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Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Dear Mr. Denton:

River Bend Station - Unit 1
Docket No. 50-458

Enclosed for your review are revisions to the River Bend Station (RBS) Final Safety Analysis Report (FSAR). These revisions reflect a change in the calculations for the ultimate heat sink maximum temperature due to revisions in plant equipment operation. These revisions to FSAR Section 9.2.5 will be included in a future amendment.

Sincerely,

J. E. Booker

J. E. Booker
Manager-Engineering,
Nuclear Fuels & Licensing
River Bend Nuclear Group

JEB/ERG/kt

B001 1/1

9.2.5.2 System Description

15 The UHS for each unit at River Bend Station consists of one 100 percent Seismic Category I cooling tower and one 100 percent capacity water storage basin. The basin holds approximately 6,720,000 gal of water to make up for drift and evaporative losses over 30 days of operation. Major component design data are given in Table 9.2-15.

The cooling tower is designed to nominally remove 379.5 x 10^6 Btu/hr at a maximum service water flow of 33,000 gpm. Design temperature for cold water leaving the tower is 93°F, corresponding to a design tower inlet water temperature of 116°F.

The design ambient wet-bulb temperature of 81°F was based upon the maximum mean 1-day wet bulb temperature of 80.3°F recorded on July 27, 1969.

The maximum allowable cold water temperature is nominally 95°F, corresponding to the value assumed for evaluation of the containment heat removal systems (Section 6.2.2).

large recirculation line

Heat transfer to standby service water is seen to occur immediately after a DBA, postulated as a ~~double ended~~ break ~~of a reactor recirculation pump suction line~~ coincident with a complete loss of offsite power. The loss of offsite power is assumed to last for the full 30 day post shutdown period. The single failure of the Division II diesel generator is postulated to occur immediately after trip.

5 to 6 hrs.

The maximum heat transfer rate to standby service water is calculated to occur ~~0.5 hr~~ after station trip when the RHR heat exchangers begin operating in the suppression pool cooling mode. Heat rejection to standby service water occurs as follows in the unit.

For shutdown following a design basis accident coincident with a loss of offsite power, core decay and heavy element decay heat generation is initially high and assumed to decrease over the 30-day shutdown in accordance with Branch Technical Position ASB 9.2. Sensible heat removal is assumed to start 12 hr after shutdown. Plant auxiliary heat loads during the 30-day post-shutdown period are listed in Table 9.2-7. The operating status for safeguard equipment operating during the 30-day period is listed in Table 9.2-13.

Add Insert 1 and relocate Inserts 1A & 1B from Pages 9.2-28 & 9.2-29, respectively.

Insert 2 →

Insert 1 for Page 9.2-24

Heat rejection to the standby service water system by the RHR heat exchangers and containment unit cooler is postulated to begin 0.5 hrs after the DBA. Calculation of heat rejection rates for the period 0.5 hrs through 5 days from the RHR heat exchangers and containment unit coolers is described in Section 6.2.1 and shown graphically in Figures 6.2-19 and 6.2-21.

Heat rejection rates for the period 4 days to 30 days were determined as follows: the RHR heat exchangers are postulated to remove the total quantity of core decay heat produced during that interval. Containment unit cooler heat rejection rates during this interval are approximated by a straight line continuation of Figure 6.2-21.

Insert 2 for Page 9.2-24

The maximum rate of heat rejection to standby service water from all sources as shown in Table 9.2-11 is 1.435×10^8 BTU/hr and occurs 5.0 hours after shutdown. This corresponds to a maximum service water supply temperature of 89.0 F at 12197 gpm flow.

The maximum total heat rejection rate for the DBA condition, calculated at 1/2 hr after shutdown, is 193 x 10^6 Btu/hr with a corresponding service water flow rate of 12,150 gpm. The maximum cold water temperature calculated at this time is 90.5°F. 15

Cold and hot water temperatures are listed in Table 9.2-11 and shown graphically in Fig. 9.2-19. The equipment operating status is listed in Table 9.2-13.

Cold water temperatures exiting the UHS cooling tower were calculated using the following methods.

Cold water temperatures were determined using vendor-supplied tower performance curves which relate cold water temperature and ambient wet bulb temperature for varying values of cooling tower range and constant tower water flows. The vendor has supplied curves for 50 percent through 110 percent at 10 percent intervals of the design tower flow of 33,000 gpm. The vendor curves are provided as Figures 9.2-19a through 9.2-19g. These curves are based on both the Cooling Tower Institute Test Code ATC-105, "Acceptance Test Code for Water Cooling Towers"[3], and vendor's proprietary data for the ceramic tile fill material. 5

Heat rejection rates and service water flow rates were determined at specific periods of time following shutdown. Tower cooling ranges were calculated using the relationship:

$$\Delta T = \frac{(HR)}{Q\ C_p}$$

where:

ΔT = Cooling range (°F)

HR = Heat rejection rate (Btu/hr)

Q = Service water flow (lbm/hr)

C_p = Specific heat of water (Btu/lbm °F)

Cold water temperatures were then interpolated from the performance curves. Hot water temperatures were found from the following relationship:

Hot Water Temp = Cooling Range + Cold Water Temp

Values of hot water temperature calculated using the above methods are highly conservative, yielding results higher than expected actual temperatures. A cooling tower operating in a closed loop dissipates all the heat rejected to it by allowing hot water temperatures to rise or fall to an equilibrium point defined by the amount of heat the ambient air is capable of picking up. For conservatism, the analysis of cooling tower operation disregards the dampening effect the large volume of water stored in the basin has upon the system operating temperatures.

In actuality, a cooling tower discharging into a large storage basin, as is the case here, cannot achieve the rapid changes in water temperature assumed by this analysis. During operation, some portion of increasing or decreasing plant heat loads goes toward raising the basin water's sensible heat, while the remainder is discharged by the tower through forced evaporation. As a result, cold water temperatures tend to follow the changes in heat rejection rates, but reach the calculated values only in the long term. The calculated values of cold water temperatures, therefore, should be considered as conservative upper boundaries instead of actual temperatures. The assumed initial basin temperature introduces a second degree of conservatism to the analysis.

15 | Another demonstration of conservatism can be seen by considering that the cold water temperature of 90.5°, calculated at 1/2 hr after shutdown, is higher than the design initial basin temperature of 88.5°F dry bulb (obtained from the maximum mean 1-day temperature, recorded July 30, 1954). This in turn is higher than the expected average basin water temperature of approximately 77.6°F corresponding to the maximum mean 30-day wet bulb temperature recorded during the period June 20, 1969 through July 19, 1969. The basin is partially shielded from the sun by the tornado missile protection roof.

Insert 3 →

The following estimated maximum losses occur for the UHS:

Insert 4 →

	Loss up to 24 hr (gal)	Total Loss (during 30 days of operation) (gal)
Natural Evaporation	1,200	35,000
Forced Evaporation	512,000	6,210,000
Drift	1,800	50,000
Total	515,000	6,295,000

15 | which is approximately 6.30 x 10^6 gal of water lost.

Insert 3 for Page 9.2-26

During the first 2.0 hours after shutdown all of the heat rejected from the station is assumed to go directly toward increasing the temperature of the water stored in the SCT Basin. During this time, no credit is taken for heat removal by natural evaporation from either the pool surface or in the lower fill. At shutdown there is a total of 6,700,000 gallons of water in the basin. From Table 9.2-10, 2.25×10^8 BTU's are rejected to service water during the first 2.0 hrs. This will raise the average temperature of the basin water by 4.4 F.

The anticipated maximum SCT basin temperature prior to shutdown to 82 F. This is based on an analysis of the energy balance between the basin partially shaded by the tornado missile protected roof and atmosphere and direct solar heat loads during the summer months.

At 2.0 hours after shutdown, the average basin water temperature would be 82 F + 4.4 or 86.4 F which is lower than the calculated 2.0 hr water temperature 88.8 F shown in Table 9.2-11. The conclusion is that for the first two hours all the heat rejected to standby service water goes to raising the sensible heat of the basin. Furthermore, the cooling tower fans may be started at 2.0 hrs after shutdown without affecting the ability of the ultimate heat sink to remove plant heat.

Insert 4 for Page 9.2-26

	Loss up to 24 hrs - gal	Total Loss for 30 days - gal
Natural Evaporation	4.11×10^2	1.23×10^4
Forced Evaporation	3.42×10^5	5.714×10^6
Drift	1.61×10^3	5.144×10^4
Cooling for PVLCS Air Compressor (water not recovered)	7.2×10^3	2.16×10^5
	3.51×10^5	5.994×10^6

Which is approximately 6.0×10^6 gal of water lost.

Forced evaporation was calculated by the following relationship:

$$E = \frac{(TH)\ C}{(LH)\ \rho}$$

where:

E = Evaporation (gal)

TH = Total integrated heat (Btu)

LH = Latent heat of incoming water (Btu/lbm)

ρ = Density of incoming water (lbm/ft^3)

C = Conversion factor of 7.481 gal/ft^3

Evaporation calculated by this equation is also conservative. As stated previously, approximately 20 to 30 percent of the heat load goes to raising the sensible heat of the water. Actual forced evaporation is expected to range between 70 and 80 percent of the calculated value.

The quantity of water naturally evaporated from the surface of the UHS storage basin is minimal for a semi-enclosed basin such as this. For natural evaporation to occur, the vapor pressure of the ambient air must be lower than the vapor pressure of the water. During UHS operation, the air near the surface of the water is saturated at the temperature of the cold water leaving the fill material. Correspondingly, the water surface temperature is at or below this temperature, thus inhibiting natural evaporation.

A net solar ~~For conservatism, a sun~~ and atmospheric heat load of 3.58 x 10^6 ~~1 x 10^7~~ Btu/day was assumed to be impressed upon the water surface through the 54 ft x 54 ft center plenum and a corresponding evaporation rate to dissipate this heat added into the total integrated evaporation and drift values shown in Table 9.2-12 and Fig. 9.2-20. Sun heat load is based conservatively on ~~the maximum value of~~ solar radiation incident to a horizontal surface ~~which~~ at 30°45' ~~32 degrees~~ north latitude ~~is found to occur on June 21 each year~~ and assuming no cloud cover.

Maximum cooling tower drift loss is assumed to be 0.01 percent of the standby service water flow rate, based upon data furnished by the UHS supplier. Drift loss is a function of the internal tower design and is independent of ambient conditions (e.g., wind speed, temperature, humidity). Cooling towers of similar design were tested at Oak Ridge National Laboratory by the Environmental Systems Company for the EPA. In their report <u>Development and Demonstration of Low-Level Drift Instrumentation</u>, October 1971, average drift losses of 0.005 percent were found. The towers tested at Oak Ridge National Laboratory had two-pass wood slat drift eliminators. The towers described herein utilize three-pass, close space polyvinyl chloride drift eliminators with lower air velocities which should be more efficient. Thus, basin capacity calculations, based upon 0.01 percent drift loss, conservatively predict tower drift loss.

The cooling tower storag facility has a capacity of approximately 6,720,000 gal. Of this capacity, approximately 70,000 gal are not used to satisfy pump minimum submergence requirements, a level of 6 in above the
15 basin floor, el 64 ft 6 in. During the first 30 days of operation following a DBA, approximately 6.00 x 10^6 gal of water are lost due to evaporation and drift. The remaining 650,000 gal of water are used as a design safety margin.

Relocate as Insert 1A to Page 9.2-24.

The analysis for the decay heat input from the reactor core to the UHS is based upon Branch Technical Position ASB 9.2. A 10 percent margin is added to the fission product heat rate to cover the uncertainty in nuclear properties for the time interval 10^1 to 10^7 sec. Decay heat rates due to fission products and heavy elements, as well as combined decay heat rates, are tabulated in Table 9.2-4. Fission product decay heat rate is graphically presented in Fig. 9.2-13. Heavy element decay heat rate is given in Fig. 9.2-14. The combined fission product and heavy element decay heat rate is given in Fig. 9.2-15.

Total integrated decay heat input to standby service water from core decay heat due to fission products and heavy elements is given in Table 9.2-5 and shown on Fig. 9.2-16.

The integrated heat rejection from the plant auxiliaries is given in Table 9.2-6. The plant auxiliaries heat input to the standby service water system is presented in Table 9.2-7 and shown on Fig. 9.2-17.

~~The heat rejection rate due to change in sensible heat is given in Table 9.2-8 and shown on Fig. 9.2-18.~~

Relocate as Insert 1B to Page 9.2-24.

Heat rejection due to pump heat is given in Table 9.2-9.

The total integrated decay heat input to the standby service water from reactor core decay heat, sensible heat, pump heat, and plant auxiliaries heat is tabulated in Table 9.2-10.

The increase in water chemistry concentration due to the absence of blowdown from the system has no effect on the operation of the UHS or the standby service water system during 30 days of operation. However, the system is operated with a controlled blowdown and makeup if the normal plant makeup wells are operable following an accident. Blowdown is then intermittent and taken from the discharge of the standby service water pumps. Discharge is made to the primary settling basins.

The makeup water required after 30 days of operation is a maximum of approximately ~~167,900~~ 164,000 gal/day. Primary makeup water is provided by the normal plant makeup wells which are described in Section 9.2.3. Makeup to the basin is manually controlled to maintain the water level above el 113 ft 4 in 15
which is the minimum required basin operating level. Should the primary makeup water source become unavailable, this makeup can be supplied by any of the following alternate methods:

1. Use of tank trucks to carry Mississippi River water from the plant barge slip to the standby cooling tower storage basin

2. Use of a temporary pump and piping to pump Mississippi River water into the storage basin

3. Use of a well - because of the presence of a large shallow water table (approximately 80 ft below grade) and the favorable geology, a temporary well could be drilled and put into operation in a few days.

The UHS can be used to dissipate residual heat produced when a reactor is shut down for refueling. During this period and during normal plant testing the cooling towers operate with a controlled blowdown and makeup.

Under normal operation, the fuel pool makeup is taken from the condensate storage tanks. Should this source become unavailable, provision is made to draw necessary makeup from the standby cooling tower basin (Fig. 9.2-1a).

Table 9.2-5

Decay Heat Rejection(1) to Standby Service Water Following a Large Recirculation Line Break

Time	Time (SEC)	Heat Rejection Rate (BTU/hr) x 10^7	Integrated Heat (BTU)
0.5 hr	1.8×10^3	8.37	0.00
1.0	3.6	8.82	4.30×10^7
1.5	5.4	9.06	8.77
2.0	7.2	9.12	1.33×10^8
2.5	9.0	9.19	1.79
3.0	1.08×10^4	9.30	2.25
4.0	1.44	9.41	3.19
5.0	1.80	9.46	4.13
6.0	2.16	9.42	5.07
8.0	2.88	9.22	6.94
10.0	3.60	8.95	8.75
12.0	4.32	8.61	1.05×10^9
16.0	5.76	8.00	1.38
20.0	7.20	7.45	1.69
24.0	8.64	6.98	1.98
2 day	1.73×10^5	5.40	3.47
3	2.59	4.55	4.66
4	3.46	4.08	5.70
5	4.32	3.80	6.64
6	5.18	3.48	7.51
7	6.05	3.32	8.33
8	6.91	3.15	9.11
9	7.76	2.99	9.84
10	8.64	2.88	1.05×10^{10}
15	1.30×10^6	2.39	1.37
20	1.73	2.09	1.64
25	2.16	1.85	1.88
30	2.59	1.74	2.09

NOTE: (1) Decay Heat Rejection by 1 RHR Heat Exchanger in Suppression Cooling Mode (See Figure 6.2-19)

TABLE 9.2-6

PLANT AUXILIARIES HEAT RATE AND INTEGRATED
HEAT INPUT TO STANDBY SERVICE WATER FOLLOWING A DBA

Auxiliary System Component	0-30 min	BTU/hr x 10^6 30 min-24 hr	24 hr-30 day	Integrated Heat (BTU)
SDG Jacket Cooler	12.03	12.03	12.03	8.662×10^9
HPCS DG Jacket Cooler	8.58	8.58	8.58	6.178×10^9
Main Control Room Chiller Condenser	2.65	2.65	2.65	1.908×10^9
Fuel Pool Cooler	0	10.76	9.72	7.018×10^9
Drywell Unit Coolers	0	0	0	0
Auxiliary Building Unit Coolers:				
RWCU Pump/Hx Area	0.148	0.148	0	3.57×10^6
RPCCW Pump/Hx Area	0.291	0.291	0	6.94×10^6
Aux. Bldg. El 114'	0	0	0	0
HPCS Pump Room	0.547	0.547	0.547	3.94×10^8
SWHGR LPCS Pump RHR A Pump Areas	0.696	0.696	0.696	5.01×10^8
SWHGR RM, Elec Term box Area	0.444	0.444	0.444	3.20×10^8
Main Stm Pipe Tunnel	0.354	0.354	0	8.48×10^6
RHR Pump/B&C and RCIC Pump Areas	0	0	0	0
Aux. Bldgs el 95'9" HPCS Hatch Area	0	0	0	0
Aux. Bldg. el 141' Division I	1.19	1.19	1.19	8.57×10^8
Aux. Bldg. el 141' Division II	0	0	0	0
RHR "A" pump/motor cooler	0	0.05	0.05	3.52×10^7
PVLCS Air Compressor	0.12	0.12	0.12	8.59×10^7

TABLE 9.2-7

PLANT AUXILIARIES HEAT INPUT
TO STANDBY SERVICE WATER

Time	Time (Sec)	Heat Rejection Rate (BTU/hr) x 10^7	Integrated Heat (BTU)
0.0 hr	0.0	2.70	0.0
0.5 hr	1.8×10^3	3.79	1.35×10^7
1.0	3.6	3.79	3.27
1.5	5.4	3.79	5.14
2.0	7.2	3.79	7.03
2.5	9.0	3.79	8.92
3.0	1.08×10^4	3.79	1.08×10^8
4.0	1.44	3.79	1.46
5.0	1.80	3.79	1.84
6.0	2.16	3.79	2.22
8.0	2.88	3.79	2.97
10.0	3.60	3.79	3.73
12.0	4.32	3.79	4.49
16.0	5.76	3.79	6.00
20.0	7.20	3.79	7.52
24.0	8.64	3.60	9.03
2 day	1.73×10^5	3.60	1.77×10^9
3	2.59	3.60	2.63
4	3.46	3.60	3.50
5	4.32	3.60	4.36
6	5.18	3.60	5.23
7	6.05	3.60	6.09
8	6.91	3.60	6.96
9	7.76	3.60	7.82
10	8.64	3.60	8.69
15	1.30×10^6	3.60	1.30×10^{10}
20	1.73	3.60	1.73
25	2.16	3.60	2.16
30	2.59	3.60	2.60

TABLE 9.2-8

CONTAINMENT UNIT COOLER HEAT REJECTION
TO STANDBY SERVICE WATER FOLLOWING
A LARGE RECIRCULATION LINE BREAK

Time	Time (Sec)	Heat Rejection Rate (BTU/hr) x 10^6	Integrated Heat (BTU)
0.5 hr	1.8×10^3	1.35	0.0
1.0	3.6	4.50	1.46×10^6
1.5	5.4	6.20	4.14
2.0	7.2	6.85	7.40
2.5	9.0	7.44	1.10×10^7
3.0	1.08×10^4	7.83	1.48
4.0	1.44	8.48	2.30
5.0	1.80	8.90	3.17
6.0	2.16	9.29	4.08
8.0	2.88	9.78	5.98
10.0	3.60	9.90	7.95
12.0	4.32	9.63	9.90
16.0	5.76	8.80	1.36×10^8
20.0	7.20	8.00	1.69
24.0	8.64	7.30	2.00
2 day	1.73×10^5	5.10	3.49
3	2.59	4.12	4.60
4	3.46	3.50	5.51
5	4.32	3.10	6.30
6	4.18	2.70	7.00
7	6.05	2.37	7.61
8	6.91	2.00	8.13
9	7.76	1.75	8.58
10	8.64	1.60	8.98
15	1.30×10^6	0.82	1.04×10^9
20	1.73	0.10	1.098
25	2.16	0.0	1.099
30	2.59	0.0	1.099

TABLE 9.2-9

HEAT REJECTED BY OPERATING PUMPS FOLLOWING DBA

Time	Time (Sec)	Heat Rejection Rate (BTU/hr) x 10^6	Integrated Heat (BTU)
0.0	0.0	2.15	0.0
0.5 hr	1.8×10^3	2.15	1.08×10^6
1.0	3.6	2.15	2.15
1.5	5.4	2.15	3.22
2.0	7.2	2.15	4.30
2.5	9.0	2.15	5.38
3.0	1.08×10^4	2.15	6.45
4.0	1.44	2.15	8.60
5.0	1.80	2.15	1.08×10^7
6.0	2.16	2.15	1.29
8.0	2.88	2.15	1.72
10.0	3.60	2.15	2.15
12.0	4.32	2.15	2.58
16.0	5.76	2.15	3.44
20.0	7.20	2.15	4.30
24.0	8.64	2.20	5.16
2 day	1.73×10^5	2.20	1.04×10^8
3	2.59	2.20	1.57
4	3.46	2.20	2.10
5	4.32	2.20	2.63
6	5.18	2.20	3.16
7	6.05	2.20	3.68
8	6.91	2.20	4.21
9	7.76	2.20	4.74
10	8.64	2.20	5.27
15	1.30×10^6	2.20	7.91
20	1.73	2.20	1.05×10^9
25	2.16	2.20	1.32
30	2.59	0.0	1.58

TABLE 9.2-10

TOTAL INTEGRATED HEAT INPUT TO STANDBY SERVICE WATER FROM RHR HEAT EXCHANGERS, CONTAINMENT UNIT COOLER, PUMPS AND PLANT AUXILIARIES

		Total Integrated Heat (BTU)				
Time	Time Sec	RHR Heat Exchanger	Containment Unit Cooler	Pumps	Plant Auxiliaries	Total Integrated Heat (BTU)
0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.5 hr	1.8×10^{3}	0.0	0.0	1.08×10^{6}	1.35×10^{7}	1.46×10^{7}
2.0 hr	7.2×10^{3}	1.33×10^{8}	7.4×10^{6}	4.30×10^{6}	7.03×10^{7}	2.15×10^{8}
24.0 hr	8.64×10^{4}	1.98×10^{9}	2.0×10^{8}	5.16×10^{7}	9.03×10^{8}	3.18×10^{9}
5.0 days	4.32×10^{5}	6.64×10^{9}	6.30×10^{8}	2.63×10^{8}	4.36×10^{9}	1.19×10^{10}
10.0 days	8.64×10^{5}	1.05×10^{10}	8.98×10^{8}	5.27×10^{8}	8.69×10^{9}	2.20×10^{10}
30.0 days	2.59×10^{6}	2.09×10^{10}	1.099×10^{9}	1.58×10^{9}	2.598×10^{10}	5.088×10^{10}

TABLE 9.2-11

STANDBY COOLING TOWER PERFORMANCE
FOLLOWING LARGE RECIRCULATION LINE BREAK

Time	Time (Sec)	Heat Load (BTU/hr)	Service Water Flow (GPM)	Forced Evaporation Rate (GPM)	Integrated Evaporation (Gal)	Cold Water Temp F	Hot Water Temp F
0.0 hr	0	2.92×10^{7}	4382	0	0	82.0	95.4
0.5	1.8×10^{3}	1.251×10^{8}	12197	0	0	82.3	102.9
1.0	3.6	1.327×10^{8}	12197	0	0	83.4	104.0
1.5	5.4	1.368×10^{8}	12197	0	0	84.5	105.1
2.0	7.2	1.381×10^{8}	12197	270.2	0	88.8	111.5
2.5	9.0	1.394×10^{8}	12197	272.8	8.14×10^{3}	88.9	111.8
3.0	1.08×10^{4}	1.394×10^{8}	12197	275.6	1.64×10^{4}	88.9	112.1
4.0	1.44	1.426×10^{8}	12197	279.2	3.30×10^{4}	89.0	112.5
5.0	1.80	1.435×10^{8}	12197	281.0	4.98×10^{4}	89.0	112.6
6.0	2.16	1.435×10^{8}	12197	281.0	6.67×10^{4}	89.0	118.6
8.0	2.88	1.42×10^{8}	12197	278.0	1.00×10^{5}	89.0	112.4
10.0	3.60	1.394×10^{8}	12197	272.8	1.33×10^{5}	88.9	111.8
12.0	4.32	1.357×10^{8}	12197	265.4	1.66	88.8	111.1
16.0	5.76	1.288×10^{8}	12197	251.7	2.28	88.6	109.8
20.0	7.20	1.225×10^{8}	12197	239.1	2.86	88.4	108.6
24.0	8.64	1.153×10^{8}	11933	224.8	3.42	87.9	107.3
2 days	1.73×10^{5}	9.73×10^{7}	11933	188.9	6.40	85.3	101.7
3	2.59	8.79×10^{7}	11933	170.4	8.99	84.8	99.6
4	3.46	8.25×10^{7}	11933	159.8	1.14×10^{6}	84.6	98.5
5	4.32	7.93×10^{7}	11933	153.5	1.36	84.4	97.8
6	5.18	7.57×10^{7}	11933	146.4	1.58	84.2	96.8
7	6.05	7.38×10^{7}	11933	142.8	1.79	84.2	96.6
8	6.91	7.17×10^{7}	11933	138.6	1.99	84.1	96.2
9	7.76	6.98×10^{7}	11933	134.9	2.19	84.0	95.8
10	8.64	6.86×10^{7}	11933	132.6	2.38	83.9	95.4
15	1.30×10^{6}	6.20×10^{7}	11933	119.7	3.29	83.7	94.1
20	1.73	5.92×10^{7}	11933	114.3	4.13	83.6	93.6
25	2.16	5.67×10^{7}	11933	109.4	4.93	83.4	92.9
30	2.59	5.56×10^{7}	11933	107.3	5.714	83.4	92.8

TABLE 9.2-12

TOTAL INTEGRATED EVAPORATION
AND DRIFT FOLLOWING DBA

Time	Time (Sec)	Integ. Forced Evap. (Gal)	Integrated Drift (Gal)	Integ. Natural Evap. (Gal)	Total Integ. Evap. (Gal)
0.0	0.0	0.0	0.0	0.0	0.0
0.5	1.8×10^3	0.0	0.0	8.6	8.6
1.0	3.6	0.0	0.0	17.1	17.1
1.5	5.4	0.0	0.0	25.7	25.7
2.0	7.2	0.0	0.0	34.2	34.2
2.5	9.0	8.14×10^3	36.6	42.8	8.22×10^3
3.0	1.08×10^4	1.64×10^4	73.2	51.4	1.65×10^4
4.0	1.44	3.30	1.46×10^2	68.5	3.32×10^4
5.0	1.80	4.98	2.20	85.6	5.01
6.0	2.16	6.67	2.93	1.03×10^2	6.71
8.0	2.88	1.00×10^5	4.39	1.37	1.01×10^5
10.0	3.60	1.33	5.85	1.71	1.34
12.0	4.32	1.66	7.32	2.05	1.67
16.0	5.76	2.28	1.02×10^3	2.94	2.29
20.0	7.20	2.86	1.32	3.42	2.88
24.0	8.64	3.42	1.61	4.11	3.44
2 day	1.73×10^5	6.40	3.33	8.22	6.44
3	2.59	8.99	5.05	1.23×10^3	9.05
4	3.46	1.14×10^6	6.76	1.64	1.15×10^6
5	4.32	1.36	8.48	2.05	1.37
6	5.18	1.58	1.02×10^4	2.46	1.59
7	6.05	1.79	1.19	2.88	1.80
8	6.91	1.99	1.36	3.29	2.01
9	7.76	2.19	1.54	3.70	2.21
10	8.64	2.38	1.71	4.11	2.40
15	1.30×10^6	3.29	2.57	6.16	3.38
20	1.73	4.13	3.42	8.21	4.17
25	2.16	4.93	4.29	1.03×10^4	4.98
30	2.59	5.714	5.14	1.232	5.78×10^6

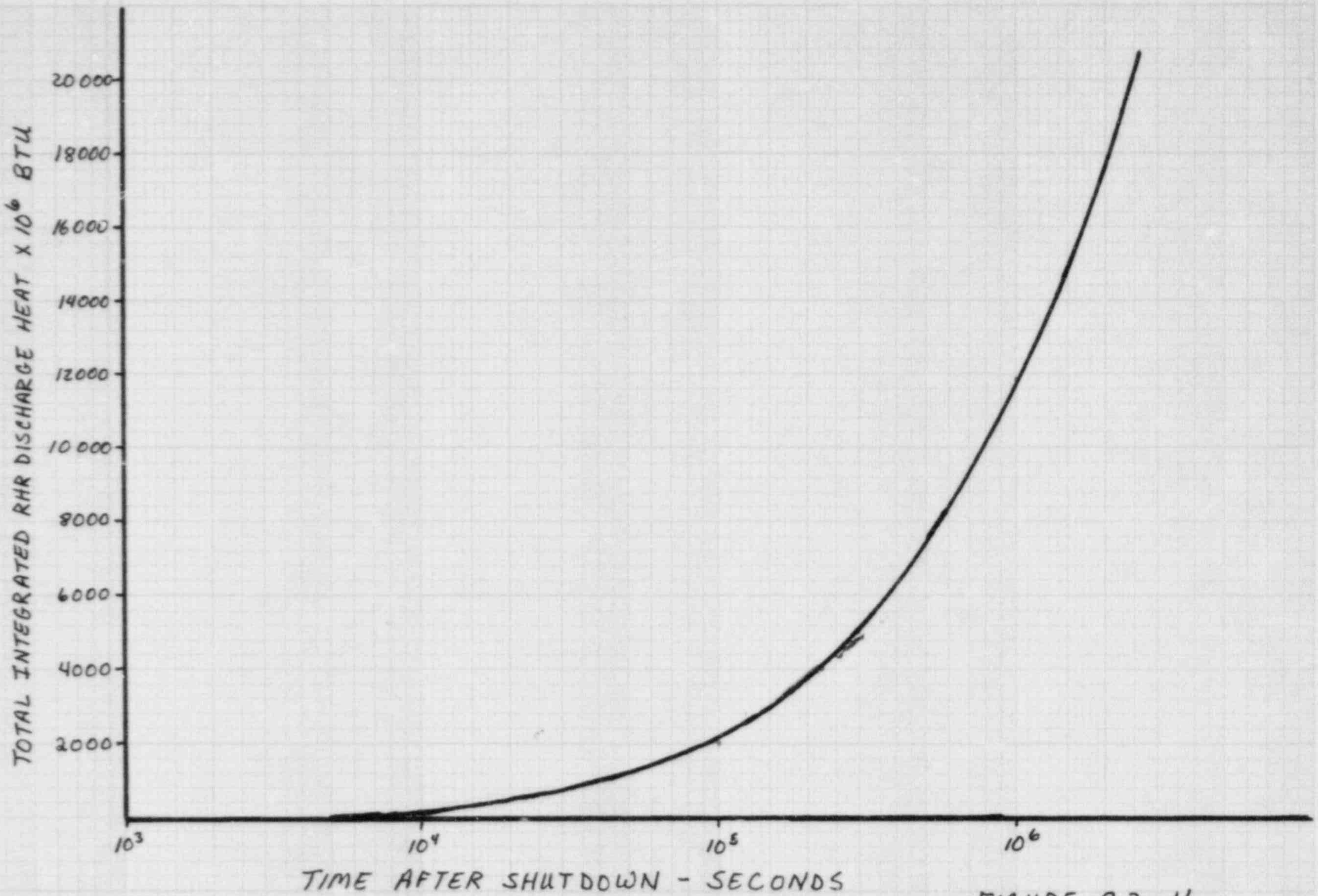

FIGURE 9.2-16
TOTAL INTEGRATED RHR DISCHARGE HEAT INPUT TO SSW FOLLOWING A LOCA
RBS FSAR

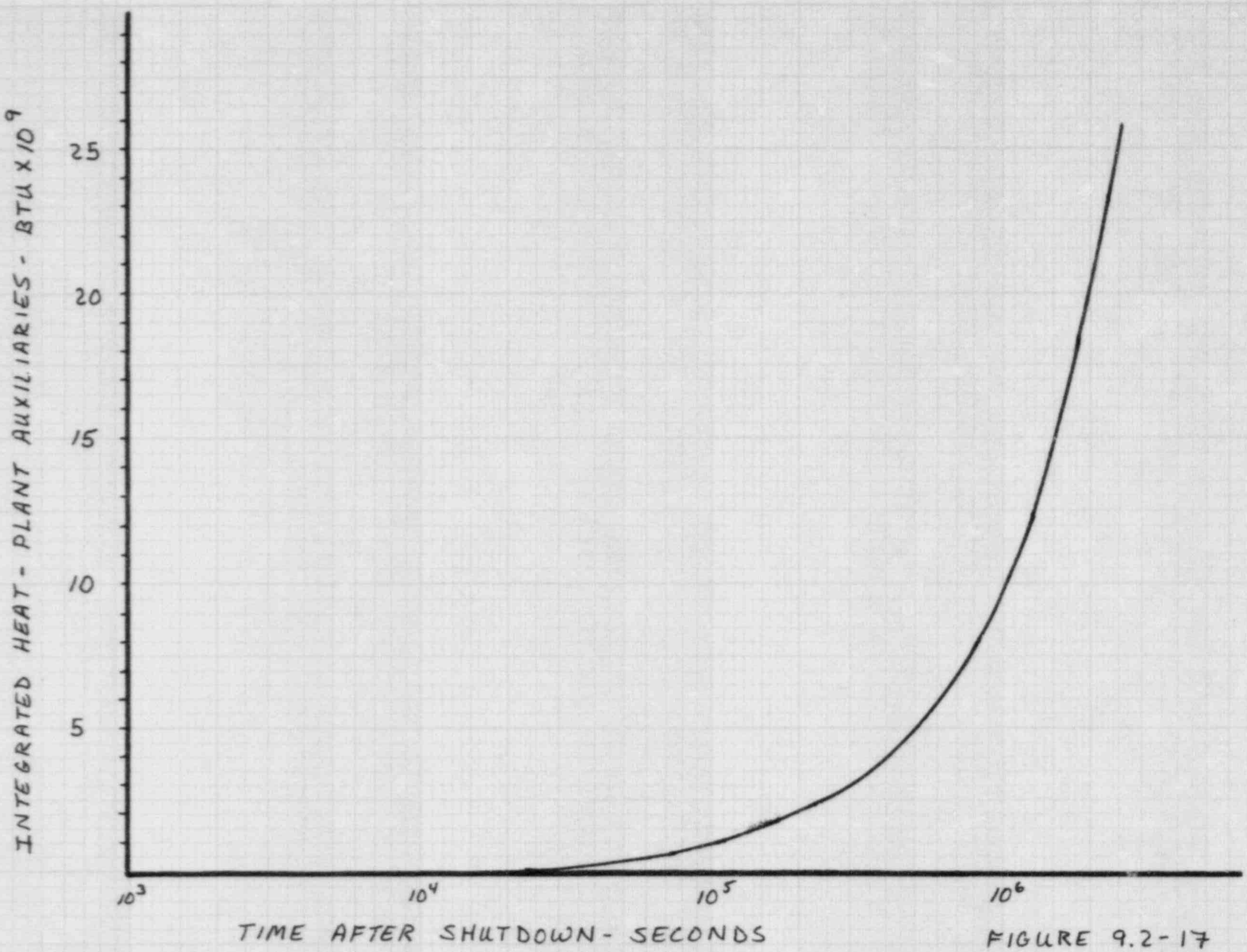

FIGURE 9.2-17
PLANT AUXILIARIES
HEAT INPUT TO SSW
FOLLOWING A LOCA
RBS FSAR

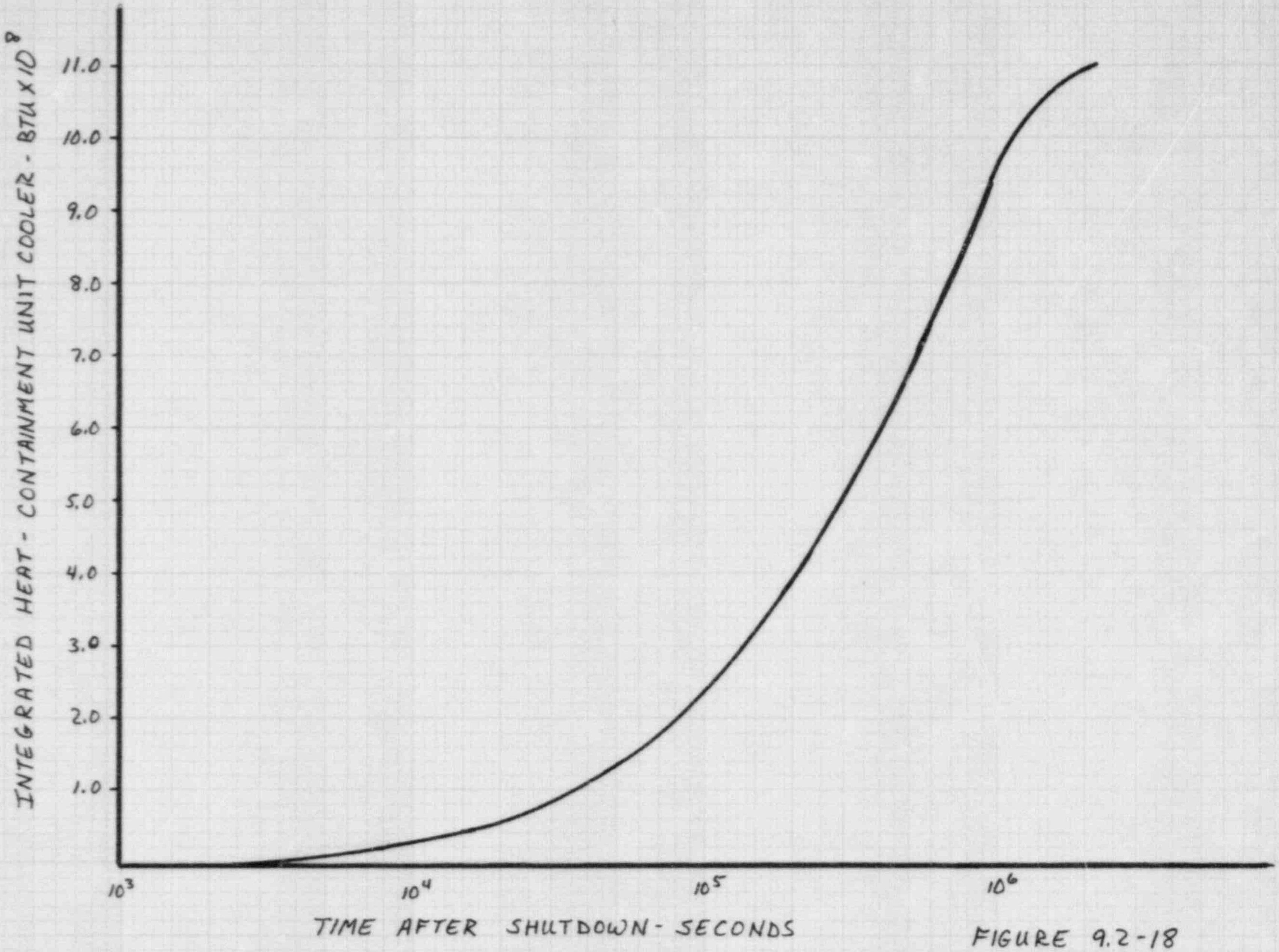

FIGURE 9.2-18
CONTAINMENT UNIT COOLER HEAT INPUT TO SSW FOLLOWING A LOCA
RBS FSAR

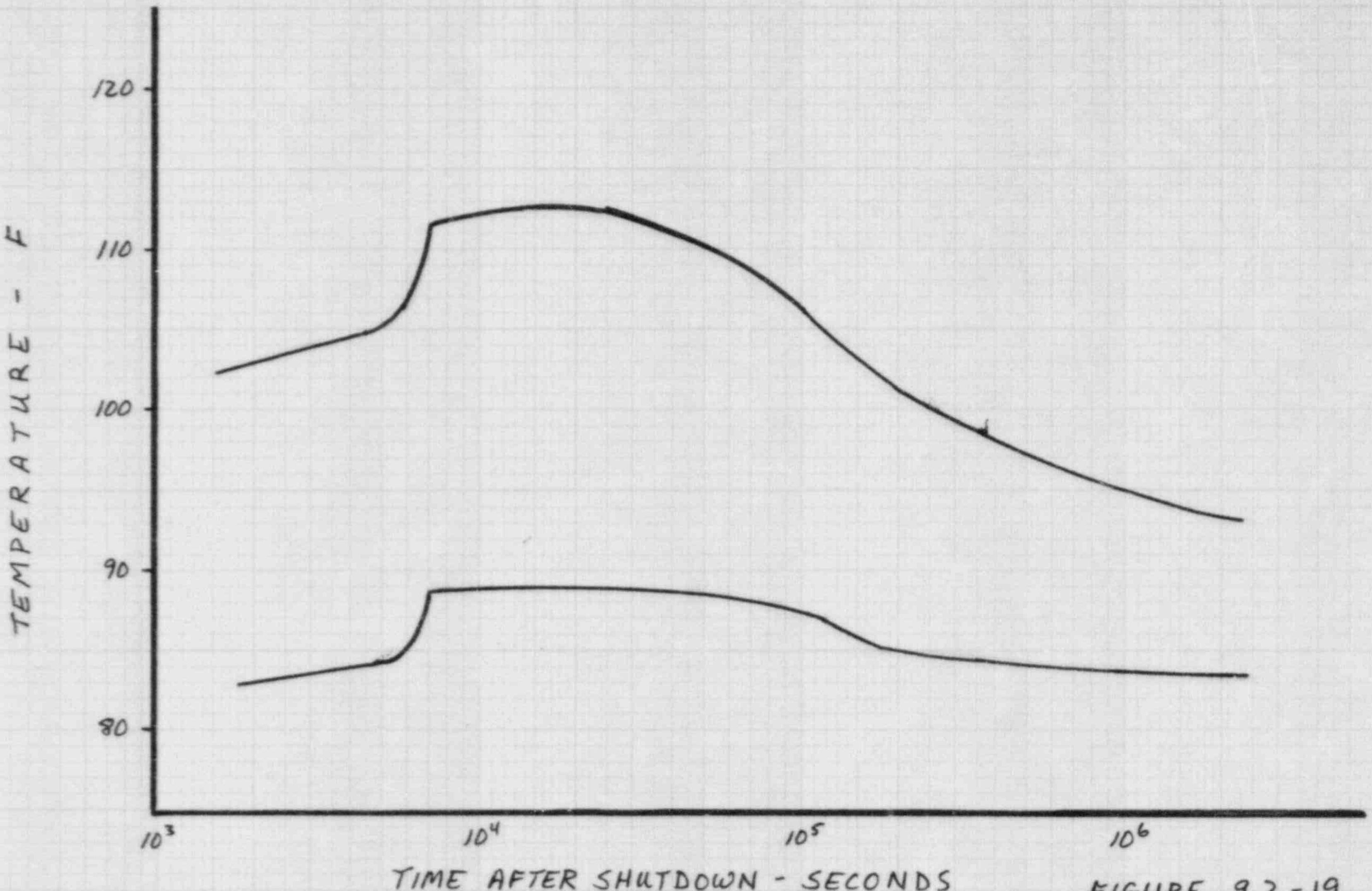

FIGURE 9.2-19
TOWER WATER TEMP
FOLLOWING A LOCA
RBS FSAR

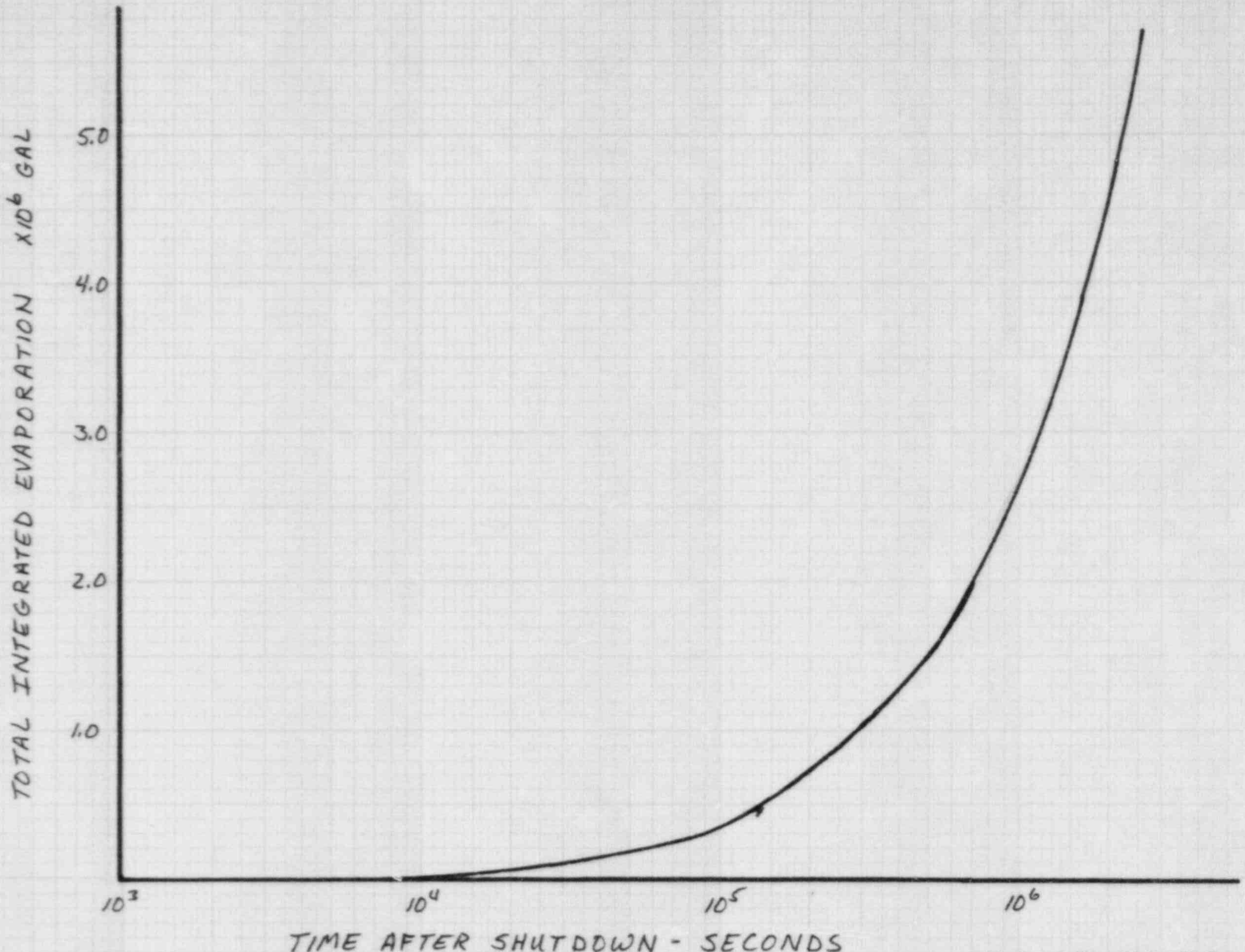

FIGURE 9.2-20
TOTAL INTEGRATED EVAPORATION
RBS FSAR