Martherm
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# Selected Machinery Thermographic Inspection

## M/V NO SUCH VESSEL


## ACME Shipping

**01/01/2001**

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## *Introduction*

Infra-red thermography is a widely accepted PPM technology that can be applied to electrical and mechanical systems found in the Marine Industry.
In additional to saving money and increasing uptime, thermography can play a crucial function in maintaining the safety and reliability of marine facilities where system failure could lead to catastrophic loss of vessel or its crew.

Thermographic imaging of running machinery can play an important part in condition monitoring and assessment. Mis-aligned shafts, dry bearings, loose couplings...etc all exert adverse loads on the machinery in question, which in turn generates localised heat - which can be detected and quantified.

## *Variables*

There are many variables that can affect the accuracy of thermographic imaging; distance from object, ambient temperature, relative humidity and most importantly the materials emissivity.
Emissivity is a modifying factor used in colour thermometry to achieve a correct temperature reading. Emissivity, or radiated efficiency, of most materials is a function of surface condition, temperature and wavelength of measurement

The camera operates in the longer wavelengths of the IR spectrum - (7µm - 14µm)

Ambient temperature and relative humidity are measured at the survey point and corrected for in the camera's set up.

Emissivity values are extrapolated with reference to the 'Table of Emissivity of Various Surfaces' produced by Mikron Instruments which can be found at the end of this report

## *Advisory Note & Disclaimer*

An in depth Thermographic Survey was carried out as instructed using the NEC San-ei Thermo Tracer TH7102 system. The survey covered areas of the Plant as detailed in the following report, with any observations specified on the attached individual thermographic Shot Sheets.

This report highlights and identifies "Hot or Cold Spots" found on the day of the survey which are pin pointed very clearly in the thermal image report sheet. These detailed thermal images are supported with a standard digital photo image for ease of identification around your plant.

It is recommended that this report be analysed by a qualified member of your staff, in order for your company to undertake any necessary remedial action. This report is for advisory purposes only and Marine Thermographic Services will not assume any liability for any decisions or actions taken by you as a result of this report.

This report does not purport to set forth all hazards, impending failures or existent problems nor to indicate that other such hazards, impending failures or existent problems do not exist. By issuing this report, neither Marine Thermographic Services nor any of its employees make any warranty, expressed or implied, concerning the contents of this report. Furthermore, neither Marine Thermographic Services nor any of its employees shall be liable in any manner for personal injury or property damage or loss of any kind arising from or connected with this thermal imaging survey or failure to inspect.

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## *General*

The following report is a thermographic inspection carried out on specific machinery items requested by the ship's staff.

It is noted that all surveyed machinery must be running at normal load in order to achieve the conditions necessary to produce a meaningful Thermographic Survey Report.

Whilst under survey the running condition of each machinery item was as follows: -

| Item Description | Running Load / Condition |
|---|---|
| Bow thruster motor | 30 minutes @ full load |
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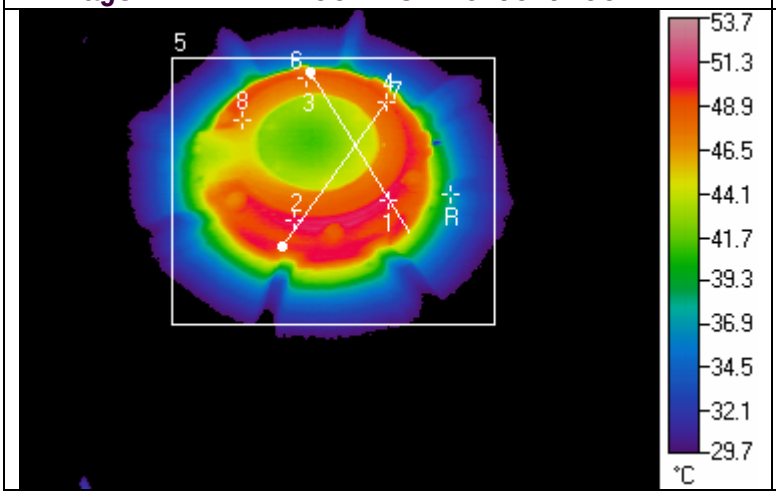
# M/V NO SUCH VESSEL

## Report Date: - 01/01/2001

| | |
|---|---|
| **Machinery ID** | **Bow Thrust Motor Top Bearing** |
| **Type** | |
| **Machinery Location** | **Bow thrust Room** |
| **Running Load / Condition** | **Full** |

**IR Image : TH710014.SIT 01/01/2001**




**Identification Image :**

| | Point1 | Point2 | Point3 | Point4 | Rect5 | Line6 | Line7 | Point8 | Ref. |
|---|---|---|---|---|---|---|---|---|---|
| **Emiss.** | **1.0** | **1.0** | **1.0** | **1.0** | **1.0** | **1.0** | **1.0** | **1.0** | **1.0** |
| **Avg** | | | | | **39.5 °C** | **46.2 °C** | **46.2 °C** | | |
| **Min** | | | | | **26.8 °C** | **42.8 °C** | **42.9 °C** | | |
| **Max** | **50.2 °C** | **50.3 °C** | **48.0 °C** | **48.3 °C** | **51.0 °C** | **50.6 °C** | **50.5 °C** | **46.7 °C** | **37.2 °C** |
| **Delta** | **13.0 °C** | **13.1 °C** | **10.8 °C** | **11.1 °C** | **13.8 °C** | **13.4 °C** | **13.3 °C** | **9.5 °C** | |

**Comments & Recommendations:**

**After 30 minutes you see a rise at point 1 but the interesting reading is the delta which gives an over all temp rise which is 13 degrees from point one to three which would indicate heat on one side i.e. at point one. I recommend bearing keeper plate is removed and bearing inspected for signs of deterioration**

**Thermographer: - Jim Scott**

| | |
|---|---|
| **Repair Date:** | **Repaired By:** |