Name Of Customer Address M/C Model No M/C Sr.No Capacity Power HARTFORD MEDIUM SCREV

Power
HARTFORD MEDIUM SCREW CHILLER
COMPRESSOR MODEL RLA
1215BHL6V5KOEMBJOC.TI 111 A

1215BHL6V5KOEMBJOC.TI 111 A 1218BHL6V5KOEMBJOC.TI 143 A CONTROL VOLTS REFRIGERANT

REFRIGERANT FULL LOAD AMPS INDIAN OIL CORPORATION LTD. Gujarat Refinery , Baroda WCFX33CL2R1R 2A02100096 190 TR 400 V, 3-PH, 50 HZ

LRA FACTORY CHARGED 885 A 142 KG

1030 A 171 KG

115/1/50 R-134A 253 A



A TATA Enterprise

COMPARISON OF 10/4/2012 IS TAKEN WITH 24/04/2012 Mainly considering the similar condensing water inlet temperature.

However a comparison is also made between 10th April and 14th May based on energy efficiency norms and the same is shown below after the readings.

OPERATIONAL READINGS	DDF D	sta DATE : 1	0.04.12		POST	Data DATE :	24 04 12		DOST I	Data DATE:	14.05.12	
TIME	11:00	1:00	3:00	5:00	11:00	1:00	3:00	5:00	11:00	1:00	3:00	5:00
Chiller Leaving Water Temp F	47.3	47.1	47.3	47.1	49.4	48.9	48	47.6	47.1	46.8	47.1	47.3
Chiller Entering Chiller Water Temp F	52.3	51.4	51.3	51.6	54.8	54.3	53.4	53	52.3	52.3	52.5	52.3
Chiller Temp Diff	5	4.3	4.5	4.5	5.4	5.4	5.4	5.4	5.2	5.5	5.4	5
Suction Press PSI	35	35	30	35	35	35	35	35	40	40	40	40
Disch Press PSI	135	135	135	135	135	135	135	125	150	158	139	149
Total Compr Amps (1+2)	257.4	244.5	230.1	236.4	236	219	242	221	257	267	242	242
Compr FLCP% 1	91	90	92.9	87.9	94.7	83.6	85.8	81.4	91.9	99	92.9	90.9
Compr FLCP% 2	92	95	85.8	88.9	95.6	100	80.3	85.8	98.2	100	91.9	92.9
Chiller Inlet wtr Press Kg/cm2									20.2			
Chiller Outlet Wtr Press Kg/cm2												
Chiller Press Drop Kg/cm2												
Condenser Leaving Water Temp F	91.2	90.2	88.5	87.9	90.8	89	88.3	85.1	94.8	95.7	91.9	92.8
Condenser Entering Water Temp F	84.2	83.4	82.2	82.3	85.8	84.7	83.8	80.5	89	89.9	86.7	88.1
Cooling water temp diff	7	6.8	6.3	5.6	5	4.3	4.5	4.6	5.8	5.8	5.2	4.7
Condenser Inlet Wtr Press Kg/cm2		0.0	0.3	3.0		4.3	4.3	4.0	3.6	3.0	3.2	4.7
Condenser Outlet Witr Press Kg/cm2												
Condenser Press Drop Kg/cm2												
Power Factor	0.656	0.619	0.562	0.591	0.697	0.637	0.703	0.645	0.722	0.738	0.683	0.683
Volts	417	417	417	417	408	409	408	409	412	412	412	413
Suction Temp F	47.1	44.7	46.4	46.6	47.3	47.4	46	46.5	46.8	46.2	46.7	46.8
Disch Temp F	125.2	129.5	129.9	129	121.2	116.2	115.8	112.8	131.7	129.9	120	131.3
Liquid Line Temp F	86.7	93.5	94.6	93.7	92.4	91	95.5	92.3	96.4	96.2	95.7	94.4
Superheat of Chiller F	00./	90.0	94.0	93.7	92.4	91	93.3	94.3	90.4	90.2	93./	34,4
Subcooling at Liquid Line F												
Discharge Superheat F												
Cooler Approach F												\vdash
Condenser Approach F	_											-
IKW Total	122.2	109.6	93.6	101.1	116.67	99.18	120.8	101.48	132.66	141.03	118.26	118.59
			95.0				120.8	101.40	132.00	141.03	118.20	118.59
			577	573			577	573		577		
Chiller Flow in GPM	572	572	572	572	572	572	572	572	572	572	572	572
Chiller Flow in GPM Condenser Flow in GPM	572 787.6	572 787.6	787.6	787.6	572 787.6	572 787.6	787.6	787.6	787.6	787.6	787.6	787.6
Chiller Flow in GPM Condenser Flow in GPM Capacity in TR	572 787.6 119.6	572 787.6 102.5	787.6 107.2	787.6 107.2	572 787.6 128.7	572 787.6 128.7	787.6 128.7	787.6 128.7	787.6 123.93	787.6 131.08	787.6 128.7	787.6 119.16
Chiller Flow in GPM Condenser Flow in GPM Capacity in TR IKW/TR	572 787.6 119.6 1.02	572 787.6 102.5 1.07	787.6 107.2 0.87	787.6 107.2 0.94	572 787.6 128.7 0.9	572 787.6 128.7 0.77	787.6 128.7 0.94	787.6 128.7 0.79	787.6 123.93 1.07	787.6 131.08 1.07	787.6 128.7 0.92	787.6 119.16 0.99
Chiller Flow in GPM Condenser Flow in GPM Capacity in TR IKW/TR Condenser Heat Rejection (TR)	572 787.6 119.6 1.02 229.7167	572 787.6 102.5 1.07 223.1533	787.6 107.2 0.87 206.745	787.6 107.2 0.94 183.7733	572 787.6 128.7 0.9 164.0833	572 787.6 128.7 0.77 141.1117	787.6 128.7 0.94 147.675	787.6 128.7 0.79 150.9567	787.6 123.93 1.07 190.3367	787.6 131.08 1.07 190.3367	787.6 128.7 0.92 170.6467	787.6 119.16 0.99 154.2383
Chiller Flow in GPM Condenser Flow in GPM Capacity in TR IKW/TR Condenser Heat Rejection (TR) Heat balance (%)	572 787.6 119.6 1.02	572 787.6 102.5 1.07	787.6 107.2 0.87	787.6 107.2 0.94	572 787.6 128.7 0.9	572 787.6 128.7 0.77	787.6 128.7 0.94	787.6 128.7 0.79	787.6 123.93 1.07	787.6 131.08 1.07	787.6 128.7 0.92	787.6 119.16 0.99
Chiller Flow in GPM Condenser Flow in GPM Capacity in TR IKW/TR Condenser Heat Rejection (TR) Heat balance (%)	572 787.6 119.6 1.02 229.7167	572 787.6 102.5 1.07 223.1533	787.6 107.2 0.87 206.745	787.6 107.2 0.94 183.7733	572 787.6 128.7 0.9 164.0833	572 787.6 128.7 0.77 141.1117	787.6 128.7 0.94 147.675	787.6 128.7 0.79 150.9567	787.6 123.93 1.07 190.3367	787.6 131.08 1.07 190.3367	787.6 128.7 0.92 170.6467	787.6 119.16 0.99 154.2383
Chiller Flow in GPM Condenser Flow in GPM Capacity in TR IKWITR Condenser Heat Rejection (TR) Heat balance (%) SST SDT	572 787.6 119.6 1.02 229.7167 -49%	572 787.6 102.5 1.07 223.1533 -67%	787.6 107.2 0.87 206.745 -54%	787.6 107.2 0.94 183.7733 -35%	572 787.6 128.7 0.9 164.0833 -1%	572 787.6 128.7 0.77 141.1117 10%	787.6 128.7 0.94 147.675 9%	787.6 128.7 0.79 150.9567 4%	787.6 123.93 1.07 190.3367 -18%	787.6 131.08 1.07 190.3367 -11%	787.6 128.7 0.92 170.6467 -5%	787.6 119.16 0.99 154.2383 -1%
Chiller Flow in GPM Condenser Flow in GPM Capacity in TR IKWITR Condenser Heat Rejection (TR) Heat balance (%) SST SDT Cathali Core Pressure Inlet	572 787.6 119.6 1.02 229.7167 -49%	572 787.6 102.5 1.07 223.1533 -67%	787.6 107.2 0.87 206.745 -54%	787.6 107.2 0.94 183.7733 -35%	572 787.6 128.7 0.9 164.0833 -1%	572 787.6 128.7 0.77 141.1117 10%	787.6 128.7 0.94 147.675 9%	787.6 128.7 0.79 150.9567 4%	787.6 123.93 1.07 190.3367 -18%	787.6 131.08 1.07 190.3367 -11%	787.6 128.7 0.92 170.6467 -5%	787.6 119.16 0.99 154.2383 -1%
Chiller Flow in GPM Condenser Flow in GPM Capacity in TR IKW/TR Condenser Heat Rejection (TR) Heat balance (%) SST SDT Cathali Core Pressure Inlet Cathali Core Pressure Outlet	572 787.6 119.6 1.02 229.7167 -49% 35 35	572 787.6 102.5 1.07 223.1533 -67% 35 35	787.6 107.2 0.87 206.745 -54% 35 35	787.6 107.2 0.94 183.7733 -35% 35	572 787.6 128.7 0.9 164.0833 -1%	572 787.6 128.7 0.77 141.1117 10%	787.6 128.7 0.94 147.675 9% 35 35	787.6 128.7 0.79 150.9567 4% 35 35	787.6 123.93 1.07 190.3367 -18% 35 35	787.6 131.08 1.07 190.3367 -11% 35 35	787.6 128.7 0.92 170.6467 -5% 35 35	787.6 119.16 0.99 154.2383 -1% 35 35
Chiller Flow in GPM Condenser Flow in GPM Capacity in TR IKWITR Condenser Heat Rejection (TR) Heat balance (%) SST SDT Cathali Core Pressure Inlet	572 787.6 119.6 1.02 229.7167 -49%	572 787.6 102.5 1.07 223.1533 -67%	787.6 107.2 0.87 206.745 -54%	787.6 107.2 0.94 183.7733 -35%	572 787.6 128.7 0.9 164.0833 -1%	572 787.6 128.7 0.77 141.1117 10%	787.6 128.7 0.94 147.675 9%	787.6 128.7 0.79 150.9567 4%	787.6 123.93 1.07 190.3367 -18%	787.6 131.08 1.07 190.3367 -11%	787.6 128.7 0.92 170.6467 -5%	787.6 119.16 0.99 154.2383 -1%
Chiller Flow in GPM Condenser Flow in GPM Capacity in TR IKW/TR Condenser Heat Rejection (TR) Heat balance (%) SST SDT Cathall Core Pressure Inlet Cathall Core Press Diff	572 787.6 119.6 1.02 229.7167 -49% 35 35	572 787.6 102.5 1.07 223.1533 -67% 35 35	787.6 107.2 0.87 206.745 -54% 35 35	787.6 107.2 0.94 183.7733 -35% 35	572 787.6 128.7 0.9 164.0833 -1%	572 787.6 128.7 0.77 141.1117 10%	787.6 128.7 0.94 147.675 9% 35 35	787.6 128.7 0.79 150.9567 4% 35 35	787.6 123.93 1.07 190.3367 -18% 35 35	787.6 131.08 1.07 190.3367 -11% 35 35	787.6 128.7 0.92 170.6467 -5% 35 35	787.6 119.16 0.99 154.2383 -1% 35 35
Chiller Flow in GPM Condenser Flow in GPM Capacity in TR IKW/TR Condenser Heat Rejection (TR) Heat balance (%) SST SDT Cathali Core Pressure Inlet Cathali Core Press Diff Compr 1	572 787.6 119.6 1.02 229.7167 -49% 35 35 0	572 787.6 102.5 1.07 223.1533 -67% 35 35 0	787.6 107.2 0.87 206.745 -54% 35 35 0	787.6 107.2 0.94 183.7733 -35% 35 35 0	572 787.6 128.7 0.9 164.0833 -1% 35 30 0	572 787.6 128.7 0.77 141.1117 10% 35 35 0	787.6 128.7 0.94 147.675 9% 35 35 0	787.6 128.7 0.79 150.9567 4% 35 35 0	787.6 123.93 1.07 190.3367 -18% 35 35 0	787.6 131.08 1.07 190.3367 -11% 35 35 0	787.6 128.7 0.92 170.6467 -5% 35 35 0	787.6 119.16 0.99 154.2383 -1% 35 35 0
Chiller Flow in GPM Condenser Flow in GPM Capacity in TR IKWTR Condenser Heat Rejection (TR) Heat balance (%) SST SDT Cathali Core Pressure Inlet Cathali Core Pressure Outlet Cathali Core Press Diff Compr 1 Suct Filter Pressure Inlet	572 787.6 119.6 1.02 229.7167 -49% 35 35 0	572 787.6 102.5 1.07 223.1533 -67% 35 35 0	787.6 107.2 0.87 206.745 -54% 35 35 0	787.6 107.2 0.94 183.7733 -35% 35 0	572 787.6 128.7 0.9 164.0833 -1% 35 30 0	572 787.6 128.7 0.77 141.1117 10% 35 35 0	787.6 128.7 0.94 147.675 9% 35 0	787.6 128.7 0.79 150.9567 4% 35 0	787.6 123.93 1.07 190.3367 -18% 35 35 0	787.6 131.08 1.07 190.3367 -11% 35 35 0	787.6 128.7 0.92 170.6467 -5% 35 0	787.6 119.16 0.99 154.2383 -1% 35 35 0
Chiller Flow in GPM Condenser Flow in GPM Capacity in TR IKWITR Condenser Heat Rejection (TR) Heat balance (%) SST SDT Cathali Core Pressure Inlet Cathali Core Pressure Outlet Cathali Core Pressure Inlet Compr 1 Suct Filter Pressure Inlet Suct Filter Pressure Outlet	572 787.6 119.6 1.02 229.7167 -49% 35 35 0	572 787.6 102.5 1.07 223.1533 -67% 35 35 0	787.6 107.2 0.87 206.745 -54% 35 35 0	787.6 107.2 0.94 183.7733 -35% 35 35 0	572 787.6 128.7 0.9 164.0833 -1% 35 30 0	572 787.6 128.7 0.77 141.1117 10% 35 35 0	787.6 128.7 0.94 147.675 9% 35 35 0	787.6 128.7 0.79 150.9567 4% 35 35 0	787.6 123.93 1.07 190.3367 -18% 35 35 0	787.6 131.08 1.07 190.3367 -11% 35 35 0	787.6 128.7 0.92 170.6467 -5% 35 35 0	787.6 119.16 0.99 154.2383 -1% 35 35 0
Chiller Flow in GPM Condenser Flow in GPM Capacity in TR IKWITR Condenser Heat Rejection (TR) Heat balance (%) SST SDT Cathali Core Pressure Inlet Cathali Core Pressure Outlet Cathali Core Pressure Diff Compr 1 Suct Filter Pressure Inlet Suct Filter Pressure Outlet Suct Filter Pressure Outlet Suct Filter Pressure Outlet Suct Filter Pressure Outlet	572 787.6 119.6 1.02 229.7167 -49% 35 35 0	572 787.6 102.5 1.07 223.1533 -67% 35 35 0	787.6 107.2 0.87 206.745 -54% 35 35 0	787.6 107.2 0.94 183.7733 -35% 35 0	572 787.6 128.7 0.9 164.0833 -1% 35 30 0	572 787.6 128.7 0.77 141.1117 10% 35 35 0	787.6 128.7 0.94 147.675 9% 35 0	787.6 128.7 0.79 150.9567 4% 35 0	787.6 123.93 1.07 190.3367 -18% 35 35 0	787.6 131.08 1.07 190.3367 -11% 35 35 0	787.6 128.7 0.92 170.6467 -5% 35 0	787.6 119.16 0.99 154.2383 -1% 35 35 0
Chiller Flow in GPM Condenser Flow in GPM Capacity in TR IKW/TR Condenser Heat Rejection (TR) Heat balance (%) SST SDT Cathali Core Pressure Inlet Cathali Core Pressure Outlet Cathali Core Pressure Outlet Cathali Core Pressure Outlet Suct Filter Pressure Outlet Suct Filter Pressure Outlet Suct Filter Press Diff Compr 1	572 787.6 119.6 1.02 229.7167 -49% 35 35 0	572 787.6 102.5 1.07 223.1533 -67% 35 35 0	787.6 107.2 0.87 206.745 -54% 35 35 0	787.6 107.2 0.94 183.7733 -35% 35 35 0	572 787.6 128.7 0.9 164.0833 -1% 35 30 0	572 787.6 128.7 0.77 141.1117 10% 35 35 0	787.6 128.7 0.94 147.675 9% 35 35 0	787.6 128.7 0.79 150.9567 4% 35 35 0	787.6 123.93 1.07 190.3367 -18% 35 35 0 40 40	787.6 131.08 1.07 190.3367 -11% 35 35 0 40 40	787.6 128.7 0.92 170.6467 -5% 35 35 0	787.6 119.16 0.99 154.2383 -1% 35 35 0
Chiller Flow in GPM Condenser Flow in GPM Capacity in TR IKW/TR Condenser Heat Rejection (TR) Heat balance (%) SST SDT Cathall Core Pressure Inlet Cathall Core Pressure Outlet Cathall Core Pressure Outlet Cathall Core Press Diff Compr 1 Suct Filter Pressure Inlet Suct Filter Press Diff Compr 2 Suct Filter Press Diff Compr 2 Suct Filter Press Diff	572 787.6 119.6 1.02 229.7167 49% 35 35 0	572 787.6 102.5 1.07 223.1533 -67% 35 35 0	787.6 107.2 0.87 206.745 -54% 35 35 0 30 30 0	787.6 107.2 0.94 183.7733 -35% 35 35 0 30 30 0	572 787.6 128.7 0.9 164.0833 -1% 35 30 0	572 787.6 128.7 0.77 141.1117 10% 35 35 0	787.6 128.7 0.94 147.675 9% 35 35 0 35 0	787.6 128.7 0.79 150.9567 4% 35 35 0 35 0	787.6 123.93 1.07 190.3367 -18% 35 35 0 40 40 40	787.6 131.08 1.07 190.3367 -11% 35 35 0 40 40 40	787.6 128.7 0.92 170.6467 -5% 35 35 0 35 78	787.6 119.16 0.99 154.2383 -1% 35 35 0 35 0 35 35 0
Chiller Flow in GPM Condenser Flow in GPM Capacity in TR IKWTR Condenser Heat Rejection (TR) Heat balance (%) SST SDT Cathall Core Pressure Inlet Cathall Core Pressure Outlet Cathall Core Pressure Outlet Cathall Core Pressure Outlet Cathall Fliter Pressure Outlet Suct Filter Pressure Inlet	572 787.6 119.6 1.02 229.7167 -49% 35 35 0 35 0	572 787.6 102.5 1.07 223.1533 -67% 35 35 0 30 30 0	787.6 107.2 0.87 206.745 -54% 35 35 0 30 0	787.6 107.2 0.94 183.7733 -35% 35 35 0 30 0 30 30 30 30 30	572 787.6 128.7 0.9 164.0833 -1% 35 30 0	572 787.6 128.7 0.77 141.1117 10% 35 35 0 35 0	787.6 128.7 0.94 147.675 9% 35 35 0 35 35 0	787.6 128.7 0.79 150.9567 4% 35 35 0 35 35 0	787.6 123.93 1.07 190.3367 -18% 35 35 0 40 40 40 40 40	787.6 131.08 1.07 190.3367 -11% 35 35 0 40 40 40 40 40 40	787.6 128.7 0.92 170.6467 -5% 35 35 0 35 35 78	787.6 119.16 0.99 154.2383 -1% 35 35 0 35 0 35 35 0
Chiller Flow in GPM Condenser Flow in GPM Capacity in TR IKW/TR Condenser Heat Rejection (TR) Heat balance (%) SST SDT Cathall Core Pressure Inlet Cathall Core Pressure Outlet Cathall Core Pressure Outlet Cathall Core Press Diff Compr 1 Suct Filter Pressure Inlet Suct Filter Press Diff Compr 2 Suct Filter Press Diff Compr 2 Suct Filter Press Diff	572 787.6 119.6 1.02 229.7167 49% 35 35 0	572 787.6 102.5 1.07 223.1533 -67% 35 35 0	787.6 107.2 0.87 206.745 -54% 35 35 0 30 30 0	787.6 107.2 0.94 183.7733 -35% 35 35 0 30 30 0	572 787.6 128.7 0.9 164.0833 -1% 35 30 0	572 787.6 128.7 0.77 141.1117 10% 35 35 0	787.6 128.7 0.94 147.675 9% 35 35 0 35 0	787.6 128.7 0.79 150.9567 4% 35 35 0 35 0	787.6 123.93 1.07 190.3367 -18% 35 35 0 40 40 40	787.6 131.08 1.07 190.3367 -11% 35 35 0 40 40 40	787.6 128.7 0.92 170.6467 -5% 35 35 0 35 78	787.6 119.16 0.99 154.2383 -1% 35 35 0 35 0 35 35 0
Chiller Flow in GPM Condenser Flow in GPM Capacity in TR IKWTR Condenser Heat Rejection (TR) Heat balance (%) SST SDT Cathall Core Pressure Inlet Cathall Core Pressure Outlet Cathall Core Pressure Outlet Cathall Core Pressure Outlet Cathall Fliter Pressure Outlet Suct Filter Pressure Inlet	572 787.6 119.6 1.02 229.7167 -49% 35 35 0 35 0	572 787.6 102.5 1.07 223.1533 -67% 35 35 0 30 30 0	787.6 107.2 0.87 206.745 -54% 35 35 0 30 0	787.6 107.2 0.94 183.7733 -35% 35 35 0 30 0 30 30 30 30 30	572 787.6 128.7 0.9 164.0833 -1% 35 30 0	572 787.6 128.7 0.77 141.1117 10% 35 35 0 35 0	787.6 128.7 0.94 147.675 9% 35 35 0 35 35 0	787.6 128.7 0.79 150.9567 4% 35 35 0 35 35 0	787.6 123.93 1.07 190.3367 -18% 35 35 0 40 40 40 40 40	787.6 131.08 1.07 190.3367 -11% 35 35 0 40 40 40 40 40 40	787.6 128.7 0.92 170.6467 -5% 35 35 0 35 35 78	787.6 119.16 0.99 154.2383 -1% 35 35 0 35 0 35 35 0
Chiller Flow in GPM Condenser Flow in GPM Capacity in TR IKWITR Condenser Heat Rejection (TR) Heat balance (%) SST SDT Cathali Core Pressure Inlet Cathali Core Pressure Outlet Cathali Core Pressure Outlet Cathali Core Pressure Inlet Suct Filter Pressure Inlet Suct Filter Pressure Outlet Suct Filter Pressure Outlet Suct Filter Pressure Inlet Suct Filter Press Diff	572 787.6 119.6 1.02 229.7167 -49% 35 35 0 35 0	572 787.6 102.5 1.07 223.1533 -67% 35 35 0 30 30 0	787.6 107.2 0.87 206.745 -54% 35 35 0 30 0	787.6 107.2 0.94 183.7733 -35% 35 35 0 30 0 30 30 30 30 30	572 787.6 128.7 0.9 164.0833 -1% 35 30 0	572 787.6 128.7 0.77 141.1117 10% 35 35 0 35 0	787.6 128.7 0.94 147.675 9% 35 35 0 35 35 0	787.6 128.7 0.79 150.9567 4% 35 35 0 35 35 0	787.6 123.93 1.07 190.3367 -18% 35 35 0 40 40 40 40 40	787.6 131.08 1.07 190.3367 -11% 35 35 0 40 40 40 40 40 40	787.6 128.7 0.92 170.6467 -5% 35 35 0 35 35 78	787.6 119.16 0.99 154.2383 -1% 35 35 0 35 0 35 35 35 0
Chiller Flow in GPM Condenser Flow in GPM Capacity in TR IKW/TR Condenser Heat Rejection (TR) Heat balance (%) SST SDT Cathali Core Pressure Inlet Cathali Core Pressure Outlet Cathali Core Pressure Outlet Cathali Core Pressure Unite Suct Filter Pressure Inlet Suct Filter Pressure Outlet Suct Filter Pressure Inlet Suct Filter Pressure Outlet Suct Filter Pressure Outlet Suct Filter Pressure Outlet Compr 1	572 787.6 119.6 1.02 229.7167 -49% 35 35 0 35 35 0 35 35 0	572 787.6 102.5 1.07 223.1533 -67% 35 35 0 30 0 30 0	787.6 107.2 0.87 206.745 -54% 35 35 0 30 30 0	787.6 107.2 0.94 183.7733 -35% 35 35 0 30 30 0	572 787.6 128.7 0.9 164.0833 -1% 35 30 0 35 30 5 35 30 0	572 787.6 128.7 0.77 141.1117 10% 35 35 0 35 0 35 0	787.6 128.7 0.94 147.675 9% 35 35 0 35 35 0 35 0	787.6 128.7 0.79 150.9567 4% 35 35 0 35 35 0 35 35 0	787.6 123.93 1.07 190.3367 -18% 35 35 0 40 40 40 0	787.6 131.08 1.07 190.3367 -11% 35 35 0 40 40 40 40 0	787.6 128.7 0.92 170.6467 -5% 35 35 0 35 35 78 35 0	787.6 119.16 0.99 154.2383 -1% 35 35 0 35 35 0 35 35 0
Chiller Flow in GPM Condenser Flow in GPM Capacity in TR IKW/TR Condenser Heat Rejection (TR) Heat balance (%) SST SDT Cathali Core Pressure Inlet Cathali Core Pressure Outlet Cathali Core Pressure Outlet Cathali Core Pressure Unitet Suct Filter Pressure Inlet Suct Filter Pressure Outlet	572 787.6 119.6 1.02 229.7167 -49% 35 35 0 35 35 0	572 787.6 102.5 1.07 223.1533 -67% 35 35 35 0 30 0 30 0	787.6 107.2 0.87 206.745 -54% 35 35 0 30 30 0 30 0	787.6 107.2 0.94 183.7733 -35% 35 35 0 30 30 0 0	572 787.6 128.7 0.9 164.0833 -1% 35 30 0 35 30 5 35 30 5	572 787.6 128.7 0.77 141.1117 10% 35 35 35 0 35 35 0	787.6 128.7 0.94 147.675 9% 35 35 0 35 35 0 35 0	787.6 128.7 0.79 150.9567 4% 35 35 0 35 35 0 35 0 110	787.6 123.93 1.07 190.3367 -18% 35 35 0 40 40 0 0	787.6 131.08 1.07 190.3367 -11% 35 35 0 40 40 40 0 80	787.6 128.7 0.92 170.6467 -5% 35 35 0 35 35 78 35 0	787.6 119.16 0.99 154.2383 -1% 35 35 0 35 35 0 35 35 0
Chiller Flow in GPM Condenser Flow in GPM Capacity in TR IKWTR Condenser Heat Rejection (TR) Heat balance (%) SST SDT Cathall Core Pressure Inlet Cathall Core Pressure Outlet Cathall Core Pressure Outlet Cathall Core Pressure Outlet Compr 1 Suct Filter Pressure Inlet Suct Filter Pressure Outlet	572 787.6 119.6 1.02 229.7167 -49% 35 35 0 35 0 35 0	572 787.6 102.5 1.07 223.1533 -67% 35 35 0 30 0 30 0	787.6 107.2 0.87 206.745 -54% 35 35 0 30 30 0 30 0 70 135	787.6 107.2 0.94 183.7733 -35% 35 35 0 30 30 0 0 70 135	572 787.6 128.7 0.9 164.0833 -1% 35 30 0 35 30 5 35 30 5	35 35 0 35 35 0 90 135	787.6 128.7 0.94 147.675 9% 35 35 0 35 35 0 0 120 135	787.6 128.7 0.79 150.9567 4% 35 35 0 35 35 0 110 125	787.6 123.93 1.07 190.3367 -18% 35 35 0 40 40 0 40 0 95 150	787.6 131.08 1.07 190.3367 -11% 35 35 0 40 40 40 0 80 158	787.6 128.7 0.92 170.6467 -5% 35 35 0 35 35 78 35 0 0	787.6 119.16 0.99 154.2383 -1% 35 35 0 35 35 0 35 35 0 120 149
Chiller Flow in GPM Condenser Flow in GPM Capacity in TR IKWTR Condenser Heat Rejection (TR) Heat balance (%) SST SDT Cathali Core Pressure Inlet Cathali Core Pressure Outlet Cathali Core Pressure Outlet Cathali Core Pressure Outlet Suct Filter Pressure Inlet Suct Filter Pressure Outlet	572 787.6 119.6 1.02 229.7167 -49% 35 35 0 35 35 0	572 787.6 102.5 1.07 223.1533 -67% 35 35 35 0 30 0 30 0	787.6 107.2 0.87 206.745 -54% 35 35 0 30 30 0 30 0	787.6 107.2 0.94 183.7733 -35% 35 35 0 30 30 0 0	572 787.6 128.7 0.9 164.0833 -1% 35 30 0 35 30 5 35 30 5	572 787.6 128.7 0.77 141.1117 10% 35 35 35 0 35 35 0	787.6 128.7 0.94 147.675 9% 35 35 0 35 35 0 35 0	787.6 128.7 0.79 150.9567 4% 35 35 0 35 35 0 35 0 110	787.6 123.93 1.07 190.3367 -18% 35 35 0 40 40 0 0	787.6 131.08 1.07 190.3367 -11% 35 35 0 40 40 40 0 80	787.6 128.7 0.92 170.6467 -5% 35 35 0 35 35 78 35 0	787.6 119.16 0.99 154.2383 -1% 35 35 0 35 35 0 35 35 0
Chiller Flow in GPM Condenser Flow in GPM Capacity in TR IKWITR Condenser Heat Rejection (TR) Heat balance (%) SST SDT Cathali Core Pressure Inlet Cathali Core Pressure Outlet Cathali Core Pressure Outlet Cathali Core Pressure Outlet Suct Filter Pressure Inlet Suct Filter Pressure Outlet Suct Filter Press Diff Compr 1	572 787.6 119.6 1.02 229.7167 -49% 35 35 0 35 0 35 0 0 75 135 60	572 787.6 102.5 1.07 223.1533 -67% 35 35 0 30 0 0 30 0	787.6 107.2 0.87 206.745 -54% 35 35 0 30 30 0 30 0 70 135 65	787.6 107.2 0.94 183.7733 -35% 35 35 0 30 0 30 0 0 70 135 65	35 30 0 35 35 30 0 70 135 65	35 35 0 35 35 0 0 35 35 0 0 35 35 45 45	787.6 120.7 0.94 147.675 9% 35 35 0 35 35 0 35 0 120 120 135 15	787.6 128.7 0.79 150.9567 4% 35 35 0 35 35 0 35 0 110 125 15	787.6 123.93 1.07 190.3367 -18% 35 35 0 40 40 0 40 0 95 150 55	787.6 131.08 1.07 190.3367 -11% 35 35 0 40 40 0 40 0 80 158 78	787.6 128.7 0.92 170.6467 -5% 35 35 0 35 78 35 0 0 0 80 139 59	787.6 119.16 0.99 154.2383 -1% 35 35 0 35 0 35 0 120 149 29
Chiller Flow in GPM Condenser Flow in GPM Capacity in TR IKWITR Condenser Heat Rejection (TR) Heat balance (%) SST SDT Cathali Core Pressure Inlet Cathali Core Pressure Outlet Cathali Core Pressure Unitet Cathali Core Pressure Outlet Suct Filter Pressure Inlet Suct Filter Pressure Outlet Suct Filter Pressure Outlet Suct Filter Pressure Inlet Suct Filter Pressure Outlet Suct Filter Pressure Inlet Compr 1 Oil Filter Pressure (© load port on LOAD System Disch Press Oil Filter Press Diff Compr 2	572 787.6 119.6 1.02 229.7167 -49% 35 35 0 35 0 35 0 75 135 60	572 787.6 102.5 1.07 223.1533 -67% 35 35 0 30 0 0 30 0 0	787.6 107.2 0.87 206.745 -54% 35 35 0 30 0 30 0 70 135 65	787.6 107.2 0.94 183.7733 -35% 35 35 0 30 0 30 0 70 135 65	35 30 0 35 35 30 0 70 135 65 75	35 35 0 35 35 0 90 135 45 80	787.6 120.7 0.94 147.675 9% 35 35 0 35 35 0 35 0 120 120 135 15	787.6 128.7 0.79 150.9567 4% 35 35 0 35 35 0 35 0 110 125 15	787.6 123.93 1.07 190.3367 -18% 35 35 0 40 40 0 40 0 95 150 55	787.6 131.08 1.07 190.3367 -11% 35 35 0 40 40 0 40 0 80 158 78	787.6 128.7 0.92 170.6467 -5% 35 35 0 35 78 35 0 0 0 139 59	787.6 119.16 0.99 154.2383 -1% 35 35 0 35 35 0 35 0 120 149 29
Chiller Flow in GPM Condenser Flow in GPM Capacity in TR IKWITR Condenser Heat Rejection (TR) Heat balance (%) SST SDT Cathali Core Pressure inlet Cathali Core Pressure Outlet Cathali Core Pressure Outlet Cathali Core Pressure Outlet Suct Filter Press Diff Compr 1 Oil Filter Pressure @ load port on LOAD System Disch Press Oil Filter Pressure @ load port on LOAD System Disch Press Oil Filter Pressure @ load port on LOAD System Disch Press	572 787.6 119.6 1.02 229.7167 -49% 35 35 0 35 35 0 35 0 75 135 60	572 787.6 102.5 1.07 223.1533 -67% 35 35 0 30 30 0 30 0 70 135 65	787.6 107.2 0.87 206.745 -54% 35 35 0 30 0 30 0 30 0 70 135 65	787.6 107.2 0.94 183.7733 -35% 35 35 0 30 0 30 0 30 0 70 135 65	572 787.6 128.7 0.9 164.0833 -1% 35 30 0 35 30 5 5 35 30 5 70 135 65	35 35 0 35 35 0 90 135 45 80 135	787.6 120.7 0.94 147.675 9% 35 35 0 35 35 0 35 35 0 120 135 15 15	787.6 128.7 0.79 150.9567 4% 35 35 35 0 35 35 0 35 35 0 110 125 15 15 15 15 15 15 15 16 17 17 17 17 17 17 17 17 17 17	787.6 123.93 1.07 190.3367 -18% 35 35 0 40 40 0 40 0 95 150 55	787.6 131.08 1.07 190.3367 -11% 35 35 35 0 40 40 0 40 40 0 80 158 78	787.6 128.7 0.92 170.6467 -5% 35 35 35 0 35 78 35 0 0 0 80 139 80 139	787.6 119.16 0.99 154.2383 -1% 35 35 0 35 35 0 35 35 0 120 149 29 80 149
Chiller Flow in GPM Condenser Flow in GPM Capacity in TR IKWTR Condenser Heat Rejection (TR) Heat balance (%) SST SDT Cathall Core Pressure Inlet Cathall Core Pressure Outlet Cathall Core Pressure Outlet Cathall Core Pressure Outlet Suct Filter Pressure Inlet Suct Filter Pressure Inlet Suct Filter Pressure Outlet System Disch Press Oil Filter Pressure Outlet System Disch Press Oil Filter Pressure Outlet System Disch Press Oil Filter Pressure Outlet System Disch Press	572 787.6 119.6 1.02 229.7167 -49% 35 35 0 35 35 0 35 0 35 0 75 135 60	572 787.6 102.5 1.07 223.1533 -67% 35 35 0 30 30 0 30 0 70 135 65	787.6 107.2 0.87 206.745 -54% 35 35 0 30 30 0 30 0 70 135 65	787.6 107.2 0.94 183.7733 -35% 35 35 0 30 30 0 30 0 70 135 65	572 787.6 128.7 0.9 164.0833 -1% 35 30 0 35 30 5 35 30 5 70 135 65	35 35 0 35 35 0 90 135 45 80 135 55 55	787.6 128.7 0.94 147.675 9% 35 35 0 35 35 0 35 0 120 135 15 15 60	787.6 128.7 0.79 150.9567 4 ¹ / ₄ 35 35 0 35 35 0 110 125 15 15 15 15 15 15 15 15 15 1	787.6 123.93 1.07 190.3367 -18% 35 35 0 40 40 0 40 0 95 150 55 80 150 70	787.6 131.08 1.07 190.3367 -11% 35 35 0 40 40 0 40 40 0 158 78	787.6 128.7 0.92 170.6467 -5% 35 35 35 78 35 0 0 35 9 9 9 9 9 9 9 9 9 9 9 9 9	787.6 119.16 0.99 154.2383 -1% 35 35 0 35 35 0 35 35 0 120 149 29 80 149 69
Chiller Flow in GPM Condenser Flow in GPM Capacity in TR IKWTR Condenser Heat Rejection (TR) Heat balance (%) SST SDT Cathall Core Pressure Inlet Cathall Core Pressure Outlet Cathall Core Pressure Outlet Cathall Core Pressure Inlet Suct Filter Pressure Inlet Suct Filter Pressure Inlet Suct Filter Pressure Outlet Suct Filter Press Diff Compress Oil Filter Press Diff Ambient Temp Degree F DBT	572 787.6 119.6 1.02 229.7167 -49% 35 35 0 35 35 0 0 75 135 60	572 787.6 102.5 1.07 223.1533 -67% 35 35 0 30 0 0 30 0 0 70 135 65 65 135 70	787.6 107.2 0.87 206.745 -54% 35 35 0 30 30 0 70 135 65 102	787.6 107.2 0.94 183.7733 -35% 35 35 0 30 0 0 70 135 65 99	572 787.6 128.7 0.9 164.0833 -1% 35 30 0 5 35 30 5 70 135 65 75 135 60 94	572 787.6 128.7 0.77 141.1117 10% 35 35 0 35 35 0 0 35 35 0 0 90 135 45	787.6 120.7 0.94 147.675 9% 35 35 0 35 35 0 120 135 15 75 135 60 100	787.6 128.7 0.79 150.9567 4% 35 35 0 35 35 0 110 125 15 75 125 50 98	787.6 123.93 1.07 190.3367 -18% 35 35 0 40 40 0 0 95 150 55 80 150 93	787.6 131.08 1.07 190.3367 -11% 35 35 0 40 40 0 40 0 80 158 78 80 158 96	787.6 128.7 0.92 170.6467 -5% 35 35 35 78 35 0 0 0 80 139 59 100	787.6 119.16 0.99 154.2383 -1% 35 35 0 35 35 0 120 149 29 80 149 69 98
Chiller Flow in GPM Condenser Flow in GPM Capacity in TR IKWTR Condenser Heat Rejection (TR) Heat balance (%) SST SDT Cathali Core Pressure Inlet Cathali Core Pressure Outlet Cathali Core Pressure Outlet Cathali Core Pressure Outlet Cathali Core Pressure Inlet Suct Filter Pressure Inlet Suct Filter Pressure Outlet Suct Filter Press Diff Comprise Outlet Outlet Suct Filter Press Diff Comprise Outlet Suct F	572 787.6 119.6 1.02 229.7167 -49% 35 35 0 35 35 0 0 75 135 60 75 135 60 95 76	572 787.6 102.5 1.07 223.1533 -67% 35 35 0 30 0 0 30 0 0 70 135 65 65 135 70	787.6 107.2 0.87 206.745 -54% 35 35 30 30 0 30 30 0 70 135 65 70 135 65 102 74	787.6 107.2 0.94 183.7733 -35% 35 30 30 0 30 30 0 70 135 65 70 135 65 99 76	572 787.6 128.7 0.9 164.0833 -1% 35 30 0 35 30 5 37 30 5 35 30 5 35 36 65 77 135 60 94 78	572 787.6 128.7 0.77 141.1117 10% 35 35 0 35 35 0 0 35 35 0 0 135 45 80 135 55 96 76	787.6 120.7 0.94 147.675 9% 35 35 0 35 35 0 120 135 15 75 135 60 100 76	787.6 128.7 0.79 150.9567 4% 35 35 0 35 35 0 110 125 15 75 125 50 98 71	787.6 123.93 1.07 190.3367 -18% 35 35 0 40 40 0 0 95 150 55 80 150 70 93 79	787.6 131.08 1.07 190.3367 -11% 35 35 0 40 40 0 0 80 158 78 96 80	787.6 128.7 0.92 170.6467 -5% 35 35 35 78 35 0 0 0 139 59 100 77	787.6 119.16 0.99 154.2383 -1% 35 35 0 35 35 0 120 149 29 80 149 69 98 78
Chiller Flow in GPM Condenser Flow in GPM Capacity in TR IKWTR Condenser Heat Rejection (TR) Heat balance (%) SST SDT Cathali Core Pressure Inlet Cathali Core Pressure Outlet Cathali Core Pressure Outlet Cathali Core Pressure Outlet Suct Filter Pressure Inlet Suct Filter Pressure Outlet Suct Filter Press Diff Compress Outlet Suct Filter Press Diff Compress Outlet	572 787.6 119.6 1.02 229.7167 -49% 35 35 0 35 35 0 0 75 135 60 75 135 60 95 76	572 787.6 102.5 1.07 223.1533 -67% 35 35 0 0 30 0 0 70 135 65 65 135 70 100 77	787.6 107.2 0.87 206.745 -54% 35 35 0 30 30 0 30 0 70 135 65 70 135 65 102 74 1,4	787.6 107.2 0.94 183.7733 -35% 35 30 30 0 30 0 30 0 70 135 65 70 135 65 70 135 65	572 787.6 128.7 0.9 164.0833 -1% 35 30 0 35 30 5 35 30 5 70 135 65 75 135 60 94 78 1,3,4	35 35 0 35 35 0 90 135 45 80 135 55 96 76 1,3,4	787.6 120.7 0.94 147.675 9% 35 35 0 35 35 0 35 35 0 120 135 15 75 135 60 100 76 1,3,4	787.6 128.7 0.79 150.9567 4 ¹ / ₄ 35 35 35 0 35 35 0 110 125 15 75 125 50 98 71 1,3,4	787.6 123.93 1.07 190.3367 -18% 35 35 0 40 40 0 40 0 95 150 70 93 79 1,3,4	787.6 131.08 1.07 190.3367 -11% 35 35 0 40 40 0 40 0 80 158 78 80 158 96 80 1,3,4	787.6 128.7 0.92 170.6467 -5% 35 35 35 78 35 0 0 0 139 59 80 139 59 100 77 1,3,4	787.6 119.16 0.99 154.2383 -1% 35 35 0 35 35 0 35 35 0 120 149 29 80 149 69 98 78 1.3,4
Chiller Flow in GPM Condenser Flow in GPM Capacity in TR IKWTR Condenser Heat Rejection (TR) Heat balance (%) SST SDT Cathali Core Pressure Inlet Cathali Core Pressure Outlet Cathali Core Pressure Outlet Cathali Core Pressure Outlet Cathali Core Pressure Inlet Suct Filter Pressure Inlet Suct Filter Pressure Outlet Suct Filter Press Diff Comprise Outlet Outlet Suct Filter Press Diff Comprise Outlet Suct F	572 787.6 119.6 1.02 229.7167 -49% 35 35 0 35 35 0 0 75 135 60 75 135 60 95 76	572 787.6 102.5 1.07 223.1533 -67% 35 35 0 30 0 0 30 0 0 70 135 65 65 135 70	787.6 107.2 0.87 206.745 -54% 35 35 30 30 0 30 30 0 70 135 65 70 135 65 102 74	787.6 107.2 0.94 183.7733 -35% 35 30 30 0 30 30 0 70 135 65 70 135 65 99 76	572 787.6 128.7 0.9 164.0833 -1% 35 30 0 35 30 5 37 30 5 35 30 5 35 36 65 77 135 60 94 78	572 787.6 128.7 0.77 141.1117 10% 35 35 0 35 35 0 0 35 35 0 0 135 45 80 135 55 96 76	787.6 120.7 0.94 147.675 9% 35 35 0 35 35 0 120 135 15 75 135 60 100 76	787.6 128.7 0.79 150.9567 4% 35 35 0 35 35 0 110 125 15 75 125 50 98 71	787.6 123.93 1.07 190.3367 -18% 35 35 0 40 40 0 0 95 150 55 80 150 70 93 79	787.6 131.08 1.07 190.3367 -11% 35 35 0 40 40 0 0 80 158 78 96 80	787.6 128.7 0.92 170.6467 -5% 35 35 35 78 35 0 0 0 139 59 100 77	787.6 119.16 0.99 154.2383 -1% 35 35 0 35 35 0 35 35 0 120 149 29 80 149 69 98 78

Note:

Comparing 10/4/2012 to 24/4/2012

The average kw/ton consumption during pre test data comes to 0.975 and post test it comes to 0.85 The savings on KW/TON comes to almost 12%.

The Cooling Capacity in kw before treatment was $4.57 \times 572 \times 500 \times .000293 = 382.9$ COP = 382.9 / 106.2 = 3.60

The Cooling Capacity in kw AFTER treatment was $5.4 \times 572 \times 500 \times .000293 = 452.5$ COP = 452.5 / 109.5 = 4.13

	Before	After	Change		
Cooling Capacity in KW	382.9	452.5	18%	incr	ease
COP	3.6	4.13	15%	incr	ease
KW / Ton	0.975	0.85	12%	decr	ease

Comparing 10/4/2012 to 14/5/2012

The major difference is in Condensing water inlet temp.

As per Asia energy efficiency norms every 0.55 deg C increase power consumption by 3%.

In case of 14/5/2012 the temp recorded was 88.4 F = 33.3 Deg C. verses 83 F = 28.3 Deg C on 10/4/2012 a difference of 5 Deg C (33.3 - 28.3)

This would effectively have an impact of 5 / 0.55 x 3 = 27 %

In order to compare the results we need to add 27% on kwh recorded in pretest to arrive at kwh consumption at higher water inlet temp. at CONDENSER. IKW on 10/4/2012 was 106.2 adding 27% on this will make it 134.9 IKW

The Cooling Capacity in kw BEFORE treatment was 4.57 x 572 x 500 x .000293 = 382.9 COP = 382.9 / 134.9 = 2.84 kw/ton = 134.9 / 111 = 1.21

The Cooling Capacity in kw AFTER treatment was

5.27 x 572 x 500 x .000293 = 441.6 COP = 441.6 / 127.6 = 3.46 kw/ton = 127.6 / 125.7 = 1.01

	Before	After	Change		
Cooling Capacity in KW	382.9	441.6	15%	incr	ease
COP	2.84	3.46	22%	incr	ease
KW/Ton	1.21	1.01	16%	decr	ease