BBSE 2.0-Alarm Test for Blood Bank Storage Equipment

1. Principle

All Blood Bank storage equipment must be continuously monitored to maintain the viability of the blood, blood products and reagents. Alarms are programmed to alert the user before the equipment reaches an unacceptable storage temperature. Testing of the alarms occurs at designated intervals to ensure they are functioning as expected and will notify staff of unacceptable temperatures.

# Specimen Collection and Preparation

N/A

# Equipment

* 1. Jewett Refrigerator
     1. SN V19T-136517-VT (BBR2)
     2. SN W26T-137081-XT (BBR1)
     3. SN Y01P-117822-YP (BBR4)
  2. Jewett Freezer
     1. SN X03R-125602-XR (BBF3)
     2. SN 51683-193 (BBF2)
     3. SN 5446-394 (BBF1)
  3. Helmer Platelet Incubator, SN 365493N (BBPL1)
  4. Forma Freezer, SN 502784-7 (BBULF1)

# Supplies

N/A

# Reagents

* 1. Waterbath of various temperatures
  2. 60% Ethylene glycol solution

## Quality Control

N/A

## Safety

Refer to Chemical Hygiene and Blood Borne Pathogen Plan for Memorial Hospital Laboratory.

## Procedure

**Refrigerator Alarms**

1. Prepare two waterbaths with approximately the following temperature:
   1. Low alarm: 1C
   2. High alarm: 6C
2. Carefully remove the temperature probe from the 10% glycerol solution.
3. Place the temperature probe, along with a calibrated thermometer, in the appropriate waterbath.
4. Watch the alarm light indicator and listen for the audible alarm.
5. Record on the Alarm Verification form:
   1. Digital temperature when alarm sounded.
   2. Unit alarm sounded (Y/N)
   3. Main lab alarm board sounded (Y/N)
   4. Blood Bank contacted by hospital operator (Y/N)
   5. Date performed and initials of tech performing
6. Repeat step c-e using the alternate waterbath.
7. Replace temperature probe in the 10% glycerol solution.
8. Acceptable results:
   1. Low alarm: 1.5C to 1.9C
   2. High alarm: 5.0C to 5.5C
   3. Main lab alarm board sounds
   4. Immediate contact by hospital operator

i. If results do not meet acceptable requirements:

* 1. Repeat testing using a newly prepared waterbath.
  2. Ensure that lab and operator alarm boards have been reset.

1. If results are still unacceptable, contact supervisor for further instructions

**Freezer Alarms**

* 1. Prepare a 60% ethylene glycol solution to approximately -25C.
  2. Carefully remove the temperature probe from the 60% ethylene glycol solution located in the freezer.
  3. Place the temperature probe, along with a calibrated thermometer, in the test ethylene glycol solution (-25C).

1. Watch the alarm light indicator and listen for the audible alarm.
2. Record on the Alarm Verification form:
   * 1. Digital temperature when alarm sounded
     2. Unit alarm sounded (Y/N)
     3. Main lab alarm board sounded (Y/N)
     4. Blood Bank contacted by hospital operator (Y/N)
     5. Date performed and initials of tech performing
3. Acceptable results:
   * 1. High alarm: -22 to -20C
     2. Main lab alarm board sounds
     3. Immediate contact by hospital operator
4. If results do not meet acceptable requirements:
   * 1. Repeat testing using a newly prepared ethylene glycol solution.
     2. Ensure that lab and operator alarm boards have been reset.
5. If results are still unacceptable, contact supervisor for further instructions

**Platelet Incubator Alarms**

1. Prepare two waterbaths with approximately the following temperature:
   * 1. Low alarm: 20C
     2. High alarm: 24C
2. Open the incubator chamber lid.
3. Carefully move the temperature probe, located on the left side of the agitator, to the outside of the incubator.
4. Close the incubator chamber lid.
5. Place the temperature probe, along with a calibrated thermometer, in the appropriate waterbath.
6. Watch the alarm light indicator and listen for the audible alarm.
7. Record on the Alarm Verification form:
   * 1. Digital temperature when alarm sounded
     2. Unit alarm sounded (Y/N)
     3. Main lab alarm board sounded (Y/N)
     4. Blood Bank contacted by hospital operator (Y/N)
     5. Date performed and initials of tech performing
8. Repeat step e-g using the alternate waterbath.
9. Replace temperature probe in the incubator.
10. Acceptable results:
    * 1. Low alarm: 20.5C to 20.9C
      2. High alarm: 23.0C to 23.5C
      3. Main lab alarm board sounds
      4. Immediate contact by hospital operator
11. If results do not meet acceptable requirements:
    * 1. Repeat testing using a newly prepared waterbath.
      2. Ensure that lab and operator alarm boards have been reset.
12. If results are still unacceptable, contact supervisor for further instructions.

**Forma Freezer Alarm**

**NOTE:** Forma freezer alarm tests require special access code. This test will be performed by authorized blood bank personnel.

1. Press the Mode key until the Configuration indicator lights.
2. Press the right arrow until HI ALRM TEST is displayed in message center.
3. Press Enter to initiate the test.
4. Watch the alarm light indicator and listen for the audible alarm.
5. Record on the Alarm Verification form:
   * 1. Digital temperature when alarm sounded
     2. Unit alarm sounded (Y/N)
     3. Main lab alarm board sounded (Y/N)
     4. Blood Bank contacted by hospital operator (Y/N)
     5. Date performed and initials of tech performing
6. Acceptable results:
   * 1. High alarm: -45C
     2. Main lab alarm board sounds
     3. Immediate contact by hospital operator
7. If results do not meet acceptable requirements:
   * 1. Repeat testing.
     2. Ensure that lab and operator alarm boards have been reset.
8. If results are still unacceptable, contact supervisor for further instructions

## References

* 1. Standards for Blood Banks and Transfusion Services, AABB, 26th Edition, 2009, Std. 3.7 & 5.1.3, Bethesda, MD.
  2. Code of Federal Regulations, Food and Drug Administration, CFR 606.60
  3. Technical Manual, AABB, 16th Edition, 2008, Method 8-3-1 & 8-3-2, Bethesda, MD.
  4. Blood Bank Refrigerator Operation Manual, 2003, Jewett, Asheville, NC.
  5. Blood Bank Freezer Operation Manual
  6. Platelet Incubator Operation Manual
  7. Forma Freezer Operation Manual

**PROCEDURE AND FORM CHANGE CONTROL**

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| Title: Alarm Test for Blood Bank Storage Equipment | | | | | | | | | | |
| Written | | **Validated** | | **Path Review** | | **Review** | | **Effective** | | **Reason for Revision** |
| Date | **By** | **Date** | **By** | **Date** | **By** | **Date** | **By** | **Date** | **By** |
| **12/18/09** | **PAB** | **12/23/09** | **GJM** | **12/29/09** | **ESB** |  |  | **2/1/10** | **PAB** |  |
| **Revised** |  |  |  |  |  |  |  |  |  |  |
| **12/21/11** | **PAB** |  |  | **12/23/11** | **ESB** |  |  | **12/29/11** | **PAB** | **New equipment names. New form.** |
|  |  |  |  |  |  | **8/2/12** | **PAB** |  |  |  |
| **9/12/12** | **PAB** |  |  | **9/12/12** | **ESB** |  |  | **9/13/12** | **PAB** | **Changed Ultra low limits** |
| **9/5/13** | **PAB** |  |  |  |  |  |  |  |  | **Changed test interval** |
| **10/27/14** | **JLH** |  |  |  |  |  |  |  |  | **Removed BBR3 from documentation and forms. Assigned number and version to SOP and forms.** |
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Location of any copy(s) of the procedure:

**Out of use:**

**Date:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_By:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Reason:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**