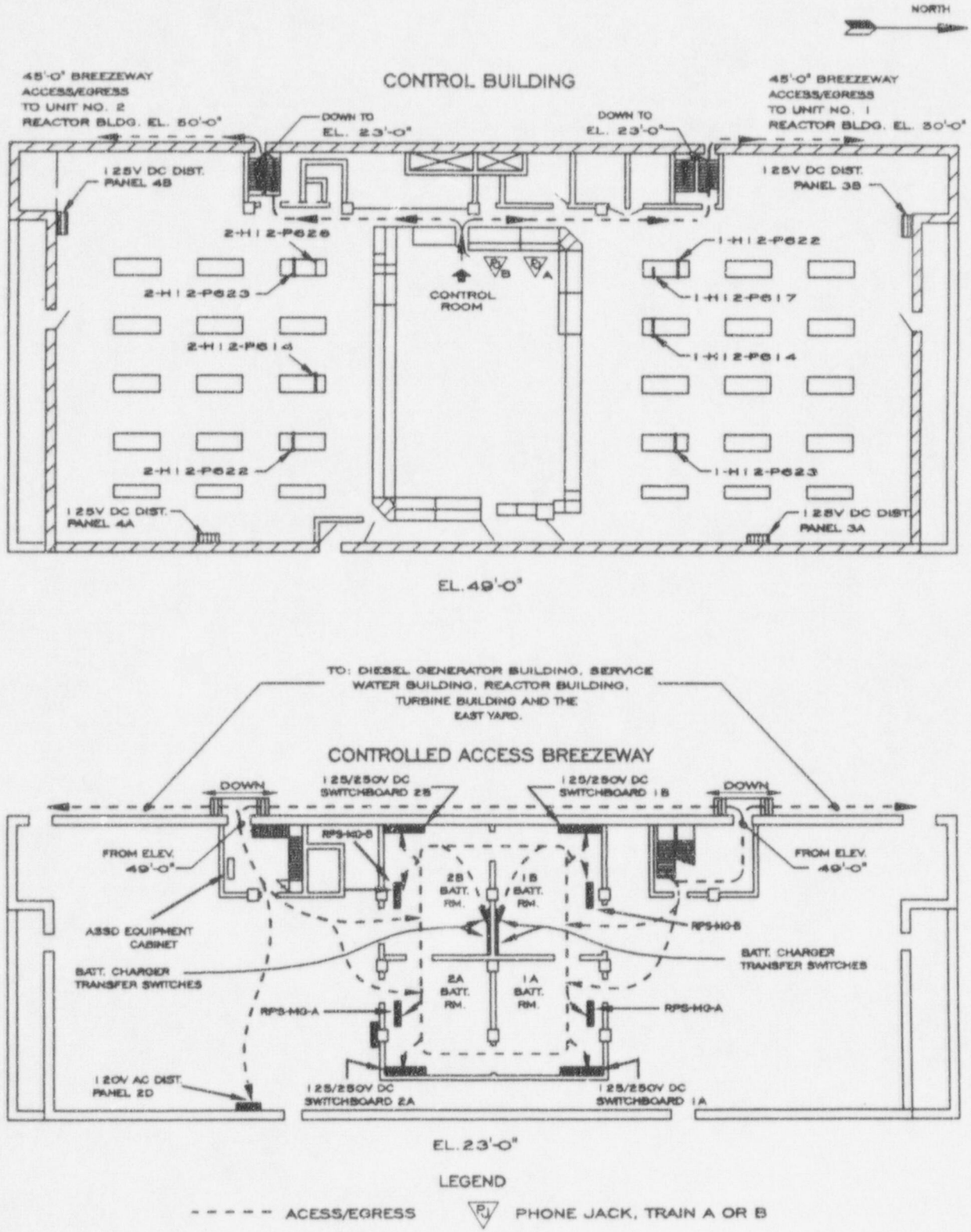


FIGURE 2

Turbine Building 20' Elevation Access/Egress

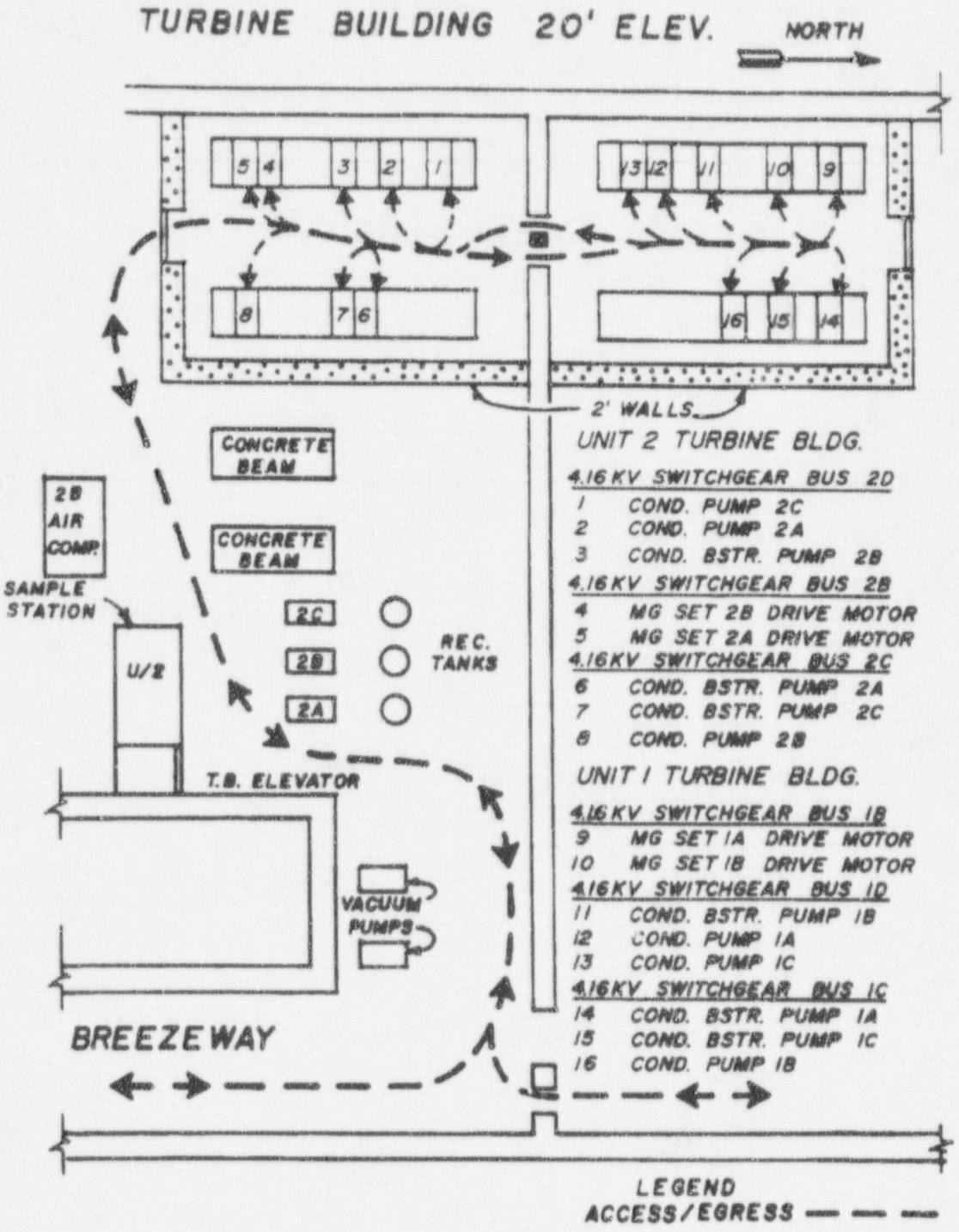


FIGURE 3

Unit 2 Reactor Building 50' Elevation Access/Egress

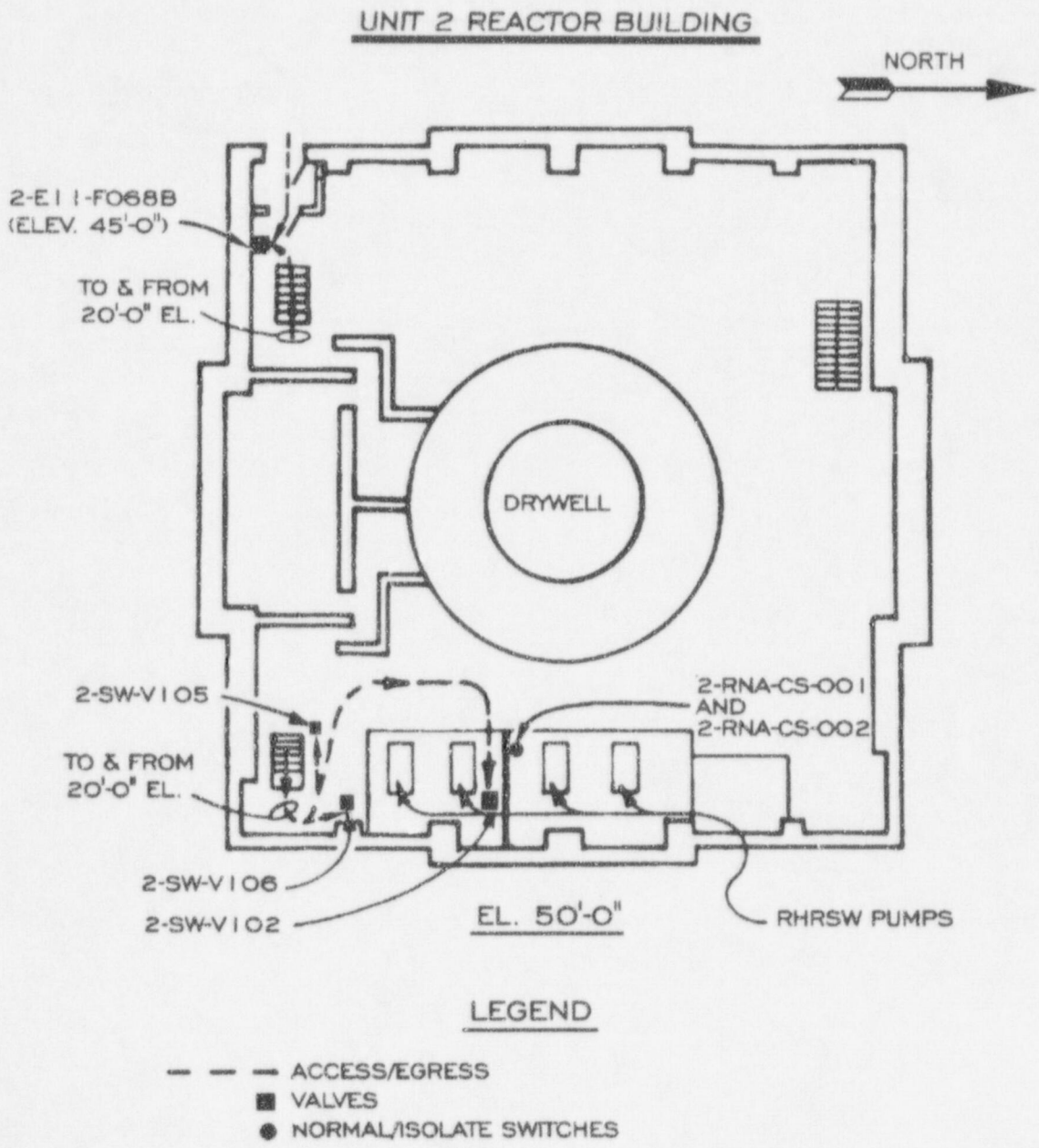


FIGURE 4

Unit 2 Reactor Building 20' Elevation Access/Egress
and
Sound Powered Phone Communications

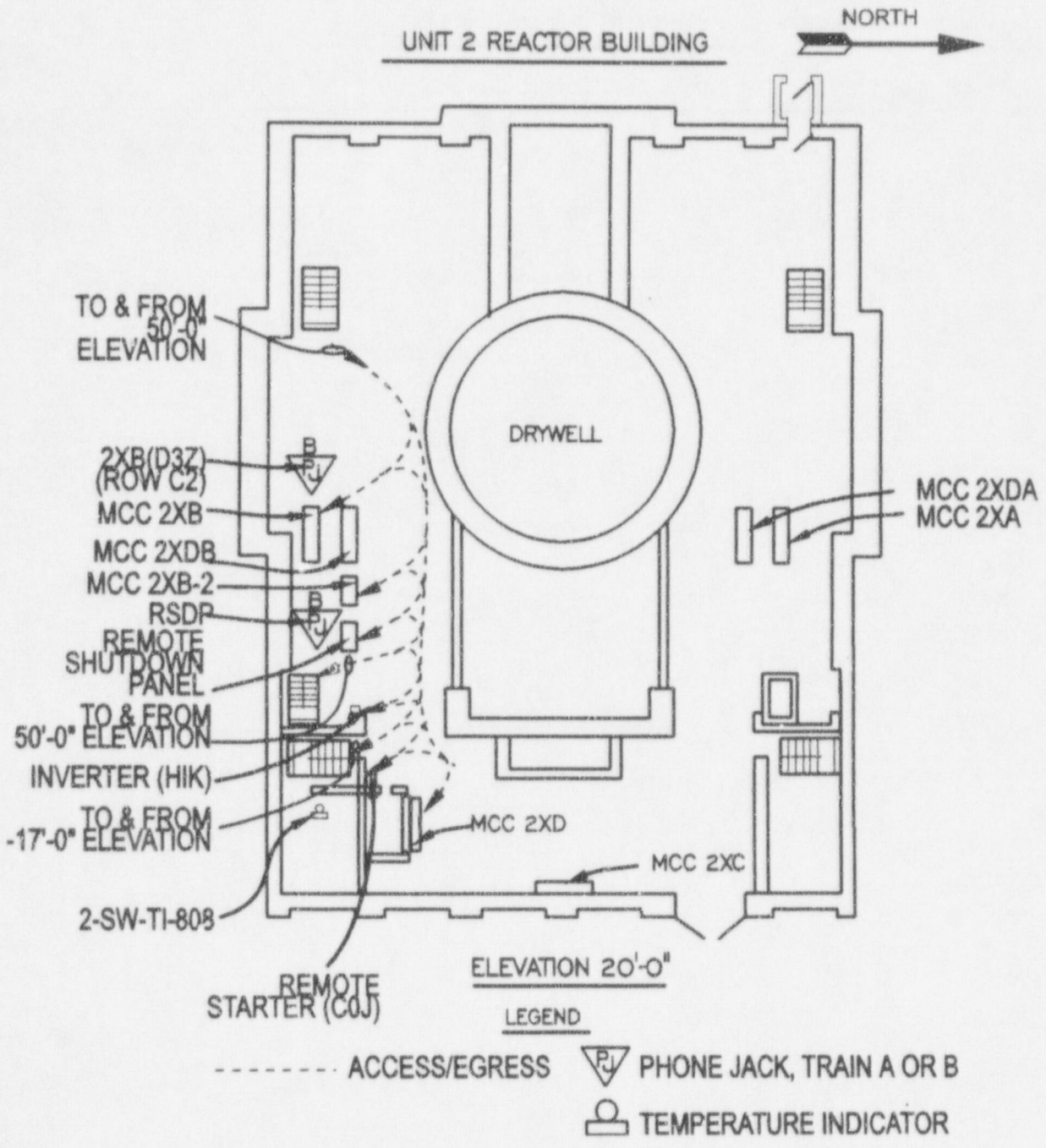


FIGURE 5

Unit 2 Reactor Building -17' Elevation Access/Egress

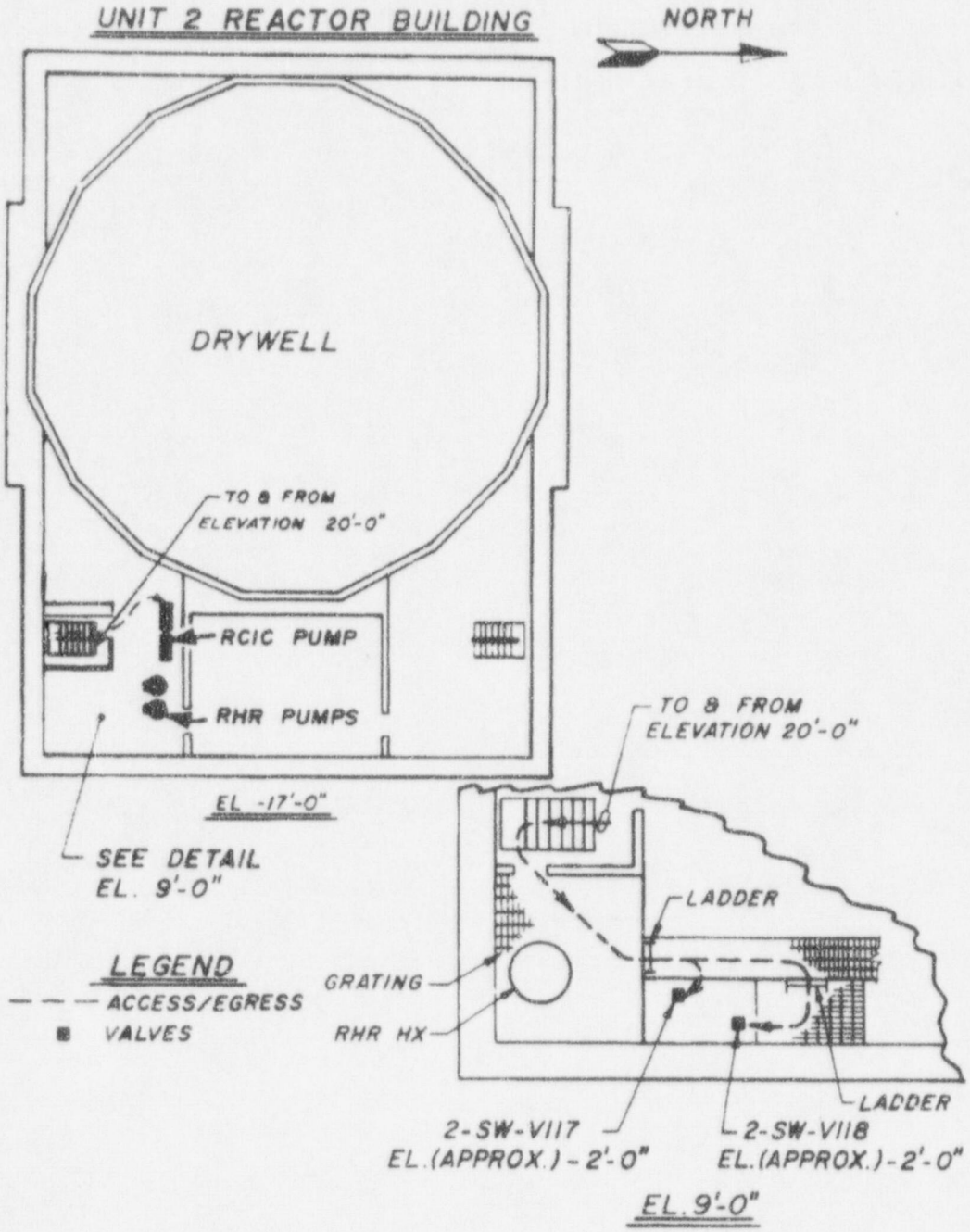
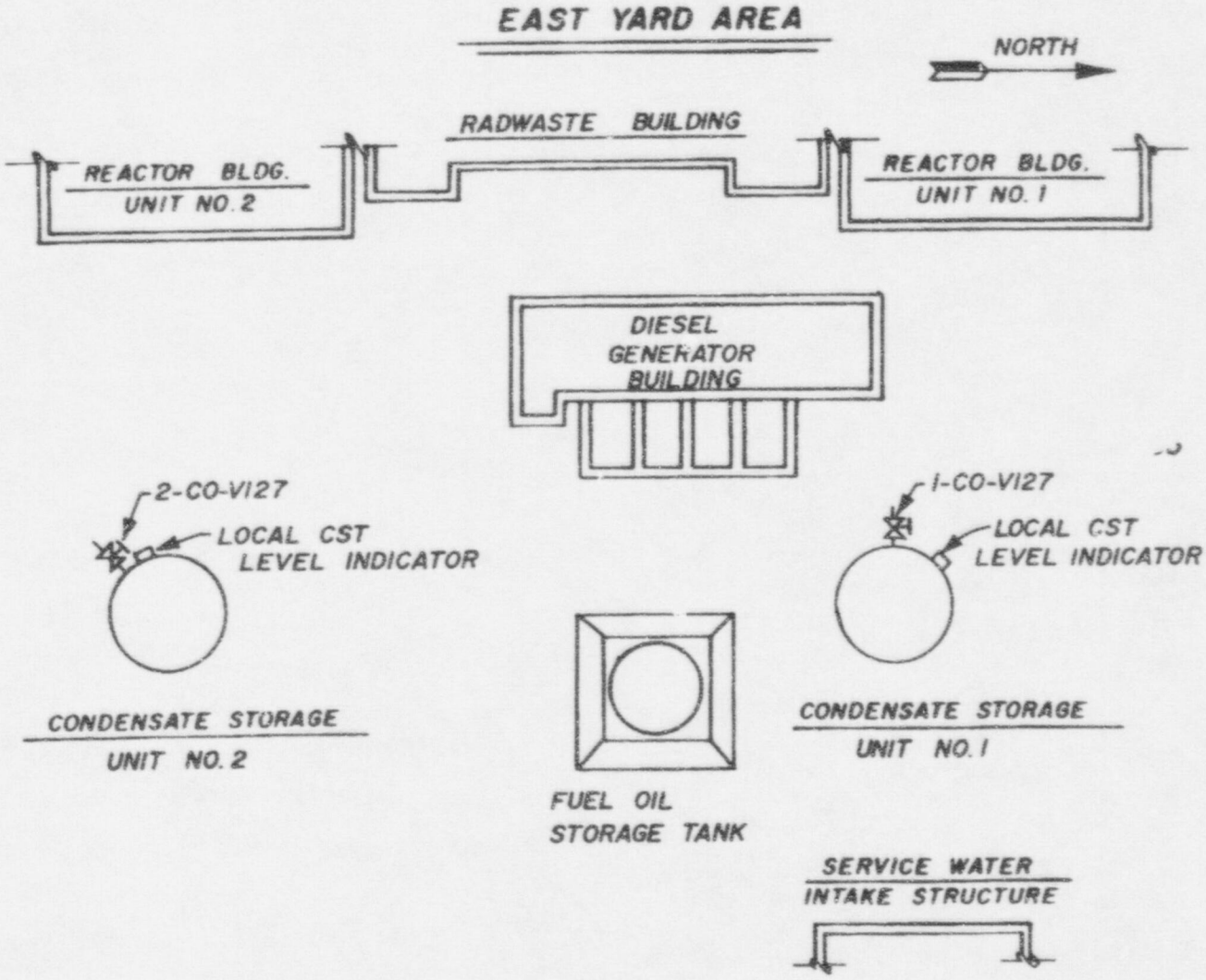


FIGURE 6

East Yard Structures and Equipment Locations



SECTION "C"

UNIT 2 RSDP/PMI REACTOR OPERATOR (REMOTE SHUTDOWN PANEL OPERATOR) ACTIONS

****

CAUTION

Interlocks that would normally prevent inadvertent draining of the reactor coolant to the suppression pool, due to improper valve positioning, are bypassed when operating the valves manually or with the ASSD switches selected for local operation. Caution must be exercised when performing RHR valve operations in this procedure to ensure that each valve operation is fully completed prior to performing the next sequential operation.

(This caution is a result of SOER 87-2 "Inadvertent draining of reactor vessel to suppression pool at BWRs", and may not be removed without concurrence of Regulatory Affairs.)

****

_____ 1. OBTAIN a security access key from the ASSD equipment cabinet.

_____ 2. USE appropriate figures in the back of this section to provide access/egress routes, equipment, and communication locations AND PROCEED to the Unit 2 Remote Shutdown Panel.

_____ 3. ALIGN switches on RSDP listed in table below as follows:

_____ a. PLACE control switch in position, THEN

_____ b. PLACE Normal/Local switch to "LOCAL" OR Isolation Switch to "ISOL".

EQUIPMENT NUMBER	DESCRIPTION	CONTROL SWT POS	NORMAL/LOCAL OR ISOLATION SWT POS
2-SW-V143	Well Water Supply Valve	CLOSED	LOCAL
2-E51-RS-SS	RCIC Turb Trip Logic	N/A	LOCAL
	Train "B" (Unit 2) Control Rm Isolation Sw.	N/A	ISOL
2-B21-F013E	Manual Relief Valve E	OFF	LOCAL
2-B21-F013G	Manual Relief Valve G	OFF	LOCAL
2-B21-F013B	Manual Relief Valve B	OFF	LOCAL
2-B21-CS-3345	Reactor Water Level	N/A	LOCAL
2-SW-V141	Well Water to Vital Header	CLOSED	LOCAL

_____ 4. OBSERVE parameters on instruments listed below while performing actions to achieve and maintain cold shutdown.

Instrument	Location
2-C32-PI-3332 Reactor Pressure	Remote Shutdown Panel
2-B21-LI-R604BX Reactor Water Level	Remote Shutdown Panel
2-B21-LI-5977 Reactor Level	Remote Shutdown Panel
2-CAC-TR-778 Drywell Temp (Pts. 1, 3, and 4)	Remote Shutdown Panel
2-E51-FIC-3325 RCIC Flow Controller	Remote Shutdown Panel
2-E11-FI-3338 RHR System B Flow	Remote Shutdown Panel
2-CAC-TR-778 Suppression Pool Water Temp. (Pt. 6 and 7)	Remote Shutdown Panel
2-CAC-LI-3342 Suppression Pool Level	Remote Shutdown Panel
2-CAC-PI-3341 Drywell Pressure	Remote Shutdown Panel
2-CO-LIT-1160 CST Level	CST
2-SW-TI-808 RHR HX B Service Water Outlet Temp Ind	Reactor Bldg-El. 20' South 2B RHR HX Room

_____ 5. ALLOW SRVs to operate at their mechanical setpoint to conserve pneumatics.

NOTE

To save time, establishing communications with other operators on the ASSD sound-powered phone system can be performed simultaneously with the implementation of other steps in this procedure.

_____ 6. ESTABLISH ASSD sound-powered phone communications as follows:

_____ a. PLUG a Y-jack into the ASSD Unit 2 Train B Sound Powered Phone Ckt.

_____ b. PLUG the sound-powered phone into the Y-jack installed in the ASSD Unit 2 Train B phone jack.

_____ 7. IF the ASSD sound-powered phone system fails to operate, THEN USE hand-held portable radios or the plant Gai-tronics system to establish communications.

_____ 8. IF directed to perform a rapid depressurization, THEN ESTABLISH sound-powered phone communication AND PROCEED to Attachment 1 of this section.

NOTE 1

RCIC Steam Supply to Turbine, E51-F045, may have closed due to high reactor water level.

NOTE 2

RCIC Trip and Throttle Valve, E51-V8, may have tripped closed on turbine overspeed. If this has occurred, the RCIC Turbine Trip light will NOT be illuminated and the valve will still indicate open at MCC 2XDB. RCIC Turbine Trip light will only be illuminated if actuated by depressing manual "TRIP" push button, or a RCIC Pump Suction Low Pressure and/or a RCIC Turbine Exhaust Diaphragm High Pressure trip signal. The valve motor must be run fully closed to reset the actuator to enable reopening the valve.

****

CAUTION

If the RCIC Turbine trips on an actual overspeed condition, the Turbine Trip and Throttle Valve, E51-V8, should not be reset until RCIC flow is at minimum.

****

_____ 9. WHEN informed RCIC is ready for startup, THEN:

_____ a. PLACE the Normal/Local switch to "LOCAL" for the RCIC Flow Controller.

_____ b. RESET RCIC and VERIFY the RCIC turbine trip light is extinguished.

_____ c. VERIFY reactor water level is less than or equal to 200 inches.

_____ d. DIRECT Unit 2 Rx Bldg MCC Operator to START RCIC.

_____ e. IF RCIC does not start, THEN DIRECT Unit 2 Rx Bldg MCC Operator to RESET RCIC Trip and Throttle Valve, E51-V8.

_____ f. WHEN informed RCIC is reset and ready for startup, THEN DIRECT Unit 2 Rx Bldg MCC Operator to START RCIC.

_____ g. IF RCIC is running, THEN adjust the RCIC flow controller as necessary to maintain reactor water level between 170 and 200 inches.

_____ h. INFORM Unit 2 SCO of RCIC status.

_____ 10. WHEN directed, THEN START reactor depressurization and cooldown at greater than 100°F/hr using SRVs and RCIC as follows:

NOTES

When cycling SRVs, sequence E, G, and B should be used to evenly distribute heat load to the suppression pool.

Cool down rate is determined by obtaining reactor coolant temperature using Temperature vs Pressure curve on Table 1 of this section. Temperature is then plotted on Table 2 of this section for temperature vs time to derive the cooldown rate.

_____ a. OPEN as many SRVs as is necessary to achieve a cooldown rate greater than 100°F/hr.

_____ b. MAINTAIN reactor water level greater than 20 inches.

_____ c. PLOT cooldown rate on Table 2 of this section.

_____ d. IF reactor water level approaches 20 inches during depressurization, THEN CLOSE as many SRVs as necessary to maintain reactor water level greater than 20 inches.

NOTE

RCIC suction should not be transferred from CST to suppression pool if suppression pool temperature is greater than 140°F.

_____ e. IF suppression pool level increases to -2 feet AND suppression pool water temperature is less than 140°F, THEN DIRECT Unit 2 Rx Bldg MCC Operator to TRANSFER RCIC suction from CST to suppression pool.

_____ 11. WHEN informed the switch lineup on the MCCs is complete, THEN DIRECT Unit 2 Rx Bldg MCC Operator to:

_____ a. PERFORM Section D2, Manual Service Water Valve Operations, AND

_____ b. PERFORM Section D3, Establishing Service Water Flow through RHR HX 2B.

_____ 12. WHEN informed service water flow has been established through RHR Heat Exchanger 2B, THEN DIRECT Unit 2 Rx Bldg MCC Operator to START suppression pool cooling in accordance with Section D4.

_____ a. WHEN RHR System B flow indicates 9,500 to 10,000 gpm, THEN DIRECT Unit 2 MCC Operator to STOP THROTTLING OPEN E11-F024B

_____ 13. WHEN reactor pressure indicates less than 120 psig, THEN INFORM Unit 2 SCO.

_____ 14. DIRECT Unit 2 Rx Bldg MCC Operator to STOP suppression pool cooling in accordance with Section D5.

_____ 15. IF the reactor vessel level is less than 200 inches or decreases to less than 200 inches anytime during shutdown cooling, THEN DIRECT Unit 2 Rx Bldg MCC Operator to ADD makeup water to the reactor vessel.

_____ a. WHEN reactor water level has been raised to between 200 and 210 inches, THEN DIRECT Unit 2 Rx Bldg MCC Operator to STOP ADDING water to the reactor vessel.

_____ 16. WHEN informed suppression pool cooling is stopped, THEN DIRECT Unit 2 Rx Bldg MCC Operator to START shutdown cooling in accordance with Section D6.

****

CAUTION

An RHR Pump should not be operated with a discharge flow rate of less than 500 gpm for more than one minute with the RHR pumps minimum flow bypass valve closed.

****

_____ a. WHEN RHR System B Flow indicates 1000 to 1100 gpm, THEN DIRECT Unit 2 Rx Bldg MCC Operator to STOP THROTTLING OPEN E11-F048B.

_____ b. MAINTAIN 1000 to 1100 gpm flow through RHR system for 15 minutes to warm up system piping.

_____ c. DIRECT Unit 2 Rx Bldg MCC Operator to THROTTLE OPEN E11-F048B to establish 5,000 to 10,000 gpm RHR flow rate.

_____ d. WHEN RHR System B Flow indicates 5,000 to 10,000 gpm, THEN DIRECT Unit 2 Rx Bldg MCC Operator to STOP THROTTLING OPEN E11-F048B.

****

CAUTION

Failure to maintain RHR Heat Exchanger service water outlet temperature below 180°F may challenge the short term seismic qualification of the RHR Service Water System and associated support structures.

****

_____ e. DIRECT the Unit 1 BOP Reactor Operator to monitor RHR HX 2B service water outlet temperature on 2-SW-TI-808.

_____ f. DIRECT Unit 2 Rx Bldg MCC Operator to ESTABLISH RHR flow through RHR HX 2B.

****

CAUTION

RPV cooldown rate, RHR Heat Exchanger service water outlet temperature, and RHR System flow requirements must be monitored once E11-F048B and E11-F003B are throttled.

****

_____ 17. INCREASE OR DECREASE cooldown rate as necessary to achieve 45 to 50°F/hr cooldown rate by directing Unit 2 Rx Bldg MCC Operator to PERFORM one OR more of the following:

NOTE

Use pressure vs temperature curve on Table 1 of this section to monitor reactor cooldown.

_____ a. THROTTLE RHR Hx B Service Water Discharge Valve, E11-PCV-F068B, while maintaining nuclear service water header pressure at 40 psig or greater.

_____ b. THROTTLE RHR HX 2B Byp Vlv, E11-F048B.

_____ c. THROTTLE RHR HX 2B Outlet Valve, E11-F003B.

_____ 18. WHEN reactor pressure has decreased to 60 psig, THEN:

_____ a. DIRECT Unit 2 Rx Bldg MCC Operator to STOP RCIC operation by closing E51-F045 AND

_____ b. INFORM Unit 2 SCO that RCIC system operation is no longer required and RCIC is being shut down.

_____ 19. MONITOR reactor vessel cooldown using Table 1 and 2 of this section AND ASSIST Unit SCO as directed.

_____ 20. WHEN reactor pressure has decreased to 0 psig, THEN INFORM Unit SCO.

ATTACHMENT 1

A. TITLE

Unit 2 Reactor Vessel Rapid Depressurization

B. ENTRY CONDITIONS

WHEN directed by the Unit SCO to initiate a rapid depressurization

C. OPERATOR ACTIONS

_____ 1. DIRECT Unit 2 Rx Bldg MCC Operator to INITIATE Section D9 for LPCI Injection.

_____ 2. WHEN informed LPCI is running, THEN

_____ a. OPEN all SRVs.

_____ b. WHEN RHR flow starts to increase THEN MAINTAIN flow at the desired rate to increase vessel level to 200 inches by directing Unit 2 Rx Bldg MCC Operator to THROTTLE RHR HX 2B Byp Vlv, E11-F048B.

_____ 3. IF increased RHR flow is desired THEN DIRECT the Emergency Switchgear Operator DG Bldg to START RHR Pump 2D.

_____ 4. WHEN reactor water level has been increased to between 150 and 160 inches, THEN DIRECT the Emergency Switchgear Operator DG Bldg to STOP RHR Pump 2D.

_____ 5. WHEN reactor water level has been increased to between 200 and 210 inches, THEN:

_____ a. DIRECT Unit 2 Rx Bldg MCC Operator to CLOSE RHR Inboard Inj Vlv, E11-F015B.

_____ b. DIRECT the Emergency Switchgear Operator DG Bldg to STOP RHR Pump 2B.

_____ 6. WHEN it is determined that LPCI injection is no longer needed, THEN:

_____ a. DIRECT Unit 2 Rx Bldg MCC Operator to CLOSE RHR HX 2B Byp Vlv, E11-F048B.

_____ b. DIRECT Unit 2 Rx Bldg MCC Operator to START shutdown cooling in accordance with Section D6.

_____ c. EXIT this attachment AND return to Section C to a compatible step for plant conditions.

TABLE 1

Reactor Pressure Vs Saturation Temperature

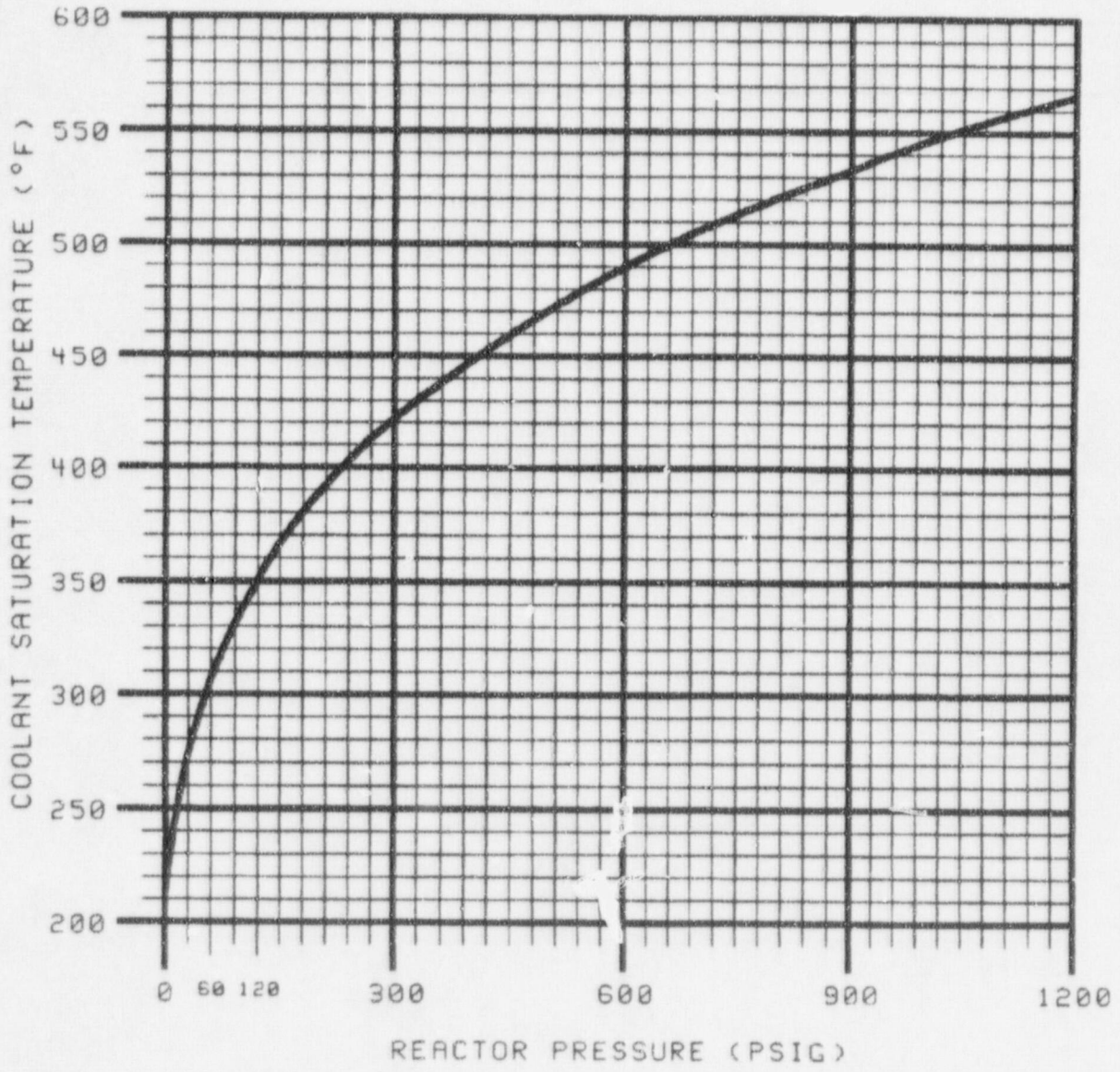


TABLE 2

Reactor Cooldown Plot

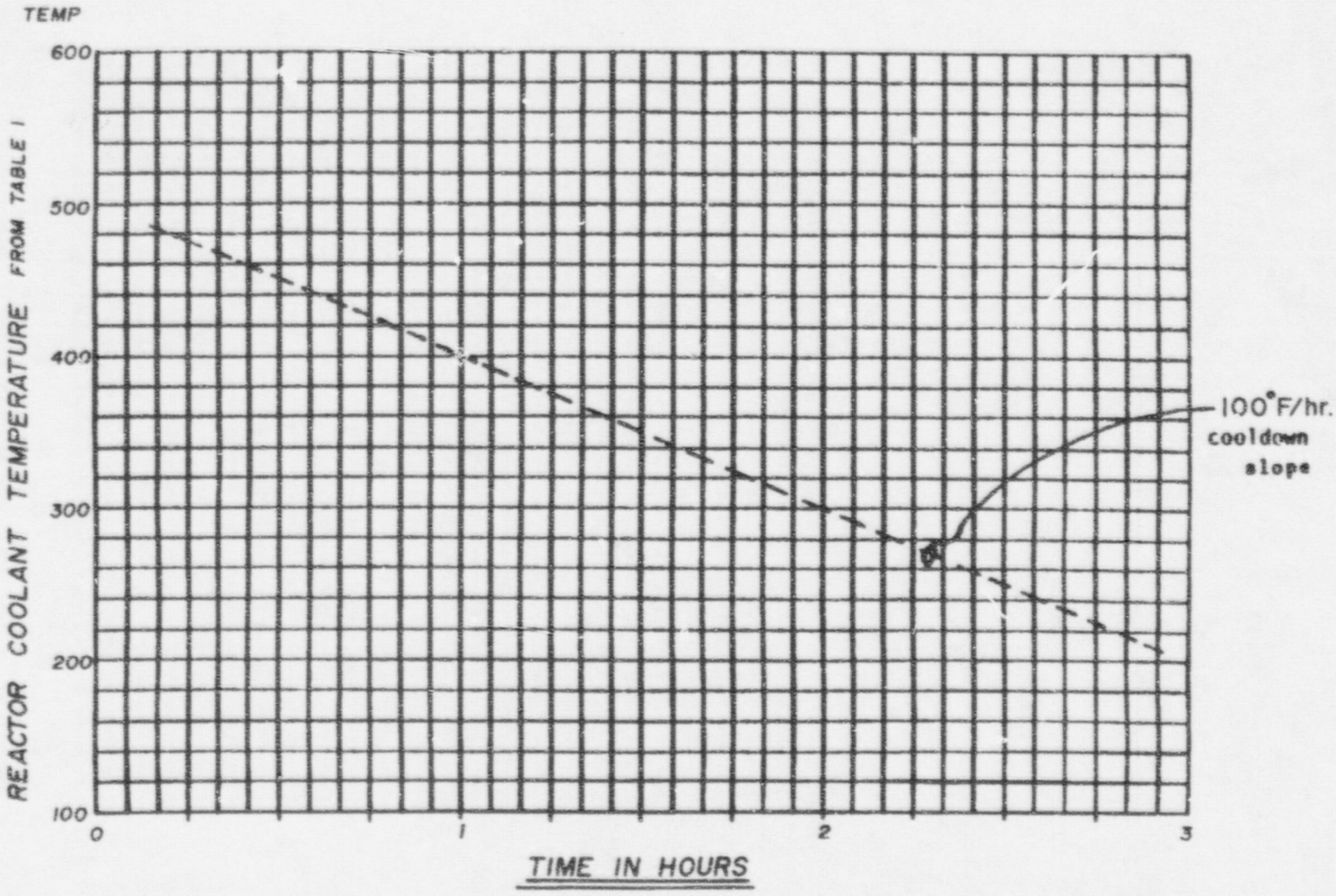


FIGURE 1

Control Building 49' and 23' Elevation Access/Egress

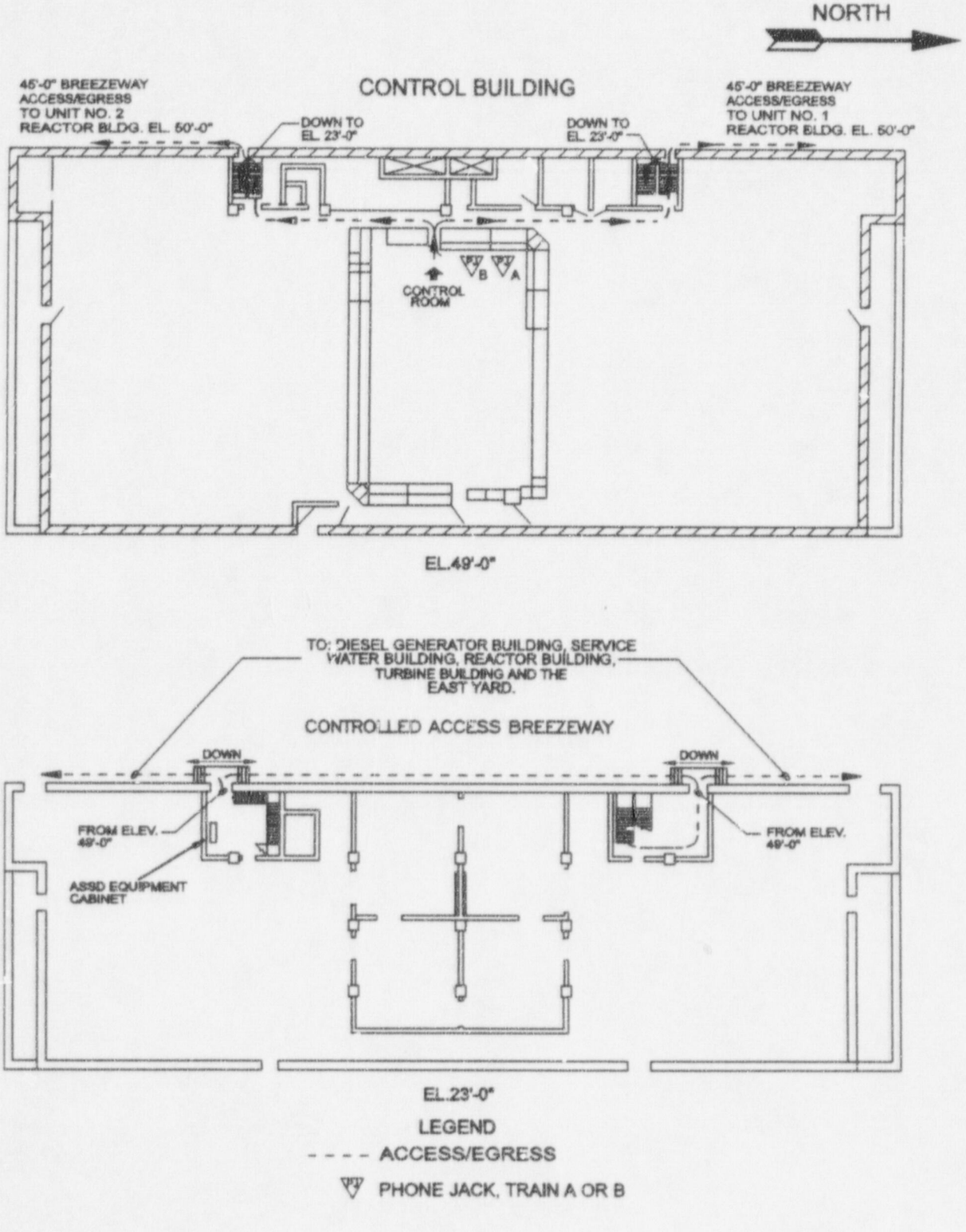


FIGURE 2

Unit 2 Reactor Building 50' Elevation Access/Egress

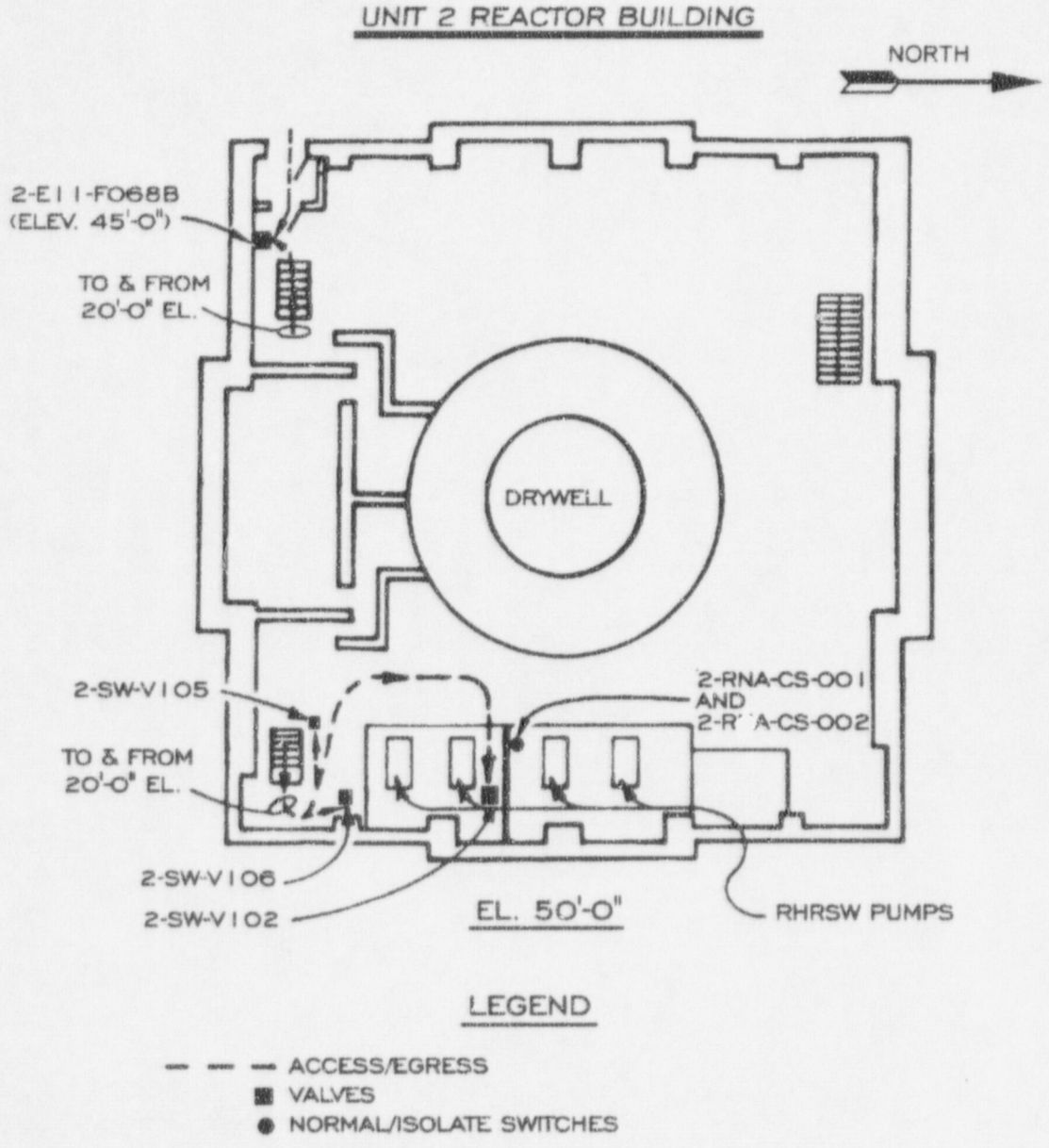
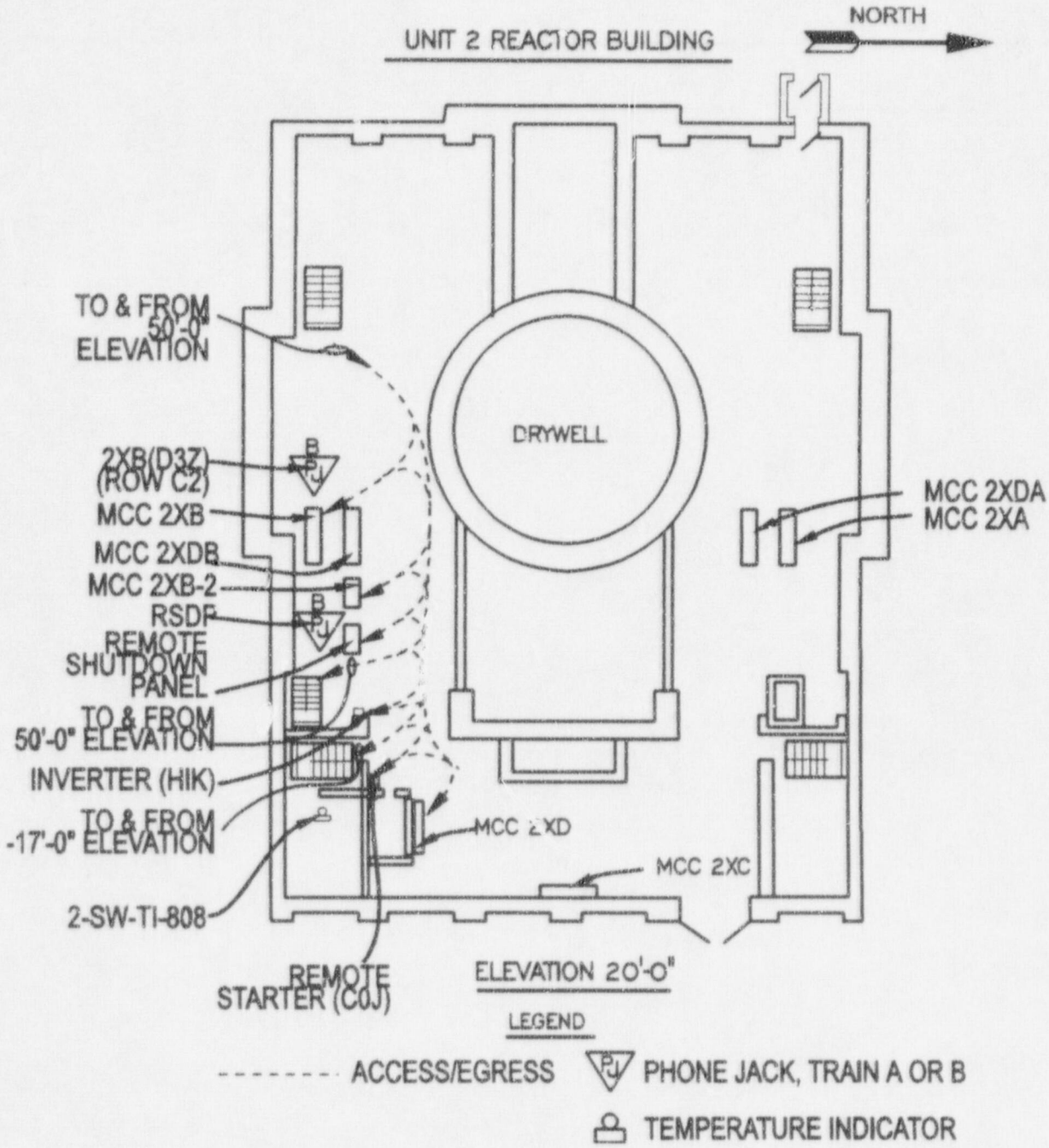


FIGURE 3

Unit 2 Reactor Building 20' Elevation Access/Egress
and
Sound Powered Phone Communications



SECTION "D"

UNIT 2 RX BLDG MCC OPERATOR ACTIONS

INDEX

D1 Initial Actions and RCIC Operations

D2 Manual Service Water Valve Operations

D3 Establishing Service Water Flow Through RHR HX 2B

D4 Placing Suppression Pool Cooling in Service

D5 Removing Suppression Pool Cooling From Service

D6 Placing Shutdown Cooling in Service

D7 Removing Shutdown Cooling From Service

D8 Adding Makeup Water to the Reactor Vessel

D9 LPCI Injection

SECTION D1

INITIAL ACTIONS AND RCIC OPERATIONS

****

CAUTION

Interlocks that would normally prevent inadvertent draining of the reactor coolant to the suppression pool, due to improper valve positioning, are bypassed when operating the valves manually or with the ASSD switches selected for local operation. Caution must be exercised when performing RHR valve operations in this procedure to ensure that each valve operation is fully completed prior to performing the next sequential operation.

(This caution is a result of SOER 87-2 "Inadvertent draining of reactor vessel to suppression pool at BWRs", and may not be removed without concurrence of Regulatory Affairs.)

****

_____ 1. OBTAIN a security key from the ASSD equipment cabinet.

_____ 2. USE appropriate figures in the back of this section to provide access/egress routes, equipment, and communication locations.

_____ 3. PROCEED to Unit 2 Reactor Building AND PERFORM the following at MCC 2XD:

NOTE

Power is considered available to an MCC when indicating lights are illuminated at that MCC.

_____ a. At Compt DW2 (Row E3) for RCIC Turbine Vacuum Breaker Valve, E51-F062:

_____ (1) PLACE breaker to "ON" AND

_____ (2) IF power is available, THEN OPEN valve.

_____ b. At Compt DW1 (Row F3) for HPCI Steam Line Isolation Valve, E41-F002:

_____ (1) PLACE Normal/Local switch to "LOCAL" AND

_____ (2) IF power is available, THEN CLOSE valve.

NOTE

Communication may be established any time using the ASSD Unit 2 Train B Sound Powered Phone Ckt at MCC 2XB Compt D3Z (Row C2). In the event the ASSD sound-powered phone system is inoperable, hand-held portable radios or the plant Gai-tronics system may be used.

_____ 4. PERFORM the following at MCC 2XDB.

_____ a. For items that have maintained contact control switches (switches without an * or a #):

_____ (1) VERIFY OR PLACE the control switch to the position indicated on the table, THEN

_____ (2) VERIFY OR PLACE Normal/Local switch to "LOCAL."

_____ b. For items that have spring return to "NEUT" or "OFF" control switches (switches that have an * or #):

_____ (1) VERIFY OR PLACE Normal/Local switch to "LOCAL," THEN

_____ (2) OPERATE the control switch of the item with an * or # as required to line up the item to the position indicated on the table.

NOTE

*Control switches for these items are spring return to "NEUT" or "OFF" AND have a seal in. Momentarily placing the switch to the position indicated on the table will line up the valve.

#Control switches for these items are spring return to "NEUT" or "OFF" AND DO NOT have a seal in. The control switch must be held in position until the valve is fully stroked to the position indicated on the table.

COMPT/ CKT	DESCRIPTION	EQUIPMENT NUMBER	CONTROL SWT/VLV POS	NORMAL/ LOCAL SWT POS
LOCATION	MCC 2XDB Reactor Building El 20' South			
BOC (Row A3)	Valve 2-E11-F009 Interlock With RHR Pumps 2B and 2D	2-E11-F009	N/A	ISOLATE
B36 (Row B3)	RCIC Barometric Condenser Condensate Pump	2-E51-C002-CP	START	LOCAL
B37 (Row C1)	RCIC Turbine Trip and Throttle Valve	2-E51-V8	CLOSED	LOCAL

COMPT/ CKT	DESCRIPTION	EQUIPMENT NUMBER	CONTROL SWT/VLV POS	NORMAL/ LOCAL SWT POS
B38 (Row C2)	RCIC Condensate Storage Tank Suction Valve	2-E51-F010	*OPEN	LOCAL
B39 (Row D1)	RCIC Cooling Water Supply Valve	2-E51-F046	*OPEN	LOCAL
B40 (Row D2)	RCIC Pump Discharge Valve	2-E51-F012	*OPEN	LOCAL
B41 (Row E1)	RCIC Injection Valve	2-E51-F013	*OPEN	LOCAL
B42 (Row E2)	RCIC Bypass to Condensate Storage Tank Valve	2-E51-F022	#CLOSED	LOCAL
B43 (Row F1)	RCIC Steam Supply Outboard Isolation Valve	2-E51-F008	*OPEN	LOCAL
B44 (Row F2)	RCIC Turbine Steam Supply Valve	2-E51-F045	*CLOSED	LOCAL
B45 (Row G1)	RCIC Suppression Pool Suction Valve	2-E51-F031	*CLOSED	LOCAL
B46 (Row G2)	RCIC Suppression Pool Suction Valve	2-E51-F029	*CLOSED	LOCAL
B47 (Row H1)	RCIC Minimum Flow Bypass to Suppression Pool Valve	2-E51-F019	*CLOSED	LOCAL
B48 (Row H2)	RWCU Outboard Isolation Valve	2-G31-F004	#CLOSED	LOCAL
B52 (Row J1)	Main Steam Line Drain Outboard Isolation Valve	2-B21-F019	*CLOSED	LOCAL

_____ 5. WHEN switch lineup for MCC 2XDB is complete, THEN INFORM RSDP Operator.

_____ 6. VERIFY open OR OPEN RCIC Steam Supply Inboard Isolation Valve, E51-F007, by performing the following:

_____ a. At inverter Panel H1K, START the inverter for RCIC Steam Supply Inboard Isolation Valve by performing the following.

_____ (1) OPEN the left side of the inverter cabinet

_____ (2) DEPRESS AND HOLD S1 push button.

_____ (3) Confirm red lamp DS1 cycles ON, then OFF.

_____ (4) Wait 5 seconds.

_____ (5) Place breaker CB6 to "ON."

_____ (6) Release S1 push button.

_____ b. At Remote Starter Panel COJ, IF RCIC Steam Supply Inboard Isolation, E51-F007, does NOT indicate full OPEN, THEN:

_____ (1) PLACE control switch for valve to "OPEN" for 3 to 5 seconds to partially open valve.

_____ (2) WAIT 30 to 60 seconds, to equalize pressure across valve.

_____ (3) Fully OPEN E51-F007.

_____ c. INFORM the Unit 2 RSDP/PMI Reactor Operator that RCIC is ready to start.

_____ 7. WHEN directed to start RCIC, THEN PERFORM the following at MCC 2XDB:

_____ a. At Compt B37 (Row C1), OPEN RCIC Turbine Trip and Throttle Valve, E51-V8.

_____ b. At Compt B44 (Row F2), OPEN RCIC Turbine Steam Supply Valve, E51-F045.

_____ c. INFORM Unit 2 RSDP/PMI Reactor Operator that E51-V8 AND E51-F045 are open AND RCIC should be running IF NOT tripped.

_____ 8. IF directed to RESET RCIC, THEN PERFORM the following:

_____ a. At MCC 2XDB Compt B44 (Row F2), CLOSE RCIC Turbine Steam Supply Valve, E51-F045.

****

CAUTION

When closing the RCIC Turbine Trip and Throttle Valve, E51-V8, hold the control switch in the CLOSE position for 5 seconds after receiving full closed indication to ensure the latch mechanism is fully engaged.

****

_____ b. At MCC 2XDB Compt B37 (Row C1), CLOSE RCIC Turbine Trip and Throttle Valve, E51-V8.

_____ c. DIRECT the Unit 2 RSDP/PMI Reactor Operator to RESET RCIC.

_____ d. IF RCIC has tripped on mechanical overspeed (ask the Unit 2 RSDP/PMI Reactor Operator), THEN RESET the mechanical overspeed trip device locally at Trip and Throttle Valve, E51-V8, as follows:

_____ (1) Depending on body position, either PUSH OR PULL against spring pressure the emergency connection rod in the direction of the Turbine Trip and Throttle Valve, E51-V8 (approximately one inch).

_____ (2) OBSERVE the tappet and ball assembly, which resembles a plunger, drops into place.

_____ (3) IF the tappet and ball assembly does NOT drop in place, THEN lightly DEPRESS the assembly.

_____ (4) RELEASE the emergency connection rod.

_____ e. INFORM the Unit 2 RSDP/PMI Reactor Operator that RCIC is reset and ready for startup.

_____ f. WHEN directed to start RCIC, THEN PERFORM the following at MCC 2XDB.

_____ (1) At Compt B37 (Row C1), OPEN RCIC Turbine Trip and Throttle Valve, E51-V8.

_____ (2) At Compt B44 (Row F2), OPEN RCIC Turbine Steam Supply Valve, E51-F045.

_____ (3) INFORM Unit 2 RSDP/PMI Reactor Operator that RCIC should be running.

_____ 9. IF directed, THEN TRANSFER RCIC suction from CST to suppression pool at MCC 2XDB as follows:

_____ a. At Compt B45 (Row G1), OPEN RCIC Suppression Pool Suction Valve, E51-F031.

_____ b. At Compt B46 (Row G2), OPEN RCIC Suppression Pool Suction Valve, E51-F029.

_____ c. At Compt B38 (Row C2), CLOSE RCIC Condensate Storage Tank Suction Valve, E51-F010.

_____ 10. WHEN directed to stop RCIC operation, THEN at MCC 2XDB Compt B44 (Row F2), CLOSE RCIC Steam Supply to Turbine, E51-F045.

****

CAUTION

Interlocks that would normally prevent inadvertent draining of the reactor coolant to the suppression pool, due to improper valve positioning, are bypassed when operating the valves manually or with the ASSD switches selected for local operation. Caution must be exercised when performing RHR valve operations in this procedure to ensure that each valve operation is fully completed prior to performing the next sequential operation.

(This caution is a result of SOER 87-2 "Inadvertent draining of reactor vessel to suppression pool at BWRs", and may not be removed without concurrence of Regulatory Affairs.)

****

_____ 11. IF power is NOT available to MCC 2XB AND/OR MCC 2XB-2, THEN PERFORM the following switch lineup in the sequence indicated at the deenergized MCC(s).

_____ a. IF power becomes available during the performance of this step, THEN EXIT this step AND PROCEED to the next step.

_____ b. PLACE control switch to the position indicated on the table, THEN

_____ c. PLACE Normal/Local switch to "LOCAL."

COMPT/ CKT	DESCRIPTION	EQUIPMENT NUMBER	CONTROL SWT/VLV POS	NORMAL/ LOCAL/ ISOLATE SWT POS
LOCATION	MCC 2XB Reactor Building El 20' South			
BV9 (Row C1)	RS-A-SS Suction Valve	2-B32-F023B	N/A	LOCAL
BV9 (Row C1)	RS-B-SS Suction Valve	2-B32-F023B	N/A	LOCAL
BV9 (Row C1)	South RHR Vent Fan	2-B-FCU-RB	START	LOCAL
DN6 (Row G1)	RHR Pumps 2B and 2D Supp. Pool Suction Valve	2-E11-F020B	OPEN	LOCAL
DP2 (Row G2)	Nuclear Service Water to Vital Header Valve	2-SW-V117	N/A	LOCAL
DN9 (Row G4)	RHR HX B Service Water Discharge Valve	2-E11-F002B	N/A	LOCAL
DM1 (Row H3)	Nuclear Service Water Supply Valve	2-SW-V105	N/A	LOCAL
DM6 (Row H4)	Conventional-Nuclear Header Cross-Tie Valve	2-SW-V102	N/A	LOCAL
DL8 (Row I2)	RHR Drywell Spray Outboard Isolation Valve	2-E11-F016B	CLOSED	LOCAL

COMPT/ CKT	DESCRIPTION	EQUIPMENT NUMBER	CONTROL SWT/VLV POS	NORMAL/ LOCAL/ ISOLATE SWT POS
DM2 (Row J2)	RHR Suppression Pool Cooling Isolation Valve	2-E11-F024B	N/A	LOCAL
DM4 (Row J3)	RHR Suppression Pool Spray Isolation Valve	2-E11-F027B	CLOSED	LOCAL
DN1 (Row K4)	RHR HX B Service Water Discharge Valve	2-E11-PDV-F068B	N/A	LOCAL
DL5 (Row L4)	RCIC Turbine Exhaust Vacuum Breaker Valve	2-E51-F066	N/A	LOCAL
DK9 (Row M1)	RHR Pump 2B Suppression Pool Suction Valve	2-E11-F004B	OPEN	LOCAL
DK3 (Row M2)	RHR Minimum Flow Bypass Valve	2-E11-F007B	N/A	LOCAL
DL0 (Row M3)	RHR Pump 2D Suppression Pool Suction Valve	2-E11-F004D	OPEN	LOCAL
DK8 (Row N1)	RHR HX 2B Outlet Valve	2-E11-FC03B	OPEN	LOCAL
DM7 (Row N2)	RHR HX 2B Inlet Valve	2-E11-F047B	CLOSED	LOCAL
DM8 (Row N3)	RHR HX 2B Byp Vlv	2-E11-F048B	CLOSED	LOCAL
D3Y (Row N4)	Isolation Switch 2-D37-IS1 for Valve 2-CAC-SV-1218C	2-CAC-SV-1218C	N/A	ISOLATE
D3Y (Row N4)	Isolation Switch 2-D3Y-IS2 for Valve 2-CAC-SV-1225C	2-CAC-SV-1225C	N/A	ISOLATE
D3Y (Row N4)	Isolation Switch 2-D3Y-IS3 for Valve 2-CAC-SV-4345	2-CAC-SV-4345	N/A	ISOLATE
LOCATION	MCC 2XB-2 Reactor Building El 20' South			
DL9 (Row C2)	RHR Outboard Injection Valve	2-E11-F017B	OPEN	LOCAL
DL7 (Row D3)	RHR Inboard Inj Vlv	2-E11-F015B	N/A	LOCAL
DM5 (Row B4)	RHR Suppression Pool Discharge Isolation Valve	2-E11-F028B	CLOSED	LOCAL

_____ 12. WHEN power is available to MCC 2XD, THEN:

_____ a. At Compt DW2 (Row E3), OPEN OR VERIFY open RCIC Turbine Vacuum Breaker Valve, E51-F062.

_____ b. At Compt DW1 (Row F3), CLOSE OR VERIFY closed HPCI Steam Line Isolation Valve, E41-F002.

_____ 13. WHEN power is available to MCC 2XB and MCC 2XB-2 (in either order), THEN immediately PERFORM the following switch lineup in the sequence indicated at the energized MCC(s):

NOTE

If a switch lineup was completed with no power available to MCC 2XB and/or MCC 2XB-2 (Step 11), then only Step b.(2) below must be performed at each MCC that the initial switch lineup was completed at.

_____ a. For items that have maintained contact control switches (switches without an * or a #):

_____ (1) VERIFY OR PLACE the control switch to the position indicated on the table, THEN

_____ (2) VERIFY OR PLACE Normal/Local switch to "LOCAL."

_____ b. For items that have spring return to "NEUT" or "OFF" control switches (switches that have an * or #):

_____ (1) VERIFY OR PLACE Normal/Local switch to "LOCAL," THEN

_____ (2) OPERATE the control switch of the item with an * or # as required to line up the item to the position indicated on the table.

*Control switches for these items are spring return to "NEUT" or "OFF" AND have a seal in for the position indicated on the table.

#Control switches for these items are spring return to "NEUT" or "OFF" AND DO NOT have a seal in. The control switch must be held in position until the valve is fully stroked to the position indicated on the table.

COMPT/ CKT	DESCRIPTION	EQUIPMENT NUMBER	CONTROL SWT/VLV POS	NORMAL/ LOCAL/ ISOLATE SWT POS
LOCATION	MCC 2XB Reactor Building El 20' South			
BV9 (Row C1)	RS-A-SS Suction Valve	2-B32-F023B	*CLOSED	LOCAL
BV9 (Row C1)	RS-B-SS Suction Valve	2-B32-F023B	*CLOSED	LOCAL
BV9 (Row C1)	South RHR Vent Fan	2-B-FCU-RB	START	LOCAL
DN6 (Row G1)	RHR Pumps 2B and 2D Supp. Pool Suction Valve	2-E11-F020B	OPEN	LOCAL
DP2 (Row G2)	Nuclear Service Water to Vital Header Valve	2-SW-V117	#OPEN	LOCAL
DN9 (Row G4)	RHR HX B Service Water Discharge Valve	2-E11-F002B	*OPEN	LOCAL
DM1 (Row (H3)	Nuclear Service Water Supply Valve	2-SW-V105	*OPEN	LOCAL
DM6 (Row H4)	Conventional-Nuclear Header Cross-Tie Valve	2-SW-V102	*CLOSED	LOCAL
DL8 (Row I2)	RHR Drywell Spray Outboard Isolation Valve	2-E11-F016B	CLOSED	LOCAL
DM2 (Row J2)	RHR Suppression Pool Cooling Isolation Valve	2-E11-F024B	#CLOSED	LOCAL
DM4 (Row J3)	RHR Suppression Pool Spray Isolation Valve	2-E11-F027B	CLOSED	LOCAL
DN1 (Row K4)	RHR HX B Service Water Discharge Valve	2-E11-PDV-F068B	#CLOSED	LOCAL
DL5 (Row L4)	RCIC Turbine Exhaust Vacuum Breaker Valve	2-E51-F066	*OPEN	LOCAL
DK9 (Row M1)	RHR Pump 2B Suppression Pool Suction Valve	2-E11-F004B	OPEN	LOCAL

COMPT/ CKT	DESCRIPTION	EQUIPMENT NUMBER	CONTROL SWT/VLV POS	NORMAL/ LOCAL/ ISOLATE SWT POS
DL3 (Row M2)	RHR Minimum Flow Bypass Valve	2-E11-F007B	*OPEN	LOCAL
DL0 (Row M3)	RHR Pump 2D Suppression Pool Suction Valve	2-E11-F004D	OPEN	LOCAL
DK8 (Row N1)	RHR HX 2B Outlet Valve	2-E11-F003B	OPEN	LOCAL
DM7 (Row N2)	RHR HX 2B Inlet Valve	2-E11-F047B	CLOSED	LOCAL
DK8 (Row N3)	RHR HX 2B Byp Vlv	2-E11-F048B	CLOSED	LOCAL
D3Y (Row N4)	Isolation Switch 2-D37-IS1 for Valve 2-CAC-SV-1218C	2-CAC-SV-1218C	N/A	ISOLATE
D3Y (Row N4)	Isolation Switch 2-D3Y-IS2 for Vale 2-CAC-SV-1225C	2-CAC-SV-1225C	N/A	ISOLATE
D3Y (Row N4)	Isolation Switch 2-D3Y-IS3 for Valve 2-CAC-SV-4345	2-CAC-SV-4345	N/A	ISOLATE
LOCATION	MCC 2XB-2 Reactor Building El 20' South			
DL9 (Row C2)	RHR Outboard Injection Valve	2-E11-F017B	OPEN	LOCAL
DL7 (Row D3)	RHR Inboard Inj Vlv	2-E11-F015B	*CLOSED	LOCAL
DM5 (Row B4)	RHR Suppression Pool Discharge Isolation Valve	2-E11-F028B	CLOSED	LOCAL

_____ 14. WHEN alignment of switches on the MCCs is complete, THEN INFORM Unit 2 RSDP/PMI Reactor Operator.

SECTION D2

MANUAL SERVICE WATER VALVE OPERATIONS

_____ 1. CLOSE SW-V118 and SW-V106 as follows:

_____ 2. VERIFY with the Diesel Generator Operator that power has been removed from MCC 2XA. (Breaker tripped at Substation E7)

_____ 3. VERIFY closed OR manually CLOSE Nuclear Header to RBCCW Heat Exchanger Isolation Valve, SW-V106. (50' el.)

_____ 4. VERIFY closed OR manually CLOSE Vital Service Water Divisional Tie Valve, SW-V118. (9' el.)

_____ 5. INFORM Unit 2 RSDP/PMI Reactor Operator that 2-SW-V118 and 2-SW-V106 are closed.

SECTION D3

ESTABLISHING SERVICE WATER FLOW THROUGH RHR HX 2B

_____ 1. WHEN directed to establish service water flow through RHR Heat Exchanger 2B, THEN:

_____ a. PERFORM Section D2 for Manual Service Water Valve Operations.

_____ b. DIRECT Service Water Building Operator to INFORM you when Unit 2 nuclear header pressure decreases to 40 psig.

_____ c. At MCC 2XB Compt DN1 (Row K4), THROTTLE OPEN RHR HX 2B Service Header Outlet Valve, E11-PDV-F068B, until informed nuclear header pressure has decreased to 40 psig.

_____ d. INFORM Unit 2 RSDP/PMI Reactor Operator that service water flow has been established through RHR Heat Exchanger 2B.

SECTION D4

PLACING SUPPRESSION POOL COOLING IN SERVICE

____ 1. WHEN directed to start suppression pool cooling, THEN:

_____ a. COMPLETE Section D2 for Manual Service Water Valve Operations.

_____ b. COMPLETE Section D3 for Establishing Service Water Flow through RHR HX 2B.

_____ c. At MCC 2XB-2 Compt DM5 (Row B4), OPEN RHR Suppression Pool Discharge Isolation Valve, E11-F028B.

_____ d. DIRECT the Emergency Switchgear Operator DG Bldg to START RHR Pump 2B.

_____ e. WHEN informed RHR Pump 2B is running, THEN at MCC 2XB Compt DM8 (Row N3), slowly THROTTLE OPEN RHR HX 2B Bypass Valve, E11-F048B, until valve is full open.

_____ f. At MCC 2XB Compt DM2 (Row J2), COORDINATE with the Unit 2 RSDP/PMI Reactor Operator and THROTTLE OPEN RHR Suppression Pool Cooling Isolation Valve, E11-F024B, to establish 9,500 to 10,000 gpm flow.

_____ g. At MCC 2XB Compt DL3 (Row M2), CLOSE RHR Minimum Flow Bypass Valve, E11-F007B.

_____ h. At MCC 2XB, ESTABLISH RHR flow through RHR Heat Exchanger 2B as follows:

_____ (1) At Compt DM7 (Row N2), VERIFY OPEN OR OPEN RHR HX 2B Inlet Valve, E11-F047B.

_____ (2) At Compt DK8 (Row N1), VERIFY OPEN OR FULLY OPEN RHR HX 2B Outlet Valve, E11-F003B.

_____ (3) At Compt DM8 (Row N3), CLOSE RHR HX 2B Byp Vlv, E11-F048B.

_____ 2. INFORM Unit 2 RSDP/PMI Reactor Operator that suppression pool cooling is in service.

SECTION D5

REMOVING SUPPRESSION POOL COOLING FROM SERVICE

____ 1. WHEN directed to stop suppression pool cooling THEN:

_____ a. At MCC 2XB Compt DL3 (Row M2), OPEN Minimum Flow Bypass Valve, E11-F007B.

_____ b. At MCC 2XB Compt DM2 (Row J2), CLOSE Suppression Pool Isolation Valve, E11-F024B.

_____ c. DIRECT the Emergency Switchgear Operator DG Bldg to STOP RHR Pump 2B.

_____ d. WHEN informed RHR Pump 2B is stopped, THEN at MCC 2XB-2 Compt DM5 (Row B4), CLOSE Suppression Pool Discharge Isolation Valve, E11-F028B.

_____ e. At MCC 2XB Compt DM7 (Row N2), CLOSE RHR HX 2B Inlet Valve, E11-F047B.

_____ f. INFORM the Unit 2 RSDP/PMI Reactor Operator that suppression pool cooling is removed from service.

SECTION D6

PLACING SHUTDOWN COOLING IN SERVICE

****

CAUTION

Interlocks that would normally prevent inadvertent draining of the reactor coolant to the suppression pool, due to improper valve positioning, are bypassed when operating the valves manually or with the ASSD switches selected for local operation. Caution must be exercised when performing RHR valve operations in this procedure to ensure that each valve operation is fully completed prior to performing the next sequential operation.

(This caution is a result of SOER 87-2 "Inadvertent draining of reactor vessel to suppression pool at BWRs", and may not be removed without concurrence of Regulatory Affairs.)

****

_____ 1. WHEN directed to start shutdown cooling, THEN:

_____ a. COMPLETE Section D2 for Manual Service Water Valve Operations.

_____ b. COMPLETE Section D3 for Establishing Service Water Flow Through RHR HX 2B.

_____ c. At MCC 2XB, PERFORM the following:

_____ (1) At Compt DN6 (Row G1), CLOSE RHR Pump B and D Suppression Pool Suction Valve, E11-F020B.

_____ (2) At Compt DK9 (Row M1), CLOSE RHR Pump B Suppression Pool Suction Valve, E11-F004B.

_____ (3) At Compt DL0 (Row M3), CLOSE RHR Pump D Suppression Pool Suction Valve, E11-F004D.

_____ (4) At Compt DL3 (Row M2), CLOSE RHR Minimum Flow Bypass Valve, E11-F007B.

_____ (5) At Compt DL1 (Row L2):

_____ (a) PLACE the Normal/Local switch to "LOCAL."

_____ (b) PLACE the breaker to "ON."

_____ (c) OPEN RHR Pump B Shutdown Cooling Suction Valve, E11-F006B.

____ (6) At Compt DL2 (Row L3):

_____ (a) PLACE the Normal/Local switch to "LOCAL."

_____ (b) PLACE the breaker to "ON."

____ (c) OPEN RHR Pump D Shutdown Cooling Suction Valve, E11-F006D.

_____ d. At MCC 2XD Compt DX5 (Row F2):

_____ (1) PLACE the breaker to "ON."

_____ (2) OPEN RHR Shutdown Cooling Inboard Isolation Valve, E11-F009.

_____ e. At MCC 2XDB Compt B50 (Row A4):

_____ (1) PLACE the Normal/Local switch to "LOCAL."

_____ (2) Slowly THROTTLE OPEN RHR Shutdown Cooling Outboard Isolation Valve, E11-F008.

_____ f. At MCC 2XB, PERFORM the following:

_____ (1) At Compt DM7 (Row N2), VERIFY closed OR CLOSE RHR HX 2B Inlet Valve, E11-F047B.

_____ (2) At Compt DK8 (Row N1), VERIFY open OR OPEN RHR HX 2B Outlet Valve, E11-F003B.

_____ (3) At Compt DM8 (Row N3), VERIFY closed OR CLOSE RHR HX 2B Byp Vlv, E11-F048B.

_____ (4) DIRECT the Emergency Switchgear Operator DG Bldg to START RHR Pump 2B.

_____ (5) WHEN informed RHR Pump 2B is running, THEN at Compt DM8 (Row N3), slowly THROTTLE OPEN RHR HX 2B Byp Vlv, E11-F048B, until dual indication is received to fill system and limit water hammer.

_____ g. At MCC 2XB-2 Compt DL7 (Row D3), OPEN RHR Inboard Inj Vlv, E11-F015B.

_____ h. At MCC 2XB Compt DM8 (Row N3), THROTTLE OPEN RHR HX Byp Vlv, E11-F048B, until directed to stop to establish 1000 to 1100 gpm RHR flow rate.

****

CAUTION

RPV cooldown rate, RHR Heat Exchanger service water outlet temperature, and RHR System flow requirements must be monitored once E11-F048B and E11-F003B are throttled.

****

_____ i. WHEN directed, THEN at MCC 2XB, THROTTLE OPEN RHR HX 2B Byp Vlv, E11-F048B, to establish 5,000 to 10,000 gpm flow rate.

_____ j. WHEN directed, THEN at MCC 2XB, ESTABLISH RHR flow through RHR Heat Exchanger 2B, by performing the following:

_____ (1) At Compt DK8 (Row N1), CLOSE RHR HX 2B Outlet Valve, E11-F003B.

_____ (2) At Compt DM7 (Row N2), OPEN RHR HX 2B Inlet Valve, E11-F047B.

_____ (3) WHEN directed, THEN PERFORM both of the following at MCC 2XB to establish cooldown rate and maintain desired flow rate:

_____ (a) At Compt DK8 (Row N1), SLOWLY THROTTLE OPEN RHR HX 2B Outlet Valve, E11-F003B.

_____ (b) At Compt DM8 (Row N3), SLOWLY THROTTLE CLOSE RHR HX 2B Byp Vlv, E11-F048B.

_____ 2. INFORM the Unit 2 RSDP/PMI Reactor Operator that shutdown cooling is in service.

_____ 3. IF directed to change cooldown rate, THEN PERFORM one OR more of the following as directed.

_____ a. AT MCC 2XB, PERFORM the following:

_____ (1) At Compt DN1 (Row K4), COORDINATE with the Service Water Building Operator and THROTTLE RHR HX B Service Header Outlet Valve, E11-PDV-F068B, to maintain the Nuclear Service Water Header pressure at 40 psig or greater.

_____ (2) At Compt DM8 (Row N3), THROTTLE RHR HX 2B Bypass Valve, E11-F048B.

_____ (3) At Compt DK8 (Row N1), THROTTLE RHR HX 2B Outlet Valve, E11-F003B.

SECTION D7

REMOVING SHUTDOWN COOLING FROM SERVICE

****

CAUTION

Interlocks that would normally prevent inadvertent draining of the reactor coolant to the suppression pool, due to improper valve positioning, are bypassed when operating the valves manually or with the ASSD switches selected for local operation. Caution must be exercised when performing RHR valve operations in this procedure to ensure that each valve operation is fully completed prior to performing the next sequential operation.

(This caution is a result of SOER 87-2 "Inadvertent draining of reactor vessel to suppression pool at BWRs", and may not be removed without concurrence of Regulatory Affairs.)

****

_____ 1. WHEN directed to stop shutdown cooling, THEN:

_____ a. At MCC 2XB-2 Compt DL7 (Row D3), CLOSE RHR Inboard Inj Vlv, E11-F015B.

_____ b. DIRECT Emergency Switchgear Operator DG Bldg to STOP RHR Pump 2B.

_____ c. WHEN informed RHR Pump 2B is stopped, THEN at MCC 2XDB Compt B50 (Row A4), CLOSE RHR Shutdown Cooling Outboard Isolation Valve, E11-F008.

_____ d. At MCC 2XD Compt DX5 (Row F2), CLOSE RHR Shutdown Cooling Inboard Isolation Valve, E11-F009.

_____ e. At MCC 2XB, PERFORM the following:

_____ (1) At Compt DL1 (Row L2), CLOSE RHR Pump 2B Shutdown Cooling Suction Valve, E11-F006B.

_____ (2) At Compt DL2 (Row L3), CLOSE RHR Pump 2D Shutdown Cooling Suction Valve, E11-F006D.

_____ (3) At Compt DN6 (Row G1), OPEN RHR Pumps B and D Suction Valve, E11-F020B.

_____ (4) At Compt DK9 (Row M1), OPEN RHR Pump B Suppression Pool Suction Valve, E11-F004B.

_____ (5) At Compt DL0 (Row M3), OPEN RHR Pump D Suppression Pool Suction Valve E11-F004D.

_____ (6) At Compt DK8 (Row N1), VERIFY OPEN OR FULLY OPEN RHR HX 2B Outlet Valve, E11-F003B.

_____ (7) At Compt DM7 (Row N2), CLOSE RHR HX 2B Inlet Valve, E11-F047B.

_____ (8) At Compt DM8 (Row N3), CLOSE RHR HX 2B Byp Vlv, E11-F048B.

_____ (9) At Compt DL3 (Row M2), OPEN RHR Minimum Flow Bypass Valve, E11-F007B.

_____ 2. INFORM Unit 2 RSDP/PMI Reactor Operator that shutdown cooling is removed from service.

SECTION D8

ADDING WATER TO THE REACTOR VESSEL

_____ 1. IF directed to add water to the reactor vessel, THEN:

_____ a. IF in suppression pool cooling, THEN PERFORM Section D5 for Removing Suppression Pool Cooling From Service.

_____ b. IF in shutdown cooling, THEN PERFORM Section D7 for Removing Shutdown Cooling From Service.

_____ c. DIRECT the Emergency Switchgear Operator DG Bldg to START RHR Pump 2B.

_____ d. WHEN informed RHR Pump 2B is running, THEN, at MCC 2XB Compt DM8 (Row N3), slowly THROTTLE OPEN RHR HX 2B Byp Vlv, E11-F048B, until dual indication is received to fill the system and limit water hammer.

_____ e. At MCC 2XB-2 Compt DL7 (Row D3), OPEN RHR Inboard Inj Vlv, E11-F015B.

_____ f. At MCC 2XB Compt DM8 (Row N3), COORDINATE with Unit 2 RSDP/PMI Reactor Operator AND THROTTLE OPEN RHR HX 2B Byp Vlv, E11-F048B, as necessary, to restore Reactor water level.

_____ 2. WHEN directed, to stop adding water to the reactor vessel, THEN:

_____ a. At MCC 2XB-2 Compt DL7 (Row D3), CLOSE RHR Inboard Inj Vlv, E11-F015B.

_____ b. DIRECT the Emergency Switchgear Operator DG Bldg to Stop RHR Pump 2B.

_____ c. At MCC 2XB Compt DM8 (Row N3), CLOSE RHR HX 2B Byp Vlv, E11-F048B.

_____ d. INFORM Unit 2 RSDP/PMI Reactor Operator that the lineup for adding water to the reactor vessel is stopped AND the RHR System is ready to be lined up for:

_____ (1) Suppression pool cooling OR

_____ (2) Shutdown cooling OR

_____ (3) LPCI injection

SECTION D9

LPCI INJECTION

_____ 1. IF directed to initiate LPCI injection, THEN:

_____ a. WHEN MCCs 2XB and 2XB-2 are energized, THEN COMPLETE any remaining steps for the MCC switch lineups in the initial actions of Section D1.

_____ b. COMPLETE Section D2 for Manual Service Water Valve Operations.

_____ c. IF in suppression pool cooling, THEN STOP suppression pool cooling in accordance with Section D5.

_____ d. IF in shutdown cooling, THEN STOP shutdown cooling in accordance with Section D7.

_____ e. IF adding water to the reactor vessel in accordance with Section D8 THEN:

_____ (1) CONTINUE with steps in Section D8 until RHR Pump 2B is running and injecting (start RHR Pump 2D if RHR Pump 2B will not start), THEN

_____ (2) PROCEED to Step 1.h.(3) of this section.

_____ f. ESTABLISH ASSD sound-powered phone communication with Unit 2 RSDP/PMI Reactor Operator.

_____ g. IF the ASSD sound-powered phone system fails to operate, THEN USE hand-held portable radios or the plant Gai-tronics system to establish communications.

_____ h. IF NOT adding water to the reactor vessel, THEN:

_____ (1) DIRECT the Emergency Switchgear Operator DG Bldg to START RHR Pump 2B (start RHR Pump 2D if RHR Pump 2B will not start).

_____ (2) WHEN informed RHR Pump 2B(2D) is running, THEN at MCC 2XB Compt DM8 (Row N3), slowly OPEN RHR HX 2B Byp Vlv, E11-F048B, until dual indication is received to fill the system and limit water hammer.

_____ (3) At MCC 2XB-2 Compt DL7 (Row D3), OPEN RHR Inboard Inj Vlv, E11-F015B.

_____ (4) INFORM the Unit 2 RSDP/PMI Reactor Operator that LPCI is running.

_____ (5) At MCC 2XB Compt DM8 (Row N3), COORDINATE with Unit 2 RSDP/PMI Reactor Operator AND THROTTLE OPEN RHR HX 2B Byp Vlv, E11-F048B, as necessary, to restore Reactor water level.

_____ (6) At MCC 2XB-2 Compt DL7 (Row D3), WHEN directed, THEN CLOSE RHR Inboard Inj Vlv, E11-F015B.

_____ (7) At MCC 2XB Compt DM8 (Row N3), WHEN directed, THEN CLOSE RHR HX 2B Byp Vlv, E11-F048B.

_____ 2. WHEN directed, THEN START shutdown cooling in accordance with Section D6.

FIGURE 1

Control Building 49' and 23' Elevation Access/Egress

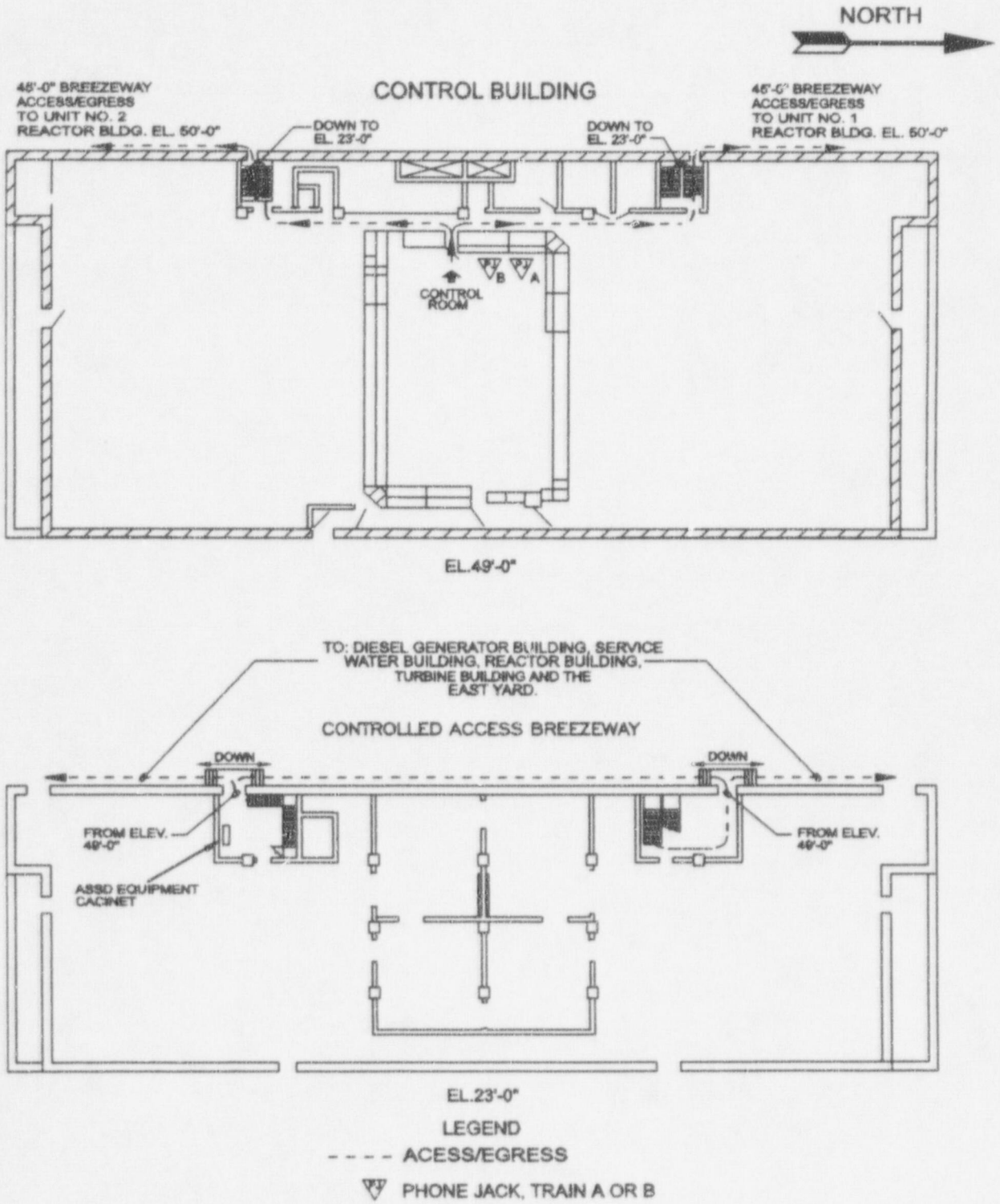


FIGURE 2

Unit 2 Reactor Building 50' Elevation Access/Egress

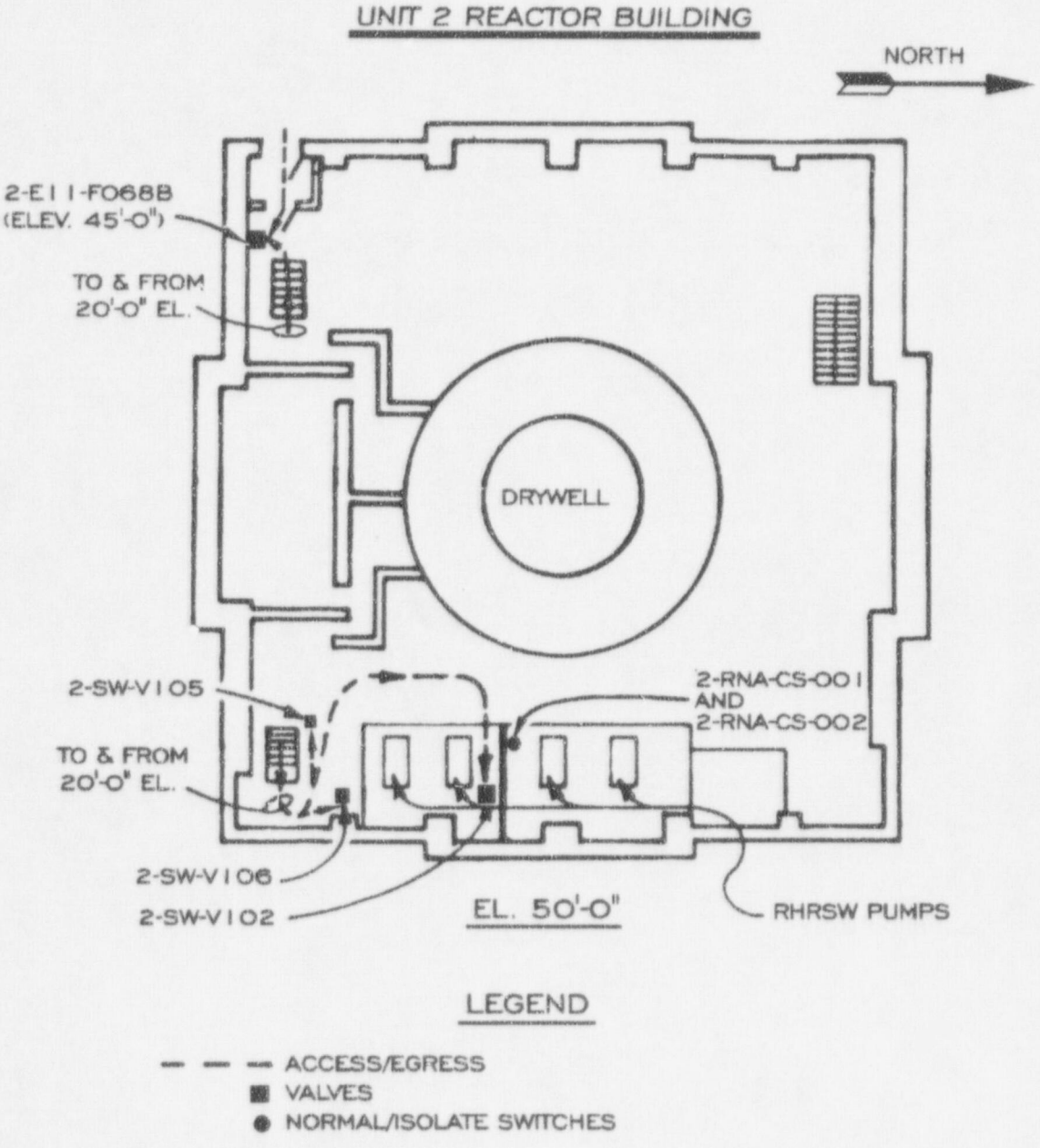


FIGURE 3

Unit 2 Reactor Building 20' Elevation Access/Egress
and
Sound Powered Phone Communications

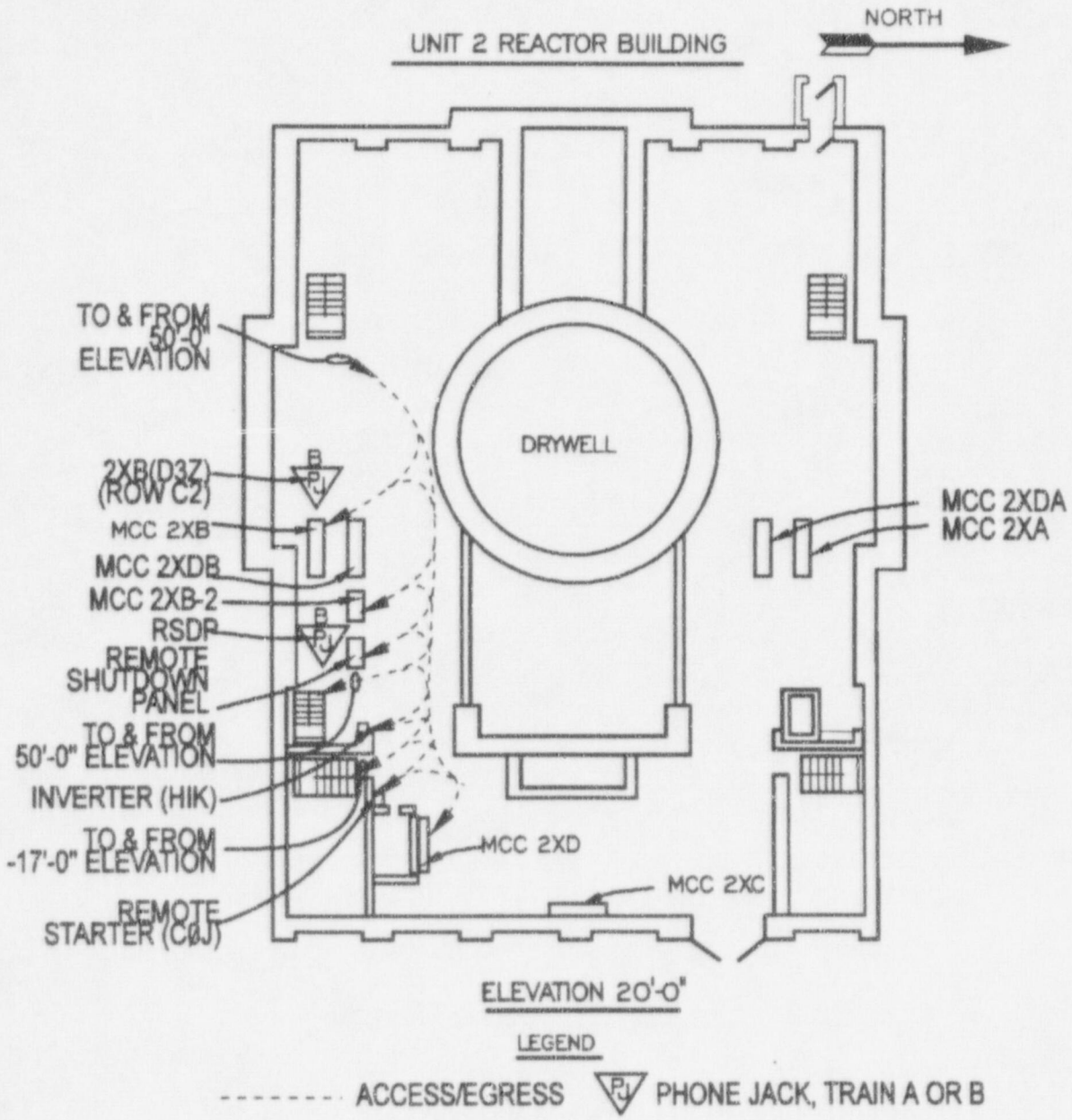
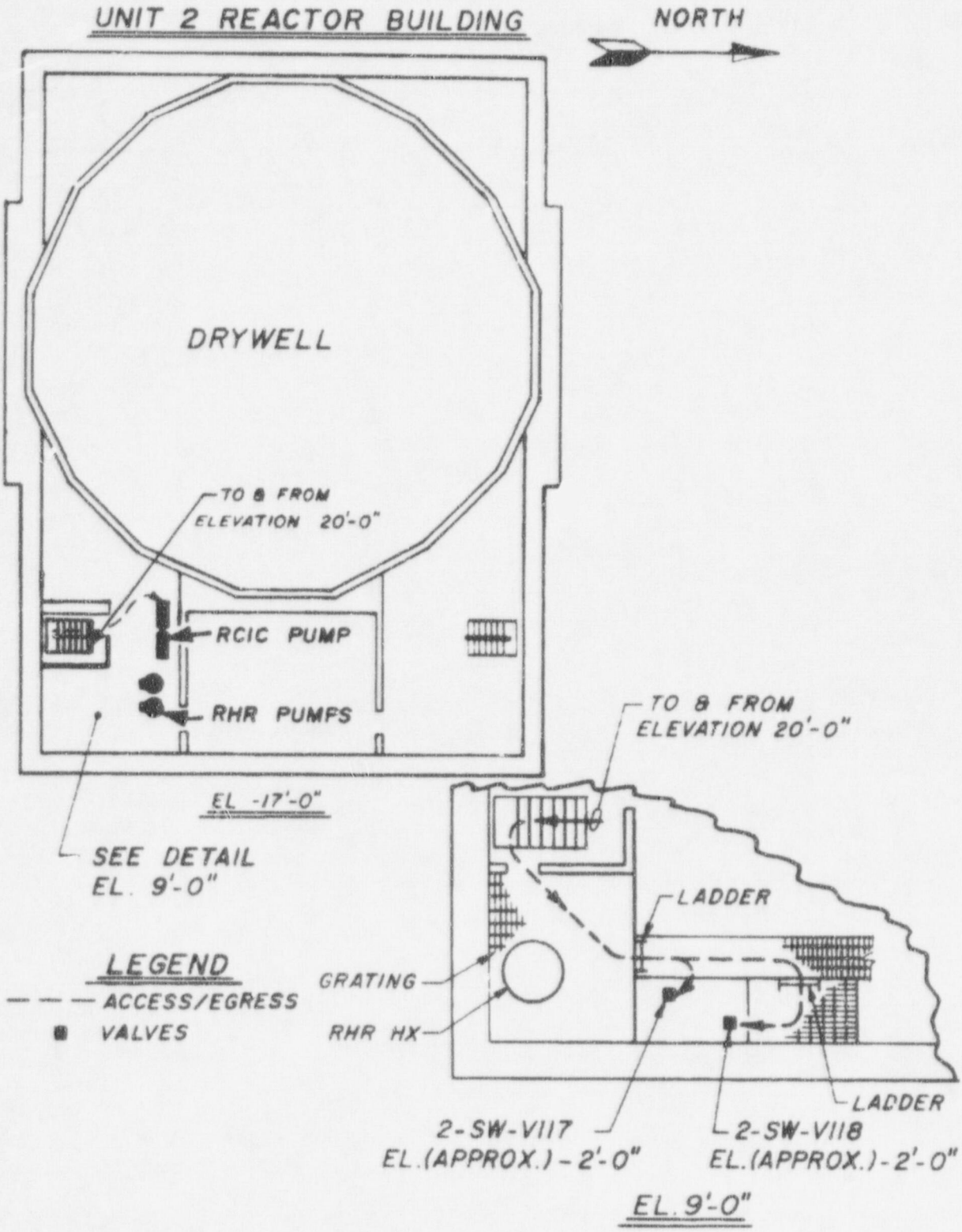


FIGURE 4

Unit 2 Reactor Building -17' Elevation Access/Egress



SECTION "E"

SERVICE WATER BUILDING OPERATOR ACTIONS

_____ 1. OBTAIN a security access key from the ASSD equipment cabinet.

_____ 2. USE appropriate figures in the back of this section to provide access/egress routes, equipment, and communication locations.

_____ 3. REPORT to Service Water Building AND ESTABLISH communications with any available station using either

_____ a. 20' elevation ASSD Unit 2 Train B sound-powered phone ckt located near the center of the west wall close to MCC 2PB

OR

_____ b. 4' elevation ASSD Unit 2 Train B sound-powered phone ckt located near the center of the east wall.

_____ c. IF the ASSD sound-powered phone system fails to operate, THEN USE hand-held portable radios or the plant Gai-tronics system to establish communications.

NOTE

Continuous communication should be maintained except during electrical and manual valve lineups.

_____ 4. At MCC 2PA, PLACE the following breakers to "OFF."

_____ a. At Compt E07 (Row E2), Conventional Service Water Pump 2A Discharge Valve to Conventional Header, 2-SW-V13.

_____ b. At Compt E08 (Row E3), Conventional Service Water Pump 2A Discharge Valve to Nuclear Header, 2-SW-V14.

_____ 5. At MCC 2PB, PLACE the following breakers to "OFF."

_____ a. At Compt E37 (Row E4), Conventional Service Water Pump 2B Discharge Valve to Nuclear Header, 2-SW-V16.

_____ b. At Compt E36 (Row F3), Conventional Service Water Pump 2B Discharge Valve to Conventional Header, 2-SW-V15.

_____ c. At Compt E38 (Row F4), Nuclear Service Water Pump 2B Discharge Valve, 2-SW-V20.

_____ 6. At MCC 1PA, PLACE the following breakers to "OFF."

_____ a. At Compt BU9 (Row E1), Conventional Service Water Pump 2C Discharge Valve to Nuclear Header, 2-SW-V18.

_____ b. At Compt BV0 (Row F1), Conventional Service Water Pump 2C Discharge Valve to Conventional Header, 2-SW-V17.

_____ 7. IF Nuclear Service Water Pump 2B is running, THEN VERIFY open OR manually OPEN its discharge valve, 2-SW-V20.

NOTE

The purpose of the next step is to ensure that the nuclear header is not crosstied to the conventional header through the conventional service water pump discharge valves. If both discharge valves are found open, then it is preferable to close the conventional header valve.

_____ 8. VERIFY closed OR manually CLOSE each conventional service water pump discharge valve to the conventional header.

_____ a. Conventional Service Water Pump 2A Discharge Valve to Conventional Header, 2-SW-V13

_____ b. Conventional Service Water Pump 2B Discharge Valve to Conventional Header, 2-SW-V15

_____ c. Conventional Service Water Pump 2C Discharge Valve to Conventional Header, 2-SW-V17

_____ 9. INFORM the Emergency Switchgear Operator DG Bldg that the service water valve and electrical lineup is complete.

_____ 10. WHEN directed, THEN VERIFY closed OR manually CLOSE Nuclear Service Water Pump 2B Discharge Valve, 2-SW-V20.

_____ 11. WHEN 2-SW-V20 is closed, THEN INFORM Emergency Switchgear Operator DG Bldg.

_____ 12. WHEN directed, THEN manually OPEN Nuclear Service Water Pump 2B Discharge Valve, 2-SW-V20.

_____ 13. WHEN 2-SW-V20 is open, THEN INFORM Emergency Switchgear Operator DG Bldg.

_____ 14. WHEN directed, THEN INFORM Unit 2 Rx Bldg MCC Operator when nuclear header pressure decreases to 40 psig as read on 2-SW-PI-145, located on Nuclear Service Water Pump 2B discharge line.

_____ 15. PERFORM duties as directed by the Unit SCO.

FIGURE 1

Control Building 49' and 23' Elevation Access/Egress

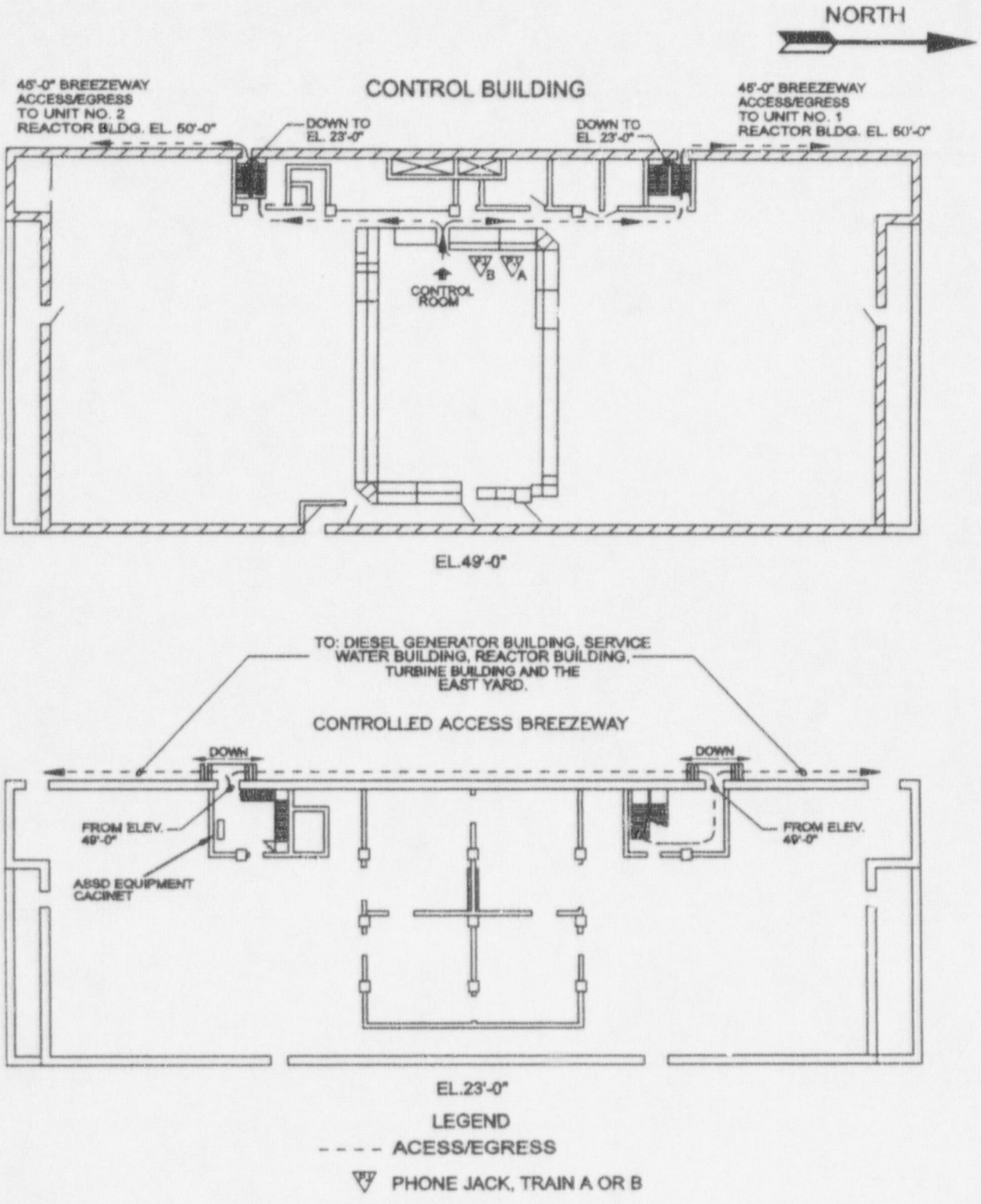
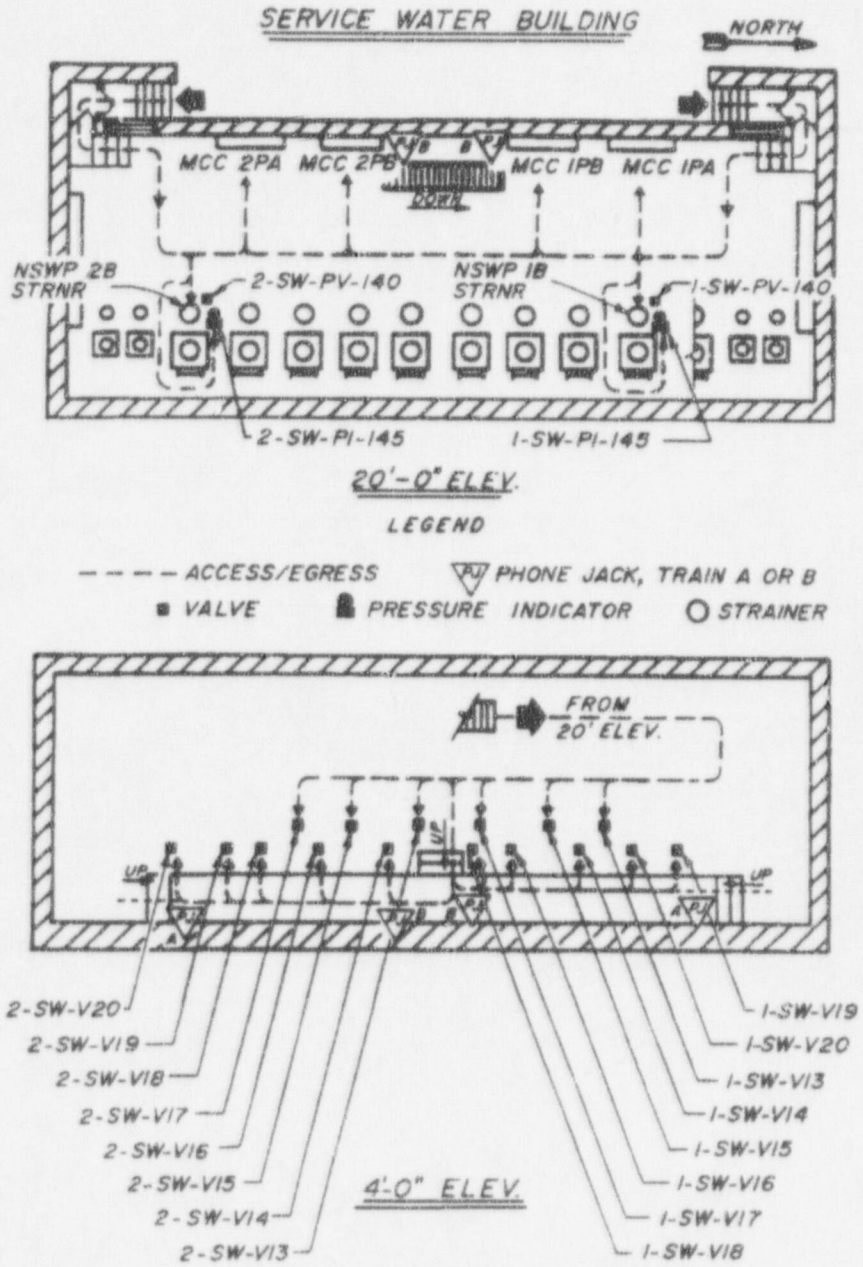


FIGURE 2

Service Water Building Access/Egress Routes
and
Sound Powered Phone Communications



SECTION "F"

EMERGENCY SWITCHGEAR OPERATOR DG BLDG ACTIONS

_____ 1. OBTAIN a security access key from the ASSD equipment cabinet.

_____ 2. USE appropriate figures in the back of this section to provide access/egress routes, equipment, and communication locations.

_____ 3. REPORT to 4 KV Bus E2 AND ESTABLISH communication with Unit 2 RSDP/PMI Reactor Operator and the Diesel Generator Operator as follows:

_____ a. At Compt AH0 (Row G), PLUG a Y-Jack into the ASSD Unit 2 Train B Sound Powered Phone Ckt.

NOTE

The next step will tie Unit 1 and Unit 2 ASSD Train B sound powered phone circuits together and allow Unit 2 SCO to talk with Unit 1 Control Room Operator.

NOTE

The jumper cord and both Y-Jacks must remain connected throughout the performance of this procedure to allow communications with all Unit 1 and Unit 2 stations.

_____ b. At Compt AH0 (Row G), PLUG a Y-Jack into ASSD Unit 1 Train B Sound Powered Phone Ckt.

_____ c. PLUG the jumper between the two Y-Jacks.

NOTE

Performance of the following step provides communications to support operations on 4 KV Buses E1 and E2.

_____ d. PLUG the sound-powered phone into either of the remaining Y-Jack connections on Compt AH0 AND ESTABLISH communications with the Diesel Generator Operator.

_____ 4. IF the ASSD sound-powered phone system fails to operate, THEN USE hand-held portable radios or the plant Gai-tronics system to establish communications.

_____ 5. At PT Compt AG5 (Row B), PLACE Normal/Local switch to "LOCAL".

_____ 6. DIRECT Diesel Generator Operator to REMOVE Diesel Generator 2 from service.

NOTE

Performance of the following step provides communications to support operations on 4 KV Buses E3 and E4.

_____ 7. When actions are required in the area of 4 KV Bus E4, THEN ESTABLISH communications with the Diesel Generator Operator using ASSD UNIT 2 TRAIN B SOUND POWERED PHONE CKT located on 4 KV Bus E4 Compartment AK6 (Row H).

_____ 8. PROCEED to 4 KV Bus E4 PT Compt AK0 (Row B) AND PLACE Normal/Local switch to "LOCAL."

_____ 9. WHEN informed Diesel Generator 2 has been removed from service, THEN DIRECT the Diesel Generator Operator to REMOVE Diesel Generator 4 from service.

_____ 10. PLACE the following Normal/Local switches to "LOCAL."

_____ a. At Compt AK3 (Row E), RHR Pump 2B.

_____ b. At Compt AK4 (Row F), RHR Serv Wtr Pump 2B.

_____ c. At Compt AK7 (Row I), Unit Substa E8.

_____ d. At Compt AK8 (Row J), CRD Hydraulic Pump 2B.

_____ e. At Compt AL1 (Row M), Nuc Serv Wtr Pump 2B.

_____ 11. VERIFY open OR manually TRIP the following breakers using the control switch OR the manual trip push button.

_____ a. At Compt AK3 (Row E), RHR Pump 2B.

_____ b. At Compt AK4 (Row F), RHR Serv Wtr Pump 2B.

_____ c. At Compt AK8 (Row J), CRD Hydraulic Pump 2B.

_____ d. At Compt AL1 (Row M), Nuc Serv Wtr Pump 2B.

_____ 12. REMOVE control power fuses AND open OR manually TRIP the following breakers using the manual trip push button.

_____ a. At Compt AK5 (Row G), RX Core Spray Pump 2B.

_____ b. At Compt AL2 (Row N), Conv Serv Wtr Pump 2B.

_____ 13. WHEN informed:

_____ a. Service water valve and electrical lineup is complete AND

_____ b. Diesel Generator 4 has been removed from service.

THEN DIRECT Service Water Building Operator to VERIFY closed OR CLOSE Nuclear Service Water Pump 2B Discharge Valve, 2-SW-V20.

_____ 14. At Compt AK7 (Row I), VERIFY closed OR CLOSE Unit Sub E8 breaker.

_____ 15. VERIFY reset OR RESET the following Lockout Relays.

_____ a. At Compt AK1 (Row C), Switch 86DB.

_____ b. At Compt AK2 (Row D), Switch 86DP.

_____ 16. WHEN informed 2-SW-V20 is closed AND Diesel Generator 4 is ready to start, THEN COORDINATE to place Diesel Generator 4 in service as follows:

_____ a. At Compt AJ9 (Row A), REMOVE control power fuses from Incoming Line from Swgr 2C breaker.

_____ b. DIRECT Diesel Generator Operator to START Diesel Generator 4.

_____ c. At Compt AJ9 (Row A), WHEN informed Diesel Generator 4 is running, THEN VERIFY open OR TRIP Incoming Line from Swgr 2C breaker using the manual trip push button.

_____ d. DIRECT Diesel Generator Operator to CLOSE Diesel Generator 4 circuit breaker.

_____ e. At Compt AL1 (Row M), WHEN informed Diesel Generator 4 breaker is closed, THEN START Nuclear Service Water Pump 2B.

_____ f. DIRECT Service Water Building Operator to OPEN 2-SW-V20.

_____ 17. INFORM the Unit 2 RSDP/PMI Reactor Operator and Unit 1 RSDP PMI Monitor that E4 is energized and Nuclear Service Water Pump 2B is running.

_____ 18. PROCEED to 4 KV Bus E2 AND PLACE the following Normal/Local switches to "LOCAL."

_____ a. At Compt AG8 (Row E), RHR Serv Wtr Pump 2D

_____ b. At Compt AG9 (Row F), RHR Pump 2D.

_____ c. At Compt AH1 (Row H), Unit Substa E6.

_____ 19. VERIFY open OR manually TRIP the following breakers using the control switch OR the manual trip push button.

_____ a. At Compt AG8 (Row E), RHR Serv Wtr Pump 2D.

_____ b. At Compt AG9 (Row F), RHR Pump 2D.

_____ 20. DIRECT Service Water Building Operator to VERIFY closed OR CLOSE Nuclear Service Water Pump 1B Discharge Valve, 1-SW-V20.

_____ 21. At Compt AH1 (Row H), VERIFY closed OR CLOSE Unit Sub E6 breaker.

_____ 22. VERIFY reset OR RESET the following Lockout Relays.

_____ a. At Compt AG6 (Row C), Switch 86DB.

_____ b. At Compt AG7 (Row D), Switch 86DP.

_____ 23. WHEN informed 1-SW-V20 is closed AND Diesel Generator 2 is ready to start, THEN COORDINATE to place Diesel Generator 2 in service as follows:

_____ a. At Compt AG4 (Row A), REMOVE control power fuses from Incoming Line from Swgr 1C breaker.

_____ b. DIRECT Diesel Generator Operator to START Diesel Generator 2.

_____ c. WHEN informed Diesel Generator 2 is running, THEN at Compt AG4 (Row A), VERIFY open OR manually TRIP Incoming Line from Swgr 1C breaker using the manual trip push button.

_____ d. DIRECT Diesel Generator Operator to CLOSE Diesel Generator 2 circuit breaker.

_____ e. WHEN informed Diesel Generator 2 breaker is closed, THEN DIRECT the Unit 1 RSDP PMI Monitor to START Nuclear Service Water Pump 1B.

_____ 24. INFORM the Unit 2 RSDP/PMI Reactor Operator and Unit 1 RSDP PMI Monitor that 4 KV Bus E2 is energized and Nuclear Service Water Pump 1B is running.

_____ 25. PROCEED to Emergency Bus E3 AND COORDINATE with Diesel Generator Operator to ISOLATE Emergency Bus E3 AND STOP Diesel Generator 3 IF operating as follows:

_____ a. At PT Compt AI3 (Row B), PLACE Normal/Local switch to "LOCAL."

_____ b. DIRECT Diesel Generator Operator to REMOVE Diesel Generator 3 from service.

_____ c. At Compt A12 (Row A), WHEN informed Diesel Generator 3 has been removed from service, THEN REMOVE the control power fuses AND VERIFY open OR manually TRIP Incoming Line from Swgr 2D breaker by depressing the manual trip push button.

_____ 26. IF directed, THEN START OR STOP RHR Pump 2B at 4 KV Bus E4 at Compt AK3 (Row E) AND INFORM Unit 2 Rx Bldg MCC Operator.

_____ 27. IF directed, THEN START OR STOP RHR Pump 2D at 4 KV Bus E2 at Compt AG9 (Row F) and INFORM Unit 2 Rx Bldg MCC Operator.

FIGURE 1

Control Building 49' and 23' Elevation Access/Egress

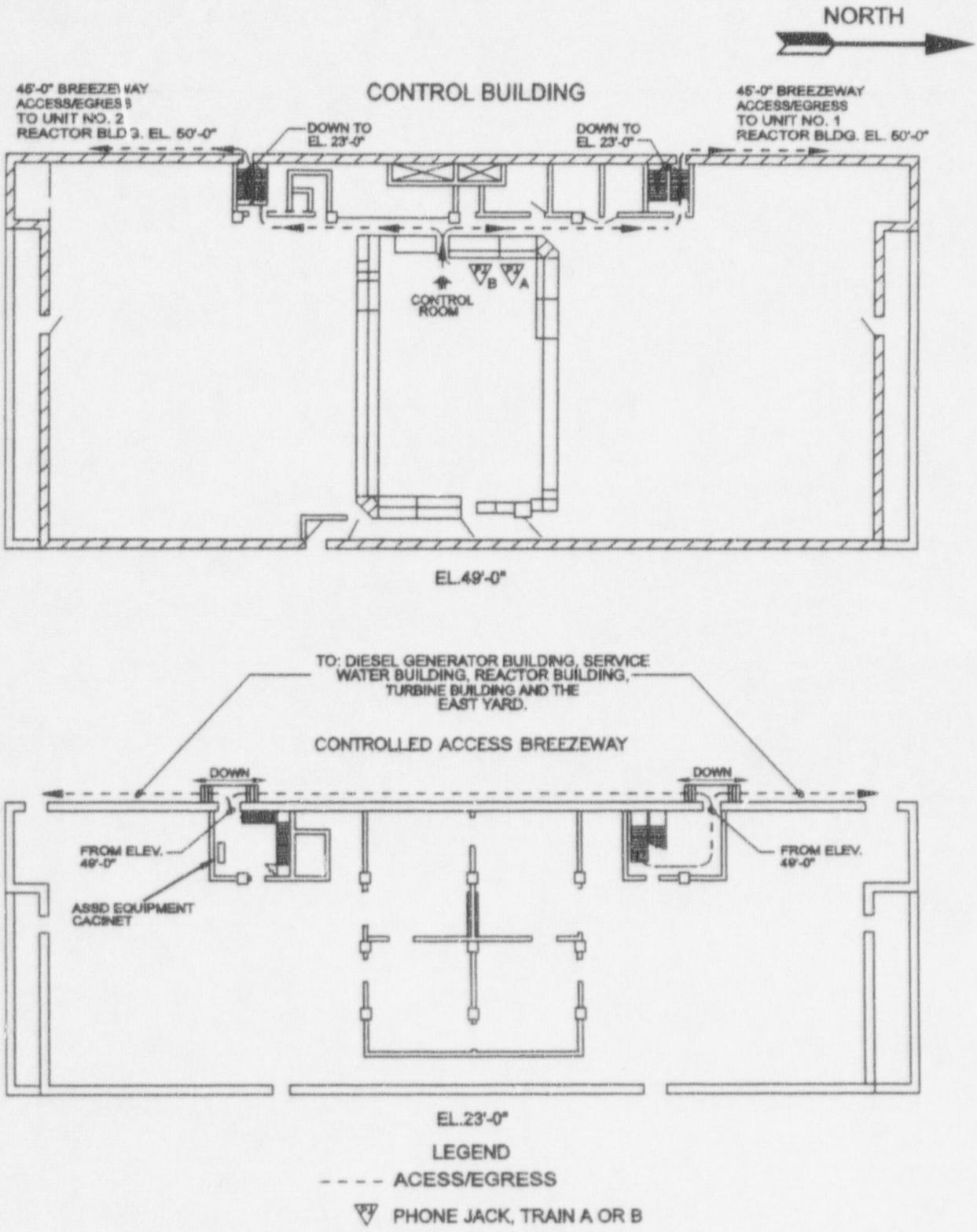
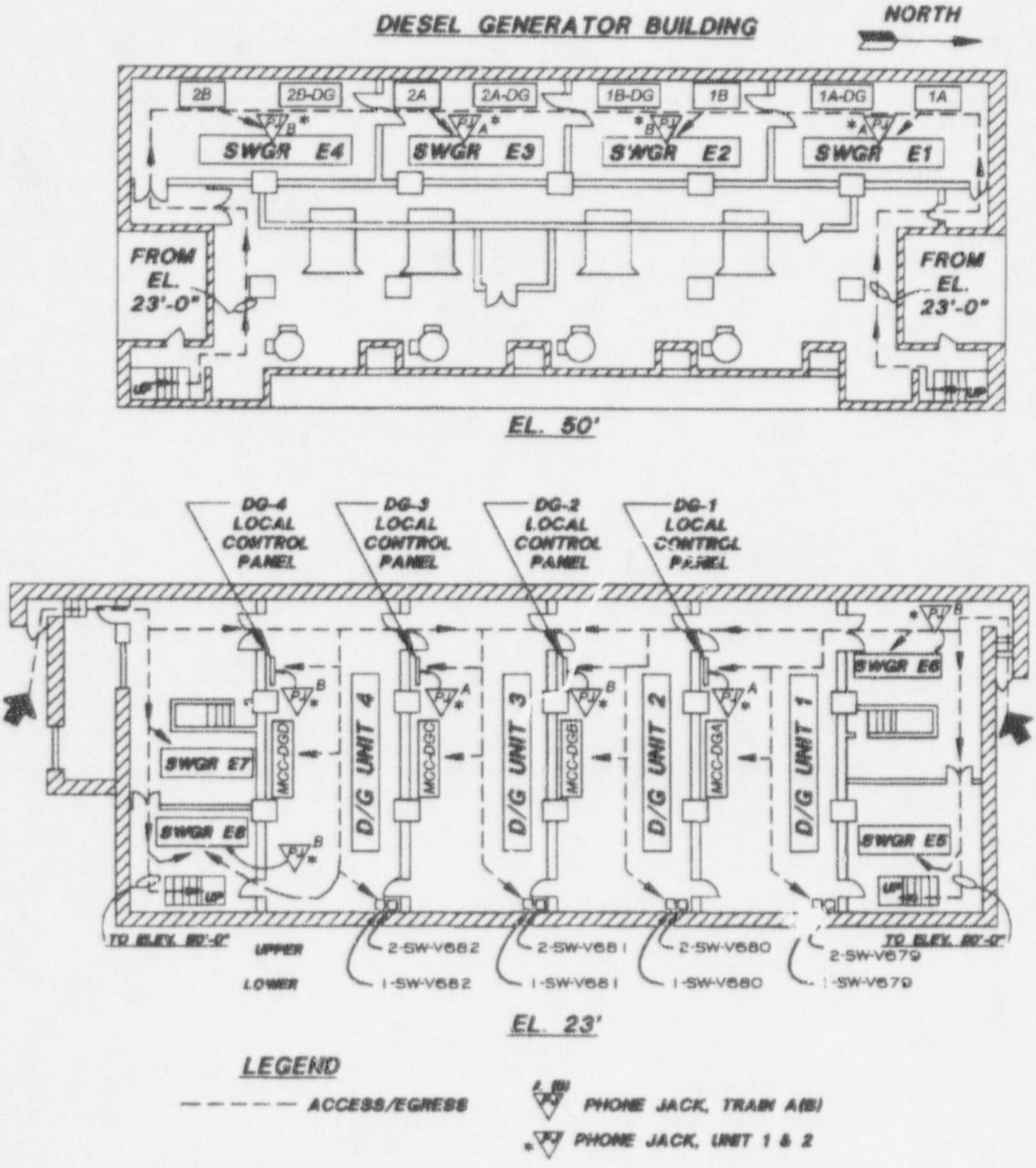


FIGURE 2

Diesel Generator Building Access/Egress Routes
and
Sound Powered Phone Communications



SECTION "G"

DIESEL GENERATOR OPERATOR ACTIONS

_____ 1. OBTAIN a security access key from the ASSD equipment cabinet.

_____ 2. USE appropriate figures in the back of this section to provide access/egress routes, equipment, and communication locations AND PROCEED to 480V Substation E7 switchgear.

_____ 3. At 480V Substation E7 Compt AY2 (Row C1), TRIP the breaker for MCC 2XA.

_____ 4. PROCEED to Diesel Generator 2 Control Panel H55 AND ESTABLISH communications with Emergency Switchgear Operator DG Bldg using the ASSD Unit 2 Train B Sound Powered Phone Ckt.

_____ 5. IF the ASSD sound-powered phone system fails to operate, THEN USE hand-held portable radios or the plant Gai-tronics system to establish communications.

_____ 6. WHEN directed to remove Diesel Generator 2 from service, THEN:

_____ a. IF closed, THEN TRIP the Generator Circuit Breaker.

_____ b. IF operating, THEN STOP Diesel Generator 2 using the EMERGENCY STOP push button.

****

CAUTION

There are seven (7) keylock normal/local switches located on Diesel Generator 2 Control Panel. Six (6) of these are located in a row. The seventh switch is located in the row above the six switches. The six switches in a row must be placed in local before placing the seventh switch in local.

****

_____ c. PLACE the six keylock Normal/Local switches to "LOCAL."

_____ d. Located in the row above the six keylocked Normal/Local switches, PLACE the seventh keylock Normal/Local switch to "LOCAL."

_____ e. INFORM the Emergency Switchgear Operator DG Bldg that Diesel Generator 2 has been removed from service.

_____ 7. PROCEED to Diesel Generator 4 Control Panel H57 AND ESTABLISH communication using the ASSD Unit 2 Train B Sound Powered Phone Ckt.

_____ 8. IF the ASSD sound-powered phone system fails to operate, THEN USE hand-held portable radios or the plant Gai-tronics system to establish communications.

_____ 9. WHEN directed to remove Diesel Generator 4 from service, THEN

_____ a. IF closed, THEN TRIP the Generator Circuit Breaker.

_____ b. IF operating, THEN STOP Diesel Generator 4 using the EMERGENCY STOP push button.

****

CAUTION

There are seven (7) keylock normal/local switches located on Diesel Generator 4 Control Panel. Six (6) of these are located in a row. The seventh switch is located in the row above the six switches. The six switches in a row must be placed in local before placing the seventh switch in local.

****

_____ c. PLACE the six keylock Normal/Local switches to "LOCAL."

_____ d. Located in the row above the six keylocked Normal/Local switches, PLACE the seventh keylock Normal/Local switch to "LOCAL."

_____ e. INFORM the Emergency Switchgear Operator DG Bldg that Diesel Generator 4 has been removed from service.

_____ 10. IF the ASSD sound-powered phone system is being used for communications, THEN REMOVE the headset AND PERFORM the following lineup.

_____ a. At MCC DGD, PERFORM the following:

_____ (1) At Compt EF7 (Row G2), PLACE breaker to "OFF" for DG 4 SW TO JKT WTR CLR SPLY ISOL VLV, 1-SW-V682.

_____ (2) At Compt D59 (Row G3), PLACE Normal/Local switch to "LOCAL" AND Start/Stop control switch to "START" for Diesel Generator Cell 4 Exhaust Fan, H-EF-DG.

_____ (3) At Compt EF6 (Row I1), PLACE breaker to "OFF" for DG 4 SW TO JKT WTR CLR INL ISOL VLV, 2-SW-V682.

_____ b. VERIFY open OR manually OPEN Diesel Generator 4 Unit 2 Service Water Supply Valve, 2-SW-V682.

_____ c. At 480V Substation E8, TRIP the following breakers.

_____ (1) At Compt AZ6 (Row B3), Reactor Building MCC 2XH breaker.

_____ (2) At Compt AO4 (Row D3), Reactor Building MCC 2XF breaker.

_____ (3) At Compt AO7 (Row E2), Reactor Building MCC 2XM breaker.

_____ (4) At Compt AO9 (Row E4), Control Building MCC 2CB breaker.

_____ (5) At Compt AI2 (Row F3), Emergency 120/208V AC Distribution Panel 2E8 breaker.

_____ d. At 480V Substation E8 Compt FN2 (Row A1), PERFORM the following:

_____ (1) PLACE Normal/Local switch to "LOCAL" AND

_____ (2) VERIFY closed OR CLOSE Sub. E8 480V Main Breaker (breaker indication is on Compt AZ5 (Row B2).

_____ 11. IF the ASSD sound-powered phone system is operable, THEN PUT ON the headset AND INFORM the Emergency Switchgear Operator DG Bldg that Diesel Generator 4 is ready to be started.

_____ 12. WHEN directed, THEN START Diesel Generator 4 using the EMERGENCY START push button.

_____ 13. WHEN the Unit Available Running light illuminates, THEN INFORM the Emergency Switchgear Operator DG Bldg that Diesel Generator 4 is running.

_____ 14. WHEN directed, to close Diesel Generator 4 circuit breaker, THEN:

_____ a. PLACE the Synchronizing Generator Switch to "ON."

_____ b. CLOSE the Generator Circuit Breaker.

_____ c. PLACE the Synchronizing Generator Switch to "OFF."

_____ d. INFORM Emergency Switchgear Operator DG Bldg that Diesel Generator 4 circuit breaker is closed.

_____ 15. At Diesel Generator 4 Control Panel, OBSERVE service water pressure is greater than 25 psig on SW-PI-153-4.

_____ 16. PROCEED to Diesel Generator 2 Control Panel H55 AND ESTABLISH communications using the ASSD Unit 2 Train B Sound Powered Phone Ckt.

_____ 17. IF the ASSD sound-powered phone system fails to operate, THEN USE hand-held portable radios or the plant Gai-tronics system to establish communications.

_____ 18. REMOVE headset AND PERFORM the following lineups:

_____ a. At MCC DGB, PERFORM the following:

_____ (1) At Compt D99 (Row G3), PLACE the Normal/Local switch to "LOCAL" AND Start/Stop control switch to "START" for Diesel Generator Cell 2 Exhaust Fan, F-EF-DG.

_____ (2) At MCC DGB Compt EC3 (Row H2), PLACE breaker to "OFF" for SW to Jacket Water Cooler Isolation Valve, 2-SW-V680.

_____ (3) At MCC DGB Compt EC4 (Row H3), PLACE breaker to "OFF" for Jacket Water Cooler Isolation Valve, 1-SW-V680.

_____ b. VERIFY open OR manually OPEN Unit 2 Service Water Supply Valve, 2-SW-V680.

_____ c. At 480V Substation E6, TRIP the following breakers:

_____ (1) At Compt AW1 (Row D2), Reactor Building MCC 2XK breaker.

_____ (2) At Compt AW4 (Row E1), Off-Gas Building MCC 2OG breaker.

_____ d. At 480V Substation E6 Compt FN0 (Row A), PERFORM the following:

_____ (1) PLACE the Normal/Local Switch to "LOCAL" AND

_____ (2) VERIFY closed OR CLOSE Sub E6 480V Main Breaker (Breaker indication is on Compt AV4 [Row B2]).

_____ 19. IF the ASSD sound-powered phone system is operable, THEN PUT ON the headset AND INFORM the Emergency Switchgear Operator DG Bldg that Diesel Generator 2 is ready to be started.

_____ 20. WHEN directed, THEN START Diesel Generator 2 using the EMERGENCY START push button.

_____ 21. WHEN the Unit Available Running light illuminates, THEN INFORM the Emergency Switchgear Operator DG Bldg that Diesel Generator 2 is running.

_____ 22. WHEN directed to close Diesel Generator 2 circuit breaker, THEN:

_____ a. PLACE the Synchronizing Generator Switch to "ON."

_____ b. CLOSE the Generator Circuit Breaker.

_____ c. PLACE the Synchronizing Generator Switch to "OFF."

_____ d. INFORM Emergency Switchgear Operator DG Bldg that Diesel Generator 2 circuit breaker is closed.

_____ 23. At Diesel Generator 2 Control Panel, OBSERVE service water pressure is greater than 25 psig on SW-PI-153-2.

NOTE

Service Water Pressure should be periodically monitored on SW-PI-153-2 and SW-PI-153-4 at Diesel Generator 2 and Diesel Generator 4 Control Panels while these diesels are operating.

_____ 24. IF the ASSD sound-powered phone system is being used for communications, THEN REMOVE the headset AND BLOCK OPEN Diesel Generator Building doors, as indicated on Attachment 1, to establish ventilation for continuous diesel generator operations.

_____ 25. WHEN ventilation has been established for diesel generator operation, THEN PUT ON the headset AND INFORM the Emergency Switchgear Operator DG Bldg that diesel generator ventilation has been established.

_____ 26. WHEN directed to remove Diesel Generator 3 from service, THEN PERFORM the following at DG 3 Control Panel.

_____ a. IF closed, THEN TRIP the Generator Circuit Breaker.

_____ b. IF Operating, THEN STOP Diesel Generator 3 using the EMERGENCY STOP push button.

_____ c. PLACE the six Normal/Local keylocked switches to "LOCAL."

_____ d. INFORM the Emergency Switchgear Operator DG Bldg that Diesel Generator 3 is removed from service.

_____ 27. IF the ASSD sound-powered phone system is being used for communications, THEN REMOVE the headset and PERFORM the following:

_____ a. VERIFY closed OR manually CLOSE Jacket Water Cooler Service Water Inlet Valve, 1-SW-V680.

_____ b. VERIFY closed OR manually CLOSE Unit 2 Service Water Supply Valve, 2-SW-V681.

_____ c. VERIFY closed OR manually CLOSE Jacket Water Cooler Service Water Inlet Valve, 1-SW-V681.

_____ d. VERIFY closed OR manually CLOSE Jacket Water Cooler Service Water Inlet Valve, 1-SW-V682.

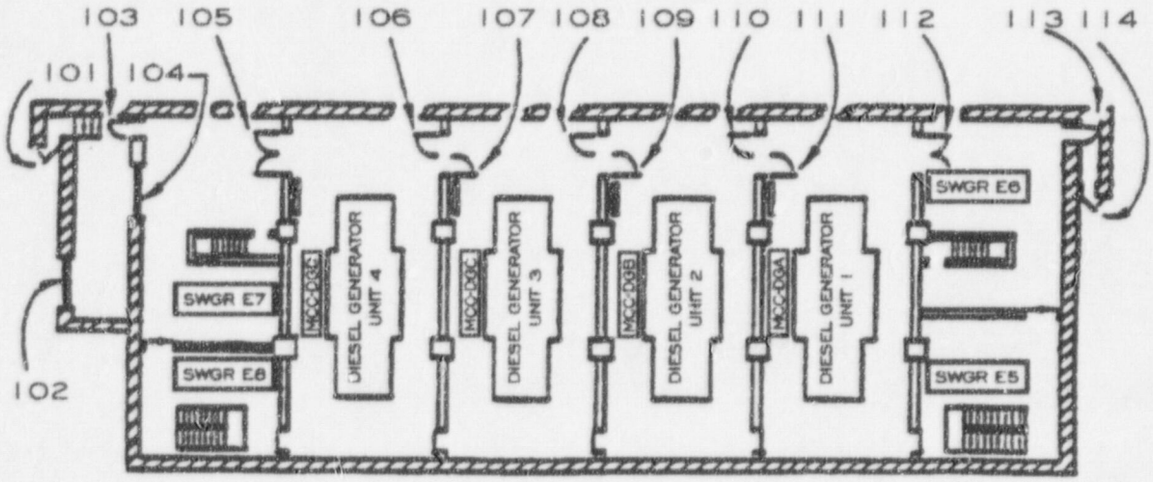
_____ 28. IF the ASSD sound-powered phone system is operable, THEN PUT ON the headset and MONITOR operation of the diesel generators.

ATTACHMENT 1

Diesel Generator Building Door Position
For
Diesel Cell Ventilation

1. OPEN/BLOCK OPEN doors identified on drawing below.

2. BLOCK OPEN doors using door wedge blocks.



ELEV. 23' 0"

FIGURE 1

Control Building 49' and 23' Elevation Access/Egress

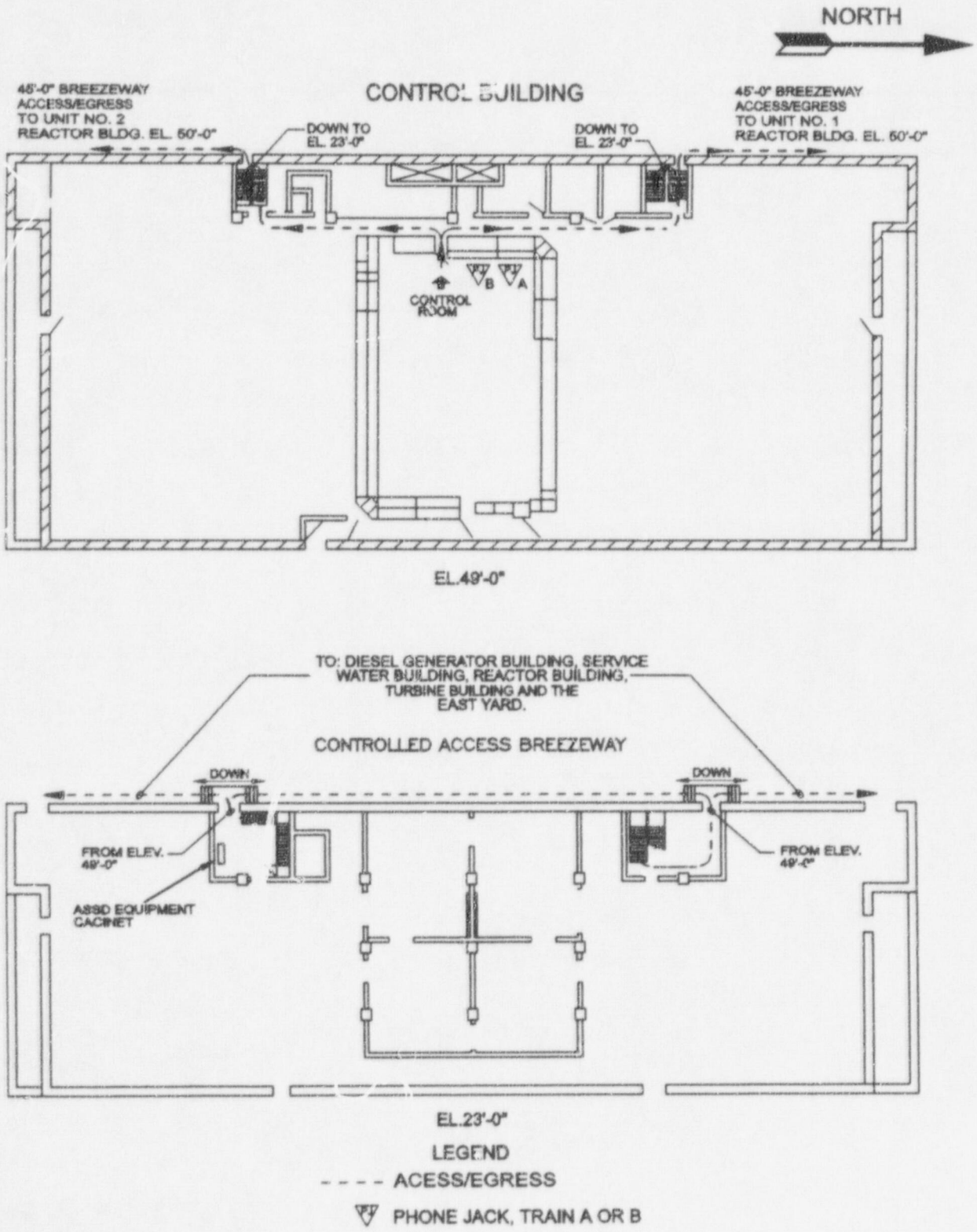


FIGURE 2

Diesel Generator Building Access/Egress Routes
and
Sound Powered Phone Communications