GENERACIÓN CENTRO S.A.

PROYECTO: CENTRAL TERMOELÉCTRICA ARROYO SECO

TEXT

HRSG PERFORMANCE DATA for PROCESS FLOW DIAGRAM

VOGT POWER INTERNATIONAL DOCUMENT			V17511-ICNA-0010		
0	9-Feb-18	Initial Issue	ID		DGS
REV.	**FECHA**	**DESCRIPCIÓN**	**POR**	**REVISÓ**	**APROBÓ**

Notes:

1. This document is designed to be used with reference to VPI drawing no. V17511-ICND-0013, "Process Flow Diagram". Trunk Line (TL) numbers shown in the attached tables reference this drawing.

2. For additional information regarding the system design, please reference the HRSG P&IDs:

V17511-ICND-0001	P&ID Legend and General Notes
V17511-ICND-0002	Flue Gas P&ID
V17511-ICND-0003	High Pressure Superheater P&ID
V17511-ICND-0004	High Pressure Economizer & Evaporator P&ID
V17511-ICND-0005	Integral Deaerator P&ID
V17511-ICND-0006	Heat Exchanger & BFW Pump P&ID
V17511-ICND-0007	Blowdown & Flash Tank P&ID
V17511-ICND-0008	PSV, Silencer Vents & Drains P&ID
V17511-ICND-0009	Duct Burner Internconnecting Piping P&ID
V17511-ICND-0010	Chemical Dosing & Sampling P&ID
V17511-ICND-0013	Process Flow Diagram

3. All data shown is predicted performance only.

4. Hydrostatic pressure head is not included in any HRSG pressure value.

5. Pressure drop across the control valves have been assumed for the purpose of predicting the HRSG performance. Actual control valve pressure drop values may vary considerably from this value depending on pump selection and system design.

6. A constant 0.69 bar (10 psi) pressure drop has been assumed for the heat exchanger. This may vary based on the final selected heat exchanger.

		1 - Gas Turbine Exhaust Conditions		2 - Exhaust Conditions after Diverter Damper (includes diverter damper seal air)		3 - Duct Burner Conditions			4 -Exhaust Conditions downstream Duct Burner		20 - HP Main Steam Outlet Terminal Point			21 - HP Main Steam Outlet upstream of Non Return Valve			22 - HP Interstage Attemperator Outlet		
		Mass Flow	Exhaust Temp In	Mass Flow	Exhaust Temp In	Heat Input (LHV)	Fuel Flow	Fuel Heating Value (LHV)	Mass Flow	Exhaust Temp	Mass Flow	Pressure	Temp	Mass Flow	Pressure	Temp	Mass Flow	Pressure	Temp
VPI Case ID	Case Description	kg/hr	°C	kg/hr	°C	MW	kg/hr	kJ/kg	kg/hr	°C	kg/hr	bara	°C	kg/hr	bara	°C	kg/hr	bara	°C
H001.5C.55C.100%.2U	Min Achievable/Winter Case 5 C/CondTemp 55 C/Diverter Damper ~ 50 % of GTE Flow	495,864	563.5	248,111	562.6	0.00	0	0	248,111	562.6	30,266	69.00	485.0	30,266	69.14	485.1	30,266	69.30	441.8
H002.5C.55C.100%.2U	Min Achievable/Winter Case 5 C/CondTemp 55 C	495,864	563.5	496,223	562.6	0.00	0	0	496,223	562.6	59,063	69.00	485.0	59,063	69.19	485.1	59,063	69.79	453.3
H003.5C.55C.100%.2U	Max Achievable/Winter Case 5 C/Cond Temp 55 C	495,864	563.5	496,223	562.6	0.00	0	0	496,223	562.6	71,407	69.00	485.6	71,407	69.28	485.7	71,407	70.15	460.2
H004.5C.55C.100%.2F	Fired/Winter Case 5 C/Cond Temp 55	495,864	563.5	496,223	562.6	24.20	1,861	46,809	498,084	703.7	103,301	69.00	485.0	103,301	69.58	485.3	103,301	71.34	431.4
H005.5C.40C.100%.2U	Min Achievable/Winter Case 5 C/CondTemp 40 C/Diverter Damper ~ 50 % of GTE Flow	495,864	563.5	248,111	562.6	0.00	0	0	248,111	562.6	29,969	69.00	485.0	29,969	69.14	485.1	29,969	69.29	441.3
H006.5C.40C.100%.2U	Min Achievable/Winter Case 5 C/CondTemp 40 C	495,864	563.5	496,223	562.6	0.00	0	0	496,223	562.6	58,538	69.00	485.0	58,538	69.19	485.1	58,538	69.77	453.0
H007.5C.40C.100%.2U	Max Achievable/Winter Case 5 C/Cond Temp 40 C	495,864	563.5	496,223	562.6	0.00	0	0	496,223	562.6	71,361	69.00	485.6	71,361	69.28	485.7	71,361	70.15	460.2
H008.5C.40C.100%.2F	Fired/Winter Case 5 C/Cond Temp 40 C	495,864	563.5	496,223	562.6	24.20	1,861	46,809	498,084	703.7	103,012	69.00	485.0	103,012	69.58	485.3	103,012	71.32	431.2
H009.5C.90C.100%.2U	Min Achievable/Winter Case 5 C/CondTemp 90 C/Diverter Damper ~ 50 % of GTE Flow/	495,864	563.5	248,111	562.6	0.00	0	0	248,111	562.6	31,028	69.00	485.0	31,028	69.14	485.1	31,028	69.30	443.0
H010.5C.90C.100%.2U	Min Achievable/Winter Case 5 C/CondTemp 90 C	495,864	563.5	496,223	562.6	0.00	0	0	496,223	562.6	60,409	69.00	485.0	60,409	69.20	485.1	60,409	69.83	454.1
H011.5C.90C.100%.2U	Max Achievable/Winter Case 5 C/Cond Temp 90 C	495,864	563.5	496,223	562.6	0.00	0	0	496,223	562.6	71,513	69.00	485.4	71,513	69.28	485.5	71,513	70.16	460.0
H012.5C.90C.100%.2F	Fired/Winter Case 5 C/Cond Temp 90 C	495,864	563.5	496,223	562.6	24.20	1,861	46,809	498,084	703.7	104,061	69.00	485.0	104,061	69.59	485.3	104,061	71.37	431.8
H013.17C.55C.100%.2U	Min Achievable/WarmCase 17 C/CondTemp 55 C/Diverter Damper ~ 50 % of GTE Flow	479,772	568.9	240,060	568.0	0.00	0	0	240,060	568.0	29,861	69.00	485.0	29,861	69.14	485.1	29,861	69.29	438.5
H014.17C.55C.100%.2U	Min Achievable/Warm Case 17 C/CondTemp 55 C	479,772	568.9	480,119	568.0	0.00	0	0	480,119	568.0	58,314	69.00	485.0	58,314	69.19	485.1	58,314	69.77	450.9
H015.17C.55C.100%.2U	Max Achievable/Warm Case 17 C/Cond Temp 55 C	479,772	568.9	480,119	568.0	0.00	0	0	480,119	568.0	70,518	69.00	485.0	70,518	69.27	485.1	70,518	70.12	457.5
H016.17C.55C.100%.2F	Fired/Warm Case 17 C/Cond Temp 55 C	479,772	568.9	480,119	568.0	24.20	1,861	46,809	481,980	712.9	102,299	69.00	485.0	102,299	69.57	485.3	102,299	71.29	428.8
H015bG.17C.55C.100%.2U	Guarantee / Max Achievable/Warm Case 17 C/Cond Temp 55 C	479,772	568.9	480,119	568.0	0.00	0	0	480,119	568.0	70,566	69.00	485.0	70,566	69.27	485.1	70,566	70.12	457.5
H016bG.17C.55C.100%.2F	Guarantee / Fired/Warm Case 17 C/Cond Temp 55 C	479,772	568.9	480,119	568.0	22.42	1,724	46,809	481,844	702.5	100,167	69.00	485.0	100,167	69.55	485.3	100,167	71.20	430.5
H017.17C.40C.100%.2U	Min Achievable/WarmCase 17 C/CondTemp 40 C/Diverter Damper ~ 50 % of GTE Flow	479,772	568.9	240,060	568.0	0.00	0	0	240,060	568.0	29,565	69.00	485.0	29,565	69.14	485.1	29,565	69.29	438.0
H018.17C.40C.100%.2U	Min Achievable/Warm Case 17 C/CondTemp 40 C	479,772	568.9	480,119	568.0	0.00	0	0	480,119	568.0	57,791	69.00	485.0	57,791	69.18	485.1	57,791	69.75	450.6
H019.17C.40C.100%.2U	Max Achievable/Warm Case 17 C/Cond Temp 40 C	479,772	568.9	480,119	568.0	0.00	0	0	480,119	568.0	70,459	69.00	485.0	70,459	69.27	485.1	70,459	70.12	457.5
H020.17C.40C.100%.2F	Fired/Warm Case 17 C/Cond Temp 40 C	479,772	568.9	480,119	568.0	24.20	1,861	46,809	481,980	712.9	101,997	69.00	485.0	101,997	69.57	485.3	101,997	71.27	428.7
H021.17C.90C.100%.2U	Diverter Damper ~ 50 % of GTE Flow/Min Achievable/WarmCase 17 C/CondTemp 90 C	479,772	568.9	240,060	568.0	0.00	0	0	240,060	568.0	30,621	69.00	485.0	30,621	69.14	485.1	30,621	69.30	439.8
H022.17C.90C.100%.2U	Min Achievable/Warm Case 17 C/CondTemp 90 C	479,772	568.9	480,119	568.0	0.00	0	0	480,119	568.0	59,658	69.00	485.0	59,658	69.20	485.1	59,658	69.80	451.8
H023.17C.90C.100%.2U	Max Achievable/Warm Case 17 C/Cond Temp 90 C	479,772	568.9	480,119	568.0	0.00	0	0	480,119	568.0	70,622	69.00	485.0	70,622	69.27	485.1	70,622	70.13	457.6
H024.17C.90C.100%.2F	Fired/Warm Case 17 C/Cond Temp 90 C	479,772	568.9	480,119	568.0	24.20	1,861	46,809	481,980	712.9	103,091	69.00	485.0	103,091	69.58	485.3	103,091	71.32	429.3
H025.31C.55C.100%.2U	Min Achievable/HotCase 31 C/CondTemp 55 C/Diverter Damper ~ 50 % of GTE Flow	451,296	580.4	225,811	579.5	0.00	0	0	225,811	579.5	30,350	69.00	485.0	30,350	69.14	485.1	30,350	69.30	433.4
H026.31C.55C.100%.2U	Min Achievable/Hot Case 31 C/CondTemp 55 C	451,296	580.4	451,623	579.5	0.00	0	0	451,623	579.5	57,295	69.00	485.0	57,295	69.18	485.1	57,295	69.74	445.9
H027.31C.55C.100%.2U	Max Achievable/Hot Case 31 C/Cond Temp 55 C	451,296	580.4	451,623	579.5	0.00	0	0	451,623	579.5	69,306	69.00	485.0	69,306	69.26	485.1	69,306	70.08	453.4
H028.31C.55C.100%.2F	Fired/Hot Case 31 C/Cond Temp 55 C	451,296	580.4	451,623	579.5	24.20	1,861	46,809	453,484	731.2	100,882	69.00	485.0	100,882	69.56	485.3	100,882	71.22	423.7
H029.31C.40C.100%.2U	Min Achievable/Hot Case 31 C/CondTemp 40 C/Diverter Damper ~ 50 % of GTE Flow	451,296	580.4	225,811	579.5	0.00	0	0	225,811	579.5	29,320	69.00	485.0	29,320	69.14	485.1	29,320	69.28	431.4
H030.31C.40C.100%.2U	Min Achievable/Hot Case 31 C/CondTemp 40 C	451,296	580.4	451,623	579.5	0.00	0	0	451,623	579.5	56,769	69.00	485.0	56,769	69.18	485.1	56,769	69.73	445.5
H031.31C.40C.100%.2U	Max Achievable/Hot Case 31 C/Cond Temp 40 C	451,296	580.4	451,623	579.5	0.00	0	0	451,623	579.5	69,249	69.00	485.0	69,249	69.26	485.1	69,249	70.08	453.4
H032.31C.40C.100%.2F	Fired/Hot Case 31 C/Cond Temp 40 C	451,296	580.4	451,623	579.5	24.20	1,861	46,809	453,484	731.2	100,553	69.00	485.0	100,553	69.55	485.3	100,553	71.20	423.5

HRSG Performance Data
VPI Project # V17511 Central Termoelectrica Arroyo Seco Project

		1 - Gas Turbine Exhaust Conditions		2 - Exhaust Conditions after Diverter Damper (includes diverter damper seal air)		3 - Duct Burner Conditions			4 -Exhaust Conditions downstream Duct Burner		20 - HP Main Steam Outlet Terminal Point			21 - HP Main Steam Outlet upstream of Non Return Valve			22 - HP Interstage Attemperator Outlet		
		Mass Flow	Exhaust Temp In	Mass Flow	Exhaust Temp In	Heat Input (LHV)	Fuel Flow	Fuel Heating Value (LHV)	Mass Flow	Exhaust Temp	Mass Flow	Pressure	Temp	Mass Flow	Pressure	Temp	Mass Flow	Pressure	Temp
VPI Case ID	Case Description	kg/hr	°C	kg/hr	°C	MW	kg/hr	kJ/kg	kg/hr	°C	kg/hr	bara	°C	kg/hr	bara	°C	kg/hr	bara	°C
H033.31C.90C.100%.2U	Min Achievable/Hot Case 31 C/CondTemp 90 C/Diverter Damper ~ 50 % of GTE Flow/	451,296	580.4	225,811	579.5	0.00	0	0	225,811	579.5	30,389	69.00	485.0	30,389	69.14	485.1	30,389	69.30	433.5
H034.31C.90C.100%.2U	Min Achievable/Hot Case 31 C/CondTemp 90 C	451,296	580.4	451,623	579.5	0.00	0	0	451,623	579.5	58,646	69.00	485.0	58,646	69.19	485.1	58,646	69.77	446.9
H035.31C.90C.100%.2U	Max Achievable/Hot Case 31 C/Cond Temp 90 C	451,296	580.4	451,623	579.5	0.00	0	0	451,623	579.5	69,429	69.00	485.0	69,429	69.26	485.1	69,429	70.09	453.5
H036.31C.90C.100%.2F	Fired/Hot Case 31 C/Cond Temp 90 C	451,296	580.4	451,623	579.5	24.20	1,861	46,809	453,484	731.2	101,742	69.00	485.0	101,742	69.56	485.3	101,742	71.26	424.3
Comments: **(Note: All pressures in this table do not include hydrostatic pressure head.)**																			

	23 - Attemperator spray water from Sweetwater Condenser		24 - HP Interstage Attemperator Inlet			25 - HP Steam Drum Outlet			26 - HP Pegging Steam upstream of Control Valve			27 - HP Saturated Steam to Sweet Water Condenser			28 - HP Drum Blowdown to Flash Tank			30 - HP Drum Inlet downstream of LCV			31 - HP Economizer Outlet to HP Drum upstream of Control Valve		
	Mass Flow	Temp	Mass Flow	Pressure	Temp	Mass Flow	Pressure	Temp	Mass Flow	Pressure	Temp	Mass Flow	Pressure	Temp	Mass Flow	Pressure	Temp	Mass Flow	Pressure	Temp	Mass Flow	Pressure	Temp
VPI Case ID	kg/hr	°C	kg/hr	bara	°C	kg/hr	bara	°C	kg/hr	bara	°C	kg/hr	bara	°C	kg/hr	bara	°C	kg/hr	bara	°C	kg/hr	bara	°C
H001.5C.55C.100%.2U	1,538	271.9	28,728	69.30	486.7	28,728	69.91	285.7	6,029	69.91	285.7	1,538	69.91	285.7	367	69.91	285.7	36,661	69.91	280.2	36,661	73.38	280.2
H002.5C.55C.100%.2U	1,693	273.9	57,370	69.79	478.2	57,370	72.12	287.9	14,057	72.12	287.9	1,693	72.12	287.9	739	72.12	287.9	73,859	72.12	281.8	73,859	75.62	281.8
H003.5C.55C.100%.2U	0	275.3	71,407	70.15	460.2	71,407	73.60	289.2	0	73.60	289.2	0	73.60	289.2	721	73.60	289.2	72,128	73.60	289.2	72,128	77.09	289.4
H004.5C.55C.100%.2F	10,495	278.8	92,806	71.34	523.3	92,806	77.40	292.7	0	77.40	292.7	10,495	77.40	292.7	1,043	77.40	292.7	104,344	77.40	289.8	104,344	80.96	289.8
H005.5C.40C.100%.2U	1,561	271.8	28,407	69.29	487.4	28,407	69.90	285.7	6,335	69.90	285.7	1,561	69.90	285.7	367	69.90	285.7	36,671	69.90	279.5	36,671	73.36	279.6
H006.5C.40C.100%.2U	1,750	273.9	56,788	69.77	479.0	56,788	72.06	287.8	14,507	72.06	287.8	1,750	72.06	287.8	738	72.06	287.8	73,783	72.06	280.8	73,783	75.57	280.9
H007.5C.40C.100%.2U	0	275.3	71,361	70.15	460.2	71,361	73.60	289.2	0	73.60	289.2	0	73.60	289.2	721	73.60	289.2	72,082	73.60	289.2	72,082	77.10	289.2
H008.5C.40C.100%.2F	10,531	278.7	92,481	71.32	523.7	92,481	77.35	292.7	0	77.35	292.7	10,531	77.35	292.7	1,041	77.35	292.7	104,053	77.35	288.8	104,053	80.91	288.8
H009.5C.90C.100%.2U	1,476	271.9	29,552	69.30	484.9	29,552	69.96	285.8	5,248	69.96	285.8	1,476	69.96	285.8	366	69.96	285.8	36,643	69.96	282.0	36,643	73.42	282.0
H010.5C.90C.100%.2U	1,542	274.1	58,867	69.83	476.2	58,867	72.27	288.0	12,922	72.27	288.0	1,542	72.27	288.0	741	72.27	288.0	74,072	72.27	284.2	74,072	75.77	284.3
H011.5C.90C.100%.2U	0	275.3	71,513	70.16	460.0	71,513	73.61	289.3	0	73.61	289.3	0	73.61	289.3	722	73.61	289.3	72,236	73.61	289.3	72,236	77.11	290.0
H012.5C.90C.100%.2F	10,400	278.9	93,662	71.37	522.0	93,662	77.53	292.8	0	77.53	292.8	10,400	77.53	292.8	1,051	77.53	292.8	105,112	77.53	292.4	105,112	81.09	292.4
H013.17C.55C.100%.2U	1,739	271.8	28,122	69.29	490.1	28,122	69.89	285.7	5,930	69.89	285.7	1,739	69.89	285.7	362	69.89	285.7	36,153	69.89	280.0	36,153	73.35	280.0
H014.17C.55C.100%.2U	2,067	273.9	56,247	69.77	481.9	56,247	72.02	287.8	13,869	72.02	287.8	2,067	72.02	287.8	729	72.02	287.8	72,912	72.02	281.4	72,912	75.53	281.5
H015.17C.55C.100%.2U	506	275.2	70,012	70.12	463.6	70,012	73.46	289.1	1	73.46	289.1	506	73.46	289.1	712	73.46	289.1	71,232	73.46	289.1	71,232	76.95	289.4
H016.17C.55C.100%.2F	11,205	278.6	91,094	71.29	528.6	91,094	77.18	292.5	0	77.18	292.5	11,205	77.18	292.5	1,033	77.18	292.5	103,333	77.18	289.8	103,333	80.74	289.9
H015bG.17C.55C.100%.2U	499	275.2	70,066	70.12	463.5	70,066	73.47	289.1	0	73.47	289.1	499	73.47	289.1	0	73.47	289.1	70,566	73.47	289.1	70,566	76.96	289.6
H016bG.17C.55C.100%.2F	10,321	278.3	89,846	71.20	523.9	89,846	76.91	292.3	0	76.91	292.3	10,321	76.91	292.3	0	76.91	292.3	100,167	76.91	290.3	100,167	80.47	290.3
H017.17C.40C.100%.2U	1,761	271.8	27,804	69.29	490.8	27,804	69.87	285.7	6,234	69.87	285.7	1,761	69.87	285.7	362	69.87	285.7	36,161	69.87	279.3	36,161	73.33	279.3
H018.17C.40C.100%.2U	2,122	273.8	55,669	69.75	482.7	55,669	71.97	287.7	14,315	71.97	287.7	2,122	71.97	287.7	728	71.97	287.7	72,834	71.97	280.5	72,834	75.47	280.5
H019.17C.40C.100%.2U	515	275.2	69,944	70.12	463.7	69,944	73.45	289.1	20	73.45	289.1	515	73.45	289.1	712	73.45	289.1	71,191	73.45	289.1	71,191	76.95	289.1
H020.17C.40C.100%.2F	11,241	278.5	90,756	71.27	529.1	90,756	77.13	292.5	0	77.13	292.5	11,241	77.13	292.5	1,030	77.13	292.5	103,027	77.13	288.8	103,027	80.69	288.8
H021.17C.90C.100%.2U	1,680	271.9	28,941	69.30	488.3	28,941	69.93	285.8	5,156	69.93	285.8	1,680	69.93	285.8	361	69.93	285.8	36,139	69.93	281.8	36,139	73.39	281.9
H022.17C.90C.100%.2U	1,922	274.0	57,736	69.80	479.9	57,736	72.17	287.9	12,743	72.17	287.9	1,922	72.17	287.9	731	72.17	287.9	73,133	72.17	283.9	73,133	75.67	284.0
H023.17C.90C.100%.2U	490	275.2	70,131	70.13	463.4	70,131	73.47	289.1	35	73.47	289.1	490	73.47	289.1	714	73.47	289.1	71,370	73.47	289.1	71,370	76.97	290.0
H024.17C.90C.100%.2F	11,110	278.7	91,981	71.32	527.3	91,981	77.31	292.6	0	77.31	292.6	11,110	77.31	292.6	1,041	77.31	292.6	104,132	77.31	292.5	104,132	80.87	292.6
H025.31C.55C.100%.2U	2,085	271.8	28,265	69.30	494.5	28,265	69.90	285.7	4,276	69.90	285.7	2,085	69.90	285.7	350	69.90	285.7	34,976	69.90	278.6	34,976	73.36	278.7
H026.31C.55C.100%.2U	2,832	273.7	54,463	69.74	489.5	54,463	71.88	287.6	13,596	71.88	287.6	2,832	71.88	287.6	716	71.88	287.6	71,606	71.88	280.8	71,606	75.38	280.8
H027.31C.55C.100%.2U	1,392	275.0	67,915	70.08	470.6	67,915	73.26	288.9	4	73.26	288.9	1,392	73.26	288.9	700	73.26	288.9	70,010	73.26	288.9	70,010	76.75	289.2
H028.31C.55C.100%.2F	12,614	278.3	88,268	71.22	539.0	88,268	76.84	292.2	0	76.84	292.2	12,614	76.84	292.2	1,019	76.84	292.2	101,901	76.84	290.1	101,901	80.40	290.1
H029.31C.40C.100%.2U	2,159	271.8	27,162	69.28	497.1	27,162	69.85	285.7	5,621	69.85	285.7	2,159	69.85	285.7	353	69.85	285.7	35,294	69.85	278.5	35,294	73.31	278.5
H030.31C.40C.100%.2U	2,882	273.7	53,887	69.73	490.4	53,887	71.83	287.6	14,037	71.83	287.6	2,882	71.83	287.6	715	71.83	287.6	71,521	71.83	279.7	71,521	75.33	279.8
H031.31C.40C.100%.2U	1,400	275.0	67,849	70.08	470.7	67,849	73.26	288.9	13	73.26	288.9	1,400	73.26	288.9	700	73.26	288.9	69,962	73.26	288.9	69,962	76.75	289.0
H032.31C.40C.100%.2F	12,649	278.2	87,904	71.20	539.6	87,904	76.79	292.2	0	76.79	292.2	12,649	76.79	292.2	1,016	76.79	292.2	101,569	76.79	288.9	101,569	80.34	288.9

HRSG Performance Data
VPI Project # V17511 Central Termoelectrica Arroyo Seco Project

	23 - Attemperator spray water from Sweetwater Condenser		24 - HP Interstage Attemperator Inlet			25 - HP Steam Drum Outlet			26 - HP Pegging Steam upstream of Control Valve			27 - HP Saturated Steam to Sweet Water Condenser			28 - HP Drum Blowdown to Flash Tank			30 - HP Drum Inlet downstream of LCV			31 - HP Economizer Outlet to HP Drum upstream of Control Valve		
	Mass Flow	Temp	Mass Flow	Pressure	Temp	Mass Flow	Pressure	Temp	Mass Flow	Pressure	Temp	Mass Flow	Pressure	Temp	Mass Flow	Pressure	Temp	Mass Flow	Pressure	Temp	Mass Flow	Pressure	Temp
VPI Case ID	kg/hr	°C	kg/hr	bara	°C	kg/hr	bara	°C	kg/hr	bara	°C	kg/hr	bara	°C	kg/hr	bara	°C	kg/hr	bara	°C	kg/hr	bara	°C
H033.31C.90C.100%.2U	2,082	271.8	28,307	69.30	494.4	28,307	69.90	285.7	4,537	69.90	285.7	2,082	69.90	285.7	353	69.90	285.7	35,278	69.90	281.2	35,278	73.36	281.3
H034.31C.90C.100%.2U	2,696	273.9	55,949	69.77	487.4	55,949	72.02	287.8	12,484	72.02	287.8	2,696	72.02	287.8	718	72.02	287.8	71,849	72.02	283.5	71,849	75.52	283.5
H035.31C.90C.100%.2U	1,372	275.0	68,058	70.09	470.4	68,058	73.28	288.9	0	73.28	288.9	1,372	73.28	288.9	701	73.28	288.9	70,131	73.28	288.9	70,131	76.78	289.9
H036.31C.90C.100%.2F	12,521	278.4	89,222	71.26	537.5	89,222	76.98	292.3	0	76.98	292.3	12,521	76.98	292.3	1,028	76.98	292.3	102,770	76.98	292.3	102,770	80.53	293.1
Comments: **(Note: All pressures in this table do not include hydrostatic pressure head.)**																					**Assumes a fixed 0.45 bar pressure drop across the control valve for all operating cases**		

HRSG Performance Data
VPI Project # V17511 Central Termoelectrica Arroyo Seco Project

Revision 00
Date: 2/9/2018

	32 - Sweet Water Condenser Water Outlet to HPEC #4			33 - Sweet Water Condenser Water Inlet from HPEC #5			34 - HPEC5 Outlet			35 - HP Economizer Bypass			36 - HP Economizer Inlet			37 - HP Feedwater Inlet downstream of FW Pump			40 - Flash Tank to DA			41 - Flash Tank Flow to Blowdown Tank		
	Mass Flow	Pressure	Temp	Mass Flow	Pressure	Temp	Mass Flow	Pressure	Temp	Mass Flow	Pressure	Temp	Mass Flow	Pressure	Temp	Mass Flow	Pressure	Temp	Mass Flow	Pressure	Temp	Mass Flow	Pressure	Temp
VPI Case ID	kg/hr	bara	°C	kg/hr	bara	°C	kg/hr	bara	°C	kg/hr	bara	°C	kg/hr	bara	°C	kg/hr	bara	°C	kg/hr	bara	°C	kg/hr	bara	°C
H001.5C.55C.100%.2U	36,661	73.84	185.3	36,661	74.58	170.1	0	74.58	170.1	36,661	74.58	170.1	0	74.58	170.1	36,661	74.58	170.1	75	17.24	205.0	292	17.24	205.0
H002.5C.55C.100%.2U	73,859	77.45	188.9	73,859	78.23	180.7	0	78.24	180.7	73,859	78.24	180.7	0	78.24	180.7	73,859	78.25	180.7	142	20.68	214.1	597	20.68	214.1
H003.5C.55C.100%.2U	72,128	78.94	251.6	72,128	79.73	251.6	72,128	79.76	251.6	0	81.32	96.7	72,128	81.30	96.7	72,128	81.33	96.7	234	3.66	140.4	488	3.66	140.4
H004.5C.55C.100%.2F	104,344	84.81	263.4	104,344	85.65	231.2	104,344	85.73	231.2	0	88.85	78.3	104,344	88.81	78.3	104,344	88.87	78.3	376	2.14	122.4	668	2.14	122.4
H005.5C.40C.100%.2U	36,671	73.82	174.4	36,671	74.56	158.9	0	74.56	158.9	36,671	74.56	158.9	0	74.56	158.9	36,671	74.56	158.9	75	17.24	205.0	292	17.24	205.0
H006.5C.40C.100%.2U	73,783	77.38	178.4	73,783	78.15	169.8	0	78.17	169.8	73,783	78.17	169.8	0	78.17	169.8	73,783	78.18	169.8	142	20.68	214.1	596	20.68	214.1
H007.5C.40C.100%.2U	72,082	78.94	249.6	72,082	79.73	249.6	72,082	79.76	249.6	0	81.31	80.1	72,082	81.29	80.1	72,082	81.32	80.1	236	3.46	138.5	485	3.46	138.5
H008.5C.40C.100%.2F	104,053	84.71	259.2	104,053	85.56	226.5	104,053	85.63	226.5	0	88.72	61.3	104,053	88.68	61.3	104,053	88.74	61.3	378	1.98	119.9	662	1.98	119.9
H009.5C.90C.100%.2U	36,643	73.89	212.1	36,643	74.63	198.0	0	74.63	198.0	36,643	74.63	198.0	0	74.63	198.0	36,643	74.63	198.0	75	17.24	205.0	292	17.24	205.0
H010.5C.90C.100%.2U	74,072	77.65	214.7	74,072	78.42	207.5	0	78.44	207.5	74,072	78.44	207.5	0	78.44	207.5	74,072	78.45	207.5	143	20.68	214.1	598	20.68	214.1
H011.5C.90C.100%.2U	72,236	78.97	256.7	72,236	79.76	256.7	72,236	79.80	256.7	0	81.38	136.5	72,236	81.36	136.5	72,236	81.39	136.5	229	4.20	145.4	494	4.20	145.4
H012.5C.90C.100%.2F	105,112	85.05	273.8	105,112	85.90	242.9	105,112	85.98	242.9	0	89.21	119.7	105,112	89.17	119.7	105,112	89.23	119.7	369	2.59	128.5	682	2.59	128.5
H013.17C.55C.100%.2U	36,153	73.80	187.5	36,153	74.54	170.1	0	74.54	170.1	36,153	74.54	170.1	0	74.54	170.1	36,153	74.54	170.1	74	17.24	205.0	288	17.24	205.0
H014.17C.55C.100%.2U	72,912	77.31	190.8	72,912	78.08	180.7	0	78.10	180.7	72,912	78.10	180.7	0	78.10	180.7	72,912	78.11	180.7	140	20.68	214.1	589	20.68	214.1
H015.17C.55C.100%.2U	71,232	78.75	254.3	71,232	79.54	252.0	71,232	79.58	252.0	0	81.09	96.2	71,232	81.08	96.2	71,232	81.10	96.2	231	3.61	140.0	481	3.61	140.0
H016.17C.55C.100%.2F	103,333	84.52	265.5	103,333	85.37	230.9	103,333	85.44	230.9	0	88.50	77.8	103,333	88.46	77.8	103,333	88.52	77.8	372	2.10	121.8	661	2.10	121.8
H015bG.17C.55C.100%.2U	70,566	78.73	255.2	70,566	79.52	252.9	70,566	79.55	252.9	0	81.04	95.4	70,566	81.02	95.4	70,566	81.05	95.4	0	3.55	139.4	0	3.55	139.4
H016bG.17C.55C.100%.2F	100,167	84.03	266.6	100,167	84.87	233.8	100,167	84.94	233.8	0	87.82	77.4	100,167	87.79	77.4	100,167	87.84	77.4	0	2.09	121.6	0	2.09	121.6
H017.17C.40C.100%.2U	36,161	73.78	176.6	36,161	74.52	158.9	0	74.52	158.9	36,161	74.52	158.9	0	74.52	158.9	36,161	74.52	158.9	74	17.24	205.0	288	17.24	205.0
H018.17C.40C.100%.2U	72,834	77.24	180.3	72,834	78.01	169.8	0	78.02	169.8	72,834	78.02	169.8	0	78.02	169.8	72,834	78.04	169.8	140	20.68	214.1	589	20.68	214.1
H019.17C.40C.100%.2U	71,191	78.75	252.2	71,191	79.54	249.9	71,191	79.57	249.9	0	81.08	79.7	71,191	81.06	79.7	71,191	81.09	79.7	233	3.42	138.0	479	3.42	138.0
H020.17C.40C.100%.2F	103,027	84.42	261.2	103,027	85.27	226.0	103,027	85.34	226.0	0	88.37	60.7	103,027	88.33	60.7	103,027	88.39	60.7	375	1.94	119.3	655	1.94	119.3
H021.17C.90C.100%.2U	36,139	73.85	214.3	36,139	74.59	198.0	0	74.59	198.0	36,139	74.59	198.0	0	74.59	198.0	36,139	74.59	198.0	74	17.24	205.0	288	17.24	205.0
H022.17C.90C.100%.2U	73,133	77.50	216.6	73,133	78.28	207.5	0	78.29	207.5	73,133	78.29	207.5	0	78.29	207.5	73,133	78.30	207.5	141	20.68	214.1	591	20.68	214.1
H023.17C.90C.100%.2U	71,370	78.79	259.4	71,370	79.58	257.2	71,370	79.61	257.2	0	81.16	136.1	71,370	81.14	136.1	71,370	81.17	136.1	226	4.15	145.0	487	4.15	145.0
H024.17C.90C.100%.2F	104,132	84.78	276.1	104,132	85.62	242.8	104,132	85.70	242.8	0	88.87	119.1	104,132	88.82	119.1	104,132	88.89	119.1	366	2.54	128.0	675	2.54	128.0
H025.31C.55C.100%.2U	34,976	73.78	172.8	34,976	74.52	151.0	0	74.52	151.0	34,976	74.52	151.0	0	74.52	151.0	34,976	74.52	151.0	82	12.07	188.2	267	12.07	188.2
H026.31C.55C.100%.2U	71,606	77.10	194.8	71,606	77.87	180.7	0	77.89	180.7	71,606	77.89	180.7	0	77.89	180.7	71,606	77.90	180.7	137	20.68	214.1	579	20.68	214.1
H027.31C.55C.100%.2U	70,010	78.50	258.6	70,010	79.28	252.2	70,010	79.32	252.2	0	80.78	94.9	70,010	80.76	94.9	70,010	80.79	94.9	228	3.49	138.7	472	3.49	138.7
H028.31C.55C.100%.2F	101,901	84.10	269.5	101,901	84.94	230.1	101,901	85.01	230.1	0	87.98	76.6	101,901	87.94	76.6	101,901	88.00	76.6	368	2.03	120.6	651	2.03	120.6
H029.31C.40C.100%.2U	35,294	73.73	175.1	35,294	74.47	152.8	0	74.47	152.8	35,294	74.47	152.8	0	74.47	152.8	35,294	74.48	152.8	75	15.51	199.9	277	15.51	199.9
H030.31C.40C.100%.2U	71,521	77.03	184.3	71,521	77.80	169.8	0	77.82	169.8	71,521	77.82	169.8	0	77.82	169.8	71,521	77.83	169.8	137	20.68	214.1	578	20.68	214.1
H031.31C.40C.100%.2U	69,962	78.49	256.4	69,962	79.28	250.0	69,962	79.31	250.0	0	80.77	78.3	69,962	80.75	78.3	69,962	80.78	78.3	230	3.29	136.7	469	3.29	136.7
H032.31C.40C.100%.2F	101,569	83.99	265.1	101,569	84.83	224.9	101,569	84.90	224.9	0	87.84	59.4	101,569	87.80	59.4	101,569	87.86	59.4	371	1.87	118.1	645	1.87	118.1

	32 - Sweet Water Condenser Water Outlet to HPEC #4			33 - Sweet Water Condenser Water Inlet from HPEC #5			34 - HPEC5 Outlet			35 - HP Economizer Bypass			36 - HP Economizer Inlet			37 - HP Feedwater Inlet downstream of FW Pump			40 - Flash Tank to DA			41 - Flash Tank Flow to Blowdown Tank		
	Mass Flow	Pressure	Temp	Mass Flow	Pressure	Temp	Mass Flow	Pressure	Temp	Mass Flow	Pressure	Temp	Mass Flow	Pressure	Temp	Mass Flow	Pressure	Temp	Mass Flow	Pressure	Temp	Mass Flow	Pressure	Temp
VPI Case ID	kg/hr	bara	°C	kg/hr	bara	°C	kg/hr	bara	°C	kg/hr	bara	°C	kg/hr	bara	°C	kg/hr	bara	°C	kg/hr	bara	°C	kg/hr	bara	°C
H033.31C.90C.100%.2U	35,278	73.80	213.5	35,278	74.54	192.7	0	74.54	192.7	35,278	74.54	192.7	0	74.54	192.7	35,278	74.54	192.7	75	15.51	199.9	277	15.51	199.9
H034.31C.90C.100%.2U	71,849	77.29	220.4	71,849	78.06	207.4	0	78.08	207.4	71,848	78.08	207.4	0	78.08	207.4	71,849	78.09	207.4	138	20.68	214.1	581	20.68	214.1
H035.31C.90C.100%.2U	70,131	78.54	264.0	70,131	79.32	257.8	70,131	79.36	257.8	0	80.85	135.1	70,131	80.83	135.1	70,131	80.86	135.1	223	4.03	143.9	478	4.03	143.9
H036.31C.90C.100%.2F	102,770	84.36	280.3	102,770	85.20	242.6	102,770	85.28	242.6	0	88.35	118.0	102,770	88.31	118.0	102,770	88.37	118.0	362	2.46	126.9	665	2.46	126.9

Comments:
(Note: All pressures in this table do not include hydrostatic pressure head.)

HRSG Performance Data
VPI Project # V17511 Central Termoelectrica Arroyo Seco Project

	80 - Heat Exchanger Cold Side Out (to Deaerator)			84 - Heat Exchanger Cold Side In (from Condensate)			82 - Heat Exchanger Hot Side In (from LP Drum/Deaerator)			83 - Heat Exchanger Hot Side Out (to FW Pump)			81- Deaerator Vent Steam			85 -Condensate Inlet upstream of Control Valve		
	Mass Flow	Pressure	Temp	Mass Flow	Pressure	Temp	Mass Flow	Pressure	Temp	Mass Flow	Pressure	Temp	Mass Flow	Pressure	Temp	Mass Flow	Pressure	Temp
VPI Case ID	kg/hr	bara	°C	kg/hr	bara	°C	kg/hr	bara	°C	kg/hr	bara	°C	kg/hr	bara	°C	kg/hr	bara	°C
H001.5C.55C.100%.2U	30,608	17.24	100.0	30,608	17.93	54.6	36,661	17.23	205.0	36,661	16.54	169.1	50	17.24	205.0	30,608	21.38	54.6
H002.5C.55C.100%.2U	59,709	20.70	100.0	59,709	21.39	54.6	73,859	20.66	214.1	73,859	19.97	179.7	50	20.68	214.1	59,709	24.84	54.6
H003.5C.55C.100%.2U	71,944	3.68	100.0	71,944	4.37	54.6	72,128	3.64	140.4	72,128	2.95	95.7	50	3.66	140.4	71,944	7.83	54.6
H004.5C.55C.100%.2F	104,019	2.19	100.0	104,019	2.88	54.6	104,344	2.10	122.4	104,344	1.41	77.3	50	2.14	122.4	104,019	6.35	54.6
H005.5C.40C.100%.2U	30,310	17.24	100.0	30,310	17.93	40.0	36,671	17.23	205.0	36,671	16.54	157.9	50	17.24	205.0	30,310	21.38	40.0
H006.5C.40C.100%.2U	59,184	20.70	100.0	59,184	21.39	40.0	73,783	20.66	214.1	73,783	19.97	168.8	50	20.68	214.1	59,184	24.84	40.0
H007.5C.40C.100%.2U	71,896	3.48	100.0	71,896	4.17	40.0	72,082	3.44	138.5	72,082	2.75	79.1	50	3.46	138.5	71,896	7.63	40.0
H008.5C.40C.100%.2F	103,724	2.03	100.0	103,724	2.71	40.0	104,053	1.93	119.9	104,053	1.25	60.3	50	1.98	119.9	103,724	6.19	40.0
H009.5C.90C.100%.2U	31,370	17.24	100.0	31,370	17.93	90.0	36,643	17.23	205.0	36,643	16.54	197.0	50	17.24	205.0	31,370	21.38	90.0
H010.5C.90C.100%.2U	61,057	20.70	100.0	61,057	21.39	90.0	74,072	20.66	214.1	74,072	19.97	206.5	50	20.68	214.1	61,057	24.85	90.0
H011.5C.90C.100%.2U	72,057	4.22	100.0	72,057	4.91	90.0	72,236	4.18	145.4	72,236	3.49	135.5	50	4.20	145.4	72,057	8.37	90.0
H012.5C.90C.100%.2F	104,793	2.63	100.0	104,793	3.32	90.0	105,112	2.54	128.5	105,112	1.85	118.7	50	2.59	128.5	104,793	6.80	90.0
H013.17C.55C.100%.2U	30,199	17.24	100.0	30,199	17.93	54.6	36,153	17.23	205.0	36,153	16.54	169.1	50	17.24	205.0	30,199	21.38	54.6
H014.17C.55C.100%.2U	58,953	20.70	100.0	58,953	21.39	54.6	72,912	20.66	214.1	72,912	19.97	179.7	50	20.68	214.1	58,953	24.84	54.6
H015.17C.55C.100%.2U	71,049	3.63	100.0	71,049	4.32	54.6	71,232	3.59	140.0	71,232	2.90	95.2	50	3.61	140.0	71,049	7.78	54.6
H016.17C.55C.100%.2F	103,010	2.15	100.0	103,010	2.84	54.6	103,333	2.06	121.8	103,333	1.37	76.8	50	2.10	121.8	103,010	6.31	54.6
H015bG.17C.55C.100%.2U	70,615	3.57	100.0	70,615	4.26	54.6	70,566	3.53	139.4	70,566	2.84	94.4	50	3.55	139.4	70,615	7.72	54.6
H016bG.17C.55C.100%.2F	100,217	2.13	100.0	100,217	2.82	54.6	100,167	2.05	121.6	100,167	1.36	76.4	50	2.09	121.6	100,217	6.29	54.6
H017.17C.40C.100%.2U	29,903	17.24	100.0	29,903	17.93	40.0	36,161	17.23	205.0	36,161	16.54	157.9	50	17.24	205.0	29,903	21.38	40.0
H018.17C.40C.100%.2U	58,429	20.70	100.0	58,429	21.39	40.0	72,834	20.66	214.1	72,834	19.97	168.8	50	20.68	214.1	58,429	24.84	40.0
H019.17C.40C.100%.2U	70,988	3.44	100.0	70,988	4.13	40.0	71,191	3.40	138.0	71,191	2.71	78.7	50	3.42	138.0	70,988	7.59	40.0
H020.17C.40C.100%.2F	102,702	1.99	100.0	102,702	2.68	40.0	103,027	1.90	119.3	103,027	1.21	59.7	50	1.94	119.3	102,702	6.15	40.0
H021.17C.90C.100%.2U	30,959	17.24	100.0	30,959	17.93	90.0	36,139	17.23	205.0	36,139	16.54	197.0	50	17.24	205.0	30,959	21.38	90.0
H022.17C.90C.100%.2U	60,299	20.70	100.0	60,299	21.39	90.0	73,133	20.66	214.1	73,133	19.97	206.5	50	20.68	214.1	60,299	24.85	90.0
H023.17C.90C.100%.2U	71,157	4.17	100.0	71,157	4.86	90.0	71,370	4.13	145.0	71,370	3.44	135.1	50	4.15	145.0	71,157	8.32	90.0
H024.17C.90C.100%.2F	103,816	2.59	100.0	103,816	3.28	90.0	104,132	2.50	128.0	104,132	1.81	118.1	50	2.54	128.0	103,816	6.75	90.0
H025.31C.55C.100%.2U	30,667	12.07	100.0	30,667	12.76	54.6	34,976	12.06	188.2	34,976	11.37	150.0	50	12.07	188.2	30,667	16.21	54.6
H026.31C.55C.100%.2U	57,923	20.70	100.0	57,923	21.39	54.6	71,606	20.66	214.1	71,606	19.97	179.7	50	20.68	214.1	57,923	24.84	54.6
H027.31C.55C.100%.2U	69,828	3.51	100.0	69,828	4.20	54.6	70,010	3.47	138.7	70,010	2.78	93.9	50	3.49	138.7	69,828	7.66	54.6
H028.31C.55C.100%.2F	101,583	2.07	100.0	101,583	2.76	54.6	101,901	1.98	120.6	101,901	1.29	75.6	50	2.03	120.6	101,583	6.23	54.6
H029.31C.40C.100%.2U	29,648	15.52	100.0	29,648	16.21	40.0	35,294	15.51	199.9	35,294	14.82	151.8	50	15.51	199.9	29,648	19.66	40.0
H030.31C.40C.100%.2U	57,397	20.70	100.0	57,397	21.39	40.0	71,521	20.66	214.1	71,521	19.97	168.8	50	20.68	214.1	57,397	24.84	40.0
H031.31C.40C.100%.2U	69,768	3.31	100.0	69,768	4.00	40.0	69,962	3.27	136.7	69,962	2.58	77.3	50	3.29	136.7	69,768	7.46	40.0
H032.31C.40C.100%.2F	101,248	1.91	100.0	101,248	2.60	40.0	101,569	1.83	118.1	101,569	1.14	58.4	50	1.87	118.1	101,248	6.07	40.0

HRSG Performance Data
VPI Project # V17511 Central Termoelectrica Arroyo Seco Project

	80 - Heat Exchanger Cold Side Out (to Deaerator)			84 - Heat Exchanger Cold Side In (from Condensate)			82 - Heat Exchanger Hot Side In (from LP Drum/Deaerator)			83 - Heat Exchanger Hot Side Out (to FW Pump)			81- Deaerator Vent Steam			85 -Condensate Inlet upstream of Control Valve		
	Mass Flow	Pressure	Temp	Mass Flow	Pressure	Temp	Mass Flow	Pressure	Temp	Mass Flow	Pressure	Temp	Mass Flow	Pressure	Temp	Mass Flow	Pressure	Temp
VPI Case ID	kg/hr	bara	°C	kg/hr	bara	°C	kg/hr	bara	°C	kg/hr	bara	°C	kg/hr	bara	°C	kg/hr	bara	°C
H033.31C.90C.100%.2U	30,716	15.52	100.0	30,716	16.21	90.0	35,278	15.51	199.9	35,278	14.82	191.7	50	15.51	199.9	30,716	19.66	90.0
H034.31C.90C.100%.2U	59,276	20.70	100.0	59,276	21.39	90.0	71,849	20.66	214.1	71,849	19.97	206.4	50	20.68	214.1	59,276	24.84	90.0
H035.31C.90C.100%.2U	69,962	4.05	100.0	69,962	4.74	90.0	70,131	4.01	143.9	70,131	3.32	134.1	50	4.03	143.9	69,962	8.20	90.0
H036.31C.90C.100%.2F	102,458	2.51	100.0	102,458	3.20	90.0	102,770	2.42	126.9	102,770	1.73	117.0	50	2.46	126.9	102,458	6.67	90.0
Comments: **(Note: All pressures in this table do not include hydrostatic pressure head.)**	**Assumes a fixed 0.69 bar pressure drop across the cold side of the heat exchanger for all operating cases.**						**Assumes a fixed 0.69 bar pressure drop across the hot side of the heat exchanger for all operating cases.**									**Assumes a fixed 3.45 bar pressure drop across the condensate control valve for all operating cases**		