

**PLAINSBORO TOWNSHIP BOARD of FIRE COMMISSIONERS  
FIRE DISTRICT No. 1  
Hearing Protection Program**

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## **1. PURPOSE AND SCOPE OF HEARING PROTECTION PROGRAM**

The Plainsboro Fire District has established this Hearing Protection Program to protect the hearing of firefighters from potentially harmful noise exposures associated with non-emergency situations. The provisions of this program apply to both Employees of Plainsboro Fire District and members of Plainsboro Fire Company. This program fulfills the Public Employees Occupational Safety and Health (PEOSA) hearing protection requirements for firefighters (NJAC12-100-10.13.)

## **2. IDENTIFICATION AND ASSESSMENT OF NON-EMERGENCY NOISE SOURCES AND PROCEDURES FOR PROTECTING FIREFIGHTERS FROM POTENTIALLY HARMFUL NOISE LEVELS.**

Non-emergency sources of noise that may expose firefighters to noise levels of 85 dBA (a-weighted decibels) or greater have been identified and evaluated, and procedures have been developed for protecting firefighters from potentially harmful levels of noise associated with these noise sources. This information is presented in Attachment 1. Noise level measurements performed to provide data for assessing the noise sources are presented in Attachment 2.

Any additional non-emergency sources of potentially harmful noise that are identified in the future will be assessed and added to the Hearing Protection Program.

## **3. ENGINEERING CONTROLS, WORK PRACTICES AND HEARING PROTECTION DEVICES**

### **3.1 Engineering Controls and Work Practices**

Engineering controls and work practices will be used to the extent feasible to reduce firefighter's exposures to noise levels that may be harmful to hearing. Engineering controls and work practices applicable to non-emergency noise sources to which firefighters may be exposed are included in Attachment 1.

### **3.2 Hearing Protection Devices**

#### **Use of Hearing Protection Devices**

When noise exposures cannot be reduced adequately using engineering controls and work practices, hearing protection devices will be used. Firefighters will use hearing protection devices whenever they are exposed to noise levels of 85 dBA or greater, unless the use of hearing protection would pose a safety hazard.

Hearing protection devices that may be used by firefighters include earplugs and earmuffs.

## **Earplugs**

The effectiveness of earplugs in protecting hearing is dependent on the noise reduction rating (NRR) of earplugs and the usability of the earplugs. Earplugs are available with NRRs up to 33. For use by firefighters, earplugs with an NRR of at least 30, and preferable 33, will be selected. Earplugs will only provide effective protection, however, if they can and will be used properly. Earplugs selected for use by firefighters must fit well, be easy to insert properly, and be comfortable.

## **Earmuffs**

Earmuffs selected for use by firefighters will have an NRR of at least 30. For exposure to potentially harmful noise levels (noise levels of 85 dBA or greater) earmuffs may not be used with safety glasses unless it is determined that the temples of the glasses do not interfere with the seal of the earmuffs to the user's head.

## **4. HEARING PROTECTION TRAINING**

All firefighters will receive hearing protection training. Initial training will be provided when firefighters join the Plainsboro Fire District, and refresher training will be incorporated into the firefighter's on-going training program.

The training will include the effects of noise exposure on hearing, sources of noise to which firefighters may be exposed, procedures for protecting hearing from excessive noise exposures, and the proper use and limitations of hearing protection devices.

## **5. OSHA HEARING CONSERVATION PROGRAM**

The Occupational Safety and Health Administration (OSHA) has established an eight-hour time-weighted average noise exposure of 85 dBA as an action level above which personnel are to be included in a Hearing Conservation Program (29CFR1910.95.) Accordingly, any firefighter who has a non-emergency noise exposure that is 85 dBA or greater, averaged over an eight-hour period will be included in an OSHA-mandated Hearing Conservation Program. Sources of non-emergency noise exposure that exceed 85 dBA have been identified and evaluated. Based on the magnitudes and the durations of these noise exposures, the eight-hour average noise exposure levels of firefighters resulting from non-emergency noise sources is not expected to be 85 dBA or greater.

Any additional noise sources identified in the future will be evaluated to determine if it is likely that the noise exposures of any firefighter may exceed the OSHA action level. In accordance with OSHA noise exposure regulations, a hearing conversation program will be implemented for any firefighter found to have a non-emergency noise exposure that exceeds the OSHA action level.

## **6. REFERENCES**

NJAC12:100-10.13, Hearing Protection Standards for Firefighters, Public Employees Occupational Safety and Health, New Jersey Department of Health and Senior Services, Trenton, NJ.

OSHA, 29CFR1910.95, Occupational Noise Exposure, Occupational Safety and Health Administration, Washington, DC.

**ATTACHMENT 1**

**IDENTIFICATION AND ASSESSMENT  
OF NON-EMERGENCY NOISE SOURCES  
AND PROCEDURES FOR PROTECTING FIREFIGHTERS  
FROM POTENTIALLY HARMFUL NOISE LEVELS**

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## **AIR COMPRESSOR ROOM**

### **Noise Sources**

Breathing Air Compressor  
Truck Air Compressor

### **Measured Noise Levels**

Noise levels measured outside of the air compressor room, three feet from the door, with both breathing air and truck air compressors operating

With door open  
average-90.6 dBA  
range-90.0 to 91.0 dBA

With door closed  
average-77.0 dBA  
range-76.7 to 77.5 dBA

Noise level measured at SCBA bottle filling station with breathing air compressor operating and truck air compressor not operating

Average-81.6 dBA  
Range-81.2 to 83.0 dBA

### **Hearing Protection Procedures for Air Compressor Room Noise Isolation**

The room entry door is to be kept closed at all times that a person is not in the room.

### **Hearing Protection Procedures for Working in Air Compressor Room**

If the truck air compressor starts while a person is in the room, the person must exit the room or turn the compressor off. If the truck air compressor is turned off while a person is in the room, the person must be sure to turn it back on when exiting the room.

A hearing protection procedure is not specified for SCBA bottle filling because the noise exposure level from the breathing air compressor is below 85dBA. Nevertheless, a person should not spend unnecessary time in the room when the breathing air compressor is operating.

## **WORKSHOP IN TRUCK BAY AREA**

### **Noise Source**

Operating a Grinder Wheel

## **Measured Noise Levels**

Noise levels measured at the location of a person's ear while operating the grinding wheel

Grinding wheel on—not grinding

average—78.8 dBA  
range—78.5 to 79.3 dBA

Grinding wheel on—grinding

average—97.9 dBA  
range—96.2 to 100.5 dBA

The duration of a person's noise exposure while grinding at the wheel would generally be only a few seconds, to a few minutes at most. This would correspond to an eight-hour time-weighted average exposure well below the OSHA hearing conservation program action level of 85 dBA.

## **Hearing Protection Procedure for Operating Grinding Wheel**

Firefighters must wear earplugs while operating the grinder wheel.

## **OPERATING POWER SAW FOR TESTING**

### **Measured Noise Level**

Noise level measured at the location of a person's ear while operating a power saw for testing

average-96.5 dBA  
range-83.5 to 105.0 dBA

The duration of a person's noise exposure while operating a power saw for testing would generally be about 30 seconds. This would correspond to an eight-hour time-weighted average noise exposure well below the OSHA hearing conversation program action level of 85 dBA.

## **Hearing Protection Procedure for Operating A Power Saw for Testing**

Firefighters must wear earplugs or earmuffs while operating a power saw for Testing.



## **OPERATING POWER SAW FOR TRAINING**

### **Measured Noise Level**

Noise level measured at the location of a person's ear while operating a power saw for training

average-102.3 dBA  
range-100.1 to 105.2 dBA

The duration of a person's noise exposure while operating a power saw for training may range from about 30 seconds to a few minutes.

The average measured noise level would correspond to an eight-hour time-weighted average level less than the OSHA hearing conversation action level of 85 dBA as long as the exposure did not exceed 44 minutes. The maximum measured noise level would correspond to an eight-hour time-weighted average level less than the OSHA hearing conversation action of 85 dBA as long as the exposure did not exceed 29 minutes.

### **Hearing Protection Procedure for Operating A Power Saw for Training**

Firefighters are to wear hearing protection during power saw training unless it is determined that the use of hearing protection would pose a safety hazard.

## **FIRE TRUCK STARTUP AND EXITING TRUCK BAY**

### **Measured Noise Levels**

Noise levels measured during fire truck operations in bay

Three feet from front of truck  
average-91.8 dBA  
range-91.3 to 92.7 dBA

Three feet from side of truck  
average-87.9 dBA  
range-87.8 to 88.1 dBA

At the entrance to gear room  
average-81.2 dBA  
range-80.9 to 81.4 dBA

A person would not be close to a truck operating in a bay for more than a few seconds.

## **Hearing Protection Procedure for Fire Trucks Starting Up and Exiting Truck Bays**

A hearing protection procedure is not required for fire trucks starting up and exiting the truck bays. The duration to noise from a truck operating inside of the truck bays is very brief, and the noise level in the gear room is well below 85 dBA.

## **FIRE TRUCKS OPERATING FOR TESTING ON FRONT DRIVEWAY**

### **Measured Noise Levels**

Noise levels measured during fire truck operation for testing on front driveway

At passenger door  
average-86.6 dBA  
range-86.2 to 87.9 dBA

Checking gear in gear compartment  
average-84.1 dBA  
range-84.0 to 84.2

Checking (operating) generator in generator compartment  
average-87.7 dBA  
range-87.5 to 88.2 dBA

In cab  
average-74.9 dBA  
range-74.4 to 76.0

The duration of operation of a fire truck for testing would range from approximately 6 to 30 minutes, depending upon the truck being tested.

## **Hearing Protection Procedure for Operating A Fire Truck for Testing**

Firefighters should wear earplugs or earmuffs while performing tasks, such as checking a fire truck generator or gear compartment, that require them to work in close proximity to the truck.

## **EMERGENCY GENERATOR TESTING**

### **Measured Noise Levels**

Noise levels measured during operation of emergency generator

Picnic Table Area (5 feet from generator fence)  
average-84.4 dBA  
range-83.9 to 84.9 dBA

Employees Smoking Area  
average-72.3 dBA  
range-72.0 to 73.1 dBA

Members Room  
average-51.6 dBA  
range-50.3 to 60.2 dBA

The emergency generator is operated once a week for testing. The duration of operation of the emergency generator for testing is approximately 30 minutes. A hearing protection procedure is not required for emergency generator testing. However, firefighters should use picnic tables furthest from the generator while it is being tested.

**ATTACHMENT 2**  
**NONEMERGENCY**  
**NOISE LEVEL MEASUREMENTS**

**SEKULIC ENGINEERING**  
**19 GREEN AVENUE, MADISON, NEW JERSEY 07940**  
**TEL: (973-593-4877 e-mail: [tsekulic@verizon.net](mailto:tsekulic@verizon.net))**

**PLAINSBORO FIRE DISTRICT  
NONEMERGENCY  
NOISE MEASUREMENT STUDY**

**PREPARED FOR  
THE PLAINSBORO DISTRICT  
407 PLAINSBORO ROAD  
PLAINSBORO, NEW JERSEY**

**NOVEMBER 29, 2011**

**PLAINSBORO FIRE DISTRICT  
NOISE MEASUREMENT STUDY**

Noise level measurements were performed on November 29, 2011, to assess non-emergency sources of noise which firefighters may be exposed at the Plainsboro Fire District facility.

The measured noise levels are presented in the following table.

A summary of the noise measurement procedure and instrument specifications is attached.

**PLAINSBORO FIRE DISTRICT  
NOISE LEVEL MEASUREMENTS  
11-29-11**

<b>Measurement Performed</b>	<b>Measured Noise Noise Level (dBA)</b>	
	<b>Average</b>	<b>Range</b>
Air Compressor Room Both Breathing Air and Truck Air Compressors Operating Outside of Room-3 Feet from Door with Door Open	90.6	90.0 to 91.0
with Door Closed	77.0	76.7 to 77.5
Air Compressor Room Breathing Air Compressor Operating Truck Air Compressor Not Operating Inside Room-at Bottle Filling Station	81.6	81.2 to 83.0
Workshop in Truck Bay Area At Operator's Ear Location Grinding Wheel On-Not Grinding	78.8	78.5 to 79.3
Grinding Wheel On-Grinding	97.9	96.2 to 100.5
Operating Power Saw for Testing At Operator's Ear	96.5	83.5 to 105.0
Operating Power Saw for Training At Operator's Ear	102.3	100.1 to 105.2
Fire Truck with Engine Running in Bay Engine R49, Bay 2 3 Feet from Front of Truck	91.8	91.3 to 92.7
3 Feet from Side of Truck	87.9	87.8 to 88.1
At Entrance to Gear Room	81.2	80.9 to 81.4

Fire Truck Testing on Front Driveway  
Engine 49

At Passenger Door	86.6	86.2 to 87.9
Checking Gear	84.1	84.0 to 84.2
Checking Generator	87.7	87.5 to 88.2
In Cab	74.9	74.4 to 76.0

Emergency Generator Testing

At Picnic Tables, 5 Feet from Generator Fence	84.4	83.9 to 84.9
At Employee Smoking Area	72.3	72.0 to 73.1
In Members Room	51.6	50.3 to 60.2



**ATTACHMENT  
NOISE MEASUREMENT PROCEDURES  
AND INSTRUMENT SPECIFICATIONS**

The noise level measurements were performed with a Quest SoundPro Type 1 sound level meter.

The meter measurement parameters were set as follows:

- sound level meter
- A-weighted scale
- slow response
- no measurement threshold
- 30 to 120 dBA range

Noise levels were measured in A-weighted decibels (dBA)

The sound level was field calibrated prior to use, and the calibration was checked before and after use, as follows:

Date	Time	Field Calibration	Calibration Check
11-29-11	8:20 am	114.0	114.1 / 114.0
11-29-11	10:50 am	---	114.1 / 114.0

The specifications and laboratory calibration dates of the sound level meter and calibrator were as follows:

Sound Level Meter: Quest SoundPro DL-1-1/3  
Type 1 Sound Level Meter  
ANSI S1.4-1983 (R2001)  
Quest Serial Number BJ1040009  
Calibrated by Advanced Labs, Inc. on 11/17/11

Calibrator: Quest Model QC-10, 114 dB at 1000 Hz  
Quest Serial Number Q10080144  
Calibrated by Advanced Labs, Inc. on 1/25/11