

OPERABILITY DETERMINATION REV 0

Note: Operability Determinations shall be made within 24 hours (can be extended up to 14 days per the Operation Manager's discretion) (See NP 5.3.7).

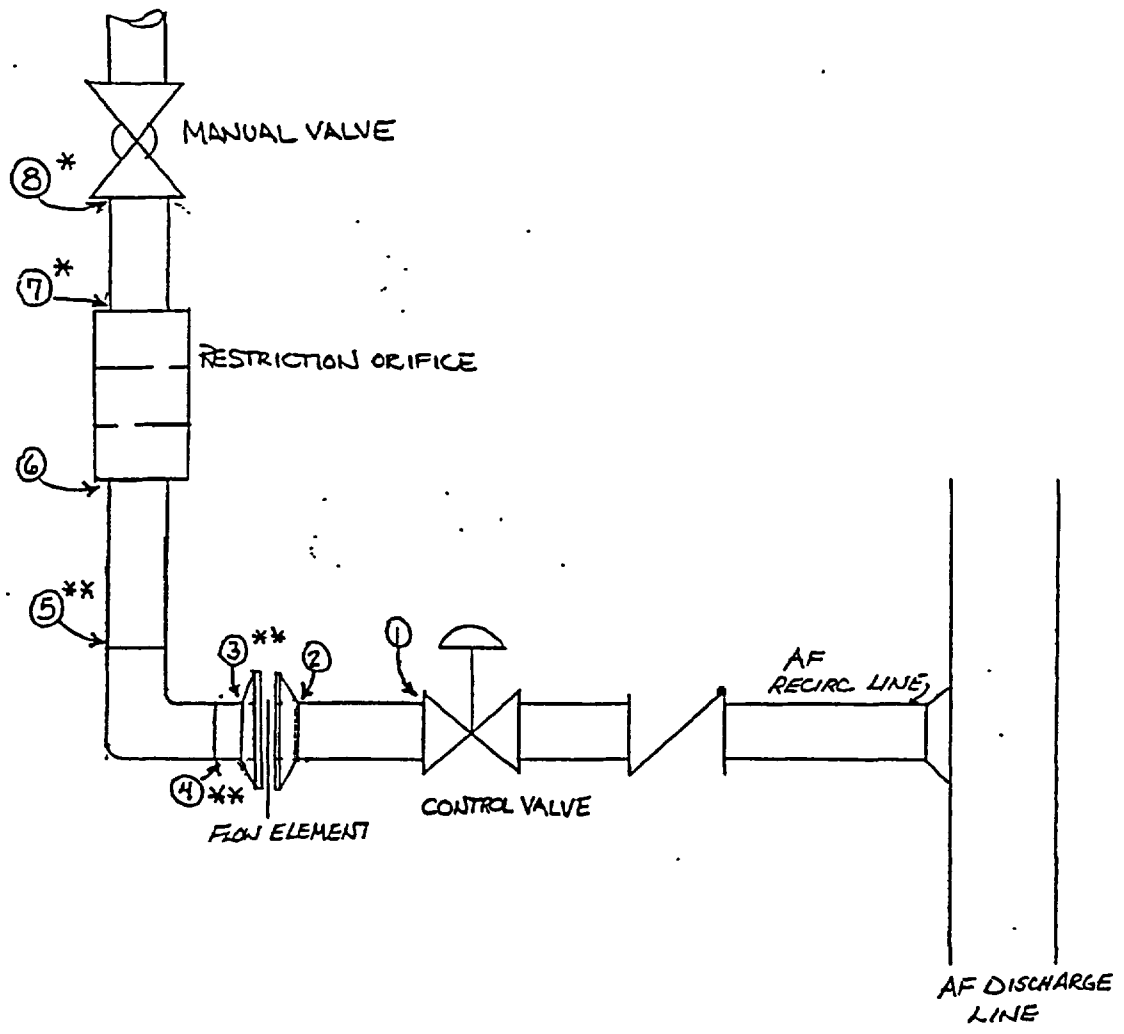
Unit Applicability:	<input checked="" type="checkbox"/> Unit 0	<input checked="" type="checkbox"/> Unit 1	<input checked="" type="checkbox"/> Unit 2	System	AF
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1.	Potentially degraded or nonconforming structure, system or component (SSC), and how degradation/nonconformance discovered: Three pinhole leaks have developed on the Motor Driven Auxiliary Feedwater Pump, P-38A and P-38B, recirculation lines in the past year. Two leaks have taken place on the recirculation line for P-38A and one for the P-38B recirculation line.
2.	Structure, system or component's safety function: The recirculation line is designed to ensure a minimum flow rate through the AF pumps to protect from adverse effects of hydraulic instability at low flow rates. The minimum flow rate for P-38A and B is 70 gpm. The minimum flow rate for the Turbine Driven Auxiliary Feedwater Pumps, 1P-29 and 2P-29, is 100 gpm.
3.	Under what circumstances (including postulated accidents) would the problem exist; Identify failure mechanism if possible: The pinhole leaks may develop any time the AF pumps are operating with the recirculation line open.
4.	Applicable Technical Specification or Current Licensing Basis (CLB) requirement or commitment and why the requirement or commitment may not be met: T.S 15.3.4. All four AF pumps are required to be operable along with their flow paths and instrumentation. Failure of the recirculation line may result in diversion of AF flow from the SG.
5.	<input type="checkbox"/> Operable (no further action required) <input checked="" type="checkbox"/> Operable But Degraded or Nonconforming (See No. 6 for required actions) Basis for declaring SSC Operable or Operable But Degraded or Nonconforming: The most limiting FSAR Chapter 14 Accident for the AF system is the Loss of Normal Feedwater (LONF). This accident analysis assumes that one motor driven AF pump provides 200 gpm of flow to one SG, 5 minutes following the low-low SG water level setpoint. The recirculation line isolation AOV for the MDAFP will automatically open on the start of the pump and then begin to close 45 seconds after 95 gpm of flow to the SG is achieved. The recirculation line isolation AOV for the TDAFP will automatically open on the start of the pump and then begin to close 45 seconds after 145 gpm of flow to the SG is achieved. Based on DBD-01 Rev. 0, the acceptable delay for the TDAFP to reach full acceleration is 39 seconds and the acceptable delay for the MDAFP to reach full capacity is 35 seconds. Westinghouse LONF/LOAC Analysis requires that the valve is full closed 60 seconds after the setpoint has been obtained. Therefore, the recirculation line AOV will not be open for longer than 100 seconds. The recent recirculation line failures were all located downstream of the isolation AOV near the flow restriction orifice and remained pinhole type leaks for duration much longer than the 100 seconds the recirculation line would be open for the accident scenario. The initiating flaw resulting in failure of the welds is not known at this time but the recent failures indicate that flow induced vibration caused by cavitation in the restriction orifice may be accelerating failures near the orifice. Based on this data, the failure of a weld upstream of the isolation AOV is not probable because the cavitation pressure pulses would be dampened before being transmitted back through the flow orifice and recirculation AOV. Also, current failures have occurred in weld near the flow restriction orifice only. Affects of the recirculation line weld failure on the CST volume are not applicable since SW provides the safety related water source for AF. Therefore, the AF system remains operable for FSAR Chapter 14 accidents. Various PBNP EOPs require the use of AF to maintain SG levels. This may require operation at low flows such that the recirculation AOV could be open. This would result in the potential for a pinhole leak to develop in a recirculation line weld. PBNP experience has been that the leaks were very small when detected by normal operating rounds. It is expected that the leaks would propagate slowly and be detected long before they would degrade the operation of the AF system The only equipment in the area of the recirculation lines that could be adversely affected by a leak are the motors for the MDAFPs. The motors are drip proof with air inlets located on the outboard underside of the

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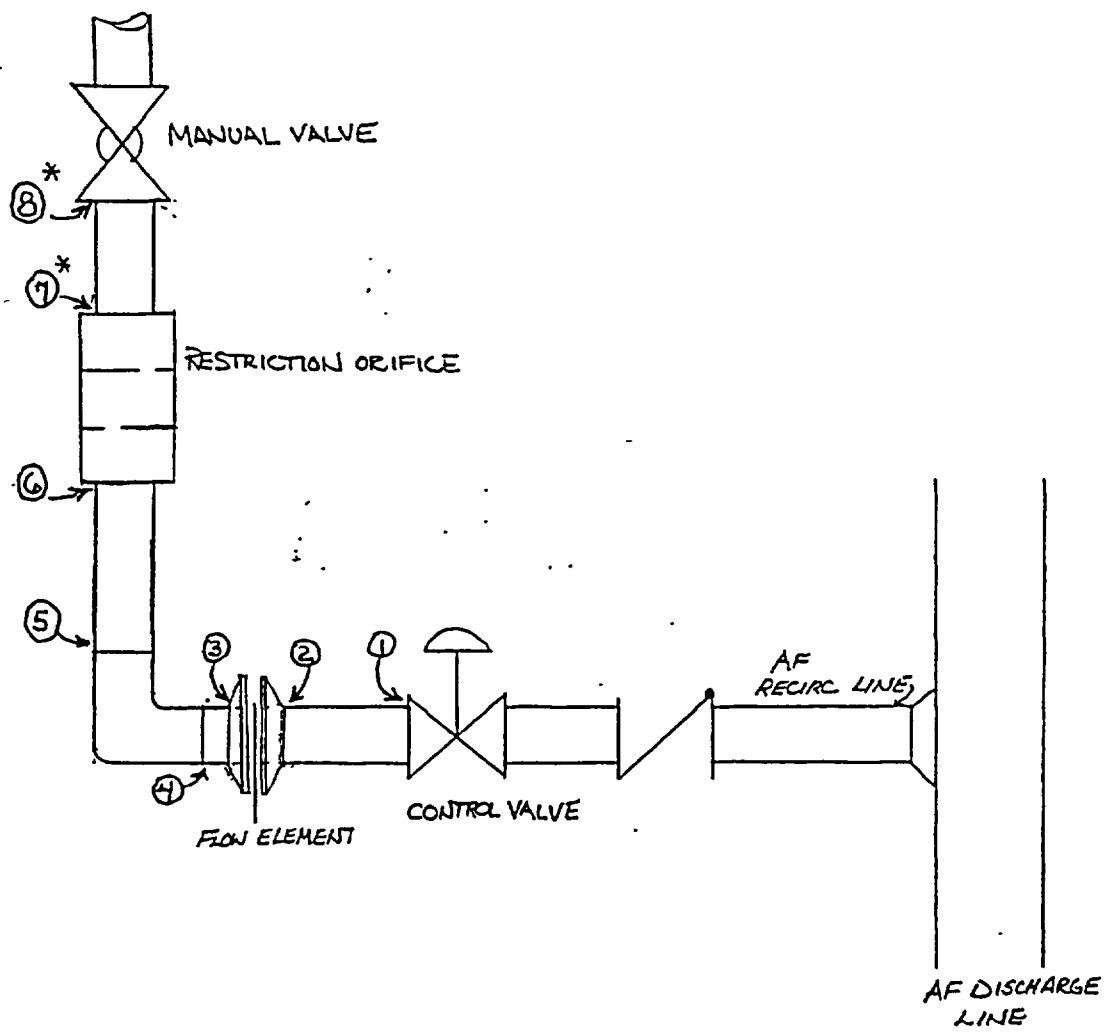
	<p>motor. Based on field inspection of the arrangement of the recirculation piping with respect to motor, the probability of water entering the motor from a recirculation line leak is not physically possible.</p> <p>The recirculation line weld failure probability described above has been minimized by the recent repairs completed. The welds have been installed since 1991 and did not display a failure until 1998. Repairs to the P-38A recirculation line in the past year have replaced 5 of the 8 welds (reference attached sketch) between the AOV and manual valve, AF-00027. The recent repair (5/19/99) to the P-38B recirculation line replaced 2 of the 8 welds (reference attached sketch) between the AOV and manual valve, AF-00040. The recirculation lines for the TDAPs have not experienced any weld failures. The limited run time of the TDAPs with respect to the MDAFPs have not allowed the piping vibrations to accelerate any weld flaws potentially caused by transgranular SCC. The MDAFPs have been operated for extended periods during plant startup and shutdown activities where the TDAPs remain idle. Based on the life of the previous welds, the new welds are expected to be leak free until the failure mechanism can be identified and corrective actions taken to eliminate the failure mechanism. The corrective actions shall be completed expeditiously.</p>		
6.	<p>For those Operable But Degraded or Nonconforming items, list action(s) which need to be accomplished to restore the SSC to its "full qualification" status (conforming to all aspects of the CLB, including codes and standards, design criteria, and commitments) and define the first available opportunity to complete the action(s). These action(s) will be tracked under the Corrective Action Program within NUTRK.</p> <p>1. Identify the cause of the weld failure and complete corrective actions.</p>		
7.	<p>Other actions identified during the preparation of the operability determination that are desired to be tracked under the Corrective Action Program within NUTRK:</p> <p>None.</p>		
Prepared by:	<i>P. F. Achard</i>	Date/Time:	5/21/99 1710
Active SRO Approval:	<i>M. Johnson</i>	Date/Time:	5/21/99 1731
DCS Approval:	<i>W.B. Fromm 5/21/99 @ 2136</i>	Date/Time:	5/21/99 1740
<input type="checkbox"/>	<i>Md for Brad Fromm per Johnson</i>		
<input type="checkbox"/>	(Active SRO) Route original to RES.		
SRO DCS Comment(s): (Optional)			



P-38A WELDS

* REPLACED 6/98

** REPLACED 4/99



P-38B WELDS

* REPLACED 5/99