Table 3.4-2 Heat and Material Balances – Case 1

		112 °F, 15% RH					112 °F, 15% RH					112 °F, 15% RH				
GTG Load:		100%					75%					50%				
Duct Burner Status:		On					Off					Off				
Fogger Status:		On					Off					Off				
Stream No	Description	Flow, kpph Per Train	Flow, kpph Plant Total	Temp. °F	Pressure psia	Enthalpy Btu/lbm	Flow, kpph Per Train	Flow, kpph Plant Total	Temp. °F	Pressure psia	Enthalpy Btu/lbm	Flow, kpph Per Train	Flow, kpph Plant Total	Temp. °F	Pressure psia	Enthalpy Btu/lbm
C1	Condensate from Condenser	—	1,400	113	260	82	—	884	100	278	69	—	753	97	280	66
C2	Condensate to HRSG Boundary Limit	739	—	115	256	84	476	—	104	274	72	405	—	100	276	69
C3	FW from LP Drum to HP/IP FW Pump	672	—	321	90	291	441	—	296	63	1,179	378	—	286	54	255
C4	HP FW Pump Discharge	621	—	324	2,168	298	389	—	299	1,393	272	334	—	289	1,221	260
C5	IP FW Pump Bleed	52	—	321	626	292	52	—	297	441	267	44	—	286	395	256
C6	Hot IP FW to Fuel Gas Preheater	39	—	462	500	444	34	—	414	314	390	29	—	401	268	376
C7	Cold IP FW from Fuel Gas Preheater	39	—	145	281	114	34	—	145	299	114	29	—	145	301	114
C8	Demin Water Makeup into Condenser	—	24	60	30	28	—	15	60	30	28	—	13	60	30	28
G1	Gas Turbine Inlet Air	3,309	—	112	14	—	2,546	—	112	14	—	2,168	—	112	14	—
G2	Gas Turbine Exhaust	3,413	—	1,137	15	—	2,601	—	1,200	15	—	2,212	—	1,200	15	—
G3	After HRSG Duct Burners	3,424	—	1,305	15	—	2,601	—	1,067	15	—	2,212	—	1,056	15	—
G4	HRSG Stack Exit	3,424	—	186	14	—	2,601	—	179	14	—	2,212	—	171	14	—
F1	Cold Natural Gas Fuel to Plant	—	150	60	564	—	—	110	60	564	—	—	88	60	564	—
F2	Cold Natural Gas Fuel to Each GTG	75	—	60	564	—	55	—	60	564	—	44	—	60	564	—
F3	Hot Natural Gas Fuel to Gas Turbine	75	—	365	514	—	55	—	365	514	—	44	—	365	514	—
F4	Cold NG Fuel to HRSG Duct Burners	11	23	60	564	—	0	0	60	564	—	0	0	60	564	—
S1	HRSG HP Superheater Exit	581	1,163	1,044	1,966	1,504	355	709	1,054	1,223	1,531	305	611	1,054	1,056	1,535
S2	HRSG Hot RH Exit	668	1,337	1,048	462	1,548	406	812	1,048	282	1,553	346	692	1,044	240	1,552
S3	HRSG IP Superheater Exit	52	103	635	492	1,320	52	104	563	302	1,294	44	87	546	258	1,289
S4	HRSG LP Superheater Exit	15	30	637	90	1,349	26	51	555	61	1,310	22	43	537	52	1,302
S5	Cold RH to HRSG from STG	—	1,151	683	492	1,348	—	702	698	302	1,367	—	605	697	258	1,369
S6	Mixed RH Steam into HRSG Reheater	627	—	679	484	1,346	403	—	680	297	1,358	346	—	678	253	1,360
S7	HP STG Throttle Steam	—	1,163	1,039	1,890	1,503	—	709	1,050	1,176	1,530	—	611	1,050	1,015	1,534
S8	STG HP Exhaust as Cold Reheat	—	1,151	683	507	1,347	—	702	698	312	1,367	—	605	697	266	1,369
S9	Hot Reheat Steam into STG	—	1,337	1,045	440	1,547	—	812	1,045	269	1,551	—	692	1,042	229	1,551
S10	LP Superheated Steam into STG	—	30	635	89	1,348	—	51	552	56	1,309	—	43	535	48	1,301
S11	STG LP Exhaust Steam to Condenser	—	1,376	113	1	1,110	—	868	100	1	1,105	—	740	97	1	1,103
W1	Not Used	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
W2	Not Used	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
W3	Not Used	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
W4	Not Used	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
W5	Not Used	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
W6	Not Used	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
W7	Not Used	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
W8	Hot Closed Loop CW	—	1,542	105	9	74	—	966	102	9	71	—	719	102	9	70
W9	Not Used	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Performance Summary	Per Train	Plant Total	Per Train	Plant Total	Per Train	Plant Total
CTG Heat Input, NG (1,4) mm Btu/h, LHV	1,515	6,059	1,110	4,441	887	3,548
HRSG Duct Burners mm Btu/h, LHV	243	973	0	0	0	0
Total Heat Consumption mm Btu/h, LHV	1,758	7,032	1,110	4,441	887	3,548
Gas Turbine Gross Output kW	158,700	634,800	100,300	401,200	66,900	267,600
Steam Turbine Gross Output kW	—	488,990	—	302,424	—	256,122
Gross Power Output kW	—	1,123,790	—	703,624	—	523,722
Auxiliary Power kW	—	26,815	—	21,649	—	20,148
Net Power kW	—	1,096,975	—	681,975	—	503,574
Net Plant Heat Rate Btu/kWh, LHV	—	6,410	—	6,512	—	7,046
Net Plant Heat Rate Btu/kWh, HHV	—	7,109	—	7,222	—	7,814

Notes:

1. GTG data from or implied by GE-GTG.
2. HRSG data from GTMaster.
3. STG data from GTMaster.
4. Fuel gas LHV based on 20,248 BTU/lb.
5. The above heat and material balance is an estimate. All values are subject to change pending detailed design development.