

Frigi-Tech™ Treatment
C.B. Richard Ellis Property
Cheyenne Business Complex
 Las Vegas, Nevada
 September 2006

Interpretation of Attached Treatment Results

Treatment Performed by CAMS, A Nevada Licensed Mechanical Contractor

Type of Unit: 5 Ton Trane Roof Top AC Unit – Gas Heat

Model Number: WCC060F300BF

Serial Number: R212PA02H

Building & Unit #: 1 – 5

Tenant: Werner Institute

<u>Summary of Results of Frigi-Tech Treatment:</u>	<u>Pre-Treatment</u>	<u>Post Treatment</u>
<p>➤ Ambient Outside Temperature <i>Meaning:</i> Same Weather Conditions Pre and Post Treatment.</p>	83°F	82°F
<p>➤ Compressor Amp Draw Reduced by 13.4% <i>Meaning:</i> Increased Lubricity of Oil Reduced Friction – Units Useful Life Extended and Reduced Energy Costs to Operate Unit</p>	15.67 Amps	13.57 Amps
<p>➤ Discharge Pressure Reduced by 14.29% <i>Meaning:</i> Reduced Discharge Pressure (Head Pressure) Indicates The Unit is Not Having to Work as Hard to Produce Conditioned Air – Compressor Operates Cooler – Unit’s Useful Life is Increased - Reduced Maintenance Due to Reduced Wear and Tear on Unit and Compressor</p>	245 PSI	210 PSI
<p>➤ Suction Pressure Reduced by 9.72% <i>Meaning:</i> Reduced Suction Pressure (Evaporator Core Temperature) Indicates The Evaporator Core is Colder as Indicated by Cooler Supply Air Being Discharged From Indoor Vents – Compressor Does Not Have to Run As Long or as Often to Produce the Conditioned Air to Tenant’s Space – Reduced Run Time = Energy Savings and The Units Useful Life is Increased – Reduced Maintenance Due to Reduced Wear and Tear on Unit and Compressor</p>	72 PSI	65 PSI



	<u>Pre Treatment</u>	<u>Post Treatment</u>
➤ Supply Air / Discharge Air Lowered by 3°F <i>Meaning:</i> Reduced Supply Air Means the Compressor Does Not Have to Run As Long or as Often to Satisfy the Desired Temperature in the Tenant’s Space – Reduced Run Time = Energy Savings and The Units Useful Life is Increased – Reduced Maintenance Due to Reduced Wear and Tear on Compressor	59.5°F	56.5°F
➤ Compressor Operating Temp Reduced by 10°F Lower Compressor Operating Temperature Extends Compressor’s Useful Life	135°F	125°F
➤ Kilowatts to Operate Unit	5.92	5.13
➤ Kilowatts Per Ton to Operate Unit	1.18	.93
➤ ASHRAE Calculation for Total Tons Produced	5	5.54
➤ Total Kilowatt Savings Post Treatment – 1.29 kWh		
➤ Annual kWh Savings Post Treatment – 21.84%(1) <i>Meaning:</i> Reduced Energy Costs to Operate Unit		
➤ ROI Assuming \$375 or \$75.00 Cost Per Treated Ton (2) – 9.13 Months		
➤ ROI if Average Reduced Compressor Run Time of 13% is Included (3)- 8.08 Months		

General Note: The overall results of the Frigi-Tech treatment to this unit is below the average results usually experienced when Frigi-Tech is applied to an HVAC system. The average outside ambient temperature of 82.5°F did not allow the full impact of the Frigi-Tech treatment to be measured. An outside ambient temperature of 90°F and above is ideal to show the full impact of Frigi-Tech treatments. However, that said, an overall savings of 21.84% with an ROI of nine (9) months is still very respectable results, especially when considering the reduced compressor run time is not included in those numbers and considering all the calculations on the attached page are according to ASHRAE Standard practices and Measurement and Verification (“M&V”) procedures.

Notes:

- (1) Annual savings calculated using ASHRAE and ARI standard calculations and published average annual hours of compressor run time in Las Vegas with the Tenant space controlled to 76°F. The reduced compressor run time is NOT included in the 21.48%.
- (2) Installation Labor and Post Follow Up Trip Costs Included in Cost Per Treated Ton.
- (3) 13% is the average compressor run time reduction taken from over 50 treated units in Las Vegas.

Frigi-Tech™ Treatment

Efficiency Measurement & Verification - ASHRAE Standard Procedures

For
C.B. Ellis - Werner Institute - Building #1

C.B. Ellis / Werner Institute Owner	Flynn Gallagher Complex Address	Las Vegas City	NV State	89129 Zip
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System Information

Make	Trane	S/N	R212PA02H	Type of Unit (i.e. DX, Split, Package, Ice Machine or Refrigeration)	RTU - DX
Model	WCC060F300BF	Tons	5	Unit #	5

Baseline Data

Treatment Date (xx/xx/xx)	09/25/06							
Volts	230							
Amps	<table border="1" style="display: inline-table; vertical-align: middle;"> <tr><td>Bk Or 1</td><td>16.50</td></tr> <tr><td>Yel or 2</td><td>15.00</td></tr> <tr><td>Bl or 3</td><td>15.50</td></tr> </table>	Bk Or 1	16.50	Yel or 2	15.00	Bl or 3	15.50	15.67 (Avg Compressor Amps)
Bk Or 1	16.50							
Yel or 2	15.00							
Bl or 3	15.50							
1, 2, or 3 Phase?	3							
Phase Calculation	1.73							
Power Factor - Note (1)	0.95							
Watts	5,922							
Kilowatts = Watts / 1000	5.92							
Baseline Return Air	72.5							
Baseline Discharge Air	59.5							
Delta-T (Return Air - Supply Air)	13							
Kilowatts to Run Unit	5.92							
Tons (Mfg. Specification)	5							
Pre-Treatment - kW / Ton	1.18							

Other Baseline Data

Outside Ambient Temp @ Unit (°F)	83.3
Suction Pressure	72
Discharge Pressure	245
Super-Heat	0
Compressor Temp.	135

Results

Baseline kW/Ton	1.18
Post-Treatment kW/Ton	0.93
Savings kW/Ton	0.26
Basic Savings/Baseline kW/Ton	21.84%
Unit Tons Equivalent Post Treatment	5.64
Total kW Savings for the Unit / kWh	1.29
Annual kWh (Pre Frigi-Tech)	3,463
Run Time - Annual Hrs. (ARI) - Las Vegas	20,508
% kWh Saved	21.84%
Annual kWh Savings With Frigi-Tech	4,480
Electricity Rate / kWh	0.11
Total Cost to Run Unit Pre-Treatment	\$2,255.90
Annual Post Treatment Cost to Operate	\$1,763.10
Annual Savings (3)	\$492.80 (Minimum Savings)
Cost To Perform Treatment	\$375.00
Return on Investment (ROI) In Months (3)	9.13

Notes:

Input Cells: _____
Automatically Calculated - Do Not Change: _____

(1) Use default value of .95 unless you have a unit-specific Power Factor value
(2) Pre-Treatment Delta-T - Post Treatment Delta-T
(3) Savings Without Decreased Compressor Run Time Included.

Location of Unit
Unit #1 is located directly behind the house.

Post-Treatment Data

Follow Up Date (xx/xx/xx)	10/09/06							
Volts	230							
Amps	<table border="1" style="display: inline-table; vertical-align: middle;"> <tr><td>Bk Or 1</td><td>14.50</td></tr> <tr><td>Yel or 2</td><td>12.90</td></tr> <tr><td>Bl or 3</td><td>13.30</td></tr> </table>	Bk Or 1	14.50	Yel or 2	12.90	Bl or 3	13.30	13.57 13.40% (Reduction)
Bk Or 1	14.50							
Yel or 2	12.90							
Bl or 3	13.30							
1, 2, Or 3 Phase?	3							
Phase Calculation Is	1.73							
Power Factor* (See Below)	0.95							
Watts	5,128							
Kilowatts = Watts / 1000	5.13							
Post Treatment Return Air	72.5							
Pre-Treatment Discharge Air	59.5							
Post Treatment Discharge Air	56.5							
Post Delta-T Difference - Note (2)	3							
CFM (400/ton) X 1.08	2,160							
BTU / Hr. Increase /	6,480							
Increased Tonnage (M38/L40) 12,000	0.54							
Increased Tonnage	0.54							
Tons (Mfg. Specification)	5							
Total Tonnage With Frigi-Tech	5.54							
Kilowatts to Run Unit	5.13							
Post Treatment - kW / Ton	0.93							

Other Post-Treatment Data

Outside Ambient Temp @ Unit (°F)	82	(1.30)
Suction Pressure	65	(7.00)
Discharge Pressure	210	(34.00)
Super-Heat	0	0.00
Compressor Temp.	125	-10

Decreased Compressor Run Time Calculations

Pre-Treatment kW/Ton	1.18
Est. Decreased Compressor Run Time (7)	13.00%
Run Time Post Treatment - Annual Hrs.	2,881
Run Time Hours Saved Annualized	582
Run Time Annualized Unit Savings	\$64.06
Annualized Savings From kW/Ton Reduction	\$492.80
Total Annual Savings Derived From Frigi-Tech (kW/Ton Reduction + Decreased Compressor Run Time)	\$658.86 24.68% % Savings
Estimated annual Savings	
Total ROI With kW/Ton + Decreased Comp Run Time - In Months	8.08

Notes Con't

(5) kW/Ton Savings and Delta-T Savings on Left Side of This Sheet are hard Numbers.
(6) For all Savings to be realized on monthly energy bills, the area being cooled must be able to hold temperature (thermostat set point) or some of the energy efficiencies will be used to satisfy the cooled space first, then savings will be realized on the monthly energy bill.
(7) Compressor Run Time Estimates are derived from multiple field tests performed over the past five (5) years. The average is actually 5% to 9% above the 13% used here.
(8) Decreased Compressor and other failures NOT included in savings/ROI either.

Initials: Client Date: _____ **A.C. Energy Solutions, LLC** Date: _____

By initialing this M&V Form I hereby acknowledge the results are true and valid and agree to abide by the terms of the Test Agreement executed on _____, 2006 by and between the Client and A.C. Energy Solutions, LLC