



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



THERMOGRAPHIC INSPECTION FOR:

UNDERFLOOR HEATING PIPEWORK

LOCATION:

TI SITE 7 SAMPLE REPORT

DATE:

19/11/10

TI 14449



Report generated by Ti Thermal Imaging LTD.

Company Registered in England: 04450573 VAT No. 828 6288 87





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Introduction to your Ti Thermal Imaging LTD risk management thermographic inspection

Inspection Overview

This investigation is employing the use of thermographics and infra-red in order to assess the underfloor heating supply and return pipes with a view to exposing where the pipework runs lay and if there are any leaks or breaks

Theory

Hot water leakage offers a unique opportunity to find anomalous areas which could be attributed to leakage within the central heating system. Temperature differential is significant in that central heating systems often operate in excess of 50°C. This enables the pipework to be seen clearly through the floor and areas of temperature anomaly can be found and investigated further for water leakages.

Electrical systems or matting can sometimes become damaged and it is possible to detect these damaged areas by running a charge through the coil to expose the break. This is done using a generator power source separate from the mains supply.

Inspection methods

Initial visual inspection of the site took place in order to familiarise with any irregularities or access problems. The underfloor heating pipework inspected in this inspection was in the kitchen area, the wine cellar area, the main hallway area and the master ensuite bathrooms. The heating system was activated upon arrival and the inspection was carried out when suitable thermal transfer through the floor was found so that the pipework signatures are clearly visible.

Reporting

A complete baseline archive has been compiled of all areas inspected with distance measurements.

- 1-Critical
- 2-Serious
- 3-Important
- 4-Minor

Thermographic Inspection Specification:

1. IR camera: Flir ThermoCAM P-series
2. Software: InspecTrend
3. Thermographer: ITC Level II
4. Extech Instruments for humidity/wind speed etc
5. Leico laser distance measurements



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Cover Page for Visual Executive and Operations summary of problems found



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INFRARED THERMOGRAPHIC INSPECTION
OF
VISUAL PROBLEMS

Provided for

Report Date: 22/11/2010

TI , TI Site 7 Hot Water Pipe Leakage

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: 1417 November 22, 2010

Prior Inspection No:

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

Wallace, Richard

Certification Level/No.: ITC Level II

* Summary of reoccurring problems on following page(s)



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List of Open Problems

Full list of thermal, mechanical and visual issues found



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TI

TI Site 7 Hot Water Pipe Leakage

List of All Open Problems

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

Report Date: 22/11/2010

Prior Inspection No :

Current Inspection No : 1417 November 22, 2010

Prob#	Asset ID		Insp#	Temp Rise	% Load	Severity	Status
V 1	-	Equipment: LIVING ROOM \ BENEATH FRONT WINDOW Component: Elevated surface temperature found indicating possible area of underfloor water leakage	1417			1-Critical	TESTED



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Inspection Inventory Pages

Equipment listing and test status



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Current Inspection Inventory Status By Inspection Order

Other	Test Status Note	Problem Type Key	Equipment Test Status Key
NI = Not Issued	SCE = Safety Critical	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/NS = Not Tested/Not Specified NSFI = Not Selected for this insp.
Prior Inspection No:		Operation Priority Key	
Current Inspection No: 1417		CTO = Critical to operation ETO = Essential to operation NON = Non-essential to operation UNC = Un-Classified	

TI
TI Site 7 Hot Water Pipe Leakage

Report Date: 22/11/2010

Inspected By : Wallace, Richard

Work Order	Asset ID	Equipment Description	CTO	Tested	Problem #	Test Status Notes
NI	-	LIVING ROOM	CTO	TESTED		
NI	-	FRONT RADIATOR	CTO	TESTED		
NI	-	TOWARDS REAR RADIATOR	CTO	TESTED		
NI	-	T-PIECE TO KITCHEN	CTO	TESTED		
NI	-	TOWARDS WINDOW	CTO	TESTED		
NI	-	BENEATH FRONT WINDOW	CTO	TESTED	V1	
NI	-	BEDROOM	CTO	TESTED		
NI	-	TOWARDS FRONT WINDOW	CTO	TESTED		
NI	-	BEDROOM RADIATOR	CTO	TESTED		
NI	-	BATHROOM	CTO	TESTED		
NI	-	BENEATH SINK	CTO	TESTED		
NI	-	LEFT OF SINK	CTO	TESTED		



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Documentation pages for Visual findings

Details of Visual problems found



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Visual Problem Documentation

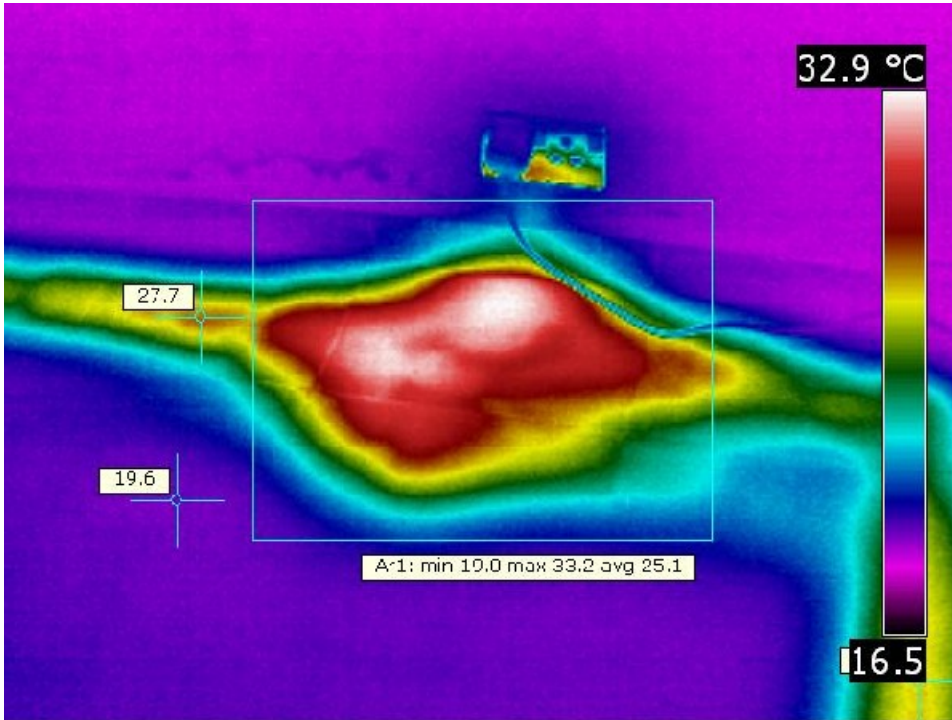
TI
TI Site 7 Hot Water Pipe Leakage

Location/Equipment Information
Asset ID: - LIVING ROOM BENEATH FRONT WINDOW

Current Prob No: Visual/1	
Is Chronic:	No
Operation Priority:	Critical to operation
Repair Priority:	1-Critical

InspectionNo: 1417
Report Date: 22/11/2010

- Classification:** Hot Water Supply & Heating Systems
- Observations:** Elevated surface temperature found indicating possible area of underfloor water leakage
- What is the Cause:** Suspected water leak
- Recommendations:** Investigate source of leak and repair. Isolate equipment if necessary



File: IR_0097A.JPG	Date: 30/09/2010	Time: 10:11 AM
File: DC_0072.jpg	Date: 30/09/2010	Time: 10:12 AM

Technician:	Wallace, Richard
Certification Level/No.:	ITC Level II



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Benchmark Baseline Trending

Full list of equipment baseline trends



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Equipment Baseline Trending Report By Inspection Order

TI
TI Site 7 Hot Water Pipe Leakage

Prior Inspection No:
Current Inspection No: 1417 November 22, 2010

Report Date: 22/11/2010

LIVING ROOM \ FRONT RADIATOR

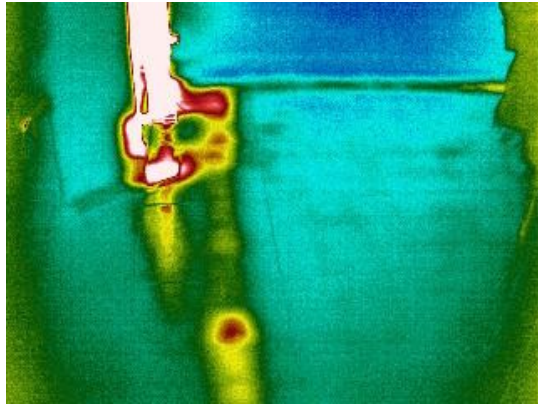
Equipment ID: -

Work Order: NI

Key

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

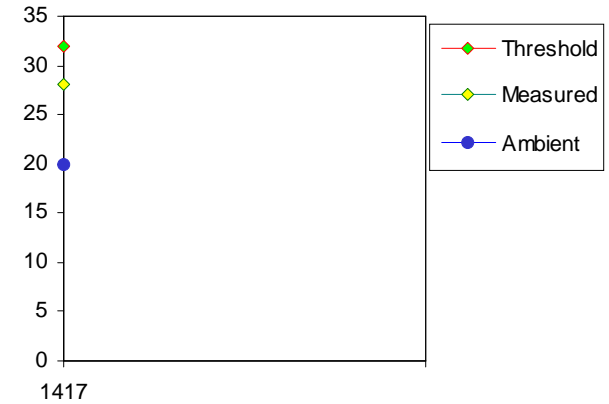
Operation Priority: CTO



IR_0073.JPG



DC_0074.jpg



Inspection History:

Inspection No	Date Inspected	Test Status	Measured Temp	Threshold Temp	Ambient Temp	Status Note	Customer Notes
1417	22/11/2010	TESTED	28 C	32 C	20 C		



Equipment Baseline Trending Report By Inspection Order

TI
TI Site 7 Hot Water Pipe Leakage

Prior Inspection No:
Current Inspection No: 1417 November 22, 2010

Report Date: 22/11/2010

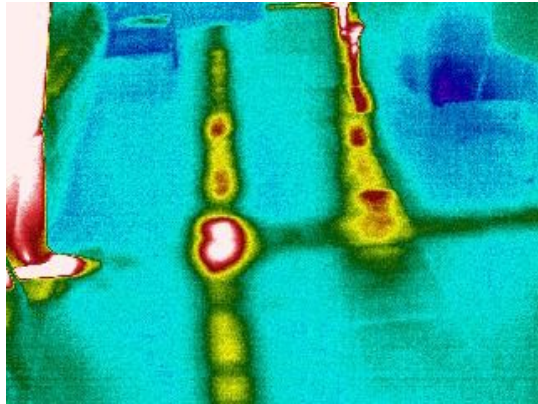
LIVING ROOM \ TOWARDS REAR RADIATOR

Equipment ID: - Work Order: NI

Key

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

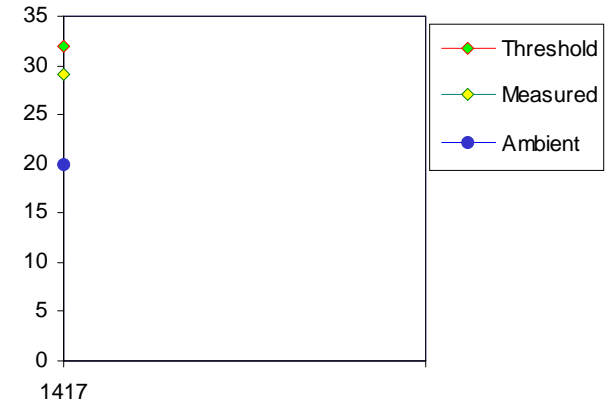
Operation Priority: CTO



IR_0082.JPG



DC_0083.jpg



Inspection History:

Inspection No	Date Inspected	Test Status	Measured Temp	Threshold Temp	Ambient Temp	Status Note	Customer Notes
1417	22/11/2010	TESTED	29 C	32 C	20 C		



Equipment Baseline Trending Report By Inspection Order

TI
TI Site 7 Hot Water Pipe Leakage

Prior Inspection No:
Current Inspection No: 1417 November 22, 2010

Report Date: 22/11/2010

LIVING ROOM \ T-PIECE TO KITCHEN

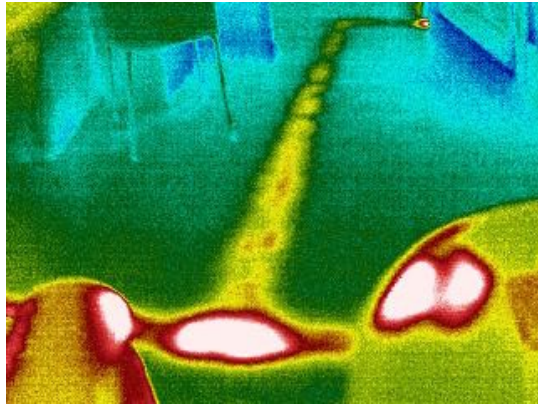
Equipment ID: -

Work Order: NI

Key

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

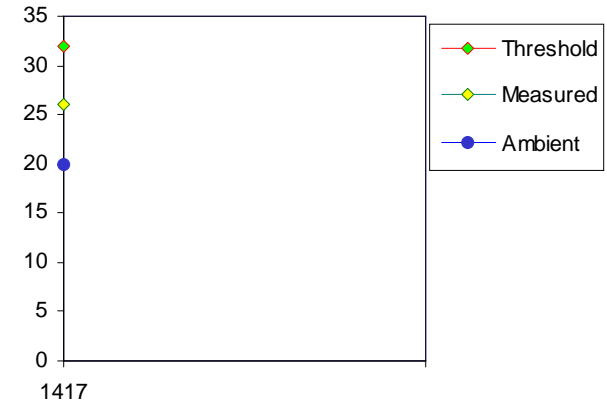
Operation Priority: CTO



IR_0085.JPG



DC_0086.jpg



Inspection History:

Inspection No	Date Inspected	Test Status	Measured Temp	Threshold Temp	Ambient Temp	Status Note	Customer Notes
1417	22/11/2010	TESTED	26 C	32 C	20 C		



Equipment Baseline Trending Report By Inspection Order

TI
TI Site 7 Hot Water Pipe Leakage

Prior Inspection No:
Current Inspection No: 1417 November 22, 2010

Report Date: 22/11/2010

LIVING ROOM \ TOWARDS WINDOW

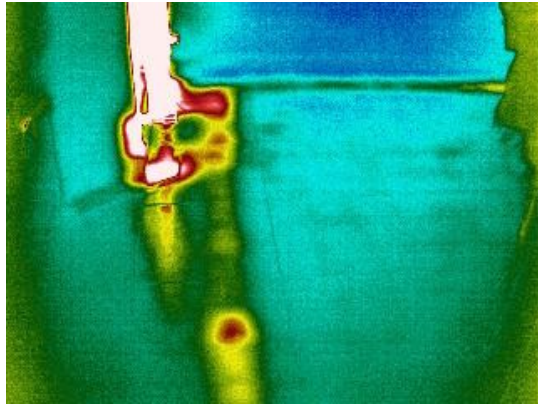
Equipment ID: -

Work Order: NI

Key

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

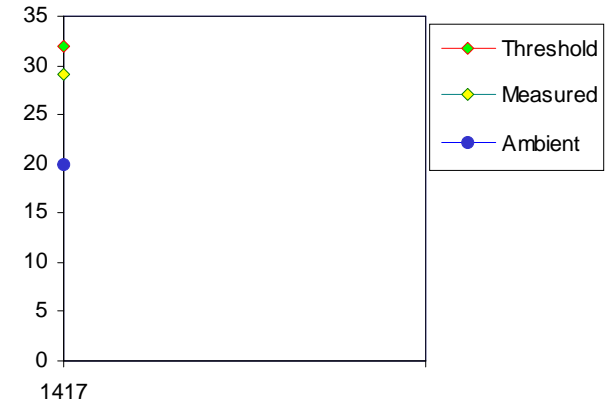
Operation Priority: CTO



IR_0073.JPG



DC_0074.jpg



Inspection History:

Inspection No	Date Inspected	Test Status	Measured Temp	Threshold Temp	Ambient Temp	Status Note	Customer Notes
1417	22/11/2010	TESTED	29 C	32 C	20 C		



Equipment Baseline Trending Report By Inspection Order

TI

TI Site 7 Hot Water Pipe Leakage

Prior Inspection No:

Current Inspection No: 1417 November 22, 2010

Report Date: 22/11/2010

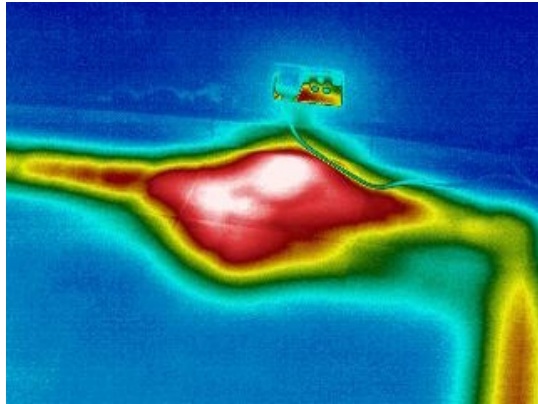
LIVING ROOM \ BENEATH FRONT WINDOW

Equipment ID: -

Work Order: NI

Key

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

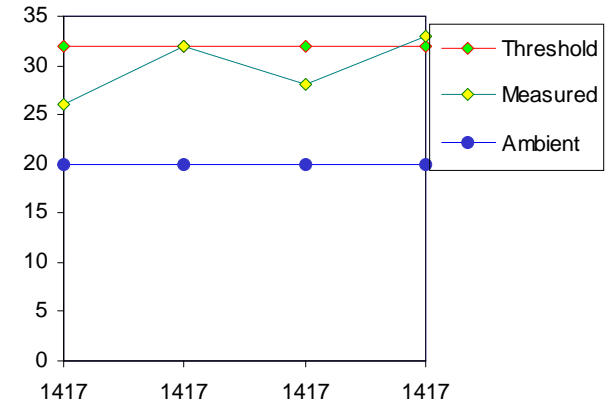


IR_0097.JPG



DC_0070.jpg

Operation Priority: CTO



Inspection History:

Inspection No	Date Inspected	Test Status	Measured Temp	Threshold Temp	Ambient Temp	Status Note	Customer Notes
1417	22/11/2010	TESTED	26 C	32 C	20 C		
1417	22/11/2010	TESTED	32 C	32 C	20 C		
1417	22/11/2010	TESTED	28 C	32 C	20 C		
1417	22/11/2010	TESTED	33 C	32 C	20 C		



Equipment Baseline Trending Report By Inspection Order

TI
TI Site 7 Hot Water Pipe Leakage

Prior Inspection No:
Current Inspection No: 1417 November 22, 2010

Report Date: 22/11/2010

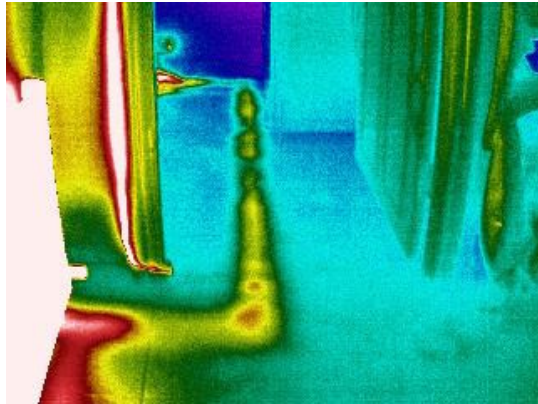
BEDROOM \ TOWARDS FRONT WINDOW

Equipment ID: - Work Order: NI

Key

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

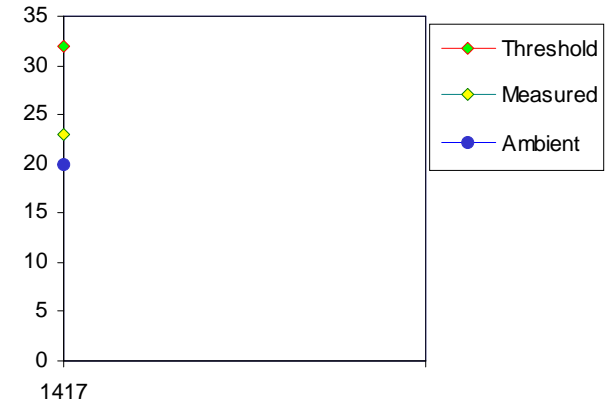
Operation Priority: CTO



IR_0077.JPG



DC_0078.jpg



Inspection History:

Inspection No	Date Inspected	Test Status	Measured Temp	Threshold Temp	Ambient Temp	Status Note	Customer Notes
1417	22/11/2010	TESTED	23 C	32 C	20 C		



Equipment Baseline Trending Report By Inspection Order

TI
TI Site 7 Hot Water Pipe Leakage

Prior Inspection No:
Current Inspection No: 1417 November 22, 2010

Report Date: 22/11/2010

BEDROOM \ BEDROOM RADIATOR

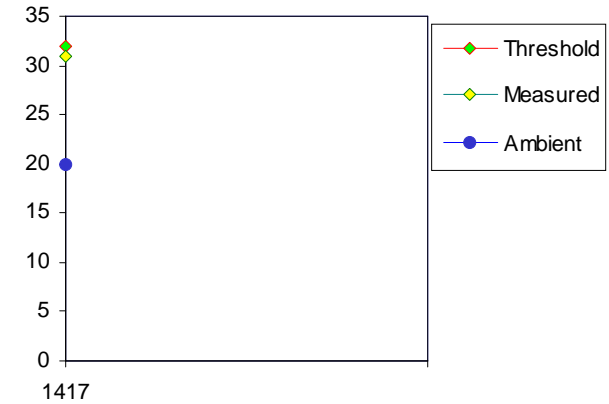
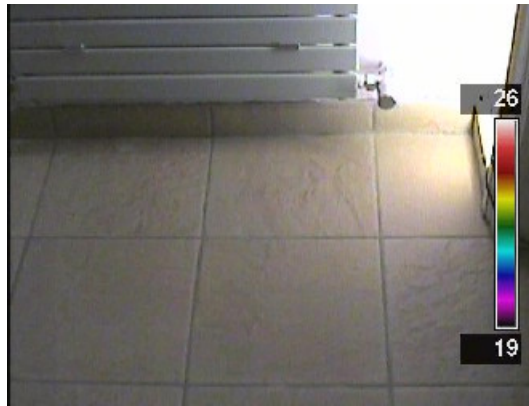
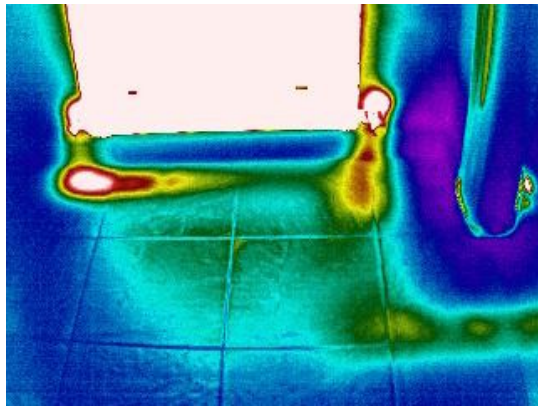
Equipment ID: -

Work Order: NI

Key

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

Operation Priority: CTO



Inspection History:

Inspection No	Date Inspected	Test Status	Measured Temp	Threshold Temp	Ambient Temp	Status Note	Customer Notes
1417	22/11/2010	TESTED	31 C	32 C	20 C		



Equipment Baseline Trending Report By Inspection Order

TI
TI Site 7 Hot Water Pipe Leakage

Prior Inspection No:
Current Inspection No: 1417 November 22, 2010

Report Date: 22/11/2010

BATHROOM \ BENEATH SINK

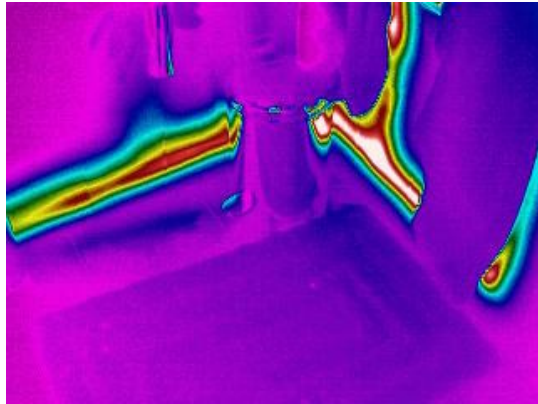
Equipment ID: -

Work Order: NI

Key

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

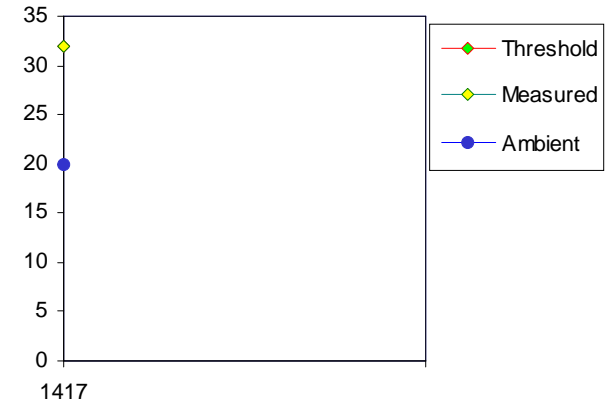
Operation Priority: CTO



IR_0087.JPG



DC_0088.jpg



Inspection History:

Inspection No	Date Inspected	Test Status	Measured Temp	Threshold Temp	Ambient Temp	Status Note	Customer Notes
1417	22/11/2010	TESTED	32 C	32 C	20 C		



Equipment Baseline Trending Report By Inspection Order

TI
TI Site 7 Hot Water Pipe Leakage

Prior Inspection No:
Current Inspection No: 1417 November 22, 2010

Report Date: 22/11/2010

BATHROOM \ LEFT OF SINK

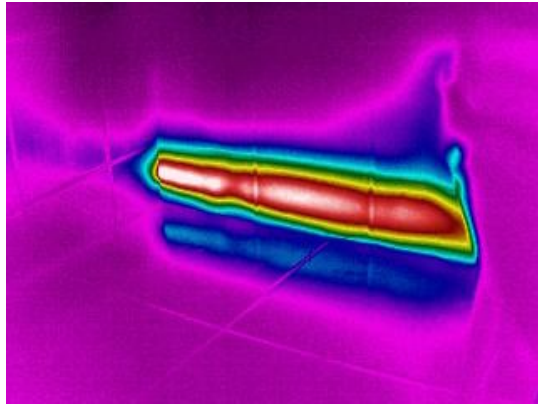
Equipment ID: -

Work Order: NI

Key

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

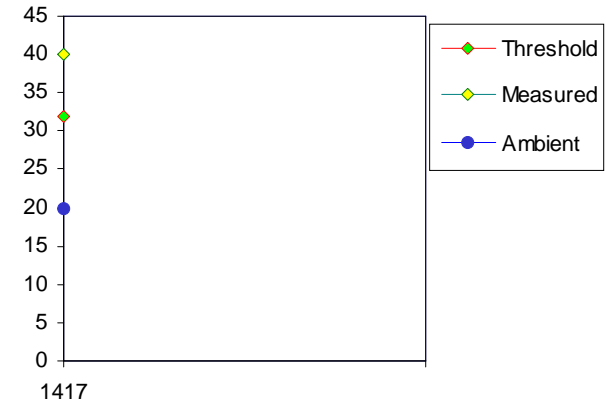
Operation Priority: CTO



IR_0089.JPG



DC_0090.jpg



Inspection History:

Inspection No	Date Inspected	Test Status	Measured Temp	Threshold Temp	Ambient Temp	Status Note	Customer Notes
1417	22/11/2010	TESTED	40 C	32 C	20 C		



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Work Order Documentation pages

Fax or Email back Corrective Work Orders



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TI

TI Site 7 Hot Water Pipe Leakage

Documentation/ Work Order Visual: Please add Corrective Work Order

Work Order #: NOT ISSUED

Corrective Work Order #:

PLEASE ADD CORRECTIVE WORK ORDERS ABOVE

1417-1 Current Prob No: Visual/1

InspectionNo: 1417
Report Date: 22/11/2010

Location/Equipment Information	
Asset ID:	-
Barcode:	NI
Location:	LIVING ROOM BENEATH FRONT WINDOW

Operation Priority:	Critical to operation
Repair Priority:	1-Critical
Hazard Type:	Visual
Hazard Classification:	Hot Water Supply & Heating Systems
Hazard Group:	Elevated surface temperature found
Hazard Issue:	indicating possible area of underfloor water leakage
Observations:	Elevated surface temperature found indicating possible area of underfloor water leakage
What is the Cause:	Suspected water leak

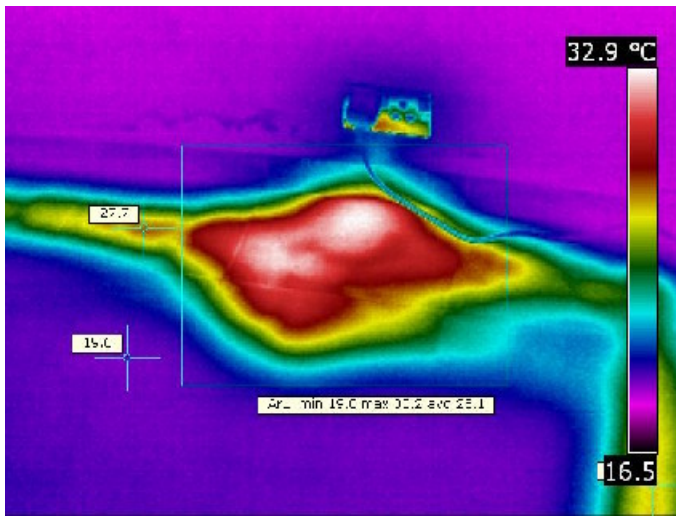


Photo File: IR_0097A.JPG

Photo Date: 30/09/2010

Photo File: DC_0072.jpg

Photo Date: 30/09/2010

Repair Information		Loss to Production	
<p>PLEASE FAX BACK AFTER REPAIR TO: 0871 900 4978 OR INFO@THERMALIMAGING.CO.UK</p>		<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Unknown	
		Consequences of Failure: <input type="text"/> Parts Req. Before Failure: <input type="text"/> Parts Req. After Failure: <input type="text"/> Repair Recommendation: <input type="text"/> Investigate source of leak and repair. Isolate equipment if necessary	Repair Date: <input type="text"/> Repaired By: <input type="text"/> Root Cause: <input type="text"/> Repair Procedure: Investigate source of leak and repair. Isolate equipment if necessary Repair Notes: <input type="text"/>



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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:					



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