

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.5 EMERGENCY CORE COOLING SYSTEMS (ECCS).

SURVEILLANCE REQUIREMENTS (Continued)

2. At least once per 18 months.

Boron Injection
Throttle Valves

Safety Injection
Throttle Valves

Valve Number

Valve Number

1. 1-SI-141 L1
2. 1-SI-141 L2
3. 1-SI-141 L3
4. 1-SI-141 L4

1. 1-SI-121 N
2. 1-SI-121 S

- h. By performing a flow balance test during shutdown following completion of modifications to the ECCS subsystem that alter the subsystem flow characteristics and verifying the following flow rates:

Boron Injection System
Single Pump*

Safety Injection System
Single Pump**

Loop 1 Boron Injection Flow
117.5 gpm

Loop 1 and 4 Cold Leg
Flow \geq 300 gpm

Loop 2 Boron Injection Flow
117.5 gpm

Loop 2 and 3 Cold Leg
Flow \geq 300 gpm

Loop 3 Boron Injection Flow
117.5 gpm

** Combined Loop 1, 2, 3 and 4 Cold Leg
Flow (single pump) less than or equal to 640
gpm. Total SIS (single pump) flow, including
miniflow, shall not exceed 700 gpm.

Loop 4 Boron Injection Flow
117.5 gpm

*675 gpm unless the pump is specifically
qualified to a higher flow up to a maximum of*

*The flow rate in each Boron Injection (BI) line should be adjusted to provide 117.5 gpm (nominal) flow in each loop. Under these conditions there is zero miniflow and 80 gpm plus or minus 5 gpm simulated RCP seal injection line flow.

The actual flow in each BI line may deviate from the nominal so long as:

- a) the difference between the highest and lowest flow is 25 gpm or less.
- b) the total flow to the four branch lines does not exceed 470 gpm.
- c) the minimum flow (total flow) through the three most conservative (lowest flow) branch lines must not be less than 300 gpm.
- d) the charging pump discharge resistance ($2.31 \times P_d / Q_d^2$) must not be less than $4.73E-3$ ft/gpm² and must not be greater than $9.27E-3$ ft/gpm², (P_d is the pump discharge pressure at runout; Q_d is the total pump flow rate.)

EMERGENCY CORE COOLING SYSTEM

BASES.

With the RCS temperature below 350°F, one OPERABLE ECCS subsystem is acceptable without single failure consideration on the basis of the stable reactivity condition of the reactor and the limited core cooling requirements.

The limitation for a maximum of one centrifugal charging pump to be OPERABLE and the Surveillance Requirement to verify all charging pumps and safety injection pumps, except the required OPERABLE charging pump, to be inoperable below 152°F provides assurance that a mass addition pressure transient can be relieved by the operation of a single PORV.

The Surveillance Requirements provided to ensure OPERABILITY of each component ensures that at a minimum, the assumptions used in the safety analyses are met and that subsystem OPERABILITY is maintained. Surveillance requirements for throttle valve position stops and flow balance testing provide assurance that proper ECCS flows will be maintained in the event of a LOCA. Maintenance of proper flow resistance and pressure drop in the piping system to each injection point is necessary to: (1) prevent total pump flow from exceeding runout conditions when the system is in its minimum resistance configuration, (2) provide the proper flow split between injection points in accordance with the assumptions used in the ECCS-LOCA analyses, and (3) provide an acceptable level of total ECCS flow to all injection points equal to or above that assumed in the ECCS-LOCA analyses.

*

* Observing these limits while flow balancing the SI pumps in the injection mode will ensure they are not exceeded in the recirculation mode (RHR pumps providing a suction pressure boost) due to the higher system resistance resulting from splitting of the SI trains when in the recirculation lineup.

UNIT NO. 2

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

SURVEILLANCE REQUIREMENTS (Continued)

2. At least once per 18 months.

Boron Injection
Throttle Valves

Valve Number

1. 2-SI-141 L1
2. 2-SI-141 L2
3. 2-SI-141 L3
4. 2-SI-141 L4

Safety Injection
Throttle Valves

Valve Number

1. 2-SI-121 N
2. 2-SI-121 S

- h. By performing a flow balance test during shutdown following completion of modifications to the ECCS subsystem that alter the subsystem flow characteristics and verifying the following flow rates:

Boron Injection System
Single Pump*

Loop 1 Boron Injection Flow
117.5 gpm
Loop 2 Boron Injection Flow
117.5 gpm
Loop 3 Boron Injection Flow
117.5 gpm
Loop 4 Boron Injection Flow
117.5 gpm

Safety Injection System
Single Pump**

Loop 1 and 4 Cold Leg
Flow greater than or equal to 300 gpm
Loop 2 and 3 Cold Leg
Flow greater than or equal to 300 gpm
** Combined Loop 1,2,3 and 4 Cold Leg Flow
(single pump) less than or equal to 640 gpm.
Total SIS (single pump) flow, including
miniflow, shall not exceed 700 gpm.

675 gpm unless the pump is specifically qualified to a higher flow up to a maximum of

*The flow rate in each boron injection (BI) line should be adjusted to provide 117.5 gpm (nominal) flow into each loop. Under these conditions there is zero mini-flow and 80 gpm plus or minus 5 gpm simulated RCP seal injection line flow. The actual flow in each BI line may deviate from the nominal so long as:

- a) the difference between the highest and lowest flow is 25 gpm or less.
- b) the total flow to the four branch lines does not exceed 470 gpm.
- c) the minimum flow through the three most conservative (lowest flow) branch lines must not be less than 300 gpm,
- d) the charging pump discharge resistance ($2.31 \times P_d/Q_d^2$) must not be less than $4.73E-3$ ft/gpm² and must not be greater than $9.27E-3$ ft/gpm², (P_d is the pump discharge pressure at runout; Q_d is the total pump flow rate).

EMERGENCY CORE COOLING SYSTEMS

BASES

With the RCS temperature below 350°F, one OPERABLE ECCS subsystem is acceptable without single failure consideration, on the basis of the stable reactivity condition of the reactor and the limited core cooling requirements.

The limitation for a maximum of one centrifugal charging pump to be OPERABLE and the Surveillance Requirement to verify all charging pumps and safety injection pumps, except the required OPERABLE charging pump, to be inoperable below 152°F provides assurance that a mass addition pressure transient can be relieved by the operation of a single PORV.

The Surveillance Requirements provided to ensure OPERABILITY of each component ensures that at a minimum, the assumptions used in the safety analyses are met and that subsystem OPERABILITY is maintained. Surveillance requirements for throttle valve position stops and flow balance testing provide assurance that proper ECCS flows will be maintained in the event of a LOCA. -Maintenance of proper flow resistance and pressure drop in the piping system to each injection point is necessary to: (1) prevent total pump flow from exceeding runout conditions when the system is in its minimum resistance configuration, (2) provide the proper flow split between injection points in accordance with the assumptions used in the ECCS-LOCA analyses, and (3) provide an acceptable level of total ECCS flow to all injection points equal to or above that assumed in the ECCS-LOCA analyses.



* Observing these limits while flow balancing the SI pumps in the injection mode will ensure they are not exceeded in the recirculation mode (RHR pumps providing a suction pressure boost) due to the higher system resistance resulting from splitting of the SI trains when in the recirculation lineup.

ATTACHMENT 3 TO AEP:NRC:1274

PROPOSED AMENDMENT TO THE
DONALD C. COOK NUCLEAR PLANT UNITS NO. 1 AND 2
TECHNICAL SPECIFICATION
SAFETY INJECTION PUMP RUNOUT FLOW LIMITS

SURVEILLANCE REQUIREMENTS (Continued)

2. At least once per 18 months.

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Throttle Valves

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Safety Injection System
Single Pump**

Loop 1 and 4 Cold Leg
Flow \geq 300 gpm

Loop 2 and 3 Cold Leg
Flow \geq 300 gpm

** Combined Loop 1, 2, 3 and 4 Cold Leg Flow (single pump) less than or equal to 640 gpm. Total SIS (single pump) flow, including miniflow, shall not exceed 675 gpm unless the pump is specifically qualified to a higher flow up to a maximum of 700 gpm.

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3/4 BASES
3/4.5 EMERGENCY CORE COOLING SYSTEMS

3/4.5.2 and 3/4.5.3 ECCS SUBSYSTEMS (Continued)

With the RCS temperature below 350°F, one OPERABLE ECCS subsystem is acceptable without single failure consideration on the basis of the stable reactivity condition of the reactor and the limited core cooling requirements.

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3/4 BASES
3/4.5 EMERGENCY CORE COOLING SYSTEMS

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