SOP Title: Verification and Calibration of Laboratory Timers		
Document ID: 26035	Version	1.0
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Effective Date: 28 Jan 22		

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1. PURPOSE

1.1 The purpose of this procedure is to describe the verification and calibration protocols for laboratory timers.

2. SCOPE

2.1 This procedure applies to all timers used in VICD laboratory processes.

3. REFERENCES

3.1 15000: Waste Disposal at the Advanced Technology Research Facility

3.2 10009: General Record Review

3.3 10023: Good Documentation Practices

3.4 SMILE Timer Calibration Verification – Guidelines (Equ15-01-G)

4. RESPONSIBILITIES

4.1 The Research Associate, hereafter referred to as Analyst, is responsible for reviewing and following this procedure, and documenting performance of equipment calibration.

4.2 The Quality Control Analyst or designee is responsible for reviewing and following this procedure.

4.3 The Scientific Manager or designee is responsible for training personnel in this procedure and reviewing associated documentation.

4.4 The Quality Assurance Specialist is responsible for quality oversight and approval of this procedure.

4.5 Trained personnel perform equipment maintenance record review per “10009: General Record Review.”

5. DEFINITIONS

5.1 NIST Verified Timer - Any timer within manufacturer calibration date that has been verified as accurate against a NIST source. Test Timer – Any timer outside manufacturer calibration date requiring verified calibration.

6. REAGENTS, MATERIALS, AND EQUIPMENT

6.1 Laboratory Timer (Fisher Scientific, Cat # 14-649-17 or equivalent)

6.2 Primary Disinfectant (Cavicide, Warehouse, Cat # 79300360 or equivalent)

6.3 Wipe, Low Lint, Wypalls (Warehouse, Cat # 79300335 or equivalent)

6.4 Batteries

7. HEALTH AND SAFETY CONSIDERATIONS

7.1 Proper safety precautions must be taken while working in a laboratory setting. This includes, but is not limited to, proper protective equipment such as lab coats, safety glasses, closed-toe shoes, and non-latex gloves.

7.2 Refer to the respective Safety Data Sheet (SDS) when working with any chemicals.

7.3 Refer to “HSL_GL_001: Waste Disposal at the Advanced Technology Research Facility” regarding waste disposal processes at the Advanced Technology Research Facility (ATRF).

8. PROCEDURE PRINCIPLES

8.1 Any Traceable laboratory timer within its manufactured calibration date is considered verified.

8.2 All verifications on timers past manufacturer calibration date must be performed using a currently in-date verified NIST timer.

9. VERIFICATION PROCEDURE

9.1 Prior to calibration verification, decontaminate all timers by wiping down with primary disinfectant sprayed on a low lint wipe.

9.2 Record the serial number of the NIST verified timer and all test timers on 26035-01: Timer Calibration Verification Form.

9.3 Set the time on the verified timer for exactly one hour (1:00.00).

9.4 Start all timers in the verification run. It is important that all timers begin simultaneously. If testing several timers, it is advisable to ask other analysts for assistance in starting them. Record starting time on 26035-01: Timer Calibration Verification Form.

9.5 Stop all timers only when the NIST Verified timer indicates the hour has elapsed (0:00.00 and alarm). Allow any timers that may reach 1:00.00 before the verified timer to continue timing.

9.6 Record the end time and time elapsed for the NIST verified timer and each of the test timers on 26035-01: Timer Calibration Verification Form.

9.7 Calculate the percent difference in elapsed time between each test timer and the NIST verified timer and record on 26035-01. Test timers must be within 2% of the elapsed time (72 seconds for one hour) for the verified timer in order to pass calibration.

9.7.1 To calculate Percent Difference:

C1 = Unrounded Time 1 (NIST verified Timer)

C2 = Unrounded Time 2 (Test Timer)

Average Time = (C1+C2) ÷ 2

$$\% \text{ Difference} = \left| \frac{C1 - C2}{Average \text{ Time}} \right| \times 100\%$$

9.7.2 If the difference in time elapsed is greater than 2%, a re-test must be performed on a new run form.

9.7.3 Test timers that fail a second calibration run should be marked as out of calibration and removed from laboratory use.

9.8 Record pass or fail for each test timer on 26035-01. Label each passing test timer with the following: date of calibration, date of calibration expiry, analyst initials, and % difference.

9.9 Timers passing calibration verification are valid for use in laboratory testing for six months from the date of calibration.

10. MAINTENANCE

10.1 Change batteries as needed when the display goes dim or a battery icon indicates low battery.

11. ATTACHMENTS

11.1 26035-01: Timer Calibration Verification Form.

12. REVISION HISTORY

Version	Change	Reason
1.0	New SOP for verification of laboratory timers.	Currently no SOP.

Attachment 1: 26035-01: Timer Calibration Verification Form.

Frederick National Laboratory for Cancer Research sponsored by the National Cancer Institute		Vaccine, Immunity and Cancer Directorate Standard Operating Procedure Form	
Form Title: Timer Calibration Verification Form			
Document ID: 26035-01		Version:	1.0
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NIST Verified Timer Data

Cavicide Lot #:		Cavicide Expiration Date:	
NIST Verified Timer S/N:		NIST Timer Calibration Date:	
Calibration Run Start Time:		Time Elapsed (hr:min.sec)	
Calibration Run End Time:		Performed by/date:	

Test Timer Data

Test Timer S/N:	Total time elapsed (hr:min.sec)	% Difference	Pass/Fail (≤2%)	Verification Sticker added to Test Timer	Performed by/Date
			☐ Pass ☐ Fail	☐ Yes ☐ No	
			☐ Pass ☐ Fail	☐ Yes ☐ No	
			☐ Pass ☐ Fail	☐ Yes ☐ No	
			☐ Pass ☐ Fail	☐ Yes ☐ No	
			☐ Pass ☐ Fail	☐ Yes ☐ No	
			☐ Pass ☐ Fail	☐ Yes ☐ No	

Reviewed by/date: _____

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