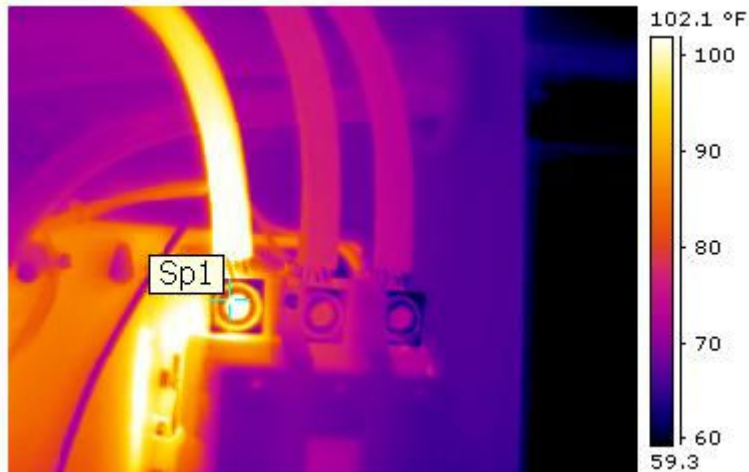


# Infrared Inspection for Pacific Crest Company



**Site: Chicago Plant  
821 – 33<sup>rd</sup> Avenue  
Chicago, IL 60601**

**February 20, 2004**



**Cascade Thermal Imaging, Inc.  
6312 150<sup>th</sup> Ave NE  
Redmond, WA 98052  
425-861-3887  
[www.Cascadethermal.com](http://www.Cascadethermal.com)**

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# Executive Overview



**Cascade Thermal Imaging, Inc.**  
**Redmond, WA 98052**  
**425-861-3887**  
**[www.Cascadethermal.com](http://www.Cascadethermal.com)**

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**Cascade Thermal Imaging, Inc.**  
**Redmond, WA 98052**  
**425-861-3887**

## Description of Severity Levels

**1-Critical** – Highest priority level. Potential danger to life and limb exists, as well as eminent danger to equipment. Equipment is likely to deteriorate and will experience failure, causing this equipment and possibly down line equipment to malfunction and/or fail if not addressed immediately.

**2 -Serious** – Equipment failure is inevitable without immediate attention. Repair should be expedited ASAP. Maintenance of this equipment should be scheduled at the very next shut down, within 30 to 60 days. Close daily monitoring is also suggested if this equipment is not redundantly backed up.

**3 -Important** – If this is not redundant equipment, repair should be scheduled ASAP. A problem exists on this equipment and should be addressed during the next scheduled shut down. Weekly monitoring is also suggested to detect and evaluate deterioration.

**4 -Minor** -Problem is apparent and needs to be monitored on a regular basis. This is a low priority problem and down time should not occur, but monitoring is suggested.

**5 -Normal** – Equipment has no apparent problem at this time. However as loads change and duty cycles increase, this level may also increase. Some level of monitoring is still recommended.



# Executive Summary Electrical

**Overview:**

**Pacific Crest , Chicago Plant**

The Infrared Electrical Inspection was performed by Cascade Thermal Imaging, by a certified infrared Thermographer. All of the items inspected are listed in this InspectTrend report. Any anomalies are listed in order of priority based on the component's temperature rise, as measured from a reference component of equal type and load at the time of the inspection. Cascade Thermal Imaging assumes no liability directly or indirectly as a result of this inspection.

**Current Inspection No: 1004      February 20, 2004**

Prior Inspection No: 1003      February 10, 2003

Priority	Temp Rise	Current Inspection	Prior Inspection	Percent of Change
1-Critical	91 - Above	0 = 0%	0 = 0%	NA
2-Serious	46 - 90	1 = 25%	2 = 100%	-50%
3-Important	21 - 45	2 = 50%	0 = 0%	NA
4-Minor	1 - 20	1 = 25%	0 = 0%	NA
5-Normal	0	0 = 0%	0 = 0%	NA
Total Tested Problems:		<b>4</b>	<b>2</b>	<b>100%</b>
Number of New Documented Problems:		3 = 75%	1 = 50%	200%
Number of Tested re-occurring Problems:		1 = 25%	1 = 50%	0%

Number of prior problems which were Not Tested this inspection : 1  
 Number of Total Open Problems : 4  
 Number of prior problems which tested Normal this inspection : 2

**Problem Severity Definitions:**

- Critical - Danger to life and limb, eminent danger to equipment
- Serious - Equipment failure is inevitable without immediate attention. Repair should be expedited ASAP
- Important - If this is not redundant equipment, repair should be scheduled ASAP.
- Minor - Problem is apparent and needs to be monitored on a regular basis.
- Normal - Equipment has no apparent problem at this time.

\* Summary of reoccurring problems on following page(s)

# Problem List by Temperature Rise



**Cascade Thermal Imaging, Inc.**

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### Prioritized List by Temperature Rise

Pacific Crest  
Chicago Plant

**Operation Priority Key**

CTO = Critical to operation  
ETO = Essential to operation  
NON = Non-essential to operation  
UNC = Un-Classified

Report Date: 4/27/2012

Prior Inspection No : 1003 February 10, 2003	Current Inspection No : 1004 February 20, 2004	Asset ID	Operation Priority	Prior Insp#	Prior Prob#	Temp Rise	Curr Prob#	Temp Rise	% Load	Repair Priority	Repair Status
Equipment: Main Building \ 1 Floor \ Main Electrical Vault \ Main Swithboard \ Main Breaker			CTO	1003	E 2	55 F	E 1	55 F	25%	2-Serious	Open
Component: A Phase line side wire lug connection on circuit breaker - 100 amp											
Equipment: West Tower \ 3 Floor West \ Electrical Room WT-3 \ Electrical Room WT L3-1			CTO			F	E 4	27 F		3-Important	Open
Component: A Phase load side wire lug connection on circuit breaker - 100 amp 765675675											
Equipment: Building A \ Electrical Room 777 \ Electrical panel 444			CTO			F	E 3	27 F		3-Important	Open
Component: B Phase Fuse Clip on Fuse 100A											
Equipment: Building A \ electrical panel			CTO			F	E 2	13 F		4-Minor	Open
Component: C Phase line side wire lug connection on circuit breaker - 100 amp											

# Problem Documentation



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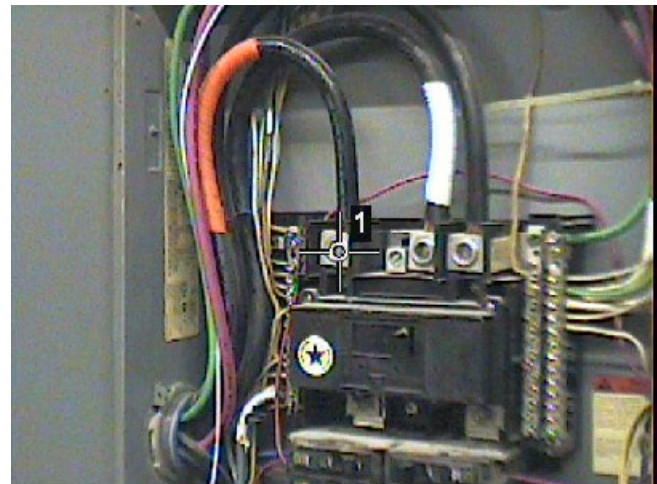
Page: 1  
 Report Date: 4/27/2012  
 Severity: Monitor

IR Image: IR\_0036.jpg  
 Photo: DC\_0037.jpg

# Infrared Inspection Report

Pacific Crest  
 Chicago Plant

Asset ID:                      Barcode:  
 Location: Main Building  
                   1 Floor  
                   Main Electrical Vault  
                   Main Switchboard



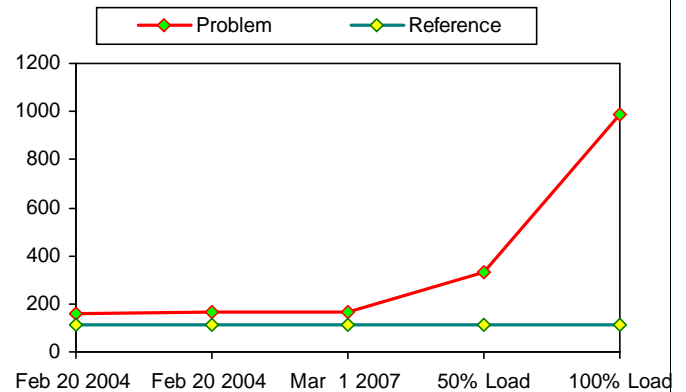
Problem	Reference	Temperature Difference	Ambient Temperature
A Phase: 165 F	C Phase: 110 F	55 F	78

**Load Test Results:**

A Phase: 25                      Neutral:  
 C Phase: 25                      Rated Load: 100  
    % Rated Load: 25

**Problem:**

A Phase line side wire lug connection on circuit breaker - 100 amp



**Recommendation:**

History of Temp Rises and Loads Tested vs. Normalized Load to 50%

Mar 1 2007 : 55F@25% vs 220F@50% / 15% Chg in 1105 Days  
 Feb 20 2004 : 55F@25% vs 220F@50% / 15% Chg in 0 Days  
 Feb 20 2004 : 48F @25% vs 192F@50%





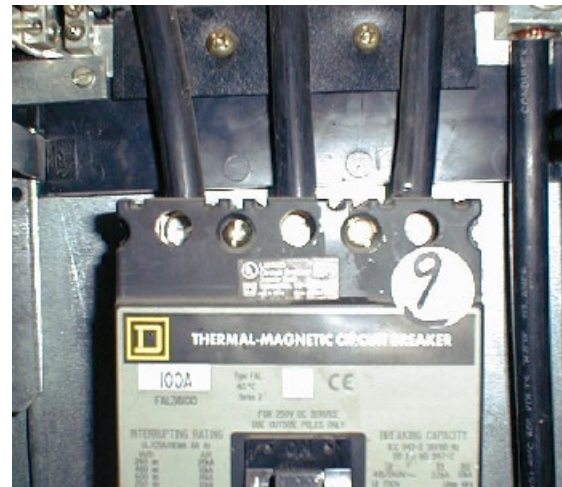
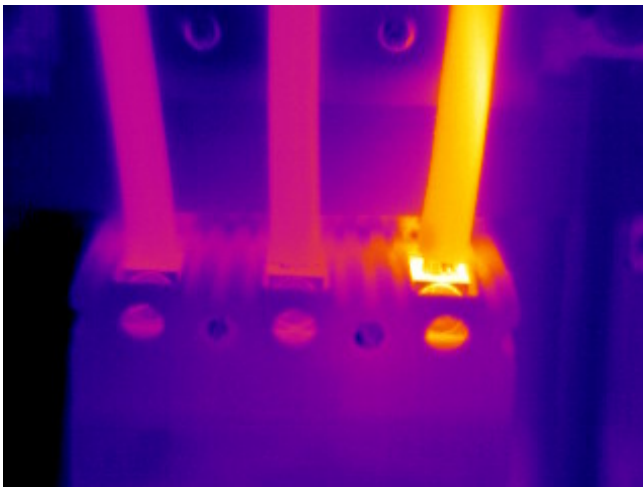
Page: 2  
 Report Date: 4/27/2012  
 Severity: Monitor

IR Image: IR101.bmp  
 Photo: Ph101a.jpg

# Infrared Inspection Report

Pacific Crest  
 Chicago Plant

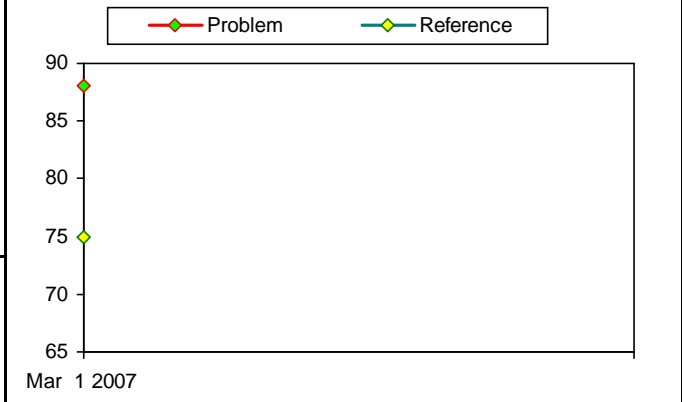
Asset ID:                      Barcode:  
 Location: Building A  
    electrical panel



Problem	Reference	Temperature Difference	Ambient Temperature
A Phase: 88 F	C Phase: 75 F	13 F	68

**Load Test Results:**

A Phase:                      Neutral:  
 C Phase:                      Rated Load:  
    % Rated Load:



**Problem:**

C Phase line side wire lug connection on circuit breaker - 100 amp

History of Temp Rises and Loads Tested vs. Normalized Load to 50%

**Recommendation:**

Mar 1 2007 : No load information



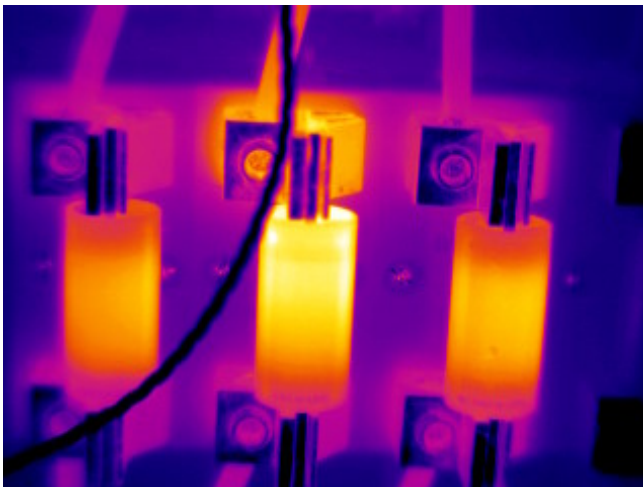
Page: 3  
 Report Date: 4/27/2012  
 Severity: Monitor

IR Image: IR100.bmp  
 Photo: Ph100a.jpg

# Infrared Inspection Report

Pacific Crest  
 Chicago Plant

Asset ID:                      Barcode:  
 Location: Building A  
                   Electrical Room 777  
                   Electrical panel 444



Problem	Reference	Temperature Difference	Ambient Temperature
B Phase: 125 F	C Phase: 98 F	27 F	68

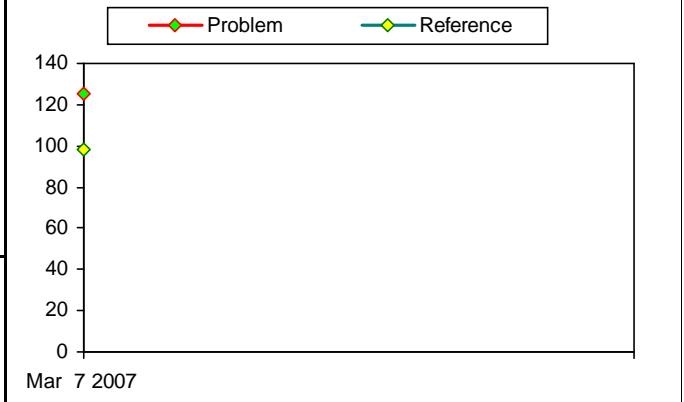
**Load Test Results:**

**B Phase:**                      **Neutral:**  
**C Phase:**                      **Rated Load:**  
    **% Rated Load:**

**Problem:**

B Phase Fuse Clip on Fuse 100A

**Recommendation:**



History of Temp Rises and Loads Tested vs. Normalized Load to 50%

Mar 7 2007 : No load information



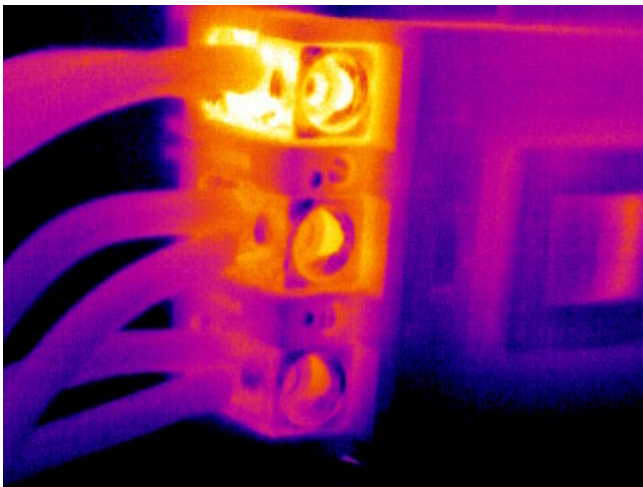
Page: 4  
 Report Date: 4/27/2012  
 Severity: Monitor

IR Image: B0213-05.bmp  
 Photo: 12020014.JPG

# Infrared Inspection Report

Pacific Crest  
 Chicago Plant

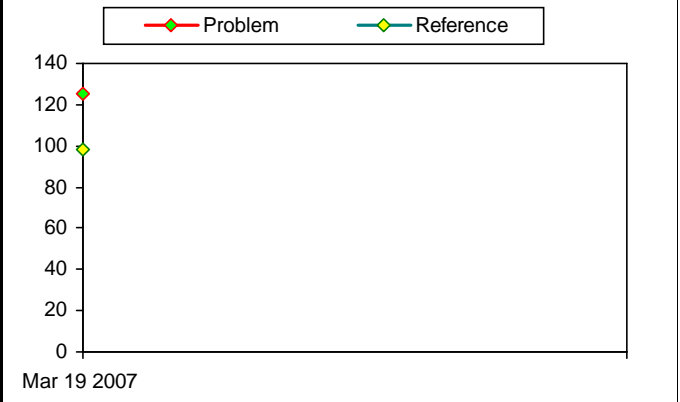
Asset ID:                      Barcode:  
 Location: West Tower  
                  3 Floor West  
                  Electrical Room WT-3  
                  Electrical Room WT L3-1



Problem	Reference	Temperature Difference	Ambient Temperature
A Phase: 125 F	B Phase: 98 F	27 F	68

**Load Test Results:**

**A Phase:**                      **Neutral:**  
**B Phase:**                      **Rated Load:**  
    **% Rated Load:**



**Problem:**

A Phase load side wire lug connection on circuit breaker - 100 amp 765675675

**Recommendation:**

Mar 19 2007 : No load information

# Work Orders



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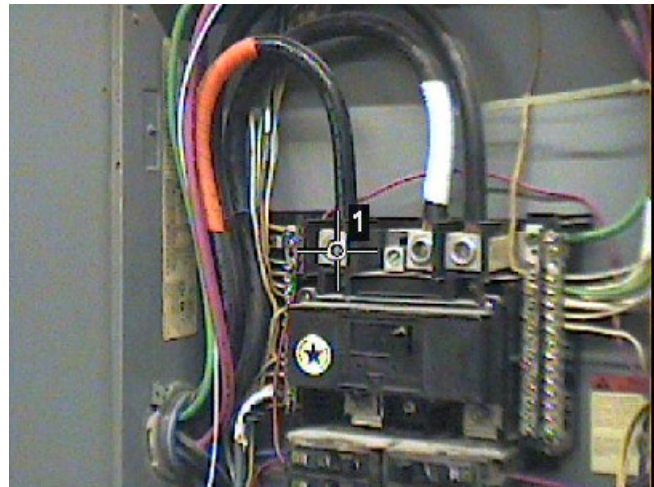
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<b>Page: 1</b>
<b>Report Date: 4/27/2012</b>
<b>Severity: Monitor</b>

# Infrared Inspection Work Order

<b>Pacific Crest Chicago Plant</b>	<b>Asset ID:</b> <b>Barcode:</b> <b>Location: Main Building</b> <b>1 Floor</b> <b>Main Electrical Vault</b> <b>Main Swithboard</b>
--	--



Infrared Filename	Infrared Date	Photo Filename	Photo Date
IR_0036.jpg	4/27/2012	DC_0037.jpg	8/27/2003

Problem	Reference	Temperature Difference
A Phase: 165 F	C Phase: 110 F	55 F

**Problem:** A Phase line side wire lug connection on circuit breaker - 100 amp

---

**Recommendation:**

---

**Repaired By:** \_\_\_\_\_ **Repair Date:** \_\_\_\_\_

---

**Repair Notes:**

---

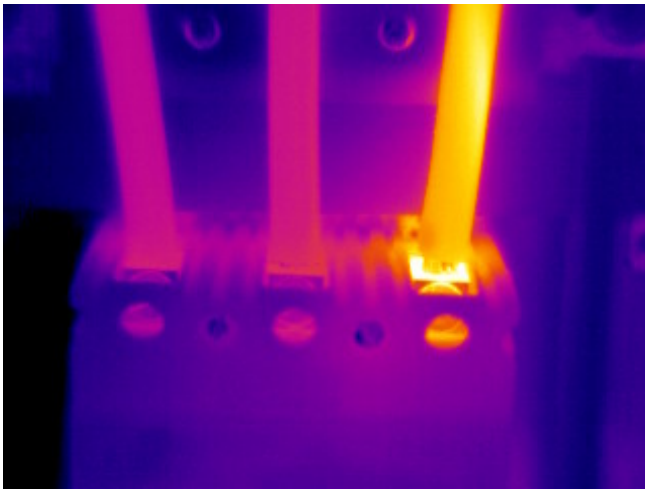


---



# Infrared Inspection Work Order

<b>Pacific Crest Chicago Plant</b>	<b>Asset ID:</b> _____ <b>Barcode:</b> _____ <b>Location:</b> Building A electrical panel
--	---



<b>Infrared Filename</b>	<b>Infrared Date</b>	<b>Photo Filename</b>	<b>Photo Date</b>
IR101.bmp	2/13/2001	Ph101a.jpg	4/27/2012

<b>Problem</b>	<b>Reference</b>	<b>Temperature Difference</b>
A Phase: 88 F	C Phase: 75 F	13 F

**Problem:** C Phase line side wire lug connection on circuit breaker - 100 amp

**Recommendation:**

**Repaired By:** \_\_\_\_\_ **Repair Date:** \_\_\_\_\_

**Repair Notes:**

---



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Page: 3

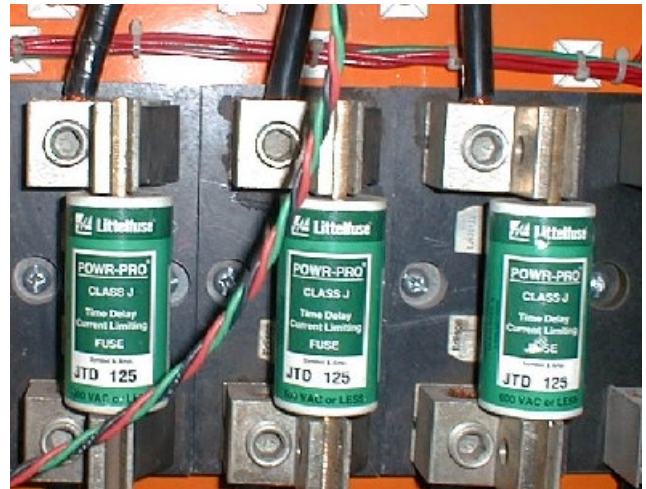
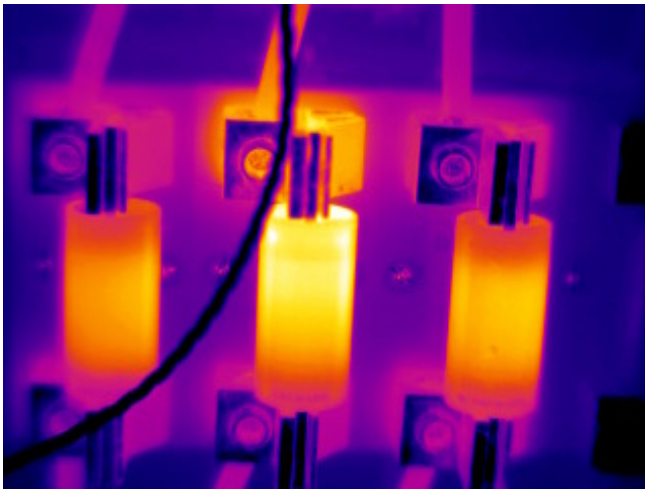
Report Date: 4/27/2012

Severity: Monitor

# Infrared Inspection Work Order

Pacific Crest  
Chicago Plant

Asset ID:                      Barcode:  
Location: Building A  
   Electrical Room 777  
   Electrical panel 444



Infrared Filename	Infrared Date	Photo Filename	Photo Date
IR100.bmp	2/21/2001	Ph100a.jpg	4/27/2012

Problem	Reference	Temperature Difference
B Phase: 125 F	C Phase: 98 F	27 F

**Problem:** B Phase Fuse Clip on Fuse 100A

**Recommendation:**

**Repaired By:**

**Repair Date:**

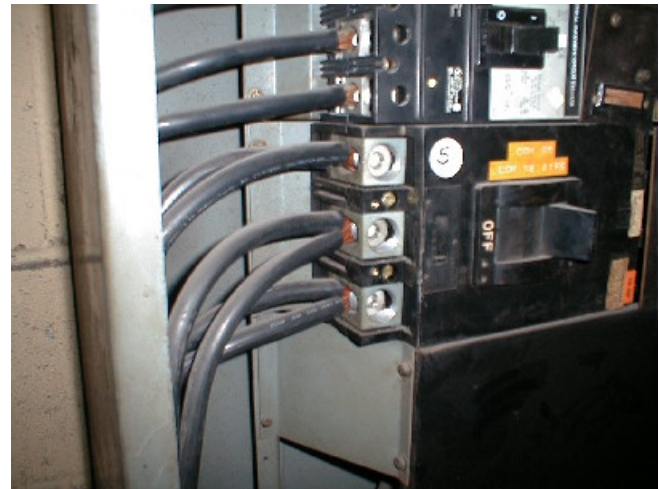
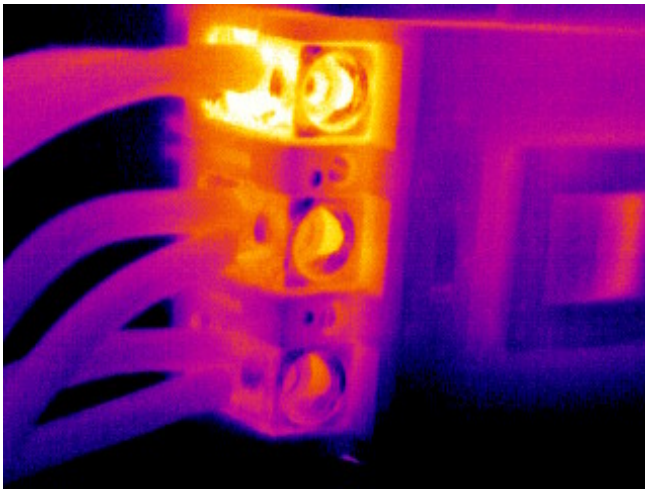
**Repair Notes:**



<b>Page: 4</b>
<b>Report Date: 4/27/2012</b>
<b>Severity: Monitor</b>

# Infrared Inspection Work Order

<b>Pacific Crest Chicago Plant</b>	<b>Asset ID:</b> <b>Barcode:</b> <b>Location:</b> West Tower 3 Floor West Electrical Room WT-3 Electrical Room WT L3-1
--	--



Infrared Filename	Infrared Date	Photo Filename	Photo Date
B0213-05.bmp	2/13/2001	12020014.JPG	12/2/2001

Problem	Reference	Temperature Difference
A Phase: 125 F	B Phase: 98 F	27 F

<b>Problem:</b> A Phase load side wire lug connection on circuit breaker - 100 amp 765675675	
<b>Recommendation:</b>	
<b>Repaired By:</b>	<b>Repair Date:</b>
<b>Repair Notes:</b>	



# Inspection Inventory



**Cascade Thermal Imaging, Inc.**  
**Redmond, WA 98052**  
**425-861-3887**  
**[www.Cascadethermal.com](http://www.Cascadethermal.com)**

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**Pacific Crest  
Chicago Plant**

## Current Inspection Inventory Status by Inspection Order

### Operation Priority Key

CTO = Critical to operation  
ETO = Essential to operation  
NON = Non-essential to operation  
UNC = Un-Classified

### Equipment Test Status Key

TBT = To Be Tested  
NT/NL = Not Tested/No Load  
NT/TC = Not Tested/Time Constraint  
NT/UR = Not Tested/Under Repair  
NT/LO = Not Tested/Locked Out  
NT/NA = Not Tested/Not Available  
NT/TC = Not Tested/Time Constraint  
NT/NS = Not Tested/Not Specified  
NSFI = Not Selected for this insp.

**Report Date: 4/27/2012**

**Inspected By :** Joe Thermographer

Prior Inspection No: 1003  
Current Inspection No: 1004  
Total # of Equipment: 53  
Equipment Tested this inspection: 23

Tested	Equipment Name	Equipment Priority	Problem #	Barcode	Asset ID	Test Status Notes
TBT	Outside Service Entrance	CTO				
TESTED	Pole 555-808-3421	CTO				
NTNA	Pad Mount TSFR 325-453	CTO				
TBT	West Tower	CTO				
TBT	1 Floor West	CTO				
TBT	Electrical Room WT-1	CTO				
TESTED	Lighting Panel WT L1-1	CTO				
TESTED	Lighting Panel WT L1-2	CTO				
TESTED	Lighting Panel WT L1-3	CTO				
TESTED	Lighting Panel WT L1-4	CTO				
TBT	2 Floor West	CTO				
TBT	Electrical Room WT-2	CTO				
TESTED	Electrical Room WT L2-1	CTO				
TESTED	Electrical Room WT L2-2	CTO				
NTNL	Electrical Room WT L2-3	CTO				
TBT	3 Floor West	CTO				
TBT	Electrical Room WT-3	CTO				
TESTED	Electrical Room WT L3-1	CTO	E4			
TBT	Electrical Room WT L3-2	CTO				
TBT	Electrical Room WT L3-3	CTO				
TBT	West Elevator Penthouse	CTO				
NTNL	Breaker Panel LV-1	CTO				
TBT	Main Building	CTO				
TBT	1 Floor	CTO				
TBT	Main Electrical Vault	CTO				
TBT	Main Swithboard	CTO				
TESTED	Main Breaker	CTO	E1			
TESTED	North Tower Breaker	CTO				
TESTED	South Tower Breaker	CTO				
TESTED	Main Building Breaker	CTO				
TESTED	Distr. Panel 1A Breaker	CTO				
TESTED	Distr. Panel 1A	CTO				
TESTED	Lighting Panel L1	CTO				
TESTED	Lighting Panel L2	CTO				
TBT	Lighting Panel L3	CTO				
TBT	MCC 1	CTO				
TESTED	Sup Fan 1	CTO				
TBT	Exh Fan 1	CTO				
TBT	Mechanical Room	CTO				
TBT	Main Chill Water Pump Motor	CTO				
TBT	Roof	CTO				
TBT	Building A	CTO				
TBT	Electrical Room 555	CTO				
TESTED	Electrical Panel 123	CTO				
TESTED	Electrical panel 444	CTO		987	88888	



**Pacific Crest  
Chicago Plant**

## Current Inspection Inventory Status by Inspection Order

### Operation Priority Key

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NSFI = Not Selected for this insp.

Prior Inspection No: 1003

Current Inspection No: 1004

Total # of Equipment: 53

Equipment Tested this inspection: 23

**Report Date: 4/27/2012**

**Inspected By :** Joe Thermographer

Tested	Equipment Name	Equipment Priority	Problem #	Barcode	Asset ID	Test Status Notes
TESTED	Electrical panel 445	CTO				
TBT	Electrical Room 777	CTO				
TESTED	Electrical Panel 123	CTO				
TESTED	Electrical panel 444	CTO	E3			
TESTED	electrical panel	CTO	E2			

# Inspection History



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Pacific Crest  
Chicago Plant

# Inspection History

## Equipment Test Status Key

### Problem Type Key

- E = I/C Electrical
- TD = T/D Electrical
- M = Mechanical
- V = Visual Inspection

- TBT = To Be Tested
- NT/NL = Not Tested/No Load
- NT/TC = Not Tested/Time Constraint
- NT/UR = Not Tested/Under Repair
- NT/LO = Not Tested/Locked Out
- NT/NA = Not Tested/Not Available
- NT/TC = Not Tested/Time Constraint
- NT/NS = Not Tested/Not Specified
- NSFI = Not Selected for this insp.

Prior Inspection No: 1003

Current Inspection No: 1004

Report Date: 4/27/2012

### Inspection # and Inspection Date

Equipment Designation	Asset ID	1000 2/7/2000	1001 2/12/2001	1002 2/11/2002	1003 2/10/2003	1004 2/20/2004
Building A						TBT
electrical panel						E2
Electrical Room 555						TBT
Electrical Panel 123						TESTED
Electrical panel 444	88888					TESTED
Electrical panel 445						TESTED
Electrical Room 777						TBT
Electrical Panel 123						TESTED
Electrical panel 444						E3
Main Building		TBT	TBT	TBT	TBT	TBT
1 Floor		TBT	TBT	TBT	TBT	TBT
Main Electrical Vault		TBT	TBT	TBT	TBT	TBT
Distr. Panel 1A		TBT	NTTC	NTTC	TBT	TESTED
Lighting Panel L1		TBT	NTTC	NTTC	TBT	TESTED
Lighting Panel L2		TBT	NTTC	NTTC	TBT	TESTED
Lighting Panel L3		TBT	NTTC	NTTC	TBT	TBT
Main Swithboard		TBT	TBT	TBT	TBT	TBT
Distr. Panel 1A Breaker		TBT	TESTED	NTTC	TBT	TESTED
Main Breaker		TBT	NTNL	E3	E2	E1
Main Building Breaker		TBT	TESTED	NTTC	TBT	TESTED
North Tower Breaker		TBT	TESTED	NTTC	TBT	TESTED
South Tower Breaker		TBT	NTNL	NTTC	TBT	TESTED
MCC 1		TBT	TBT	TBT	TBT	TBT
Exh Fan 1		E2	E2	E2	TBT	TBT
Sup Fan 1		E1	E1	E1	E1	TESTED
Mechanical Room		TBT	TBT	TBT	TBT	TBT
Main Chill Water Pump Motor		TBT	TESTED	NTTC	TBT	TBT
Roof		TBT	TBT	TBT	TBT	TBT
Outside Service Entrance		TBT	TBT	TBT	TBT	TBT
Pad Mount TSFR 325-453		TBT	NTTC	TESTED	TBT	NTNA
Pole 555-808-3421		TD1	TD1	TESTED	TBT	TESTED
West Tower		TBT	TBT	TBT	TBT	TBT
1 Floor West		TBT	TBT	TBT	TBT	TBT
Electrical Room WT-1		TBT	TESTED	TBT	TBT	TBT
Lighting Panel WT L1-1		TBT	E3	TESTED	TBT	TESTED



Pacific Crest  
Chicago Plant

## Inspection History

### Problem Type Key

E = I/C Electrical  
TD = T/D Electrical  
M = Mechanical  
V = Visual Inspection

Prior Inspection No: 1003  
Current Inspection No: 1004

### Equipment Test Status Key

TBT = To Be Tested  
NT/NL = Not Tested/No Load  
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NT/UR = Not Tested/Under Repair  
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NT/TC = Not Tested/Time Constraint  
NT/NS = Not Tested/Not Specified  
NSFI = Not Selected for this insp.

Report Date: 4/27/2012

### Inspection # and Inspection Date

Equipment Designation	Asset ID	1000	1001	1002	1003	1004
		2/7/2000	2/12/2001	2/11/2002	2/10/2003	2/20/2004
Lighting Panel WT L1-2		TBT	TESTED	TESTED	TBT	TESTED
Lighting Panel WT L1-3		TBT	TESTED	TESTED	TBT	TESTED
Lighting Panel WT L1-4		TBT	TESTED	TESTED	TBT	TESTED
2 Floor West		TBT	TBT	TBT	TBT	TBT
Electrical Room WT-2		TBT	TBT	TBT	TBT	TBT
Electrical Room WT L2-1		TBT	TESTED	TESTED	TBT	TESTED
Electrical Room WT L2-2		TBT	TESTED	TESTED	TBT	TESTED
Electrical Room WT L2-3		TBT	TESTED	TESTED	TBT	NTNL
3 Floor West		TBT	TBT	TBT	TBT	TBT
Electrical Room WT-3		TBT	TBT	TBT	TBT	TBT
Electrical Room WT L3-1		TBT	TESTED	TESTED	TBT	E4
Electrical Room WT L3-2		TBT	TESTED	TESTED	TBT	TBT
Electrical Room WT L3-3		TBT	TESTED	TESTED	TBT	TBT
West Elevator Penthouse		TBT	TBT	TBT	TBT	TBT
Breaker Panel LV-1		TBT	NTTC	NTTC	TBT	NTNL

# Baseline Trending



**Cascade Thermal Imaging, Inc.**  
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**425-861-3887**  
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Chicago Plant

# Infrared Baseline Equipment Report

Page: 1  
Report Date: 4/27/2012

Prior Inspection #: 1003  
Prior Inspection Date: 2/10/2003  
Current Inspection #: 1004  
Current Inspection Date: 2/20/2004

### Operation Priority Key

CTO = Critical to operation  
ETO = Essential to operation  
NON = Non-essential to operation  
UNC = Un-Classified

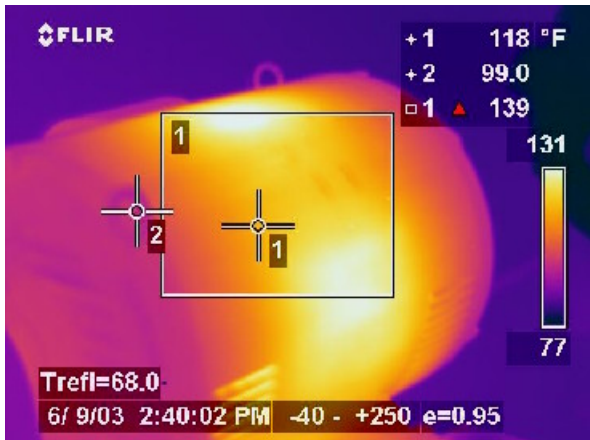
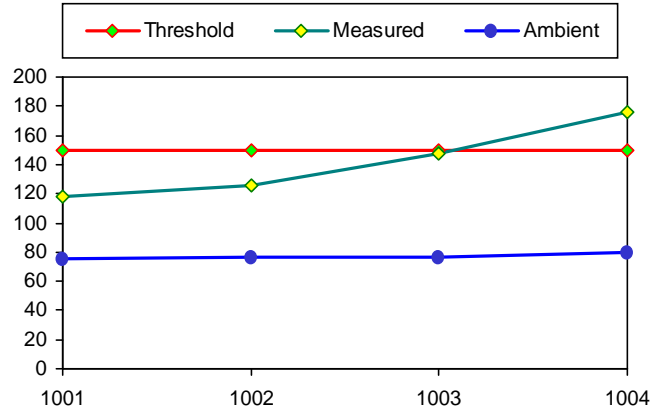
Equipment Location: Main Building \ 1 Floor \ Mechanical Room \ Main Chill Water Pump Motor

Equipment ID:

Barcode:

Manufacturer:

Operation Priority: CTO



IR\_060903\_003.jpg



DC\_060903\_005.jpg

### Inspection History:

Inspection No	Date Inspected	Test Status	Measured Temp	Threshold Temp	Ambient Temp	Status Note	Customer Notes
1001	2/19/2004	TESTED	118 F	150 F	75 F		
1002	2/19/2004	NTTC	126 F	150 F	77 F		
1003	2/19/2004	TBT	147 F	150 F	77 F		
1004	3/1/2007	TESTED	176 F	150 F	80 F		