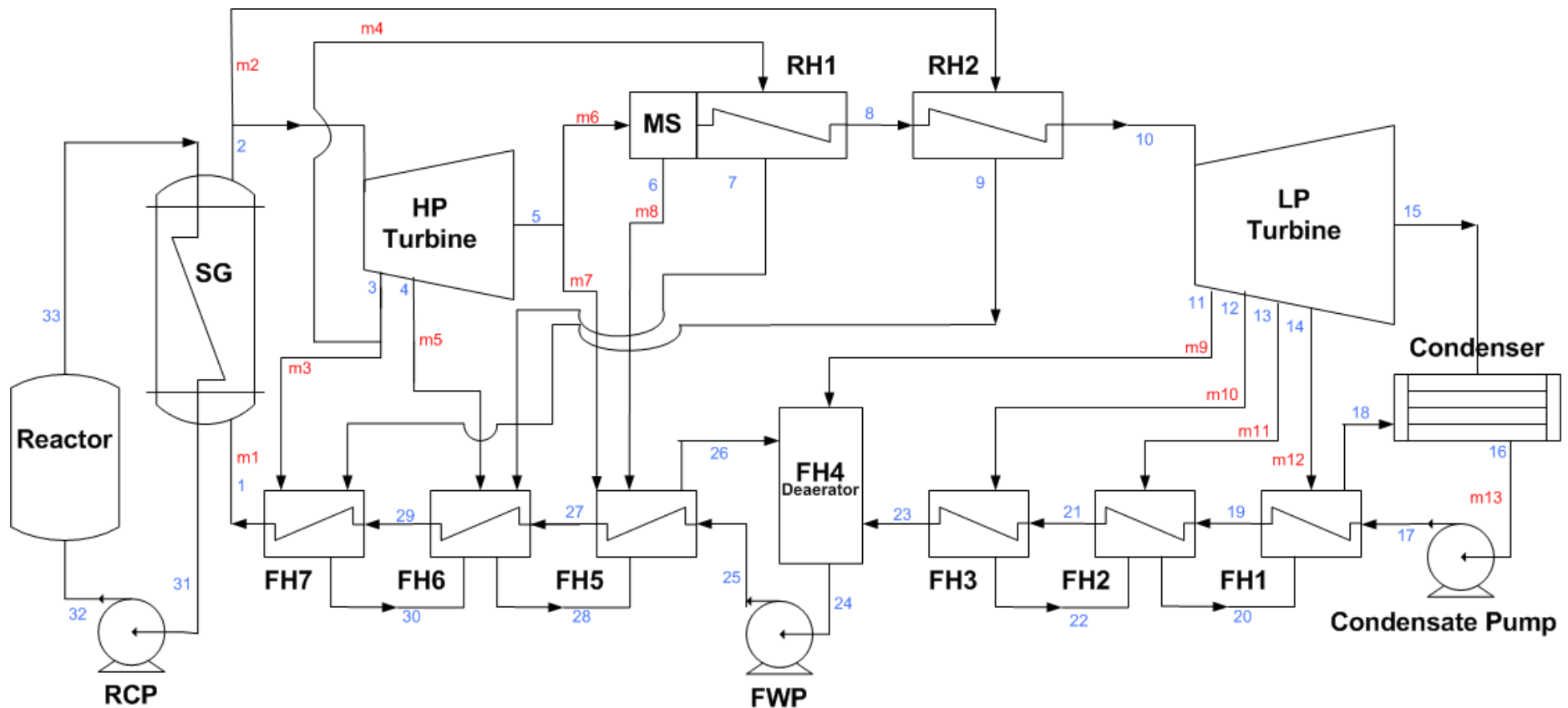


More Complex Rankine Cycles

❖ HW#4

- APR1400
- Efficiency of the turbines
- Cycle efficiency (secondary side only)
Pump efficiency: 75 %

Use your own drawing!



More Complex Rankine Cycles

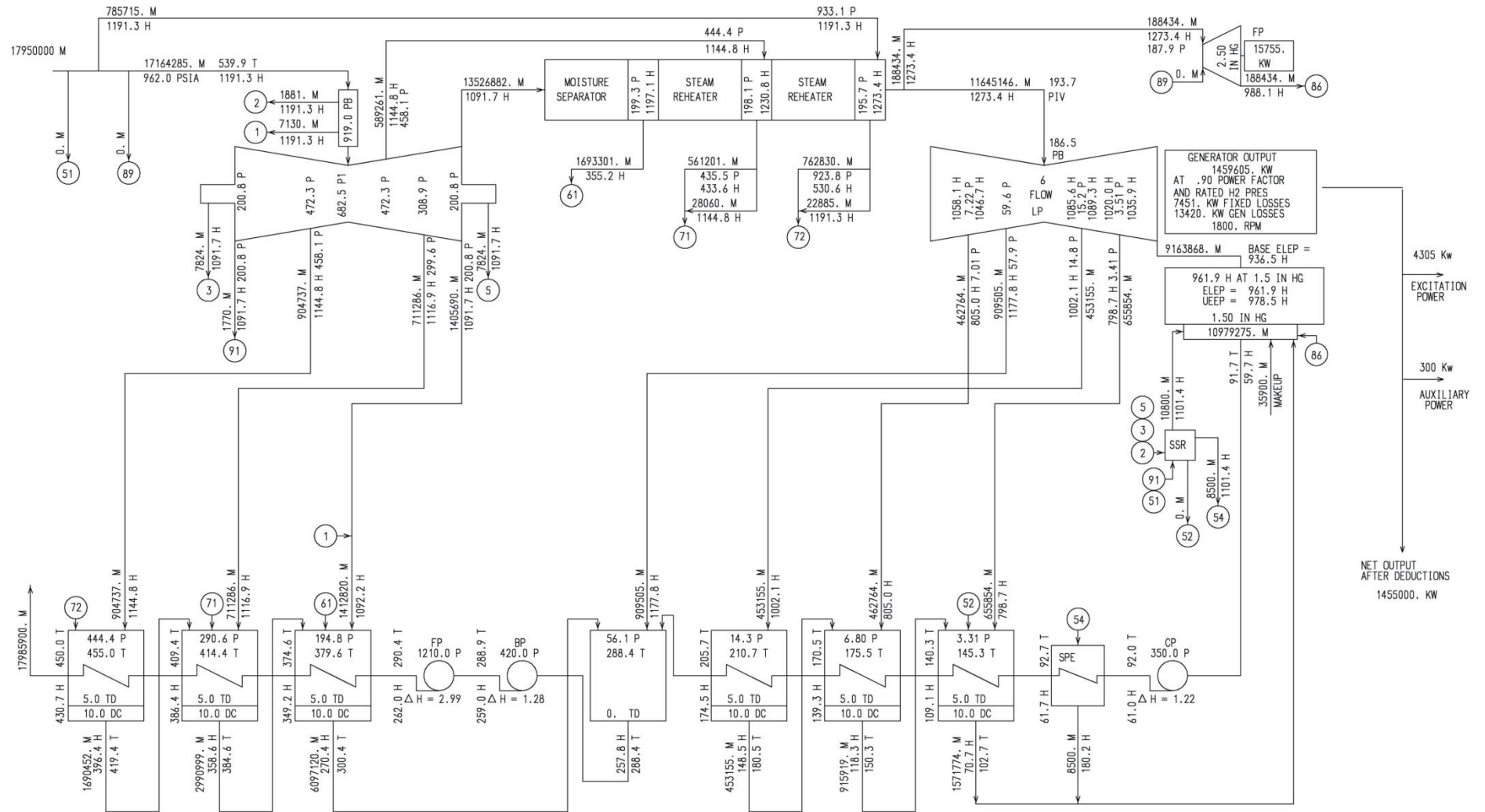
❖ HW#5

- APR1400
- Efficiency of the turbines
- Cycle efficiency

State Point	Temperature (oC)	Quality	Pressure (MPa)	Enthalpy (J/kg)
1	232.2			
2		1	6.633	
3			3.256	
4			2.130	
5			1.384	2539294
6				
7				
8	222.6			
9				
10	264.5			
11			0.411	
12			0.105	
13			0.050	
14			0.024	
15			0.005	2232727
16				
17				
18				
19	60.2			
20				
21	76.9			
22				
23	96.5			
24				
25				
26				
27	190.3			
28				
29	209.7			
30				

More Complex Rankine Cycles

HW#5



* VALVE BEST POINT
NET HEAT RATE = $\frac{17164286. (1191.3 - 430.7) + 785715. (1191.3 - 430.7)}{1459605} = 9353$ BTU/KW-HR

* VALVE BEST POINT
GROSS HEAT RATE = $\frac{17164286. (1191.3 - 430.7) + 785715. (1191.3 - 430.7)}{1475360} = 9254$ BTU/KW-HR

LEGEND - CALCULATIONS BASED ON 1967 ASME STEAM TABLES
M - FLOW-LB/HR
P - PRESSURE-PSIA
H - ENTHALPHY-BTU/LB
T - TEMPERATURE-F DEGREES

1455000. KW 1.50 IN HG ABS .20 PCT MU
TC&F 52.0 IN LSB 1800 RPM
962.0 PSIA 1191.3 BTU / LB 2 STAGE REHEAT
GEN- 1690000. KVA .90 PF LIQ

17164286. (1191.3 - 430.7)

More Complex Rankine Cycles

❖ HW#4

- You can use any software you want to use.
 - MATLAB and PYTHON are recommended.
- Due date: 6/7 (00:00)
- Submit the document and source program to ETL.
 - Zip your doc file and source code files (Python is recommended with addition points.)
 - Draw the T-s diagram of APR1400 power conversion system