Ti Thermal Imaging LTD

Unit 8, Weybridge Business Centre, 66 York Road, Weybridge, Surrey, KT13 9DY

Tel: 0845 458 6315 Fax: 0871 9004978 E-mail: info@thermalimaging.co.uk Web: www.thermalimaging.co.uk

RISK MANAGEMENT THERMOGRAPHIC INSPECTION FOR:

THE PINNACLE – LIGHTING LEVEL 2A

LOCATION:

MILTON KEYNES
BUCKINGHAMSHIRE

DATE:

15/01/12

TI JOB NO.

TI-15367

Introduction to your Ti Thermal Imaging LTD risk management thermographic inspection

This electrical, mechanical and visual thermographic inspection has been carried out using a Flir P-series camera with data input onto a purpose built tablet PC platform for instantaneous results and report generation. A Webmanager houses all data that is permanently accessible over the internet allowing the user to track and monitor problems and their repair status.

This is a guide which should help you to fully understand how the inspection was performed and how the results were achieved

- The framework to this inspection can either be generated onsite during the inspection, building the list during the survey or a list exported to MS Excel can be imported into the tablet PC to provide comprehensive information such as item locations, tag numbers, work orders etc.
- Images are captured of all online items and a record is kept of temperature data to enable a trending programme to begin. Subsequent inspections will see the addition of a new image for each inspection so that temperatures can be monitored.
- Baseline images and anomalous pieces of equipment have been recorded as one of three types of inspection:
    - T/D Electrical – This covers transmission, distribution and instrumentation
    - Mechanical – This covers all mechanical/moving/rotary equipment
    - Visual – This covers all visual findings only
- All component baseline images are taken under normal load conditions.
- Panels have been removed where safe and possible to do so and where covered by the Permit To Work system. In addition load readings have been captured using a clamp meter only where covered by the Permit to Work system and where safe to do so. In some cases load readings have not been taken so these are left as blank intentionally so that the normalised graph will function correctly. If a 0 value is inserted then a fictitious reading will be obtained. An explanation of the Normalization graph is listed later.
- A complete inventory will be built of the equipment giving Test Status at the time of the inspection allowing transparency to the inspection and what occurred with each piece of equipment. These Test Status include:

TBT	To Be Tested	These appear in bold on the thermographers tablet to identify which items are still to be tested
TESTED	TESTED	Marked as Tested once images and faults have been documented
NTLO	Not Tested Locked Out	Selected if the item could not be opened safely
NTNL	Not Tested No Load	Selected if the item was offline at the time of inspection and could not be started
NTNA	Not Tested Not Available	Selected if the item is no longer available
NTNS	Not Tested Not Specified	Selected if an item is found to be unspecified
NTUR	Not Tested Under Repair	Selected if an item is currently under a repair procedure
NSFI	Not Scheduled For Inspection	Selected if an item is not due or needed to be tested
NTTC	Not Tested Time Constraint	Selected if the inspection has not been allocated enough time or access problems have cause it to overrun.

- Each piece of equipment has been allocated a priority to operation taken from the following non-changeable list:

CTO	Critical To Operation
ETO	Essential to Operation
NON	Non-Essential To Operation
UNC	Unclassified

- Emissivity is the value in which an object emits it's infra-red radiation and is also directly proportional to it's reflectivity. For example if an item had 0.9 emissivity then it's reflectivity would be 0.1. This inspection uses an emissivity set to 0.96 because this value is found to be suitable when assessing the temperatures of most electrical components due to them usually being housed in plastic or rubber which has a similar emissivity value. Emissivity is only changed were absolutely necessary. An example of this would be copper busbar with no electrical tape/labels attached.
- Anomalous components are assessed in one of two ways.

1. With the use of Reference components operating under similar conditions: These would include using line/load sides or different phases with similar load patterns to compare an anomalous component with another which has a more normal temperature gradient.
2. The use of load correction formulas which results in the following value:
   - Estimated fault component temp at full load (°C) – This estimates the temperature that the component would be running at if it was loaded at 100%. This value has been arrived at using a formula correction using anomalous and ambient temperatures, measured and maximum load.

- The value of 75°C has been taken from the British Standard BS7671 (*.*). This value is the recommended cable temperatures of between 65-85C at full load.
- Using this value it is possible to use a fault rating system to grade the severity of the fault. The following fault ratings and colour coding have been used:

Fault Ratings	minor	Important	Serious	Critical
Temp above ref temp or above 75°C	0-7	8-15	16-32	33+

- This value of 75°C is also used as a threshold temperature for the captured baseline images. In certain circumstances, this value has either been increased to 100°C or decreased to 50°C. The value has been increased to 100°C where the thermographer deems this a more appropriate value due to an elevated cubicle ambient or where components are tightly arranged together causing uplift in operating temperature. The value has been decreased to 50°C where the thermographer deems this a more appropriate value due to panel covers not being able to be removed and only the surface of the component can be seen and not the actual connections. In certain circumstances where SP2 Reference temperature cannot be suitably obtained, the value has been set from the BS Ref of 75°C as the SP2 reference temp.
- The normalization graph simulates temperature at 0, 50% and 100% load and is designed to assist the prediction of component operating temperature where a reference component has been used. According to Ohms law $P=I^2R$ but the graph is designed as a quick glance tool to assist in viewing the potential that a problem may become.
- Where anomalous components are found, a knowledge base library is used to house specific statements that ensure synergy between inspections for faults, root causes and recommended remedial actions.
- **Formulas:**

Normalization Graph	$P=I^2R$ where P=Power, I=Current, R=Resistance
T load corrected	Let (Tm – Tamb) = Trise ; I meas / I full = LF (Load factor) Then: Tcorr = (((1/ LF)^1.68+(1/ LF)^1.46)/2)*Trise + Tamb

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Report pages:

The combined report contains the following pages:

NB Page numbers have been left in for additional ID purposes. Page numbers run in sequence beginning at #1 for each section but do not run in sequence for the whole combined report.

1. Cover Page for TD Electrical: This is a summary report which offers the amount of problems found and their severity grade. It is for a complete site overview.
2. List of all open problems: This is the full list of equipment found with problems and includes their locations and tag numbers
3. Inspection Inventory: This is a full inventory of equipment inspected, their ID numbers and their test status.
4. Documentation pages: These pages include the details of all anomalies found for individual pieces of equipment.
5. Cost Benefit Analysis: This lists the possible cost benefits of finding the faults before they have failed and estimates how much cost has been saved by predicting a failure before it happens. These values are deliberately very conservative and loss of production has not been taken into account.

The Webmanager contains all of the above reports and lists problems, cost benefits and baseline trends in easy to source locations. To view your current and previous inspections, please logon to your personal Webmanager using your username and password already supplied. If you do not have this please contact Ti on 0845 4586315.

http://193.228.155.40/inspectrend or www.thermalimaging.co.uk then 'Login to Webmanager' tab

Webmanager tutorial snapshot:

Navigate to the area you need using one of the 6 tabs at the top of the screen:

REP'S/ELECTRICIANS ENTER CORRECTIVE WORKORDERS INTO WEBMANAGER HERE →	**Overview**	Summary listing all problems active or closed with severity grade.
	Inspection	Select site and then hit search to reveal historical list of inspections. Select 'more' next to the inspection that you want to see further details of. At the bottom is a 'reports' button that highlights in red, hit this to reveal a list of your reports. **Your combined report will be prefixed by 1_ to ensure it the very first report.**
	Inventory	Select site and then hit search to reveal a full inventory of surveyed equipment, test status, priority to site operation and last inspected date.
	Problems	Select site and then hit search to reveal a list of all open/closed problems found with severity grade, repair status and date found. Attach a work order here for remedial action and view the problem in its own individual report page.
	Cost Benefit	Select site and then hit search to reveal the savings you have made by having this inspection carried out. Typical ratio is spend £1 and save £4.
	Baseline	Select site and then hit search to reveal baseline trend data for all equipment surveyed. Here you can view individual trend reports for each piece of equipment where the latest IR/DC images are displayed with a historical temperature graph for baseline temp/current insp. Temp and threshold temp.

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Cover Page for T/D Electrical

Executive and Operations summary of problems found

Also available on your Webmanager Overview page
Please use your login details provided

http://193.228.155.40/inspectrend

INFRARED THERMOGRAPHIC INSPECTION
OF
TRANSMISSION / DISTRIBUTION
ELECTRICAL INSPECTION

Report Date: 23/01/2012

Provided for

[redacted]

Overview:

The Infrared Electrical Inspection was performed by TI Thermal Imaging, by a certified infrared Thermographer. All of the items inspected are listed in this InspecTrend 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. TI Thermal Imaging assumes no liability directly or indirectly as a result of this inspection.

Current Inspection No: 1732 **January 15, 2012**

Prior Inspection No:

Priority	Temp Rise	**Current Inspection**	Prior Inspection	Percent of Change
1-Critical	33 - Above	**0 = 0%**	NA	NA
2-Serious	16 - 32	**0 = 0%**	NA	NA
3-Important	8 - 15	**1 =100%**	NA	NA
4-Minor	1 - 7	**0 = 0%**	NA	NA
5-Normal	0	**0 = 0%**	NA	NA
	Total Tested Problems:	**1**	NA	NA
	Number of New Documented Problems:	1 =100%	NA	NA
	Number of Tested re-occuring Problems:	0 = 0%	NA	NA

Number of prior problems which were Not Tested this inspection : NA

Number of Total Open Problems : **1**

Number of prior problems which tested Normal this inspection : NA

I hereby certify the above project was inspected by myself or under my direction and that the enclosed data is the direct result of this inspection.

TI Thermal Imaging

James, Humphries

Certification Level/No.:

* Summary of reoccuring problems on following page(s)

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Cover Page for Visual

Executive and Operations summary of problems found

Also available on your Webmanager Overview page
Please use your login details provided

http://193.228.155.40/inspectrend

INFRARED THERMOGRAPHIC INSPECTION
OF
VISUAL PROBLEMS

Report Date: 23/01/2012

Provided for

[redacted]

Overview:

The Infrared Inspection was performed by TI Thermal Imaging, by a certified infrared Thermographer. All of the items inspected are listed in this InspecTrend 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. TI Thermal Imaging assumes no liability directly or indirectly as a result of this inspection.

Current Inspection No: 1732 January 15, 2012

Prior Inspection No:

Priority	Temp Rise	**Current Inspection**	Prior Inspection	Percent of Change
1-Critical		**0 = 0%**	NA	NA
2-Serious		**0 = 0%**	NA	NA
3-Important		**2 =100%**	NA	NA
4-Minor		**0 = 0%**	NA	NA
	Total Tested Problems:	**2**	NA	NA
Number of New Documented Problems:		2 =100%	NA	NA
Number of Tested re-occuring Problems:		0 = 0%	NA	NA

Number of prior problems which were Not Tested this inspection : NA

Number of Total Open Problems : **2**

Number of prior problems which tested Normal this inspection : NA

I hereby certify the above project was inspected by myself or under my direction and that the enclosed data is the direct result of this inspection.

TI Thermal Imaging

James, Humphries

Certification Level/No.:

* Summary of reoccuring problems on following page(s)

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List of Open Problems

Full list of thermal, mechanical and visual issues found

Also available on your Webmanager Problems page
Please use your login details provided

http://193.228.155.40/inspectrend

List of All Open Problems

The Pinnacle - Lighting Level 2A Marsh

Operation Priority Key

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

Report Date: 23/01/2012

Prior Inspection No :

Current Inspection No : 1732 **January 15, 2012**

Prob#	Asset ID		Insp#	Temp Rise	% Load	Severity	Status
V 1	DB 7 7 L1 A	Equipment: DISTRIBUTION BOARD 7 \ DB 7 Component: Dangerous work environment leading to possible HSE issues	1732			3-Important	TESTED
TD 1	DB 7 5 L2 B	Equipment: DISTRIBUTION BOARD 7 \ DB 7 Component: Plug Connection Indicated higher temperature than expected on Flourescent	1732	8 C	80%	3-Important	TESTED
V 2	DB 7 6 L2 A	Equipment: DISTRIBUTION BOARD 7 \ DB 7 Component: Dangerous work environment leading to possible HSE issues	1732			3-Important	TESTED

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Inspection Inventory Pages

Equipment listing and test status

Also available on your Webmanager Inventory page with Photos
Please use your login details provided

http://193.228.155.40/inspectrend

Current Inspection Inventory Status
By Inspection Order

Other

NI = Not Issued

Test Status Note

SCE = Safety Critical

Problem Type Key

TD = T/D Electrical
M = Mechanical
V = Visual Inspection

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/NS = Not Tested/Not Specified
NSFI = Not Selected for this insp.

The Pinnacle - Lighting Level 2A Marsh

Prior Inspection No:

Report Date: 23/01/2012

Current Inspection No: 1732

Inspected By : James, Humphries

Work Order	Asset ID	Equipment Description	CTO	Tested	Problem #	Test Status Notes
NI	-	DISTRIBUTION BOARD 7	CTO	TESTED		
NI	DB 7 8 L1	DB 7	CTO	TESTED		
NI	DB 7 7 L3 A	DB 7	CTO	TESTED		
NI	DB 7 7 L3 B	DB 7	CTO	TESTED		
NI	DB 7 7 L1 A	DB 7	CTO	TESTED	V1	
NI	DB 7 7 L1 B	DB 7	CTO	TESTED		
NI	DB 7 6 L3 A	DB 7	CTO	TESTED		
NI	DB 7 7 L2 A	DB 7	CTO	TESTED		
NI	DB 7 7 L2 B	DB 7	CTO	TESTED		
NI	DB 7 6 L2 A	DB 7	CTO	TESTED	V2	
NI	DB 7 6 L2 B	DB 7	CTO	TESTED		
NI	DB 7 6 L1 A	DB 7	CTO	TESTED		
NI	DB 7 6 L1 B	DB 7	CTO	TESTED		
NI	DB 7 5 L1 A	DB 7	CTO	TESTED		
NI	DB 7 5 L1 B	DB 7	CTO	TESTED		
NI	DB 7 6 L3 B	DB 7	CTO	TESTED		
NI	DB 7 5 L3 A	DB 7	CTO	TESTED		
NI	DB 7 5 L3 B	DB 7	CTO	TESTED		
NI	DB 7 5 L2 A	DB 7	CTO	TESTED		
NI	DB 7 5 L2 B	DB 7	CTO	TESTED	TD1	

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Documentation pages for TD Electrical

Details of TD electrical problems found

Also available on your Webmanager Problems page
Please use your login details provided

http://193.228.155.40/inspectrend

Client	Asset	Inspection Number	Report Date	Inspection Type
[redacted] Ltd	The Pinnacle - Lighting Level 2A	1732	23/01/2012	T/D Electrical

Location / Equipment Information

Work Order	NOT ISSUED
Equipment ID	DB 7 5 L2 B
Location	DISTRIBUTION BOARD 7
Description	DB 7
Severity	3-Important
Anomoly	Plug Connection Indicated higher temperature than expected on Flourescent
Possible Root Cause	Possible overheated component inside panel
Recommendation	Further investigation required

Equipment Information

Component:	Lighting		
Manufacturer:	Unknown		
Model No:	NA		
Rated Amps:	5		
Circuit Voltage:	240 Volts		
Measured Loads (Load taken if safe and allowed on PTW)	Phase	Actual Loads (A)	Load %
	Plug Connection:	4	80.00%
	Plug Connection:	4	80.00%
	Neutral		

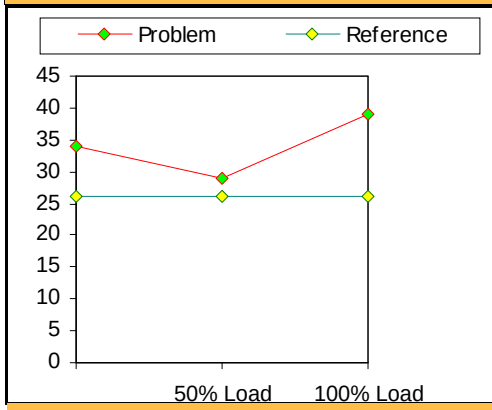
Current Prob No: T/D Electrical/1

Operation Priority:	Critical to operation
Max Component Temperature - Ar1 Max Temperature	34 C
Reference Temperature or SP2 Temperature	26 C
Temperature Rise Above Reference	8 C
Maximum allowable Temperature British Standard Reference	75 C
British Standard Reference - BS7671	

Temperature Information

Cubicle ambient:	20 C
Emissivity:	0.96
Environment:	Indoors
Adjusted Temperature Rise above reference:	8 C
Estimated Temp Rise over reference @ 50% Load: (See * 1)	3 C
Estimated Temp Rise over reference @ 100% Load: (See * 2)	13 C

Normalized Graph



Digital Image: DC_2772.jpg **Date:** 16/01/2012

Infrared Image: IR_2771A.jpg **Date:** 16/01/2012

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Documentation pages for Visual findings

Details of Visual problems found

Also available on your Webmanager Problems page
Please use your login details provided

http://193.228.155.40/inspectrend

Visual Problem Documentation

Work Order#: NOT ISSUED

The Pinnacle - Lighting Level 2A Marsh

Location/Equipment Information

Asset ID: DB 7 7 L1 A

DISTRIBUTION BOARD 7
DB 7

Current Prob No: Visual/1

Is Chronic:	**No**
Operation Priority:	**Critical to operation**
Repair Priority:	**3-Important**

InspectionNo: 1732
Report Date: 23/01/2012

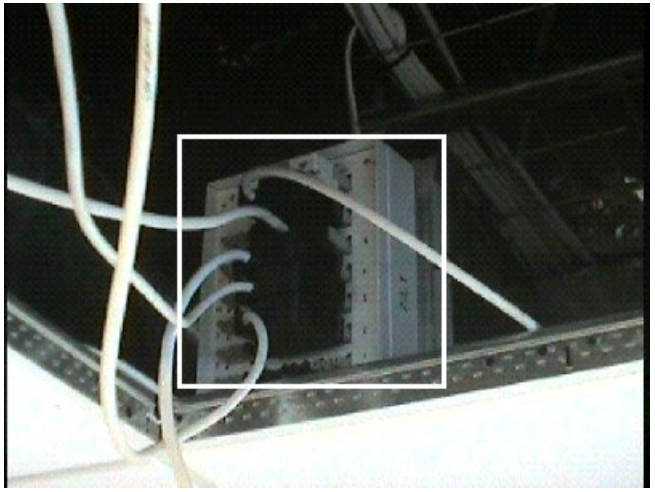
Classification: Electrical

Observations: Dangerous work environment leading to possible HSE issues

What is the Cause: Equipment unfixed

Recommendations: Re-fit to required standard

IR IMAGE IS NOT NECESSARY



File:	Date:	Time:
File: DC_2741.jpg	Date: 16/01/2012	Time: 06:03 PM

Technician: **James, Humphries**
Certification Level/No.:

Visual Problem Documentation

Work Order#: NOT ISSUED

The Pinnacle - Lighting Level 2A Marsh

Location/Equipment Information

Asset ID: DB 7 6 L2 A

DISTRIBUTION BOARD 7
DB 7

Current Prob No: Visual/2

Is Chronic:	**No**
Operation Priority:	**Critical to operation**
Repair Priority:	**3-Important**

InspectionNo: **1732**
Report Date: **23/01/2012**

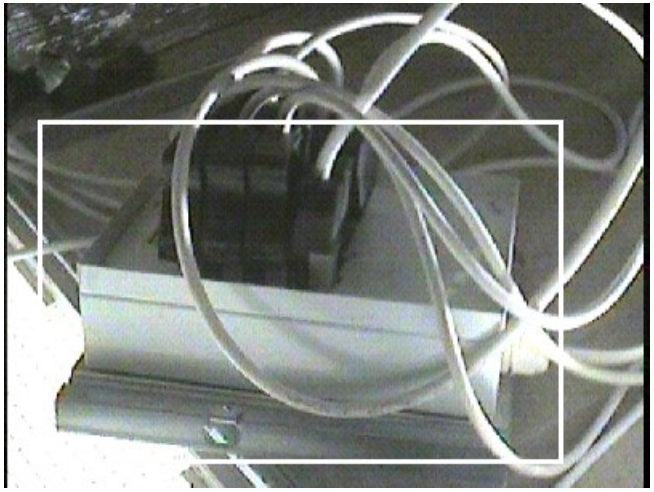
Classification: Electrical

Observations: Dangerous work environment leading to possible HSE issues

What is the Cause: Equipment unfixed

Recommendations: Re-fit to required standard

IR IMAGE IS NOT NECESSARY



File:	Date:	Time:
File: DC_2751.jpg	Date: 16/01/2012	Time: 06:04 PM

Technician: **James, Humphries**
Certification Level/No.:

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Benchmark Baseline Trending

Full list of equipment baseline trends is also available on your Webmanager
Please use your login details provided

http://193.228.155.40/inspectrend

Equipment Baseline Trending Report
By Inspection Order

Key

CTO = Critical to operation
ETO = Essential to operation
NON = Non-essential to operation
UNC = Un-Classified
NI = Not Issued

The Pinnacle - Lighting Level 2A Marsh

Current Inspection No: 1732 **January 15, 2012**

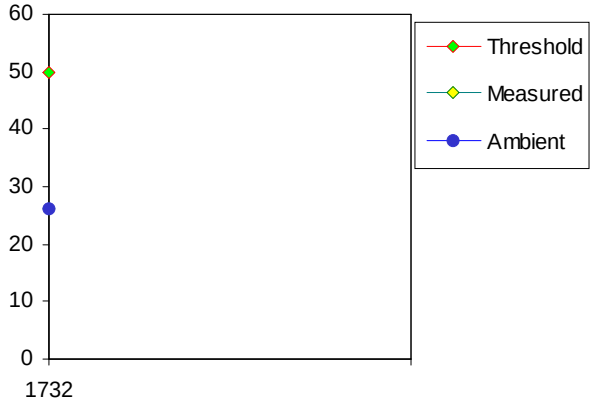
Report Date: **23/01/2012**

DISTRIBUTION BOARD 7 \ DB 7

Equipment ID: **DB 7 8 L1** **Work Order:** **NI** **Operation Priority:** **CTO**

IR_2734.jpg

DC_2735.jpg



Inspection History:

Inspection No	Date Inspected	Test Status	Measured Temp	Threshold Temp	Ambient Temp	Status Note	Customer Notes
1732	23/01/2012	TESTED	26 C	50 C	26 C		

Equipment Baseline Trending Report
By Inspection Order

Key

CTO = Critical to operation
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The Pinnacle - Lighting Level 2A Marsh

Current Inspection No: 1732 **January 15, 2012**

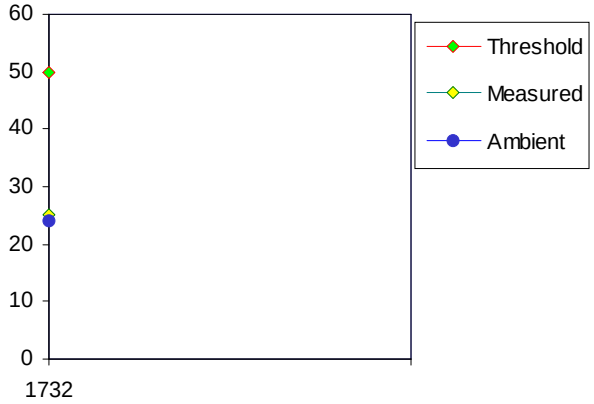
Report Date: **23/01/2012**

DISTRIBUTION BOARD 7 \ DB 7

Equipment ID: **DB 7 7 L3 A** **Work Order:** **NI** **Operation Priority:** **CTO**

IR_2736.jpg

DC_2737.jpg



Inspection History:

Inspection No	Date Inspected	Test Status	Measured Temp	Threshold Temp	Ambient Temp	Status Note	Customer Notes
1732	23/01/2012	TESTED	25 C	50 C	24 C		

Equipment Baseline Trending Report
By Inspection Order

Key

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ETO = Essential to operation
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NI = Not Issued

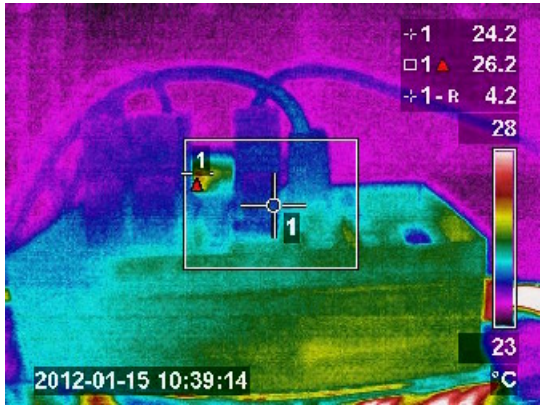
The Pinnacle - Lighting Level 2A Marsh

Current Inspection No: 1732 **January 15, 2012**

Report Date: **23/01/2012**

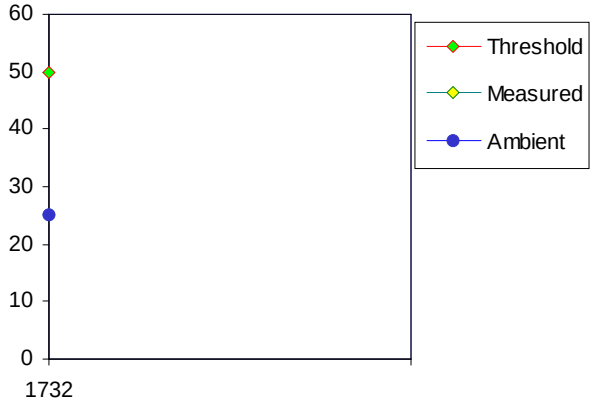
DISTRIBUTION BOARD 7 \ DB 7

Equipment ID: **DB 7 7 L3 B** **Work Order:** **NI** **Operation Priority:** **CTO**



IR_2738.jpg

DC_2739.jpg



Inspection History:

Inspection No	Date Inspected	Test Status	Measured Temp	Threshold Temp	Ambient Temp	Status Note	Customer Notes
1732	23/01/2012	TESTED	25 C	50 C	25 C		

Equipment Baseline Trending Report
By Inspection Order

Key

CTO = Critical to operation
ETO = Essential to operation
NON = Non-essential to operation
UNC = Un-Classified
NI = Not Issued

The Pinnacle - Lighting Level 2A Marsh

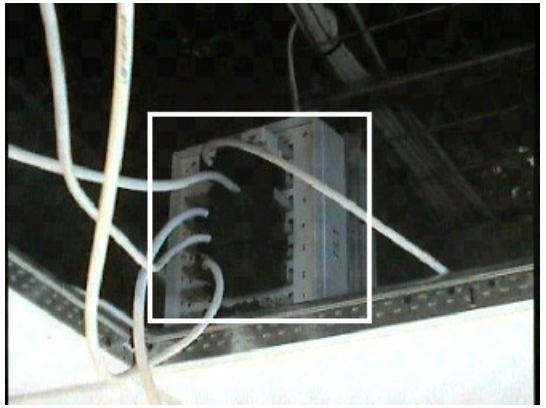
Current Inspection No: 1732 **January 15, 2012**

Report Date: **23/01/2012**

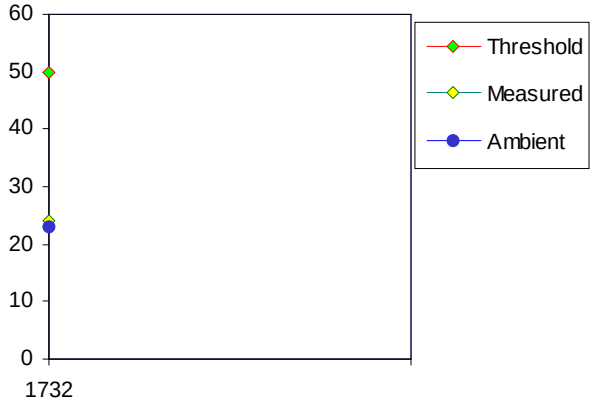
DISTRIBUTION BOARD 7 \ DB 7

Equipment ID: **DB 7 7 L1 A** **Work Order:** **NI** **Operation Priority:** **CTO**

IR_2740.jpg



DC_2741.jpg



Inspection History:

Inspection No	Date Inspected	Test Status	Measured Temp	Threshold Temp	Ambient Temp	Status Note	Customer Notes
1732	23/01/2012	TESTED	24 C	50 C	23 C		

Equipment Baseline Trending Report
By Inspection Order

Key

CTO = Critical to operation
ETO = Essential to operation
NON = Non-essential to operation
UNC = Un-Classified
NI = Not Issued

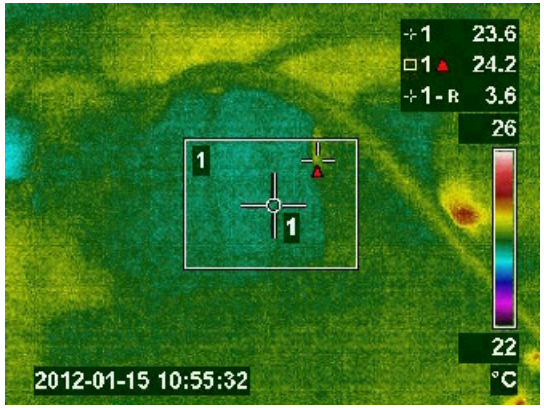
The Pinnacle - Lighting Level 2A Marsh

Current Inspection No: 1732 **January 15, 2012**

Report Date: **23/01/2012**

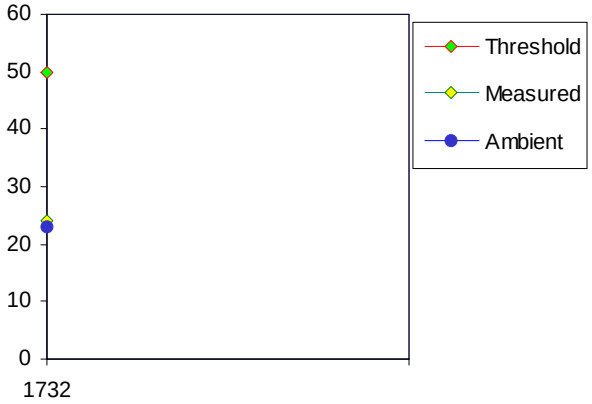
DISTRIBUTION BOARD 7 \ DB 7

Equipment ID: **DB 7 7 L1 B** **Work Order:** **NI** **Operation Priority:** **CTO**



IR_2742.jpg

DC_2743.jpg



Inspection History:

Inspection No	Date Inspected	Test Status	Measured Temp	Threshold Temp	Ambient Temp	Status Note	Customer Notes
1732	23/01/2012	TESTED	24 C	50 C	23 C		

Equipment Baseline Trending Report
By Inspection Order

Key

CTO = Critical to operation
ETO = Essential to operation
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NI = Not Issued

The Pinnacle - Lighting Level 2A Marsh

Current Inspection No: 1732 **January 15, 2012**

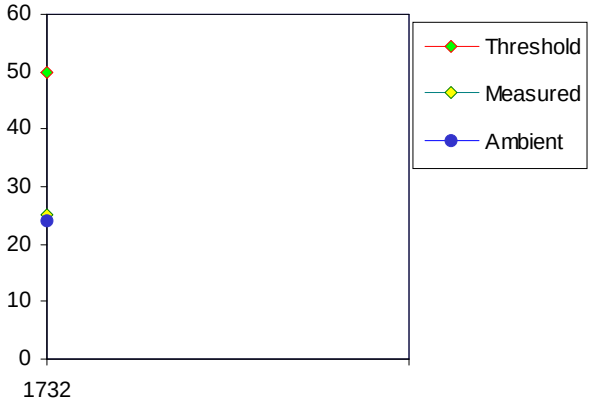
Report Date: **23/01/2012**

DISTRIBUTION BOARD 7 \ DB 7

Equipment ID: **DB 7 6 L3 A** **Work Order:** **NI** **Operation Priority:** **CTO**

IR_2744.jpg

DC_2745.jpg



Inspection History:

Inspection No	Date Inspected	Test Status	Measured Temp	Threshold Temp	Ambient Temp	Status Note	Customer Notes
1732	23/01/2012	TESTED	25 C	50 C	24 C		

Equipment Baseline Trending Report
By Inspection Order

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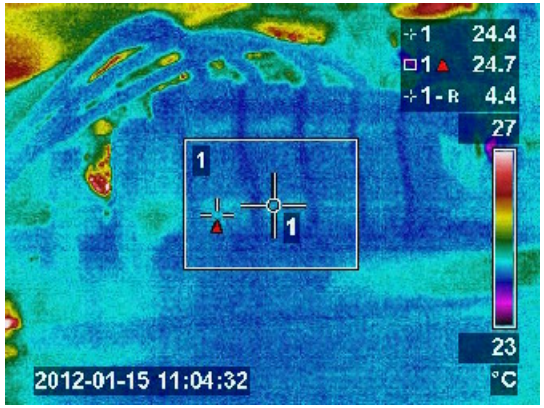
The Pinnacle - Lighting Level 2A Marsh

Current Inspection No: 1732 **January 15, 2012**

Report Date: **23/01/2012**

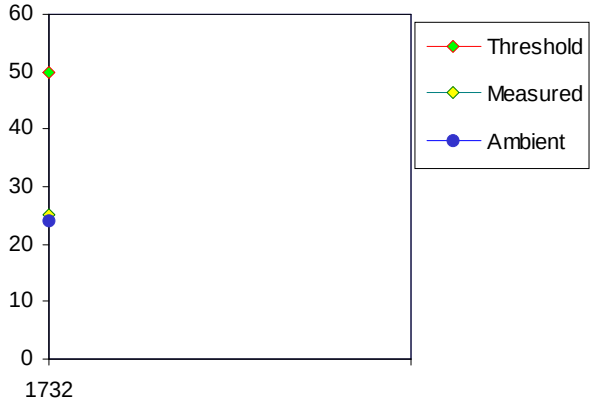
DISTRIBUTION BOARD 7 \ DB 7

Equipment ID: **DB 7 7 L2 A** **Work Order:** **NI** **Operation Priority:** **CTO**



IR_2746.jpg

DC_2747.jpg



Inspection History:

Inspection No	Date Inspected	Test Status	Measured Temp	Threshold Temp	Ambient Temp	Status Note	Customer Notes
1732	23/01/2012	TESTED	25 C	50 C	24 C		

Equipment Baseline Trending Report
By Inspection Order

Key

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The Pinnacle - Lighting Level 2A Marsh

Current Inspection No: 1732 **January 15, 2012**

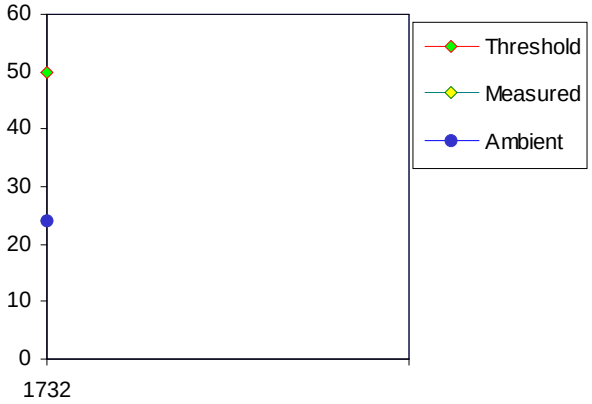
Report Date: **23/01/2012**

DISTRIBUTION BOARD 7 \ DB 7

Equipment ID: **DB 7 7 L2 B** **Work Order:** **NI** **Operation Priority:** **CTO**

IR_2748.jpg

DC_2749.jpg



Inspection History:

Inspection No	Date Inspected	Test Status	Measured Temp	Threshold Temp	Ambient Temp	Status Note	Customer Notes
1732	23/01/2012	TESTED	24 C	50 C	24 C		

Equipment Baseline Trending Report
By Inspection Order

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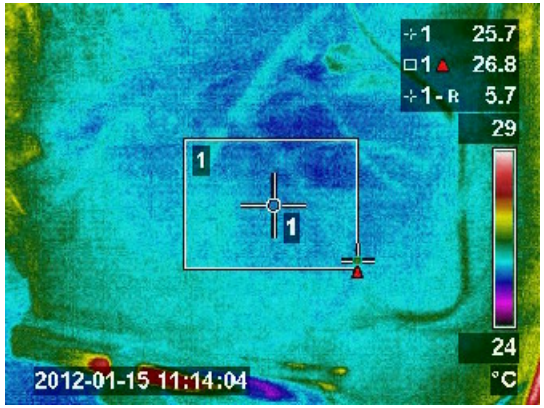
The Pinnacle - Lighting Level 2A Marsh

Current Inspection No: 1732 **January 15, 2012**

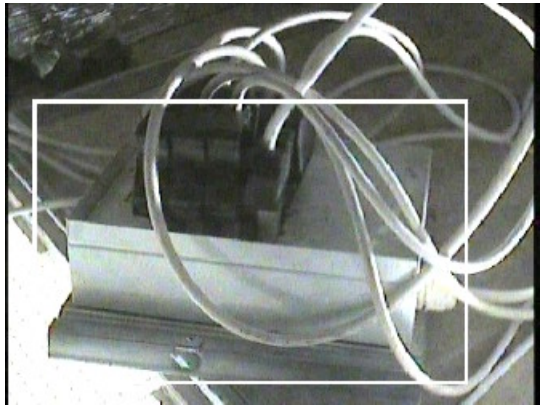
Report Date: **23/01/2012**

DISTRIBUTION BOARD 7 \ DB 7

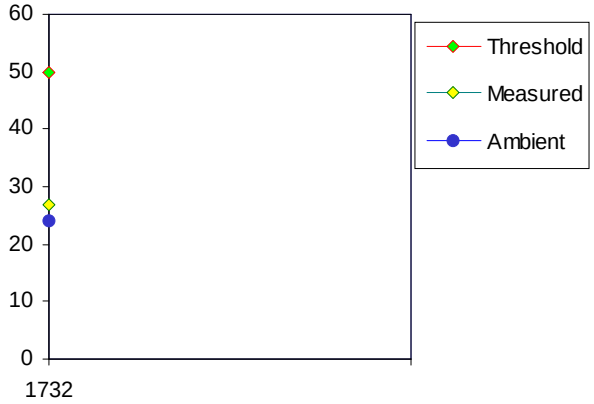
Equipment ID: **DB 7 6 L2 A** **Work Order:** **NI** **Operation Priority:** **CTO**



IR_2750.jpg



DC_2751.jpg



Inspection History:

Inspection No	Date Inspected	Test Status	Measured Temp	Threshold Temp	Ambient Temp	Status Note	Customer Notes
1732	23/01/2012	TESTED	27 C	50 C	24 C		

Equipment Baseline Trending Report
By Inspection Order

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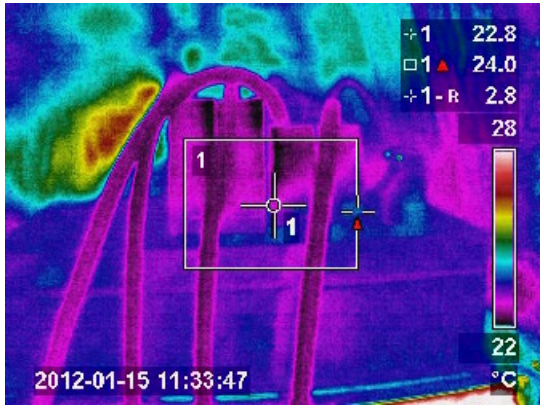
The Pinnacle - Lighting Level 2A Marsh

Current Inspection No: 1732 **January 15, 2012**

Report Date: **23/01/2012**

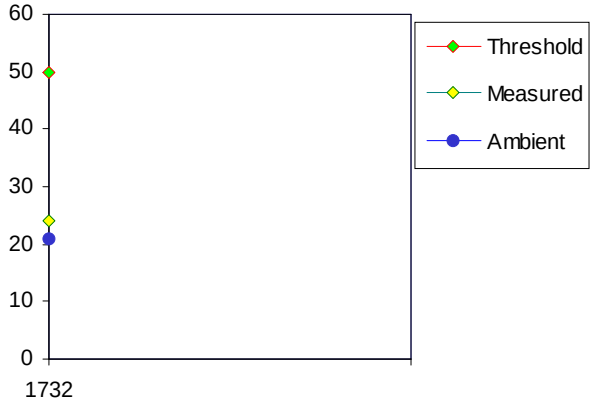
DISTRIBUTION BOARD 7 \ DB 7

Equipment ID: **DB 7 6 L2 B** **Work Order:** **NI** **Operation Priority:** **CTO**



IR_2752.jpg

DC_2753.jpg



Inspection History:

Inspection No	Date Inspected	Test Status	Measured Temp	Threshold Temp	Ambient Temp	Status Note	Customer Notes
1732	23/01/2012	TESTED	24 C	50 C	21 C		

Equipment Baseline Trending Report
By Inspection Order

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The Pinnacle - Lighting Level 2A Marsh

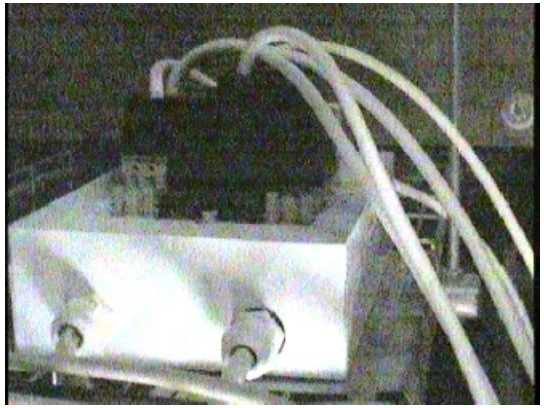
Current Inspection No: 1732 **January 15, 2012**

Report Date: **23/01/2012**

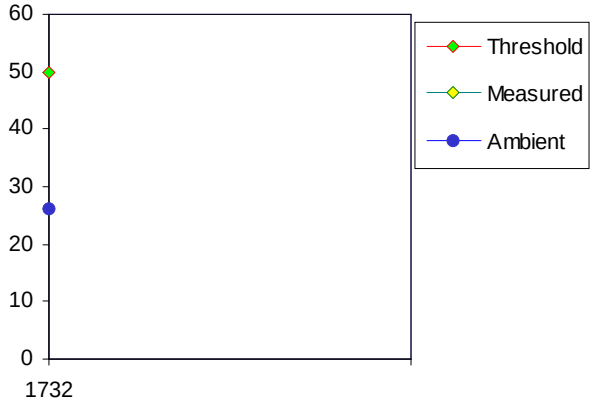
DISTRIBUTION BOARD 7 \ DB 7

Equipment ID: **DB 7 6 L1 A** **Work Order:** **NI** **Operation Priority:** **CTO**

IR_2754.jpg



DC_2755.jpg



Inspection History:

Inspection No	Date Inspected	Test Status	Measured Temp	Threshold Temp	Ambient Temp	Status Note	Customer Notes
1732	23/01/2012	TESTED	26 C	50 C	26 C		

Equipment Baseline Trending Report
By Inspection Order

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The Pinnacle - Lighting Level 2A Marsh

Current Inspection No: 1732 **January 15, 2012**

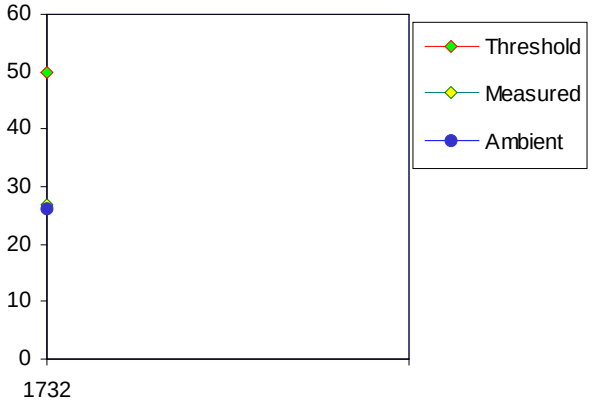
Report Date: **23/01/2012**

DISTRIBUTION BOARD 7 \ DB 7

Equipment ID: **DB 7 6 L1 B** **Work Order:** **NI** **Operation Priority:** **CTO**

IR_2756.jpg

DC_2757.jpg



Inspection History:

Inspection No	Date Inspected	Test Status	Measured Temp	Threshold Temp	Ambient Temp	Status Note	Customer Notes
1732	23/01/2012	TESTED	27 C	50 C	26 C		

Equipment Baseline Trending Report
By Inspection Order

Key

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The Pinnacle - Lighting Level 2A Marsh

Current Inspection No: 1732 **January 15, 2012**

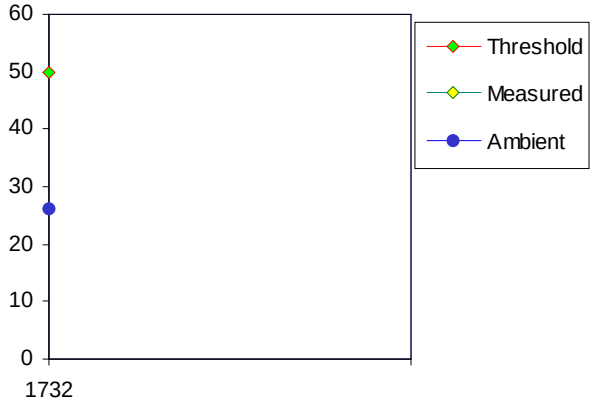
Report Date: **23/01/2012**

DISTRIBUTION BOARD 7 \ DB 7

Equipment ID: **DB 7 5 L1 A** **Work Order:** **NI** **Operation Priority:** **CTO**

IR_2758.jpg

DC_2759.jpg



Inspection History:

Inspection No	Date Inspected	Test Status	Measured Temp	Threshold Temp	Ambient Temp	Status Note	Customer Notes
1732	23/01/2012	TESTED	26 C	50 C	26 C		

Equipment Baseline Trending Report
By Inspection Order

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The Pinnacle - Lighting Level 2A Marsh

Current Inspection No: 1732 **January 15, 2012**

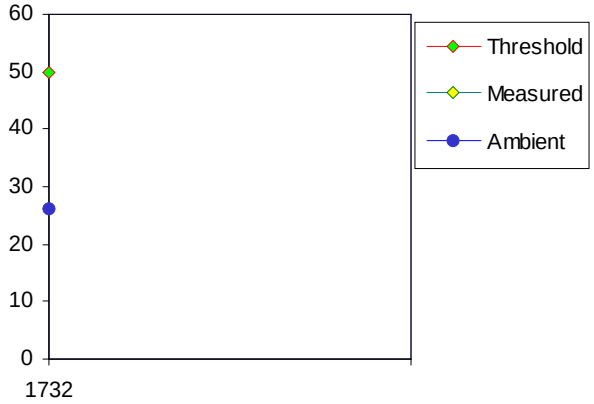
Report Date: **23/01/2012**

DISTRIBUTION BOARD 7 \ DB 7

Equipment ID: **DB 7 5 L1 B** **Work Order:** **NI** **Operation Priority:** **CTO**

IR_2760.jpg

DC_2762.jpg



Inspection History:

Inspection No	Date Inspected	Test Status	Measured Temp	Threshold Temp	Ambient Temp	Status Note	Customer Notes
1732	23/01/2012	TESTED	26 C	50 C	26 C		

Equipment Baseline Trending Report
By Inspection Order

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The Pinnacle - Lighting Level 2A Marsh

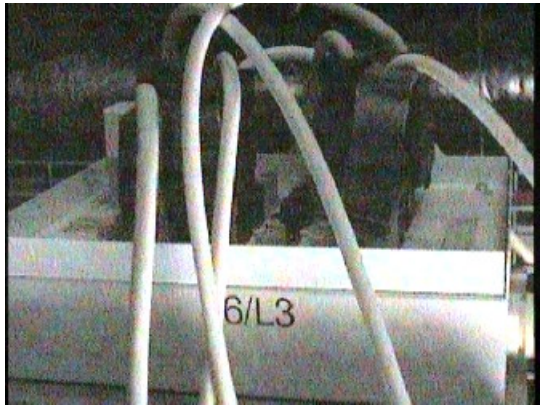
Current Inspection No: 1732 **January 15, 2012**

Report Date: **23/01/2012**

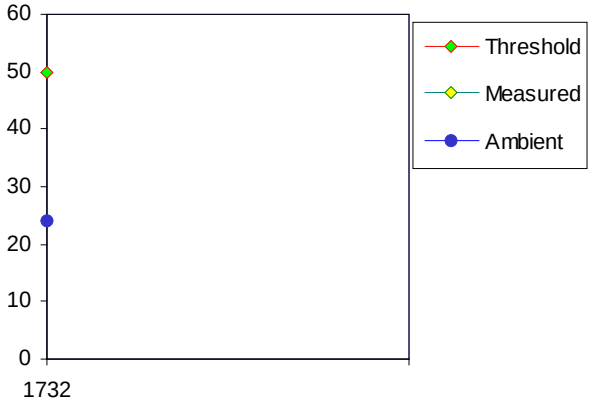
DISTRIBUTION BOARD 7 \ DB 7

Equipment ID: **DB 7 6 L3 B** **Work Order:** **NI** **Operation Priority:** **CTO**

IR_2763.jpg



DC_2764.jpg



Inspection History:

Inspection No	Date Inspected	Test Status	Measured Temp	Threshold Temp	Ambient Temp	Status Note	Customer Notes
1732	23/01/2012	TESTED	24 C	50 C	24 C		

Equipment Baseline Trending Report
By Inspection Order

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The Pinnacle - Lighting Level 2A Marsh

Current Inspection No: 1732 **January 15, 2012**

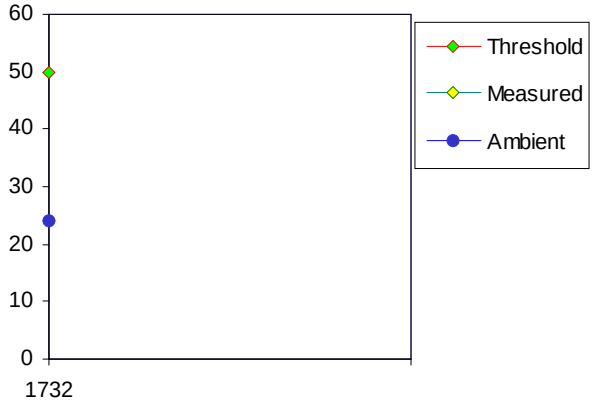
Report Date: **23/01/2012**

DISTRIBUTION BOARD 7 \ DB 7

Equipment ID: **DB 7 5 L3 A** **Work Order:** **NI** **Operation Priority:** **CTO**

IR_2765.jpg

DC_2766.jpg



Inspection History:

Inspection No	Date Inspected	Test Status	Measured Temp	Threshold Temp	Ambient Temp	Status Note	Customer Notes
1732	23/01/2012	TESTED	24 C	50 C	24 C		

Equipment Baseline Trending Report
By Inspection Order

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The Pinnacle - Lighting Level 2A Marsh

Current Inspection No: 1732 **January 15, 2012**

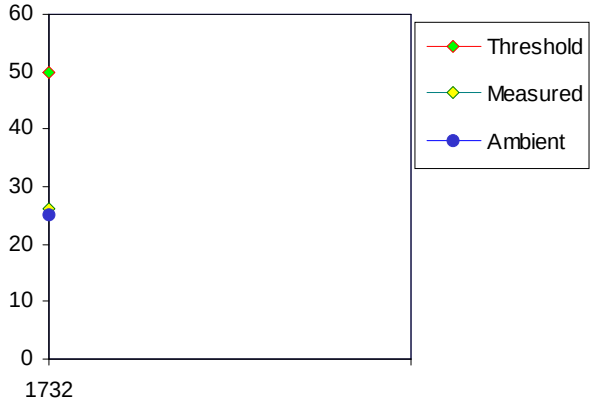
Report Date: **23/01/2012**

DISTRIBUTION BOARD 7 \ DB 7

Equipment ID: **DB 7 5 L3 B** **Work Order:** **NI** **Operation Priority:** **CTO**

IR_2767.jpg

DC_2768.jpg



Inspection History:

Inspection No	Date Inspected	Test Status	Measured Temp	Threshold Temp	Ambient Temp	Status Note	Customer Notes
1732	23/01/2012	TESTED	26 C	50 C	25 C		

Equipment Baseline Trending Report
By Inspection Order

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The Pinnacle - Lighting Level 2A Marsh

Current Inspection No: 1732 **January 15, 2012**

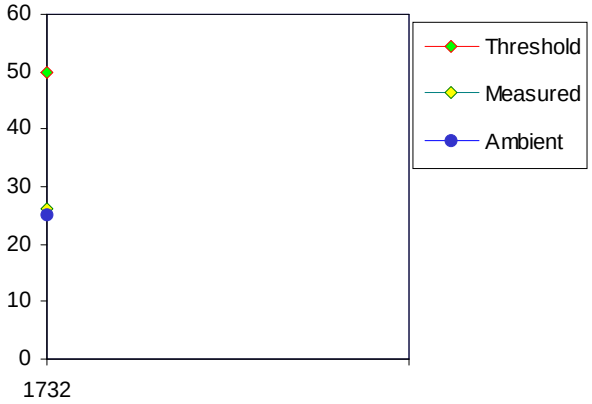
Report Date: **23/01/2012**

DISTRIBUTION BOARD 7 \ DB 7

Equipment ID: **DB 7 5 L2 A** **Work Order:** **NI** **Operation Priority:** **CTO**

IR_2769.jpg

DC_2770.jpg



Inspection History:

Inspection No	Date Inspected	Test Status	Measured Temp	Threshold Temp	Ambient Temp	Status Note	Customer Notes
1732	23/01/2012	TESTED	26 C	50 C	25 C		

Equipment Baseline Trending Report
By Inspection Order

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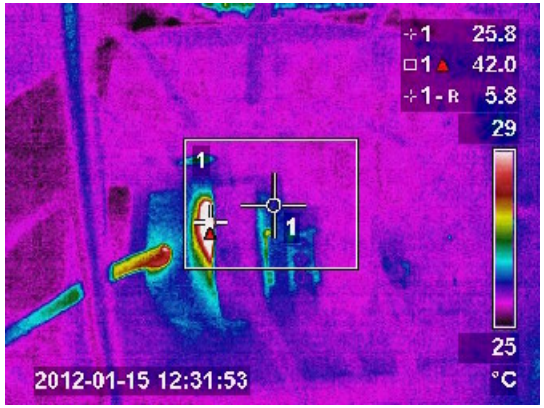
The Pinnacle - Lighting Level 2A Marsh

Current Inspection No: 1732 **January 15, 2012**

Report Date: **23/01/2012**

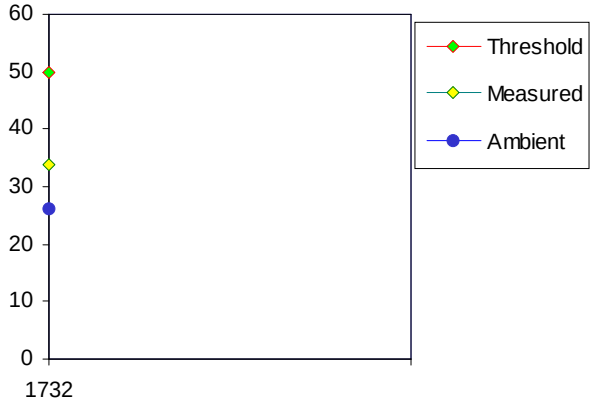
DISTRIBUTION BOARD 7 \ DB 7

Equipment ID: **DB 7 5 L2 B** **Work Order:** **NI** **Operation Priority:** **CTO**



IR_2771.jpg

DC_2772.jpg



Inspection History:

Inspection No	Date Inspected	Test Status	Measured Temp	Threshold Temp	Ambient Temp	Status Note	Customer Notes
1732	23/01/2012	TESTED	34 C	50 C	26 C		

Ti Thermal Imaging LTD

Unit 8, Weybridge Business Centre, 66 York Road, Weybridge, Surrey, KT13 9DY

Tel: 0845 458 6315 Fax: 0871 9004978 E-mail: info@thermalimaging.co.uk Web: www.thermalimaging.co.uk

Work Order Documentation pages

Fax or Email back Corrective Work Orders

Also available on your Webmanager Problems page
Please use your login details provided

http://193.228.155.40/inspectrend

Documentation/Work Order T/D Electrical: Please add Corrective Work Order

The Pinnacle - Lighting Level 2A Marsh

Work Order #: NOT ISSUED

Corrective Work Order #:

PLEASE ADD CORRECTIVE WORK ORDER ABOVE

InspectionNo: 1732
Report Date: 23/01/2012

1732-1

Current Prob No: T/D Electrical/1

Location/Equipment Information

Asset ID: DB 7 5 L2 B
Barcode: NI
Location: DISTRIBUTION BOARD 7
DB 7

Component: **Lighting**
Problem: Plug Connection Indicated higher temperature than expected on Flourescent

Manufacturer: **Unknown**
Model No: **NA**
Circuit Voltage: **240 Volts**

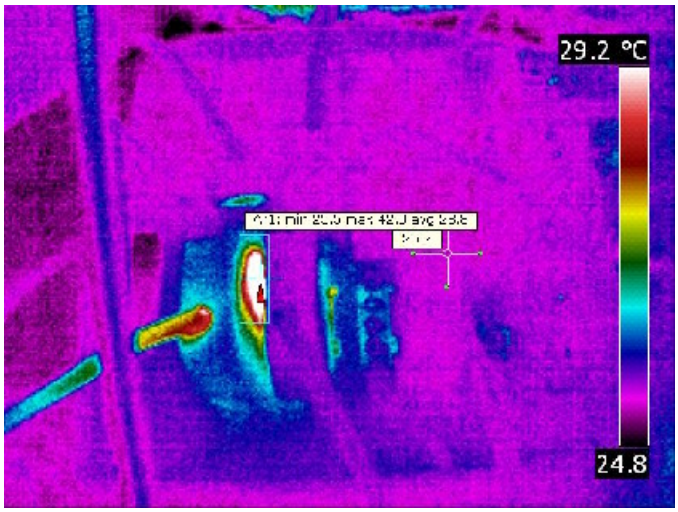
Load Test Results

Component Rated Load:	5	amps
Plug Connection:	4	amps
Plug Connection:	4	amps
		amps

Thermal Information

Operation Priority: **Critical to operation**
Repair Priority: **3-Important**
Ambient: **20 C** Enviroment: **Indoors**

Component Temperature On Plug Connectio	**34 C**
Plug Connection Reference Temperature:	**26 C**
Temperature Rise Above Reference:	**8 C**
ANSI/EEE/NEMA Max Allowable Temp @ 100% Load:	**50 C**
Est Temp Rise over reference @ 50% Load:	**3**
Est Temp Rise over reference @ 100% Load:	**13**



IR File: IR_2771A.jpg IR Date: 16/01/2012 Photo File: DC_2772.jpg Photo Date: 16/01/2012

Repair Information

PLEASE FAX BACK AFTER REPAIR TO: 0871 900 4978 OR INFO@THERMALIMAGING.CO.UK

Loss to Production
☐ Yes ☐ No ☑ Unknown

Consequences of Failure:
POSSIBLE FIRE RISK

Repair Date: **Repaired By:**

Root Cause:

Parts Req. Before Failure:

Repair Procedure:

Parts Req. After Failure:

Repair Action:

Repair Recommendation:
Further investigation required

Documentation/ Work Order Visual: Please add Corrective Work Order

The Pinnacle - Lighting Level 2A Marsh

Work Order #: NOT ISSUED

Corrective Work Order #:

PLEASE ADD CORRECTIVE WORK ORDERS ABOVE

InspectionNo: 1732
Report Date: 23/01/2012

1732-1 | **Current Prob No: Visual/1**

Location/Equipment Information

Asset ID:	DB 7 7 L1 A
Barcode:	NI
Location:	DISTRIBUTION BOARD 7 DB 7

Operation Priority:	Critical to operation
Repair Priority:	3-Important
Hazard Type:	Visual
Hazard Classification:	Electrical
Hazard Group:	Dangerous work environment
Hazard Issue:	leading to possible HSE issues
Observations:	Dangerous work environment leading to possible HSE issues
What is the Cause:	Equipment unfixed

PHOTO IMAGE IS NOT NECESSARY

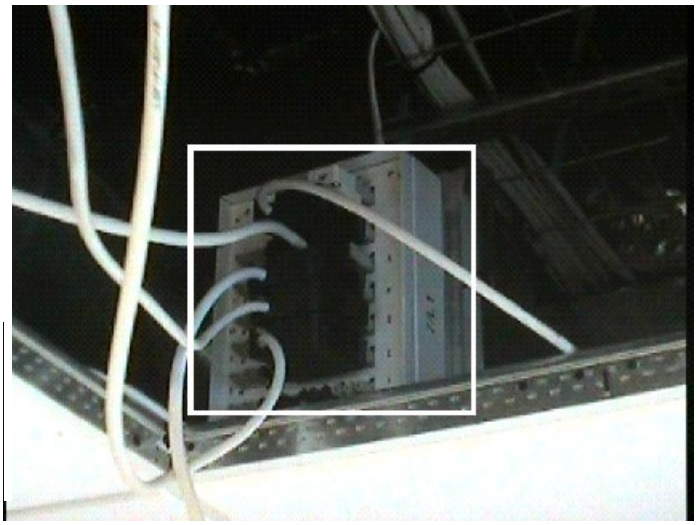


Photo File: Photo Date: Photo File: DC_2741.jpg Photo Date: 16/01/2012

Repair Information

PLEASE FAX BACK AFTER REPAIR TO: 0871 900 4978 OR INFO@THERMALIMAGING.CO.UK

Loss to Production

☐ Yes ☐ No ☑ Unknown

Consequences of Failure:

Parts Req. Before Failure:

Parts Req. After Failure:

Repair Recommendation:
Re-fit to required standard

Repair Date:

Repaired By:

Root Cause:

Repair Procedure:
Re-fit to required standard

Repair Notes:

Documentation/ Work Order Visual: Please add Corrective Work Order

The Pinnacle - Lighting Level 2A Marsh

Work Order #: NOT ISSUED

Corrective Work Order #:

PLEASE ADD CORRECTIVE WORK ORDERS ABOVE

InspectionNo: 1732
Report Date: 23/01/2012

1732-2 **Current Prob No: Visual/2**

Location/Equipment Information

Asset ID: DB 7 6 L2 A
Barcode: NI
Location: DISTRIBUTION BOARD 7
DB 7

Operation Priority:	Critical to operation
Repair Priority:	3-Important
Hazard Type:	Visual
Hazard Classification:	Electrical
Hazard Group:	Dangerous work environment
Hazard Issue:	leading to possible HSE issues
Observations:	Dangerous work environment leading to possible HSE issues
What is the Cause:	Equipment unfixed

PHOTO IMAGE IS NOT NECESSARY

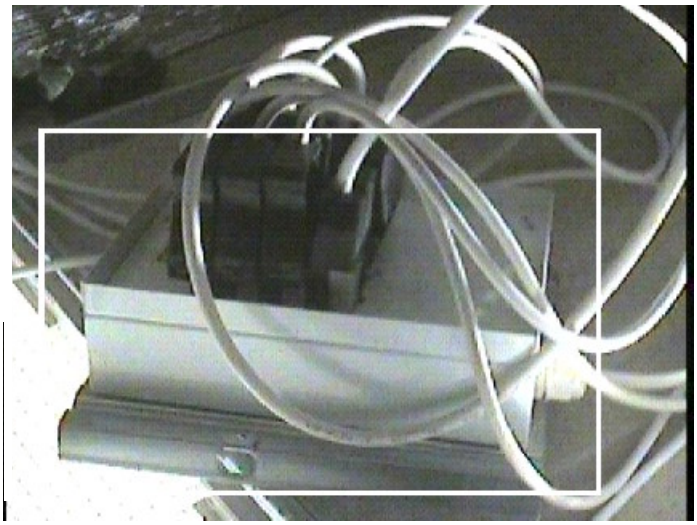


Photo File: Photo Date: Photo File: DC_2751.jpg Photo Date: 16/01/2012

PLEASE FAX BACK AFTER REPAIR TO: 0871 900 4978 OR INFO@THERMALIMAGING.CO.UK

Repair Information

Loss to Production ☐ Yes ☐ No ☑ Unknown

Consequences of Failure:

Repair Date: **Repaired By:**

Root Cause:

Parts Req. Before Failure:

Repair Procedure: Re-fit to required standard

Parts Req. After Failure:

Repair Notes:

Repair Recommendation:
Re-fit to required standard

Ti Thermal Imaging LTD

Unit 8, Weybridge Business Centre, 66 York Road, Weybridge, Surrey, KT13 9DY

Tel: 0845 458 6315 Fax: 0871 9004978 E-mail: info@thermalimaging.co.uk Web: www.thermalimaging.co.uk

Client Work Appraisal

We are continually trying to improve our service and ensure that all our inspections are carried out to the highest standards. Please use the form below to add your comments, anonymously if you prefer and send back to us at the address above or:

Email: info@thermalimaging.co.uk
Fax: +44 870 9004971

TI Job Number: (Optional)	Excellent	Good	Mediocre	Poor	Comments
Office:					
Response time to enquiry					
Content of information sent on enquiry					
Telephone and email manner					
Price					
Value					
Engineer:					
Time keeping					
Appearance					
Code of conduct					
Subject knowledge					
Method of work					
Engineer flexibility					
Inspection Specification:					
Equipment and software					
Report content					
Report delivery time					
Report retrieval					
Other Comments:					