Use of the Braun ThermoScan IRT 3020 Heat Stress Monitors

Tank Farm Operating Procedure

Industrial Hygiene

USQ # N/A-4

Change History (≤ Last 5 Rev-Mods)

<table>
<thead>
<tr>
<th>Rev-Mod</th>
<th>Release Date</th>
<th>Justification</th>
<th>Summary of Changes</th>
</tr>
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<tbody>
<tr>
<td>B-2</td>
<td>10/10/2017</td>
<td>Industrial Hygiene Request</td>
<td>Modified “Radiological and Contamination Control” section to current standard.</td>
</tr>
<tr>
<td>B-1</td>
<td>10/12/2016</td>
<td>Inconsequential change from Records Management</td>
<td>Updated records section.</td>
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<tr>
<td>B-0</td>
<td>07/16/2015</td>
<td>Periodic Review</td>
<td>5.1.2 added &quot;ambient&quot; and &quot;while device is off.&quot; Modified NOTE before 5.1.16</td>
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<tr>
<td>A-1</td>
<td>09/18/2014</td>
<td>IHT Request</td>
<td>Made procedure type “Routine”</td>
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<tr>
<td>A-0</td>
<td>08/09/2013</td>
<td>New procedure</td>
<td>All pages new.</td>
</tr>
</tbody>
</table>

Table of Contents

1.0 PURPOSE AND SCOPE ................................................................. 2
  1.1 Purpose ............................................................................. 2
  1.2 Scope ............................................................................ 2

2.0 Information ........................................................................... 2
  2.1 Terms and Definitions .................................................. 2
  2.2 General Information ..................................................... 2

3.0 PRECAUTIONS AND LIMITATIONS ........................................ 3
  3.1 Personnel Safety ............................................................ 3
  3.2 Equipment Safety .......................................................... 3
  3.3 Radiation and Contamination Control ............................ 3

4.0 PREREQUISITES ....................................................................... 5
  4.1 Special Tools, Equipment, and Supplies ....................... 5
  4.2 Performance Documents ............................................... 5
  4.3 Field Preparation .......................................................... 5

5.0 PROCEDURE ........................................................................... 6
  5.1 Using the Braun ThermoScan IRT 3020 Infrared Thermometer ........................................................................... 6
  5.2 Records ........................................................................... 8
1.0 PURPOSE AND SCOPE

1.1 Purpose

The purpose of this procedure is to ensure the proper use of the Braun ThermoScan IRT 3020 infrared thermometer in support of worker physiological monitoring performed in accordance with TF-OPS-IHT-007, TFC-ESHQ-S_IH-C-07.

1.2 Scope

The scope includes function, usage and collection of data.

2.0 INFORMATION

2.1 Terms and Definitions

Tympanic membrane - The external surface of the eardrum.

Core temperature - A hypothetical temperature represented by measurements reflecting deep body readings of organs or blood. Core body temperature is considered to be the best indicator of heat strain and is also used to diagnose heat related conditions such as heat stroke.

2.2 General Information

The Braun ThermoScan IRT 3020 specifications:

- Temperature range: 50 to 104 °F
- Humidity range: Less than or equal to 95 %, non-condensing
- Accuracy: ± 0.2 °F (95.9 - 107.6 °F) and ± 0.3 °F (outside this temperature range)
- Power: 1-3 volt, CR2032 lithium cell battery (should be good for about 1,000 measurements or 2 years).
3.0 PRECAUTIONS AND LIMITATIONS

3.1 Personnel Safety

Do not attempt to clear ear obstructions or counsel individuals on suggestions for ear wax removal.

If an individual has an injury or indicates pain or discomfort in their ear when using or gently inserting the ThermoScan, immediately discontinue use in that ear.

3.2 Equipment Safety

Do not use excessive force to insert lens covers into ear canal

3.3 Radiation and Contamination Control

3.3.1 Planned work in radiological areas must be approved by Radiological Control personnel per the Radiological Risk Screening procedure TFC-ESHQ-RP-RWP-C-01.

3.3.1.1 When performed without a formal work package or approved procedure (i.e., Level 3 or 4 work), this procedure is limited to radiological areas and work activities permitted by a low risk Radiological Work Permit (RWP).

3.3.2 Before conducting sampling or monitoring, contact the responsible Radiological Control personnel for the facility or area to determine any specific survey or monitoring requirements.

- Pre, during, and post contamination survey requirements.
- Any applicable RSP’s for your specific equipment or task.
- Alternative survey or monitoring needs to support the radiological release survey process.
### 3.3 Radiation and Contamination Control (Cont.)

3.3.3 Comply with the requirements set forth by the RWP, HPT coverage, Release Survey Plan (RSP), and any other applicable procedures as determined above.

3.3.4 When exiting radiological areas where no HPT coverage was provided, inform the radiological control personnel of the use/history for the equipment being presented (e.g., only sampled air in the Contamination Area, No known history of contamination based on use, etc.) to aid them in properly evaluating the radiological release criteria needed.

3.3.5 Samples collected in a radiological area shall not be removed from the facility, transported by personnel, or submitted to an analytical laboratory until they have been evaluated by an HPT in accordance with approved procedures.
4.0 PREREQUISITES

4.1 Special Tools, Equipment, and Supplies

The following supplies may be needed to perform this procedure:
- Extra Lens Filters (covers)

4.2 Performance Documents

The following documents may be needed to perform this procedure:
- Record information in accordance with TFC-ESHQ-S_IH-C-46, “Industrial Hygiene Reporting, and Records Management”
- Braun ThermoScan IRT 3020 instruction booklet (Jan. 10, 2012)
- TFC-ESHQ-S_IH-C-07, “Heat Stress Control”
- TF-OPS-IHT-007, “Using Direct Reading Instruments.”

4.3 Field Preparation

4.3.1 REVIEW the heat stress mitigation checklist and any additional written instruction from the project Industrial Hygienist.

4.3.2 WHEN performed in radiological area controlled for contamination,

NOTIFY HPT prior to use of the temperature monitoring device.
5.0 PROCEDURE

5.1 Using the Braun ThermoScan IRT 3020 Infrared Thermometer

NOTE - Measurement requires a direct line of sight to the tympanic membrane (ear drum). Some ear canal shapes may make this impossible and ear wax may impede the ability to get an accurate measurement.

- This is an objective physiological measurement and not a medical or clinical procedure.
- The unit will turn off automatically after one minute of inactivity.

5.1.1 CHECK the battery life by looking at the battery icon.

5.1.1.1 IF shading is gone, REPLACE the battery or device.

5.1.2 ALLOW the device to stabilize for 30 minutes in the ambient environment where it will be taking readings while the devices is off.

5.1.3 REMOVE the protective probe cap.

5.1.4 SNAP on a disposable, clean lens filter (cover) onto the probe.

5.1.5 PUSH the “start” button to initiate a self-diagnostic check.

5.1.6 WAIT for device to emits two (2) beeps and the display appears.

5.1.6.1 IF the display does not appear, REPLACE device.

5.1.7 GRASP the outer edge of the top half of the ear AND

PULL up, back and then hold.

5.1.8 GENTLY INSERT the ThermoScan probe into the ear canal AND

TILT the probe towards the nose.

5.1.9 PRESS the “start” button AND

WAIT till a beep is heard.
5.1 Using the Braun ThermoScan IRT 3020 Infrared Thermometer (Cont.)

5.1.10 RECORD the tympanic membrane temperature on Form A-6006-433, “WORKER HEART RATE/TEMPERATURE MONITORING FORM”.

5.1.11 IF an unrealistic reading occurs, ie < about 94 F or the “LO” message is displayed, CHANGE the lens filter and repeat Steps 5.1.5 through 5.1.10 above.

5.1.12 IF an unrealistic reading occurs again, CHANGE the lens filter AND MEASURE the other ear’s tympanic membrane.

5.1.13 IF unsuccessful again, REPEAT Steps 5.1.4 through 5.1.12 with this same eardrum.

5.1.14 IF unsuccessful after two attempts with each ear, STOP and discuss using alternate workers or methods with the Project Industrial Hygienist.

5.1.15 FOLLOW TFC-ESHQ-S_IH-C-07, “HEAT STRESS CONTROL” to apply the temperature measurement.

NOTE - Baseline and periodic measurements are collected in the same ear.

5.1.16 USE same ear that the baseline was obtained, PERIODICALLY MEASURE the worker’s tympanic membrane temperature during the work cycle by replacing the lens filter with a clean one and repeating Steps 5.1.4 through 5.1.12 above on a frequency indicated by form A-6006-433 or at the direction of the Project Industrial Hygienist.

5.1.17 PROVIDE the completed monitoring forms and associate field records to the Project Industrial Hygienist within 2 working days.
5.2 Records

1.1.1 PERFORM the following for records identified within this procedure.

1.1.1.1 RECORD the number of times the record was generated in applicable column

OR

PLACE a check mark (√) in the N/A column.

1.1.1.2 SUBMIT the package to IH.

<table>
<thead>
<tr>
<th>Records Submittal Checklist</th>
<th>Number of times completed</th>
<th>N/A (√)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FORMS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Industrial Hygiene surveys (including forms)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SEND the completed records with Records Submittal Checklist attached to the Safety and Health Program for records retention.</td>
<td></td>
<td></td>
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</tbody>
</table>

_________________________________________ / ____________________________ / ____________

Signature          Print (First and Last)          Date

IH

The record custodian identified in the Company Level Records Inventory and Disposition Schedule (RIDS) is responsible for record retention in accordance with TFC-BSM-IRM_DC-C-02.