

Attachment II

Marked Up Copy of R.E. Ginna Nuclear Power Plant  
Technical Specifications

Included Pages:

3.6-18

B 3.6-53\*

- \* This bases page is being provided for information only to show the changes RG&E intends to make following NRC approval of the LAR. The bases are under RG&E control for all changes in accordance with Specification 5.5.13.

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3. The changes do not involve a significant increase in individual or cumulative occupational radiation exposure since no new or different type of equipment are required to be installed as a result of this LAR.

Accordingly, the proposed changes meet the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), an environmental assessment of the proposed changes is not required.

#### F. REFERENCES

None.



### 3.6 CONTAINMENT SYSTEMS

#### 3.6.6 Containment Spray (CS), Containment Recirculation Fan Cooler (CRFC), NaOH, and Containment Post-Accident Charcoal Systems

LCO 3.6.6 Two CS trains, four CRFC units, two post-accident charcoal filter trains, and the NaOH system shall be OPERABLE:

APPLICABILITY: MODES 1, 2, 3, and 4.

#### ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One CS train inoperable.	A.1 Restore CS train to OPERABLE status.	72 hours
B. One post-accident charcoal filter train inoperable.	B.1 Restore post-accident charcoal filter to OPERABLE status.	7 days
C. Two post-accident charcoal filter trains inoperable.	C.1 Restore one post-accident charcoal filter train to OPERABLE status.	72 hours
D. NaOH system inoperable.	D.1 Restore NaOH System to OPERABLE status.	72 hours

(continued)

NOTE  
In MODE 4, both CS pumps may be in pull-stop for up to 2 hours for the performance of interlock and valve testing of motor operated valves (MOV's) 857A, 857B, and 857C. Power may also be restored to MOV's 896A and 896B, and the valves placed in the closed position, for up to 2 hours for the purpose of each test.

BASES (continued)

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LCO


During a DBA, a minimum of 2 CRFC units and one CS train are required to maintain the containment peak pressure and temperature below the design limits (Ref. 8). Additionally, two CS trains taking suction from the NaOH System, two CRFC units with post accident charcoal filters (i.e., units A and C), or one CRFC unit with post accident charcoal filters in combination with one CS train are also required to remove iodine from the containment atmosphere and maintain concentrations below those assumed in the safety analysis. To ensure that these requirements are met, two CS trains, four CRFC units, and two post-accident charcoal filter trains and the NaOH System must be OPERABLE. Therefore, in the event of an accident, at least one CS and post-accident charcoal filter train, the NaOH System, and two CRFC units operates, assuming the worst case single active failure occurs.

Each CS train includes a spray pump, spray headers, nozzles, valves, spray eductors, piping, instruments, and controls to ensure an OPERABLE flow path capable of taking suction from the RWST upon an ESF actuation signal and manually transferring suction to Containment Sump B via the RHR pumps.

For the NaOH System to be OPERABLE, the volume and concentration of spray additive solution in the tank must be within limits and air operated valves 836A and 836B must be OPERABLE.

Each CRFC unit includes a motor, fan cooling coils, dampers, moisture separators, HEPA filters, duct distributors, instruments, and controls to ensure an OPERABLE flow path. For CRFC units A and C, flow through either the post-accident charcoal filter or the bypass is required for the units to be considered OPERABLE.

Each post-accident charcoal filter train includes a plenum containing charcoal filter banks and isolation dampers to ensure an OPERABLE flow path. CRFC units A and C are also required to be OPERABLE.

  
See Insert ①

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(continued)

### **Insert 1**

The LCO is modified by a Note which states that in MODE 4, both CS pumps may be placed in pull-stop, with power restored to motor operated valves 896A and 896B and the valves placed in the closed position for interlock and valve testing of motor operated valves 857A, 857B, and 857C. This Note provides 2 hours for each test of each motor operated valve 857A, 857B, and 857C. The Note is required since the installed interlocks on 857A, 857B, and 857C require closure of valves 896A and 896B while other valve testing (e.g., differential pressure tests) require a pressurized RHR system. Performance of these tests in MODEs 5 and 6 would render the RHR system inoperable when it is required for core cooling.

**Attachment III**

**Proposed Technical Specifications**

**Included Pages:**

**3.6-18**

### 3.6 CONTAINMENT SYSTEMS

#### 3.6.6 Containment Spray (CS), Containment Recirculation Fan Cooler (CRFC), NaOH, and Containment Post-Accident Charcoal Systems

LCO 3.6.6 Two CS trains, four CRFC units, two post-accident charcoal filter trains, and the NaOH system shall be OPERABLE.

-----NOTE-----  
In MODE 4, both CS pumps may be in pull-stop for up to 2 hours for the performance of interlock and valve testing of motor operated valves (MOV) 857A, 857B, and 857C. Power may also be restored to MOVs 896A and 896B, and the valves placed in the closed position, for up to 2 hours for the purpose of each test.  
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APPLICABILITY: MODES 1, 2, 3, and 4.

#### ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One CS train inoperable.	A.1 Restore CS train to OPERABLE status.	72 hours
B. One post-accident charcoal filter train inoperable.	B.1 Restore post-accident charcoal filter to OPERABLE status.	7 days
C. Two post-accident charcoal filter trains inoperable.	C.1 Restore one post-accident charcoal filter train to OPERABLE status.	72 hours
D. NaOH system inoperable.	D.1 Restore NaOH System to OPERABLE status.	72 hours



Attachment IV

Miscellaneous References

- d. At or above an RCS temperature of 350°F, two residual heat removal pumps are operable.
- e. At or above an RCS temperature of 350°F, two residual heat removal heat exchangers are operable.
- f. At the conditions required in a through e above, all valves, interlocks and piping associated with the above components which are required to function during accident conditions are operable.
- g. At or above an RCS temperature of 350°F, A.C. power shall be removed from the following valves with the valves in the open position: safety injection cold leg injection valves 878B and D. A.C. power shall be removed from safety injection hot leg injection valves 878A and C with the valves closed. D.C. control power shall be removed from refueling water storage tank delivery valves 896A, 896B and 856 with the valves open.
- h. At or above an RCS temperature of 350°F, check valves 853A, 853B, 867A, 867B, 878G, and 878J shall be operable with less than 5.0 gpm leakage each. The leakage requirements of Technical Specification 3.1.5.2.1 are still applicable.
- i. Above a reactor coolant system pressure of 1600 psig, except during performance of RCS hydro test, A.C. power shall be removed from accumulator isolation valves 841 and 865 with the valves open.
- j. At or above an RCS temperature of 350° F, A.C. power shall be removed from Safety Injection suction valves 825A and B with the valves in the open position, and from valves 826A, B, C, D with the valves in the closed position.

### B.3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

#### B 3.5.2 ECCS - MODES 1, 2, and 3

##### BASES

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##### BACKGROUND

The function of the ECCS is to provide core cooling and negative reactivity to ensure that the reactor core is protected after any of the following accidents:

- a. Loss of coolant accident (LOCA) and coolant leakage greater than the capability of the normal charging system;
- b. Rod ejection accident;
- c. Loss of secondary coolant accident, including uncontrolled steam release or loss of feedwater; and
- d. Steam generator tube rupture (SGTR).

The addition of negative reactivity is designed primarily for the loss of secondary coolant accident where primary cooldown could add enough positive reactivity to achieve criticality and return to significant power.

There are two phases of ECCS operation: injection and recirculation. In the injection phase, water is taken from the refueling water storage tank (RWST) and injected into the Reactor Coolant System (RCS) through the cold legs and reactor vessel upper plenum. When sufficient water is removed from the RWST to ensure that enough boron has been added to maintain the reactor subcritical and the containment sump has enough water to supply the required net positive suction head to the ECCS pumps, suction is switched to Containment Sump B for recirculation. After approximately 20 hours, simultaneous ECCS injection is used to reduce the potential for boiling in the top of the core and any resulting boron precipitation.

The ECCS consists of two separate subsystems: safety injection (SI) and residual heat removal (RHR) (see Figure B 3.5.2-1). Each subsystem consists of two redundant, 100% capacity trains. The ECCS accumulators and the RWST are also part of the ECCS, but are not considered part of an ECCS flow path as described by this LCO.

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## BASES

BACKGROUND  
(continued)

The ECCS flow paths which comprise the redundant trains consist of piping, valves, heat exchangers, and pumps such that water from the RWST can be injected into the RCS following the accidents described in this LCO. The major components of each subsystem are the RHR pumps, heat exchangers, and the SI pumps. The RHR subsystem consists of two 100% capacity trains that are interconnected and redundant such that either train is capable of supplying 100% of the flow required to mitigate the accident consequences. The SI subsystem consists of three redundant, 50% capacity pumps which supply two RCS cold leg injection lines. Each injection line is capable of providing 100% of the flow required to mitigate the consequences of an accident. These interconnecting and redundant subsystem designs provide the operators with the ability to utilize components from opposite trains to achieve the required 100% flow to the core.

Removal of  
power for  
MOV 896A &  
896B

During the injection phase of LOCA recovery, suction headers supply water from the RWST to the ECCS pumps. A common supply header is used from the RWST to the safety injection (SI) and containment spray (CS) System pumps. This common supply header is provided with two in-series motor-operated isolation valves (896A and 896B) that receive power from separate sources for single failure considerations. These isolation valves are maintained open with DC control power removed via a key switch located in the control room. The removal of DC control power eliminates the most likely causes for spurious valve actuation while maintaining the capability to manually close the valves from the control room during the recirculation phase of the accident (Ref. 1). The SI pump supply header also contains two parallel motor-operated isolation valves (825A and 825B) which are maintained open by removing AC power. The removal of AC power to these isolation valves is an acceptable design against single failures that could result in undesirable component actuation (Ref. 2).

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BASES

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BACKGROUND  
(continued)

A separate supply header is used for the residual heat removal (RHR) pumps. This supply header is provided with a check valve (854) and motor operated isolation valve (856) which is maintained open with DC control power removed via a key switch located in the control room. The removal of DC control power eliminates the most likely causes for spurious valve actuation while maintaining the capability to manually close the valve from the control room during the recirculation phase of the accident (Ref. 3).

The three SI pumps feed two RCS cold leg injection lines. SI Pumps A and B each feeds one of the two injection lines while SI Pump C can feed both injection lines. The discharge of SI Pump C is controlled through use of two normally open parallel motor operated isolation valves (871A and 871B). These isolation valves are designed to close based on the operating status of SI Pumps A and B to ensure that SI Pump C provides the necessary flow through the RCS cold leg injection line containing the failed pump.

The discharges of the two RHR pumps and heat exchangers feed a common injection line which penetrates containment. This line then divides into two redundant core deluge flow paths each containing a normally closed motor operated isolation valve (852A and 852B) and check valve (853A and 853B) which provide injection into the reactor vessel upper plenum.

For LOCAs that are too small to depressurize the RCS below the shutoff head of the SI pumps, the steam generators provide core cooling until the RCS pressure decreases below the SI pump shutoff head.

During the recirculation phase of LOCA recovery, RHR pump suction is manually transferred to Containment Sump B (Refs. 4 and 5). This transfer is accomplished by stopping the RHR pumps, isolating RHR from the RWST by closing motor operated isolation valve 856, opening the Containment Sump B motor operated isolation valves to RHR (850A and 850B) and then starting the RHR pumps. If motor operated isolation valve 856 fails to close, check valve 854 provides necessary isolation of the RWST. The SI and CS pumps are then stopped and the RWST isolated by closing motor operated isolation valve 896A and 896B for the SI and CS pump common supply header and closing motor operated isolation valve 897 or 898 for the SI pumps recirculation line.

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## BASES

BACKGROUND  
(continued)

## Interlocks

The RHR pumps then supply the SI pumps if the RCS pressure remains above the RHR pump shutoff head as correlated through core exit temperature, containment pressure, and reactor vessel level indications (Ref. 6). The RHR pumps can also provide suction to the CS pumps for containment pressure control. This high-head recirculation path is provided through RHR motor operated isolation valves 857A, 857B, and 857C. These isolation valves are interlocked with valves 896A, 896B, 897, and 898. This interlock prevents opening of the RHR high-head recirculation isolation valves unless either 896A or 896B are closed and either 897 or 898 are closed. If RCS pressure is such that RHR provides adequate core and containment cooling, the SI and CS pumps remain in pull-stop. During recirculation, flow is discharged through the same paths as the injection phase. After approximately 20 hours, simultaneous injection by the SI and RHR pumps is used to prevent boron precipitation (Ref. 7). This consists of providing SI through the RCS cold legs and into the lower plenum while providing RHR through the core deluge valves into the upper plenum.

The two redundant flow paths from Containment Sump B to the RHR pumps also contain a motor operated isolation valve located within the sump (851A and 851B). These isolation valves are maintained open with power removed to improve the reliability of switchover to the recirculation phase. The operators for isolation valves 851A and 851B are also not qualified for containment post accident conditions. The removal of AC power to these isolation valves is an acceptable design against single failures that could result in an undesirable actuation (Ref. 2).

The SI subsystem of the ECCS also functions to supply borated water to the reactor core following increased heat removal events, such as a steam line break (SLB). The limiting design conditions occur when the negative moderator temperature coefficient is highly negative, such as at the end of each cycle.

During low temperature conditions in the RCS, limitations are placed on the maximum number of ECCS pumps that may be OPERABLE. Refer to the Bases for LCO 3.4.12, "Low Temperature Overpressure Protection (LTOP) System," for the basis of these requirements.

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## BASES

### BACKGROUND (continued)

The ECCS subsystems are actuated upon receipt of an SI signal. The actuation of safeguard loads is accomplished in a programmed time sequence. If offsite power is available, the safeguard loads start immediately in the programmed sequence. If offsite power is not available, the Engineered Safety Feature (ESF) buses shed normal operating loads and are connected to the emergency diesel generators (EDGs). Safeguard loads are then actuated in the programmed time sequence. The time delay associated with diesel starting, sequenced loading, and pump starting determines the time required before pumped flow is available to the core following a LOCA.

The active ECCS components, along with the passive accumulators and the RWST covered in LCO 3.5.1, "Accumulators," and LCO 3.5.4, "Refueling Water Storage Tank (RWST)," provide the cooling water necessary to meet AIF-GDC 44 (Ref. 8).

### APPLICABLE SAFETY ANALYSIS

The LCO helps to ensure that the following acceptance criteria for the ECCS, established by 10 CFR 50.46 (Ref. 9), will be met following a LOCA:

- a. Maximum fuel element cladding temperature is  $\leq 2200^{\circ}\text{F}$ ;
- b. Maximum cladding oxidation is  $\leq 0.17$  times the total cladding thickness before oxidation;
- c. Maximum hydrogen generation from a zirconium water reaction is  $\leq 0.01$  times the hypothetical amount generated if all of the metal in the cladding cylinders surrounding the fuel, excluding the cladding surrounding the plenum volume, were to react;
- d. Core is maintained in a coolable geometry; and
- e. Adequate long term core cooling capability is maintained.

The LCO also limits the potential for a post trip return to power following an SLB event and helps ensure that containment temperature limits are met post accident.

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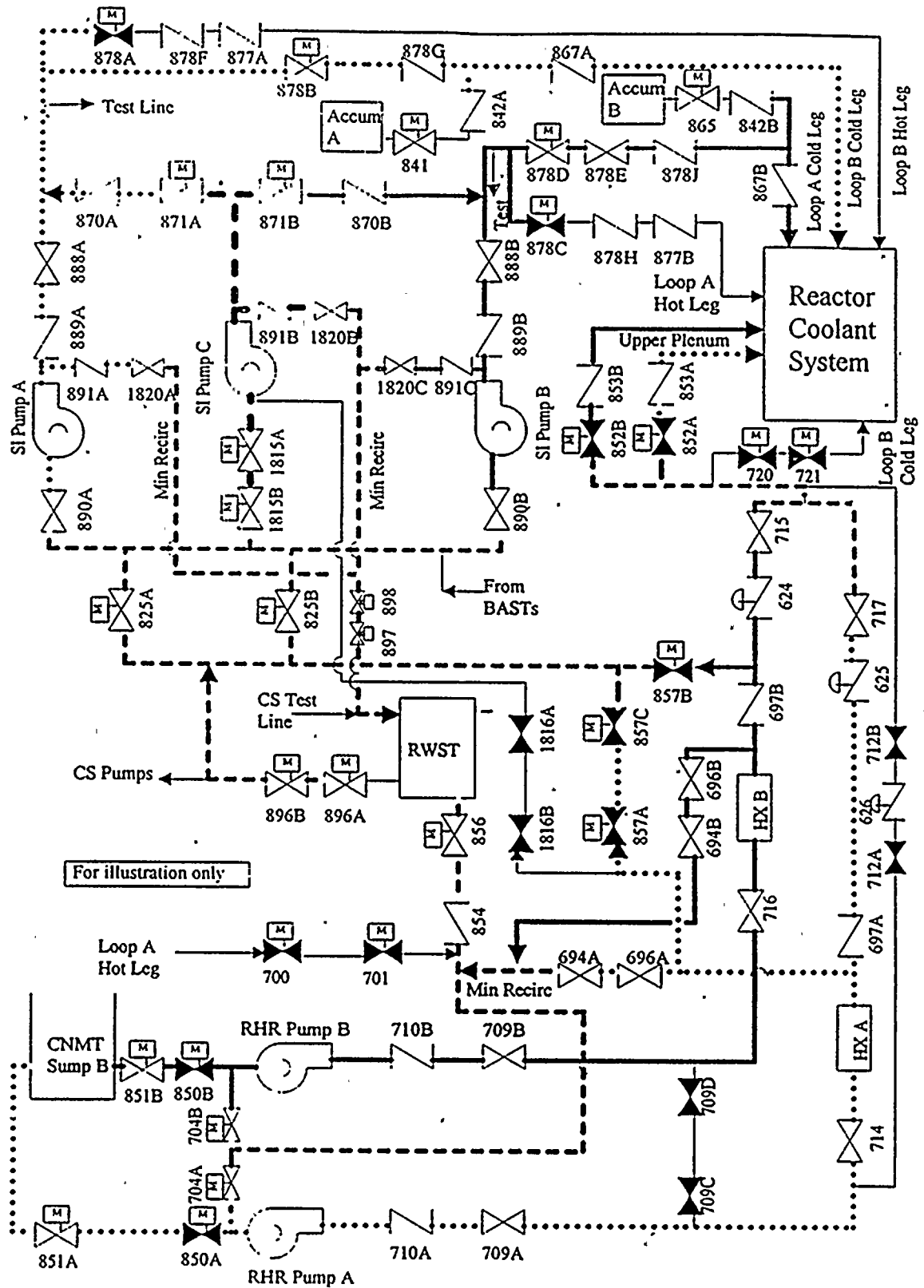


Figure 3.5.2-1 (page 1 of 2)



