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Area	Laboratory-Blood Bank
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Preventative Maintenance of the Jewett Plasma Freezer - Troy Blood Bank

Document Type: Procedure

I. PURPOSE AND OBJECTIVE:

This document provides the Blood Bank Medical Technologist with guidelines and directions when performing preventative maintenance of the Thermo Scientific Jewett® Plasma Freezer.

II. CLINICAL SIGNIFICANCE:

Temperature monitored equipment must be preventively maintained to safeguard the storage of blood products and provide for safe transfusion. Blood Bank reagents also follow strict guidelines for storage as directed by their manufacturer. This monitoring follows a defined schedule at least as frequent as specified by the manufacturer. The actions in this process are recorded on a corresponding form, *Preventative Maintenance of the Jewett® Double Door Plasma Freezer*.

III. DEFINITIONS:

A. **Control Panel System**: This panel located on the top right side of the freezer provides adjustment of alarms and set points in addition to a quick visual indicator of current cabinet temperature and alarm conditions.

B. **UPS**: Uninterruptible Power Supply outlet.

IV. SUPPLIES:

A. Chart paper

B. Stop watch

C. Independent calibrated thermometer

D. cleaning supplies

E. 9 volt alkaline batteries

V. EQUIPMENT:

A. Thermo Scientific Jewett® -30°C Laboratory and Plasma Freezer Model JPL5030A Serial Number 1112069001170228

VI. PROCEDURE:

A. Quarterly Preventative Maintenance

1. **Door Ajar Status**: A visual and audible alarm will be present if the door is opened for approximately three minutes.
    a. Left Door (on a double door refrigerator do one door at a time).
        i. Record initial temperatures of sensor (display), and internal thermometer.
        ii. Activate stop watch as door is opened.
        iii. Leave door ajar (slightly is enough).
        iv. Stop watch when alarm sounds and the alarm icon on the control panel illuminates.
        v. Close door.
        vi. Record post open door test temperatures of sensor and lower (left shelf) thermometer.
        vii. Record time in minutes and seconds.
        viii. Document if the open door test passed.
    b. Right Door
        i. Repeat 1-8 after waiting at least 30 minutes before testing the right door.
        ii. Document temperatures from the display, right upper and right lower shelf thermometers.
2. **Alarm Test**: During the alarm test, the temperature sensor is artificially heated by a tiny built-in thermoelectric heating unit which simulates warm conditions. The electronic control module notes the sensor temperature changes and the control panel displays these changes. While the alarm testing procedure is very accurate and reliable, the temperature of the refrigerated space does not change during the alarm test. This test automatically advances through all steps and stops.
    a. Verify that the key position is in the Alarm On mode.
    b. To start the alarm test, press ▲ and ● simultaneously.

c. During the test the main display and thermometer bulb will indicate simulated cabinet temperature.

d. When simulated temperature exceeds the warm alarm setpoint, the alarm sounds and the alarm icon on the control panel illuminates.

e. The temperature display begins to drop. After a few seconds, the temperature in the display is back in operating range.

f. The test is now complete but the alarm continues to sound until the temperature on the display is back in the operating range.

3. **Freezer Cleaning**
    a. The exterior, interior and door gaskets are cleaned with a soft cloth and a mild detergent.
    b. Condenser cleaning is performed by Facilities Management.

4. **Graph Battery Check/Replace**: This battery provides approximately 24 hours back-up power to the chart recorder.
    a. Replace the 9V battery found in the graph recording compartment in the months of Jan and July.
    b. Date and initial the battery.
    c. Check the status of the 9V battery in the months of April and October.
    d. If the LED indicator located to the lower left of the chart, glows continuously the battery is charged.
    e. If the LED indicator flashes and/or the alarm icon illuminates during AC power, the battery needs to be replaced.

B. Annual Preventative Maintenance

1. **AC Power Failure Test**: If AC power fails, a visual and audible alarm will be present.
    a. Unplug AC power from freezer.
    b. An audible alarm sounds and the alarm icon on the control panel illuminates.
    c. Plug freezer back into AC UPS outlet.
    d. Press and hold (+) and (–) together for 3 seconds to clear alarms.

2. **Document Inspection Sticker Date**
    a. A yearly inspection sticker is affixed to each unit by Facilities Management (FM), document the date of inspection.

VII. NOTES:

A. The defrosting process on the freezer initiates automatically in response to a built-in timer, and is set for one defrost cycle every six hours. The defrost cycle is 20 minutes. The cycle terminates automatically if during defrost the evaporator coil temperature exceeds -15°C.
    1. If the temperature of the freezer exceeds -18°C due to the defrosting process, but

returns to the acceptable storage temperature range (-65°C to -18°C) within 15 minutes, then no additional actions are required.

2. If the temperature of the freezer exceeds -18°C (the high end of the acceptable storage temperature range) for more than 15 minutes due to the defrosting process, then proceed as described in Transfusion Medicine policy, *Storage Equipment Alarms and Temperature Deviations*.

B. If the Jewett freezer is temporarily out of service for preventative maintenance (PM), or if any of the PM described in this document is unacceptable and cannot be corrected as described in this document, the following steps need to be completed.

1. Attach the green Out of Service Tag if not operational.
2. Document the form, *Storage Equipment Alarms and Temperature Deviations*.
3. Document the form, *Log of Blood Bank Reagent or Equipment Problems*.
4. Notify the Blood Bank Supervisor or Lead Medical Technologist.

VIII. REFERENCES:

1. -30°C Laboratory and Plasma Freezers A and D Installation and Operation Manual 325099H11 Rev. D July 2016
2. AABB Technical Manual, *current edition*.
3. College of American Pathologists CAP Checklist, *current edition*.

Attachments

Equipment Alarms and Temp Deviations.pdf

Jewett Freezer.docx

Out of Service Notice.pdf

Reagent Equipment Problems Log.pdf

Approval Signatures

Step Description	Approver	Date
	Vaishali Pansare: Chief, Pathology	1/18/2024
	Ryan Johnson: OUWB Clinical Faculty	1/17/2024

Policy and Forms Steering Committe (if needed)	Teresa Lovins: Supv, Laboratory	1/15/2024
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