National Institute for Occupational Safety and Health National Personal Protective Technology Laboratory 626 Cochrans Mill Road Pittsburgh, PA 15236		
Procedure No. RCT-ASR-STP-0145	Revision: 1.2	Date: 22 October 2020

DETERMINATION OF SOUND LEVEL MEASUREMENTS FOR REMAINING SERVICE-LIFE INDICATORS ON SELF-CONTAINED BREATHING APPARATUS
STANDARD TESTING PROCEDURE (STP)

1. PURPOSE

This document establishes the procedure for ensuring that the operational Sound Level Measurements for Remaining Service-Life Indicators requirements on Self-Contained Breathing Apparatus (SCBA) submitted for Approval, Extension of Approval, or examined during Certified Product Audits, meet the minimum certification standards set forth in 42 CFR, Part 84, Subpart G, Section 84.63(c).

2. GENERAL

This STP describes the Determination of Sound Level Measurements for Remaining Service-Life Indicators on Self-Contained Breathing Apparatus test in sufficient detail that a person knowledgeable in the appropriate technical field can select equipment with the necessary resolution, conduct the test, and determine whether or not the product passes the test.

3. EQUIPMENT/MATERIALS

3.1. The list of necessary test equipment and materials follows:

3.1.1. Noise Dosimeter—Quest Technologies Noise Pro Series Dosimeter For OSHA use, the dosimeter must have a 5 dB exchange rate, use a 90 dBA criterion level, be set at slow response, and use either an 80 dBA or 90 dBA threshold gate, or a dosimeter that has both capabilities, whichever is appropriate for the evaluation.

3.1.2. Life size mannequin.

3.1.3. Self Contained Breathing Apparatus Respirator

4. TESTING REQUIREMENTS AND CONDITIONS

4.1. Prior to beginning any testing, confirm that all measuring equipment employed has been calibrated in accordance with the testing laboratory's calibration procedure and schedule. All measuring equipment utilized for this testing must have been calibrated using a method traceable to recognized international standards when available.

4.2. A background noise level of no greater than 60 dB shall be established and maintained in the location where the procedure is performed.

5. PROCEDURE

5.1. Position the microphones of the Quest NoisePro Dosimeter on each ear of the mannequin. Following the respirator manufacturer's instructions, mount the respirator assembly onto the mannequin.

5.2. Each sample measurement should be averaged over 30 seconds. Once the dBA noise level of the mannequin setup has been determined to be below 85 dBA safety limit, test subject testing may begin.

5.3. Bleed air cylinder down using the by-pass until the alarm sounds. Turn unit off.

5.4. Turn on SCBA.

5.5. Take and record five measurements.

5.6. Data Analysis

5.6.1. Average the five readings taken from the left ear.

5.6.2. Average the five readings taken from the right ear.

5.6.3. Average the left ear average and right ear average to get the total average.

5.7. This test should be done on a minimum of two respirators, or more if additional testing is required (42 CFR, Part 84, Sections 84.12, 84.30, and 84.60)

6. PASS\FAIL CRITERIA

6.1. The pass/fail criterion is made known herein.

6.2. The minimum sound level for SCBA remaining service-life indicators must be at least 80 dBa when readings are averaged from both ears of a mannequin.

7. RECORDS\TEST SHEETS

7.1. Record test data in a format that shall be stored and retrievable. Data to be reported as shown in attached data sheet.

8. ATTACHMENTS

8.1. Sound Level Measurements, Self-Contained Breathing Apparatus Data Sheet

8.1. Sound Level Measurements, Self-Contained Breathing Apparatus Data Sheet

SOUND LEVEL MEASUREMENTS, SELF-CONTAINED BREATHING APPARATUS

Project No : _____ Date: _____

Company : _____

Respirator Type: _____

Requirement: The average sound level at both ears must be greater than 80 dBA.

Procedure: The respirator is mounted on a mannequin. Five sound level measurements are taken at each ear and averaged. The results for the two ears are then averaged.

Results:

Unit # 1:	Left Ear\dBA	Right Ear\dBA	Unit # 2:	Left Ear\dBA	Right Ear\dBA
1.	_____	_____		_____	_____
2.	_____	_____		_____	_____
3.	_____	_____		_____	_____
4.	_____	_____		_____	_____
5.	_____	_____		_____	_____
Left Ear Average:	_____			_____	
Right Ear Average:	_____			_____	
Total Average:	_____			_____	

Comments:

_____

_____

_____

Test Engineer: _____ PASS_____ FAIL_____

Revision History

Revision	Date	Reason for Revision
1.0	14 November 2000	Historic document
1.1	9 September 2005	Update header and format to reflect lab move from Morgantown, WV No changes to method
1.2	22 October 2020	The document is updated to current style and content standards. There is no change to the test set up or method, but specified sound measurement instrumentation has been updated. The ability to collect an average measurement expressed in dBA over the specified 30 second interval eliminates the need to convert dose to dBA.