

11397

1/25/91 p. 1 of 2

Atomic Safety and Licensing Board

DOCKETED
USNRC

In the Matter of:

'91 FEB -7 P4:34

Docket Nos. 50-424, 50-425

ASLBP No. 90-617-03-04A

GROUP 3
DOCKET # 90-617-03-04A

Georgians Against Nuclear Energy
Supplemental Submittal

Calculations on Rise Rate of Jacket Water Temperature

CASE 1 - TOTAL LOSS OF NSCW COOLING INCLUDING
REVISED 3-WAY VALVE FAILURE TO BYPASS POSITION

ASSUMPTIONS - Heat load approximately 24 M BTU/Hr.*
- Jacket Water Equivalent Volume ~ 1500 gal.

Rate of Rise of Jacket Water Temperature \approx
 24×10^6 BTU/Hr.

$$\frac{24 \times 10^6 \text{ BTU/Hr.}}{1500 \text{ gal} \times 8.3 \text{ \#/gal} \times 60 \frac{\text{min}}{\text{hr.}} \times \frac{1 \text{ BTU}}{\text{\#}^\circ\text{F}}} \approx \boxed{32^\circ\text{F/Min}}$$

* From Design Steady State Operating Parameters

100°F NSCW inlet temp

133°F NSCW outlet temp

1500 gpm NSCW flow

$$Q = m c \Delta T$$

$$= 1500 \times 8.3 \times 60 \times (133 - 100)^\circ\text{F}$$

$$= 24.6 \text{ M BTU/Hr.}$$

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(CASE 2 TO FOLLOW)

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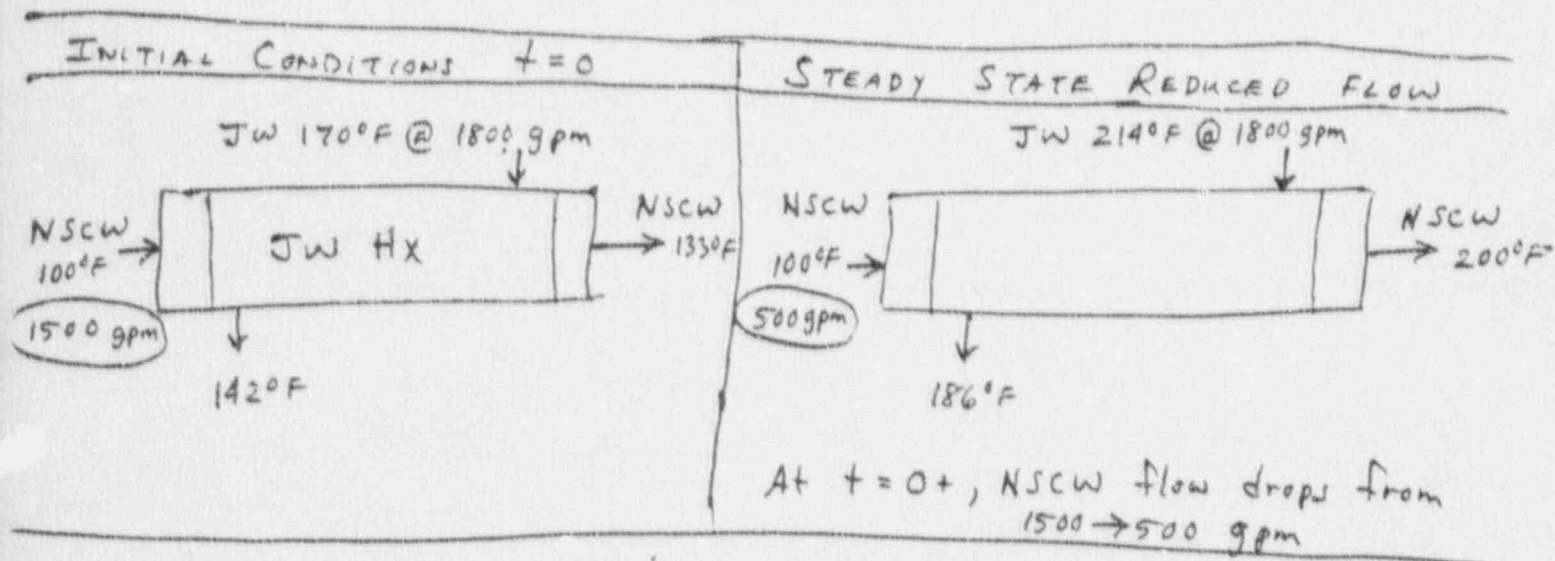
1/25/91 p. 2 of 2

Atomic Safety and Licensing Board

CASE 2

- PARTIAL LOSS OF NSCW COOLING, INCLUDING REDUCTION OF NSCW FLOW FROM 1500 gpm to 500 gpm from CONTROL ROOM FIRE.

ASSUMPTIONS - Heat load approximately $24 \frac{MBTU}{HR}$.
- JACKET WATER EQUIVALENT VOLUME 1500 gal.



Initial Rate of Rise of t at $t=0$ from time of reduced flow

$$= \frac{\frac{2}{3} \times 24 \text{ MBTU/HR}}{1500 \text{ gal} \times 8.3 \times 60 \text{ min/HR}}$$

21 $^{\circ}F/\text{min}$

Time to JW exceeding $200^{\circ}F$

Approximately 2 minutes

Section 3

3-48

NUREG-1410

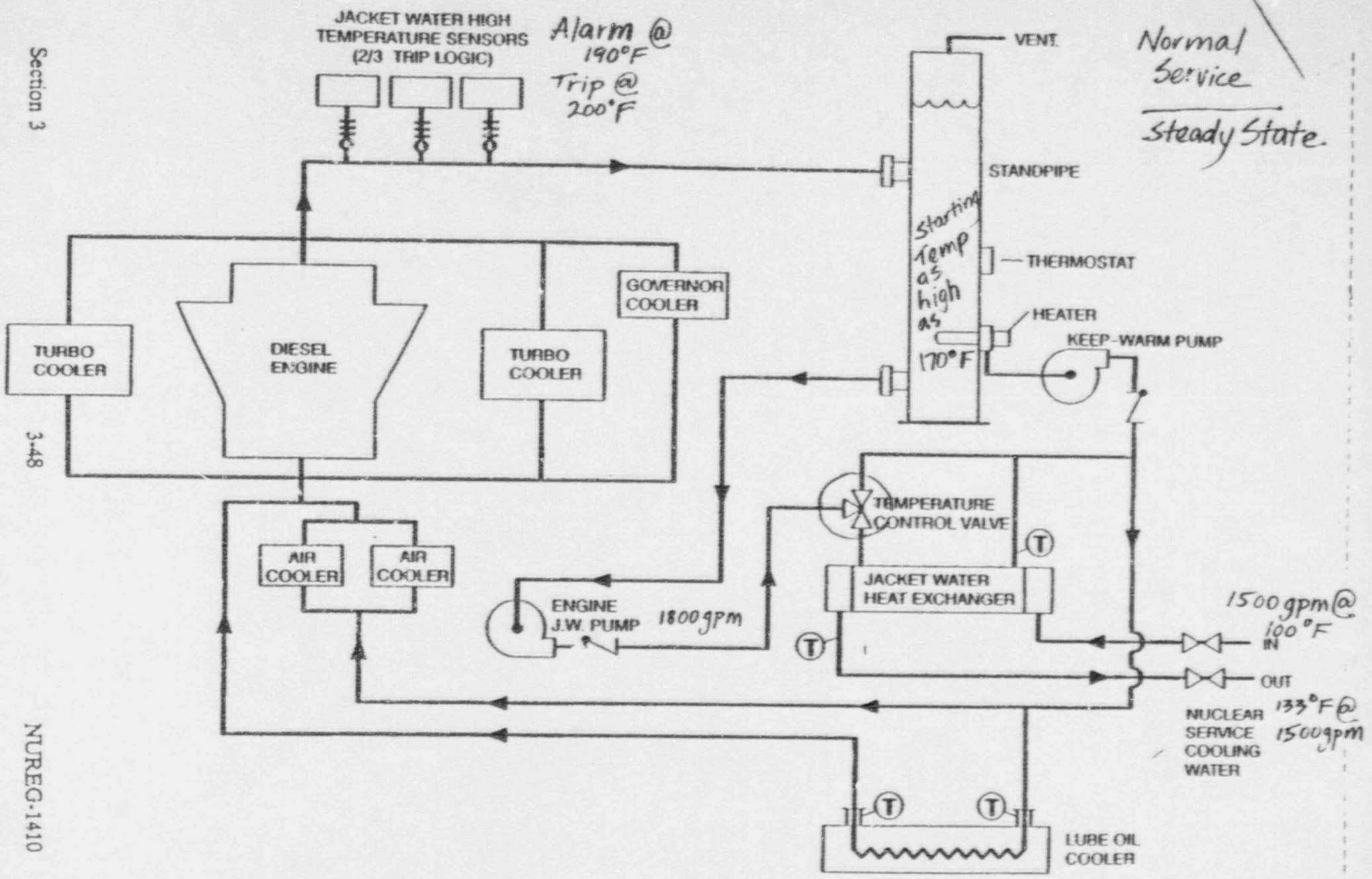


Figure 3.6 Jacket Water Cooling System

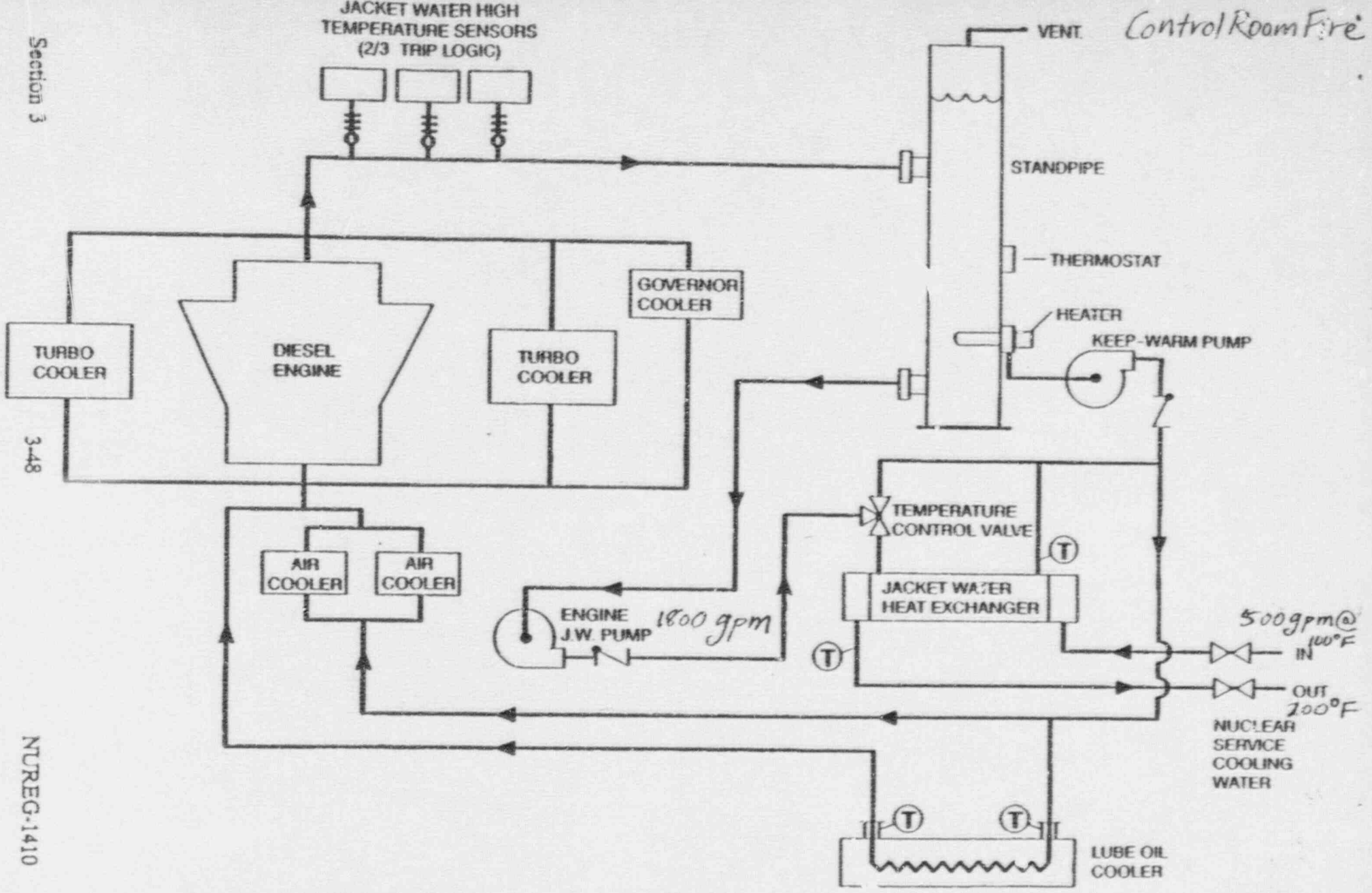


Figure 3.6 Jacket Water Cooling System

Section 3

3-48

NUREG-1410