



Rush Copley Medical Center

BLOOD BANK | AURORA, IL

Proc. #4840-BB-1031

TITLE: Stopwatch and Timers Calibration

Purpose:

Timers affect the reactions and reproducibility of the tests being performed. Therefore, the accuracy must be checked upon receipt, after repair and as scheduled.

The stopwatch is calibrated with NIST's time, the calibrated stopwatch will then be used to calibrate the timers.

Policy:

All Blood Bank staff must be familiar with this procedure.

Materials:

- 1) <https://nist.time.gov/>
- 2) Stopwatch
- 3) Timers
- 4) Proc. #4840-BB-1031.1.F (Stopwatch Calibration Form)
- 5) Proc. #4840-BB-1031.2.F (Timer Calibration Form)
- 6) Proc. #4840-BB-1031.3 (Timer Inventory Log)

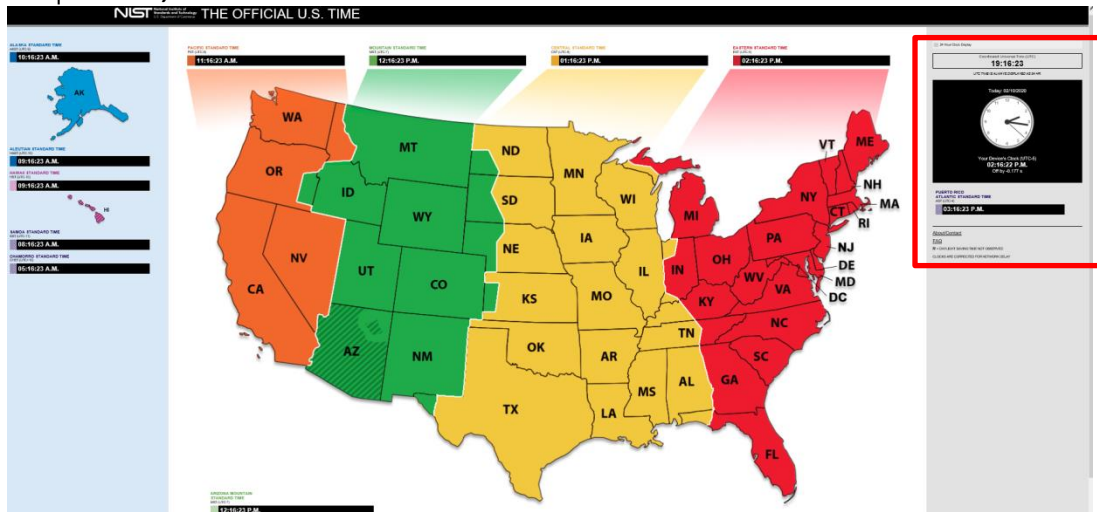
Notes & Limitation:

- 1) The stopwatch and timers must be calibrated upon receipt, semi-annually, and after repair.
- 2) Timers will be named according to the department they are primarily used in followed by a number. (ex. Blood Bank #1) Each timer's information will be kept on a timer inventory log indicating the timer name, serial number, manufacturer, and calibration date.
- 3) Timer and stopwatch calibration records will be kept in blood bank.

Procedure(s) Instruction:

Stopwatch calibration:

1. Locate the official National Institute of Standards and Technology (NIST) traceable website at <https://nist.time.gov/>. Use the Coordinated Universal Time (UTC) clock on the right hand side.



2. Please note that it is the time interval, not the actual time that is important for the stopwatch verification process.
3. Obtain a Stopwatch Calibration Form (Procedure #BB-1031.1.F) and complete the top section.
4. Take the stopwatch to be checked to the same location as the computer used to access the NIST website.
5. At the beginning of the hour start the laboratory stopwatch that is being verified. Document the time for both the UTC clock on the NIST website and the stopwatch that is being verified.
6. At the end of the hour, go back to the computer and the stopwatch that is being verified. As the computer clock reaches the end of the hour stop the stopwatch. Record the ending time from the computer website and the time from the timing device on the Stopwatch Calibration form.
7. Compare the times as indicted on the record sheet and indicate if the timing device being verified is within the defined acceptability limits.
 - a. The NIST verified stopwatch should read one hour (60 Minutes) +/- 1 second at the end of the test time of one hour.
 - b. **Note:** *The tolerance limits for the NIST verified stopwatch are different from the limits listed under the Timer Calibration section. The limits for the NIST verified stopwatch are more stringent since it will be used as the reference method.*
8. If the verified stopwatch is acceptable label it with the date of verification and the initials of the laboratory staff member who performed the test.
9. Once the stopwatch has gone through the verification procedure and has passed, this stopwatch can then be used to check other timers in the laboratory.

Timer calibration:

1. Timers used at the bench are to be considered as contaminated and should only be handled with gloves and other personal protective equipment and/or thoroughly disinfected before calibration verification.
2. Obtain a Timer Calibration form (Procedure #BB-1031.2.F) and complete top section with the appropriate information.
3. Set the laboratory timer at one minute.
4. Start the laboratory timer and the NIST verified stopwatch simultaneously.
5. Stop the NIST verified stopwatch precisely as the laboratory timer indicates that the set time has elapsed.
6. Record the NIST verified stopwatch time on the Timer Calibration form under the one minute section.
7. Compare the timer time against the stopwatch time.
 - a. Acceptable range: 5%
 - i. $1 \text{ min} \pm 3 \text{ sec}$.
 - b. If unacceptable, repeat the one minute calibration.
 - c. If the results are still unacceptable, take the timer out of service and notify the lead technologist.
 - d. Document any corrective action on the Timer Calibration Form.
8. If the one minute calibration results are acceptable, repeat the calibration for ten (10) minutes.
 - a. Acceptable range: 5%
 - i. $10 \text{ min} \pm 30 \text{ sec}$.
 - b. If the results are unacceptable at 10 minutes, take the timer out of service and notify the lead technologist.
 - c. Document any corrective action on the Timer Calibration Form.
9. Repeat the calibration process for all channels of any multi-channel timers.
10. Update the Timer Inventory Log (Procedure 4840-BB-1031.3) with the new timer calibration date or removal from service.

Related Documents:

1. Proc. #4840-BB-1031.1.F (Stopwatch Calibration Form)
2. Proc. #4840-BB-1031.2.F (Timer Calibration Form)
3. Proc. #4840-BB-1031.3 (Timer Inventory Log)

References:

1. AABB, Standards for Blood Banks and Transfusion Services, *current edition*