The limiting Design Basis Accidents (DBAs) and transients for the AFW System are as follows: R210

a. Feedwater Line Break (FWLB); and

b. Loss of main feedwater (MFW).

In addition, the minimum available AFW flow and system characteristics are credited for removing decay heat in the analysis of a small break loss of coolant accident (LOCA).

The AFW System design is such that it can perform its function following a FWLB between the MFW isolation valves and containment, combined with a loss of offsite power following turbine trip, and a single active failure of the steam turbine-driven AFW pump (above 50% power) or one motor-driven AFW pump (below 50% power with steam generator low level reactor trip time delay). For 50% power operation and higher, one motor-driven AFW pump is assumed to deliver to the broken MFW header at the pump run-out flow. Sufficient flow would be delivered to the intact steam generator by the redundant motor-driven AFW pump.

For partial power operation (below 50% power with trip time delay active), one motor-driven AFW pump is assumed to fail. All flow from the turbine-driven AFW pump and the redundant motor-driven AFW pump is assumed to deliver to the broken MFW header until the faulted steam generator is isolated. BR-8
After isolation of the faulted steam generator, sufficient flow is delivered to the intact steam generator by the turbine-driven and redundant motor-driven AFW pump. R210

The Engineered Safety Feature Actuation System (ESFAS) automatically actuates the AFW turbine-driven pump and associated valves and controls when required to ensure an adequate feedwater supply to the steam generators during loss of power.

The surveillance requirements (SRs) provide a means of ensuring the AFW system components are capable of supplying required flow to the steam generators, the flow path is aligned correctly, and the automatic functions actuate as designed. The automatic functions are verified through either an actual or simulated actuation signal. The actuation signal associated with SR 4.7.1.2.3 (automatic valve actuation) include the AFW actuation test signal and the low AFW pump suction pressure test signal. The actuation signal associated with SR 4.7.1.2.4 (automatic pump start) includes only the AFW actuation test signal.

Each motor-driven auxiliary feedwater pump (one Train A and one Train B) supplies flow paths to two steam generators. Each flow path contains an automatic air-operated level control valve (LCV). The LCVs have the same train designation as the associated pump and are provided trained air. The turbine-driven auxiliary feedwater pump supplies flow paths to all four steam generators. Each of these flow paths contains an automatic opening (non-modulating) air-operated LCV, two of BR-1 BR-7

The limiting Design Basis Accidents (DBAs) and transients for the AFW System are as follows: R196

a. Feedwater Line Break (FWLB); and

b. Loss of main feedwater (MFW).

In addition, the minimum available AFW flow and system characteristics are credited for removing decay heat in the analysis of a small break loss of coolant accident (LOCA).

The AFW System design is such that it can perform its function following a FWLB between the MFW isolation valves and containment, combined with a loss of offsite power following turbine trip, and a single active failure of the steam turbine-driven AFW pump (above 50% power) or one motor-driven AFW pump (below 50% power with steam generator low level reactor trip time delay). For 50% power operation and higher, one motor-driven AFW pump is assumed to deliver to the broken MFW header at the pump run-out flow. Sufficient flow would be delivered to the intact steam generator by the redundant motor-driven AFW pump.

For partial power operation (below 50% power with trip time delay active), one motor-driven AFW pump is assumed to fail. All flow from the turbine-driven AFW pump and the redundant motor-driven AFW pump is assumed to deliver to the broken MFW header until the faulted steam generator is isolated. BR-9
After isolation of the faulted steam generator, sufficient flow is delivered to the intact steam generator by the turbine-driven and redundant motor-driven AFW pump. R196

The Engineered Safety Feature Actuation System (ESFAS) automatically actuates the AFW turbine-driven pump and associated valves and controls when required to ensure an adequate feedwater supply to the steam generators during loss of power.

The surveillance requirements (SRs) provide a means of ensuring the AFW system components are capable of supplying required flow to the steam generators, the flow path is aligned correctly, and the automatic functions actuate as designed. The automatic functions are verified through either an actual or simulated actuation signal. The actuation signal associated with SR 4.7.1.2.3 (automatic valve actuation) include the AFW actuation test signal and the low AFW pump suction pressure test signal. The actuation signal associated with SR 4.7.1.2.4 (automatic pump start) includes only the AFW actuation test signal.

Each motor-driven auxiliary feedwater pump (one Train A and one Train B) supplies flow paths to two steam generators. Each flow path contains an automatic air-operated level control valve (LCV). The LCVs have the same train designation as the associated pump and are provided trained air. The turbine-driven auxiliary feedwater pump supplies flow paths to all four steam generators. Each of these flow paths contains an automatic opening (non-modulating) air-operated LCV, two of which are designated as Train A, receive A-train air, and provide flow to the same steam generators that are supplied by the B-train motor-driven auxiliary feedwater pump. The remaining two LCVs are designated as Train B, receive B-

BR-1
BR-7
BR-1