



AUXILIARY FEEDWATER SYSTEM

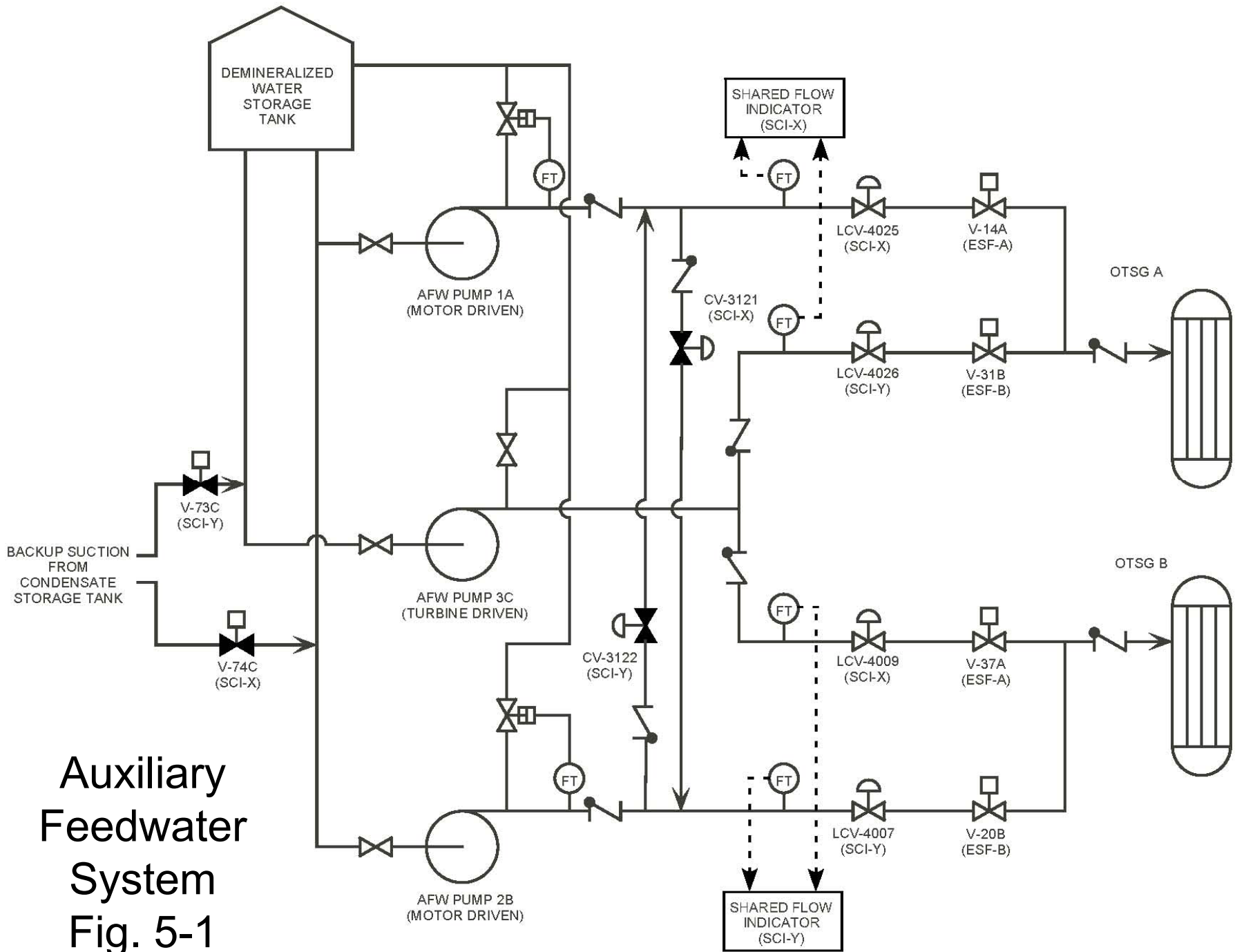
Chapter 5.0
B&W Cross-Training Course
R-326C

OBJECTIVES

1. State the purpose of the auxiliary feedwater (AFW) system.
2. List all suction sources for the AFW pumps.
3. List the automatic start signals for the AFW pumps.
4. Explain how the operation of the AFW system helps promote natural circulation in the reactor coolant system.
5. State the purpose of the “Feed-Only-Good-Generator” (FOGG) logic and explain how it functions.

Description

- System has two 50% capacity motor-driven pumps and a 100% capacity steam-driven pump.
- The 1A and 2B MDAFW pumps are ten-stage centrifugal pumps rated at 600 gpm each and driven by 4160-vac, 800-hp electric motors.
- The 1600-hp TDAFW pump (3C) is a six-stage centrifugal pump rated at 1325 gpm.
- Suction sources in order of priority are the DWST, CST, and Service Water.

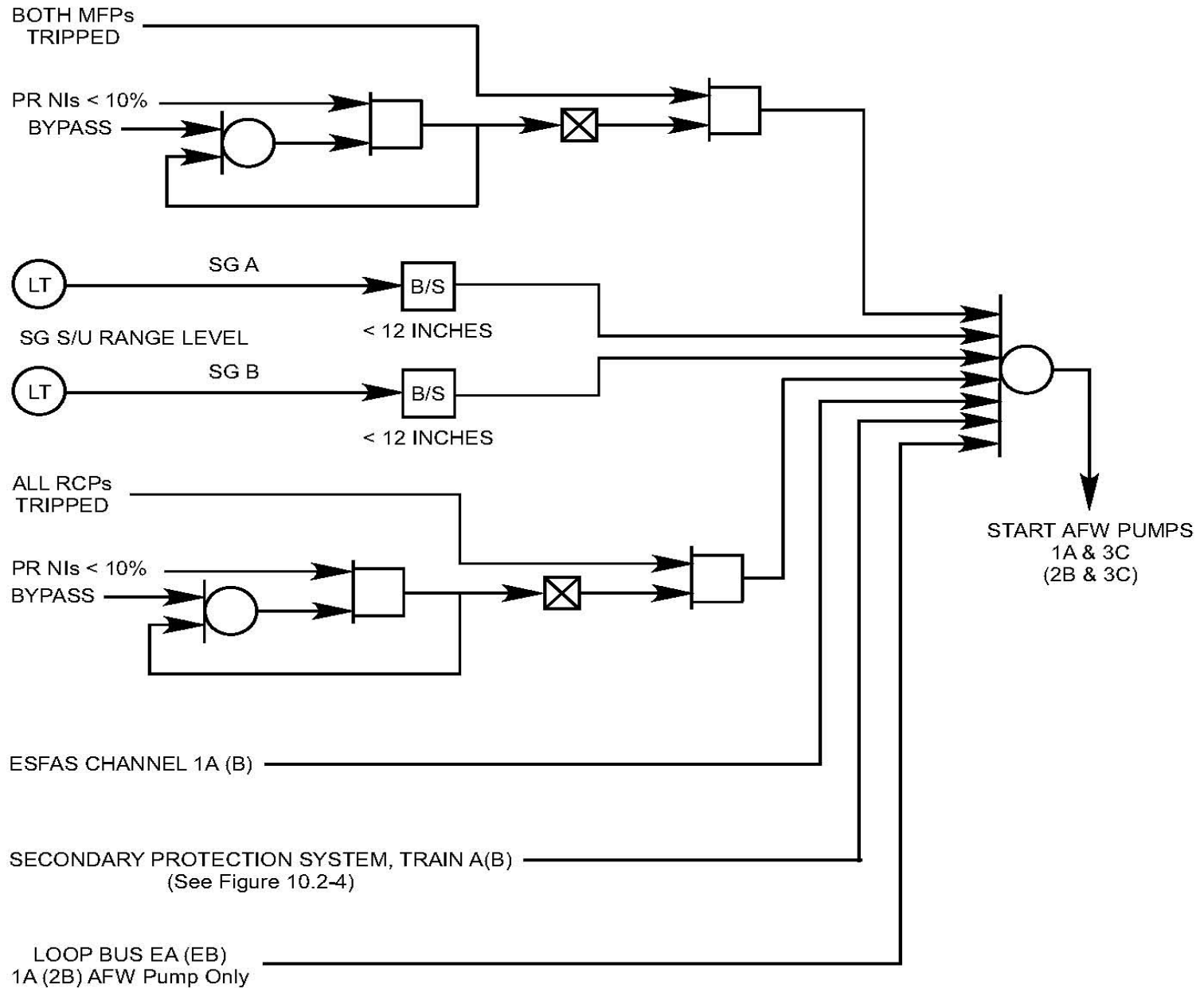


Auxiliary
Feedwater
System
Fig. 5-1

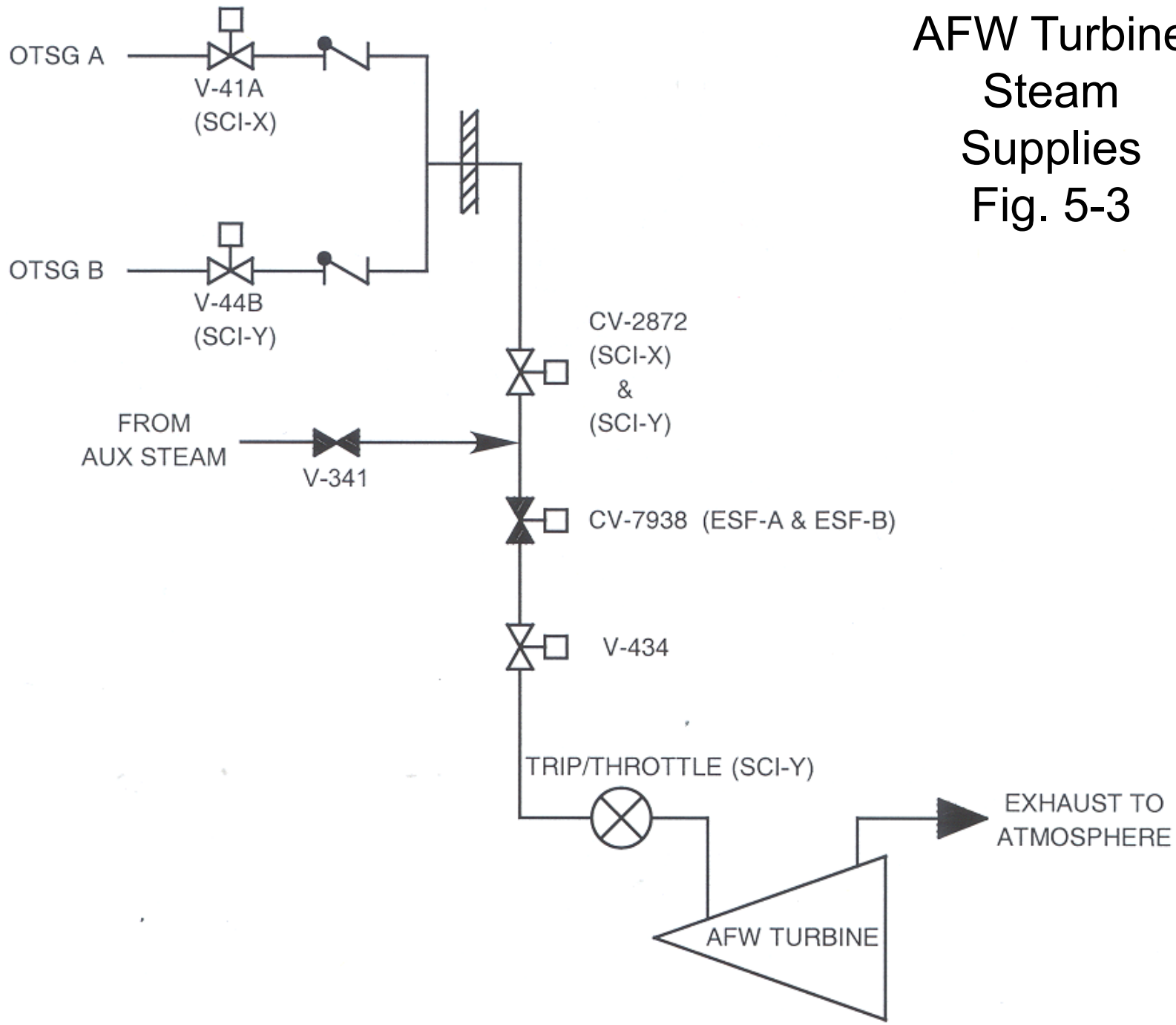
Start Signals

1. ESFAS Actuation.
2. A low S/U level ($< 12''$) in either OTSG.
3. Both main feedwater pumps tripped.
 - a. Can be by-passed if $< 10\%$.
4. All RCPs tripped.
 - a. Can be by-passed if $< 10\%$.
5. Low pressure in either OTSG.
 - a. Secondary Protection System.
6. In addition, the two MDAFW pumps are started on a LOOP in accordance with the LOOP automatic loading sequence.

AFW Start Signals (Fig. 5-2)



AFW Turbine Steam Supplies Fig. 5-3



Feed-Only-Good-Generator (FOGG)

- Logic associated with AFW Control Valves & Isolation Block Valves which will send a close signal to the valve on the line feeding a faulted OTSG.
- The isolation scheme determines which OTSG to isolate based upon a comparison of OTSG pressures.
- When condition clears, the signal will automatically reset and AFW will recommence to the OTSGs.
- FOGG will not isolate more than one SG.

TABLE 5-1 FOGG Logic

OTSG Pressures (psig or psid)	"A" OTSG Valves		"B" OTSG Valves	
	Control	Isolation	Control	Isolation
1. A > 800, B > 800	Enabled	Open	Enabled	Open
2. A > 800, B < 800	Enabled	Open	Closed	Closed
3. A < 800, B > 800	Closed	Closed	Enabled	Open
4. A & B < 800, $\Delta P < 100$	Enabled	Open	Enabled	Open
5. A & B < 800, A - B > 100	Enabled	Open	Closed	Closed
6. A & B < 800, B - A > 100	Closed	Closed	Enabled	Open