

EMERGENCY CORE COOLING SYSTEMS

3/4.5.2 ECCS SUBSYSTEMS - $T_{avg} \geq 350^{\circ}\text{F}$

LIMITING CONDITION FOR OPERATION

3.5.2 Two independent Emergency Core Cooling System (ECCS) subsystems* shall be OPERABLE with each subsystem comprised of:

- a. One OPERABLE centrifugal charging pump,
- b. One OPERABLE residual heat removal heat exchanger,
- c. One OPERABLE residual heat removal pump, and
- d. An OPERABLE flow path capable of taking suction from the refueling water storage tank on a safety injection signal and automatically transferring suction to the residual heat removal sump during the recirculation phase of operation.

APPLICABILITY: MODES 1, 2 and 3.

ACTION:

- a. With one ECCS subsystem inoperable, restore the inoperable subsystem to OPERABLE status within 72 hours* or be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours.
- b. In the event the ECCS is actuated and injects water into the Reactor Coolant System, a Special Report shall be prepared and submitted to the Commission pursuant to Specification 6.9.2 within 90 days describing the circumstances of the actuation and the total accumulated actuation cycles to date. The current value of the usage factor for each affected safety injection nozzle shall be provided in this Special Report whenever its value exceeds 0.70.

* The allowable outage time for each RHR train may be extended to 7 days for the purpose of maintenance and modification. This exception may only be used one time per RHR train and is not valid after December 31, 1997

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SAFETY EVALUATION
FOR REVISING THE SPECIFICATION FOR
ECCS SUBSYSTEMS - $T_{avg} \geq 350$ DEGREES FAHRENHEIT
IN THE VIRGIL C. SUMMER NUCLEAR STATION
TECHNICAL SPECIFICATIONS

Description of Amendment Request

South Carolina Electric & Gas Company (SCE&G) proposes to revise the Virgil C. Summer Nuclear Station (VCSNS) Technical Specifications (TS) 3/4.5.2, ECCS SUBSYSTEMS - $T_{avg} \geq 350^{\circ}\text{F}$ to add the following footnote:

"The allowable outage time for each RHR train may be extended to 7 days for the purpose of maintenance and modification. This exception may only be used one time per RHR train and is not valid after December 31, 1997."

The proposed TS change request (TSCR) will allow a one time extension of the current TS 3.5.2 ACTION statement, item (a.) outage time from 72 hours to 7 days. This will permit maintenance to the residual heat removal (RHR) heat exchangers and modification of the RHR pump suction header valves to be performed at power when radiation levels associated with the components are at their lowest, thus resulting in reduced personnel exposure.

VCSNS Health Physics (HP) has performed a radiological assessment of the required RHR heat exchanger maintenance and valve modification. The assessment resulted in an estimated collective dose of approximately 20 person-REM to perform the maintenance and modification on both trains of RHR while at power. Based on the previous three refueling outages at VCSNS, radiation exposures could be 2 to 3 times higher if these activities were to be performed during a plant shutdown.

The requested time of 7 days is based on experience gained from previous repair evolutions on the components.

Safety Evaluation

The large break loss of coolant (LBLOCA) is a design basis accident that is not considered to occur during the lifetime of plant operation. It is used as a design basis to assure conservatism. The safety function of the RHR system is to provide a low pressure, high volume water source for reflooding the core following a large break that results in a rapid depressurization. Following a small break LOCA, the RHR pumps may be required to provide suction pressure to the safety injection system during sump recirculation and for long-term decay heat removal. The loss of coolant accident analyses only take credit for one train of RHR. TS requires that both trains of RHR be operable in Mode 1. One train is allowed to be inoperable for a period of 72 hours. The proposed TSCR will provide for a one time extension of the allowable outage time from 72 hours to 7 days to allow maintenance and a modification to be performed at power. The alternative is to perform the maintenance and modification during plant shutdown; however, that is during the time of peak radiation level in the RHR system due to its use during plant cooldown. A dose savings between 20 to 40 person-REM is expected by performing the maintenance and modification at power rather than after a plant shutdown.

During the outage time, the redundant train will remain operable and be available to perform the safety function assumed by the safety analysis. The effect of having one RHR train out of service for 7 days was evaluated. The evaluation used the core damage frequency (CDF) from the PRA model based on the VCSNS IPE model with equipment history updates and incorporation of plant modifications performed through Cycle 7. The CDF calculated by the PRA model is $1.006E-4$ per reactor year. Use of the current allowable outage time of 72 hours for each RHR train results in a CDF of $1.024E-4$ per reactor year. Use of a 7 day allowable outage time raises the CDF to $1.050E-4$ per reactor year. The change results in a one time total increase in CDF of $2.6E-6$.

The $2.6E-6$ increase in CDF is considered small when compared to the 20 to 40 person-REM savings in exposure; therefore, SCE&G has determined that the reduction in exposure justifies the increase in CDF by performing these activities during Mode 1 operation.

Pursuant to the above information, the proposed TSCR does not involve a significant reduction in the margin of safety.

NO SIGNIFICANT HAZARDS DETERMINATION
FOR REVISING THE SPECIFICATION FOR
ECCS SUBSYSTEMS - $T_{avg} \geq 350$ DEGREES FAHRENHEIT
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VCSNS Health Physics (HP) has performed a radiological assessment of the required RHR heat exchanger maintenance and valve modification. The assessment resulted in an estimated collective dose of approximately 20 person-REM to perform the maintenance and modification on both trains of RHR while at power. Based on the previous three refueling outages at VCSNS, radiation exposures could be 2 to 3 times higher if these activities were to be performed during a plant shutdown.

The requested time of 7 days is based on experience gained from previous repair evolutions on the components.

Basis for No Significant Hazards Consideration Determination

SCE&G has evaluated the proposed change to the VCSNS TS described above against the Significant Hazards Criteria of 10 CFR 50.92 and determined that the change does not involve any significant hazard for the following reasons:

1. The probability or consequences of an accident previously evaluated is not significantly increased.

The probability of an accident previously evaluated in the FSAR does not change. A one time extension to increase the allowed outage time for each train of RHR from 72 hours to 7 days affects only RHR train availability which does not contribute to the probability of a LOCA. The proposed change to TS 3/4.5.2 has been shown to have only a small increase in Core Damage Frequency. The consequences of a LOCA does not change from those currently resulting from a LOCA initiated while in TS 3.5.2 ACTION statement (a.), thus, there is no change in consequences of an accident previously evaluated in the FSAR.

2. The possibility of an accident or a malfunction of a different type than any previously evaluated is not created.

The proposed TSCR only results in a one time increase in the allowable outage time for each train of RHR. It does not result in an operational condition different from that which has already been considered by TS. Therefore, the change does not create the possibility of a new or different kind of accident or malfunction.

3. The margin of safety has not been significantly reduced.

The effects of increasing the allowed outage time on the calculated core damage frequency has been evaluated and determined to be small.

Pursuant to 10CFR50.91, the preceding analysis provides a determination that the proposed TSCR poses no significant hazard as delineated by 10CFR50.92.