

20,684,700 LB 1,110.9 P 99.75% 1,186.6 H REHEATER STAGE 1 REHEATER STAGE 2 SSR MAKEUP DEAERATOR 5,540 LB PEGGING 0.000 LB 13,291,290 LB 158.6 P 362.9 F 155.4 P 535.8 F 15,576,980 LB 162.0 P 84.8 % SSR 3,460 LB 2,285,689 LB 158.6 P 362.9 F FROM STEAM GENERATORS REHEATER 1 DRAIN TANK 12,174,690 LB 48.8 P 317.7 F IP TURBINE 46,780 LB SSR 3,195 LB 1,173,136 LB 1,027.6 P 548.0 F GSC GSC SSR 6,485 LB 3 x 813 LB 3 x 3,113 LB SSR GSC x 3,113 LB 3 x 813 LB A 827,933 LB 424.4 P 89.8 % 47.9 F 317.3 F $^{\mathsf{B}}$ 155.9 P 535.5 F REHEATER STAGE 2 HP FWH 6 HP TURBINE 1,800 RPM GENERATOR OUTPUT (EST) : 1,710,000 KW 13,140 LB 1,220,430 LB 424.4 P 89.8 % 818,800 LB 269.3 P 87.1 % 701,404 LB 48.8 P 317.7 F STEAM SEAL REGULATOR SSR B 5,540 LB 923,590 LB 162.0 P 18,680 LB MOISTURE SEPARATOR DRAIN TANK STEAM 265,150 LB 3.5 P 94.1 % H)
MOISTURE (AVERAGE BACKPRESSURE)
TOTAL FLOW 10,700,520 LB 07 33,340 LB 877,716 LB AUX STEAM 0.000 LB DRAIN PUMP 80% EFF 0% MAKEUP CIRCULATING WATER BLOWDOWN COOLER CONDENSATE PUMP 3X50% 5.0F TD TD LP FWH 4 150.850 LB 11,481,250 LB 1.52 P 115.2 F 217.9 F LP FWH 2 272.4 F LP FWH 3 LP FWH 1 TO STEAM GENERATORS 12,905,516 LB 212.8 P 267.7 F 12,208,112 LB 223.4 P 213.3 F 11,330,400 LE 234.5 P 140.0 F 11,330,400 LB 241.7 P 117.3 F REHEATER
STAGE 2

DRAIN
0.000 LB 360 P 115.8 F 20,891,530 LB 1,131.2 P 446.0 F 426.4 H DEAERATOR 148.1 P CONDENSATE POLISHED 33% FLOW CAPACITY 20,891,530 LB FEEDWATER VALVE STATION 129.7 F SEAL LEAKOFFS 604,963 LB 145.4 F REHEATER STAGE 2 DRAIN REHEATER STAGE 1 DRAIN 14,560 LB 403.2 P 90.1 % REHEATER STAGE 2 DRAIN COOLER 50,950 LB 383.1 F COMPONENT COOLING WATER STEAM GENERATOR BLOWDOWN 206,850 LB 1,144.3 P 561 F 563.7 H 150.850 LB 5.7 F 1ST STAGE BLOWDOWN COOLER 190 P 165.0 F 2ND STAGE BLOWDOWN COOLER 345.7 F 1,173,136 LB 450.4 F 2,426,806 LB 406.4 F 4,121,828 LB 370.0 F 155,900 LB 383.1 F 117.3 F LEGEND - CALCULATIONS BASED ON IAPWS-IF97 STEAM TABLES LB - MASS FLOW RATE, Ibm/hr
P - PRESSURE, PSIA
F - TEMPERATURE, F
STEAM QUALITY
H - ENTHALPY, BTU/Ibm

Figure 10.1-1—Design Heat Balance for Steam and Power Conversion System Cycle

GROSS HEAT RATE: $\frac{20,684,700 \times 1,186.6 + 206,850 \times 563.7 - 20,891,530 \times 426.4}{1,710,000} = 9,212 \text{ BTU/kw-hr}$

CONDENSATE PUMP

REV 002 MAH01 T2



Figure 10.1-2—Valves Wide Open Heat Balance for Steam and Power Conversion System Cycle

