

Hearing Conservation Program



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Hearing Conservation Program

Revision History

| Revision | Effective Date | Reason for New or Change/Description of New or Change |
|-----------------|-----------------------|---|
| 4 | 09/01/17 | This revision replaces the previous revision in its entirety; therefore, no revision bars are shown. This revision further establishes guidance for the protection of personnel from hearing loss induced by workplace noise during construction activities. |
| 3 | 04/14/2015 | Initial Issue. Bechtel Corporation's Core Process 2HI-H030-00312, Rev. 3, <i>Hearing Conservation Program</i> , dated November 2009, was approved for use as an adopted procedure by the UPF Project and issued as UPF-CP-312, Rev. 3, <i>Hearing Conservation Program</i> , in April 2015. |

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Hearing Conservation Program

1.0 Purpose

This procedure describes the processes to be implemented at the Uranium Processing Facility (UPF) construction site and support areas for worker protection against hearing loss due to exposure to noise during construction activities. This procedure establishes the written hearing conservation program (HCP) for the UPF project.

2.0 Scope

This procedure applies to all personnel who are assigned to work at locations within the UPF construction site and/or support areas where the potential for exposure to high levels of workplace noise exists. The procedure applies to direct-hire (craft and nonmanual) personnel who are exposed to noise levels at or above the American Conference of Governmental Industrial Hygienists (ACGIH) threshold limit value (TLV)–time-weighted average (TWA). Subcontractors shall have an HCP that complies with the requirements of the UPF HCP.

3.0 Roles and Responsibilities

3.1 Construction Manager

The Construction Manager has the overall responsibility for ensuring the effective implementation of this procedure. The Construction Manager is responsible for ensuring that all applicable construction project personnel exposed to noise levels at or above the ACGIH TLV–TWA actively participate in the HCP, and providing worker support, facilities, and other resources necessary to effectively carry out the HCP.

3.2 Project Industrial Hygienist

In conjunction with the Construction Manager, the Project Industrial Hygienist (PIH) is responsible for implementing and administering this procedure. The overall authority to interpret this procedure rests with the PIH, and includes the authority to interpret the intent and applicability of this procedure, as well as all requirements referenced in or associated with this procedure. The PIH or designee should ensure the following:

- Exposure assessments are performed by Environment, Safety and Health (ES&H) personnel with calibrated sound-level meters and dosimeters, and other measuring instruments.
- An effective personal protective equipment (PPE) program is in place to ensure that employees wear required hearing protection PPE (e.g., earmuffs and/or earplugs) in work areas where noise levels are at or above the ACGIH TLV–TWA and that hearing protection PPE has been properly evaluated and accepted for the work environment.
- Engineering controls are evaluated and implemented for tasks that potentially expose workers to noise levels equal to or greater than the ACGIH TLV–TWA.
- A hearing conservation training program adapted to conditions specific to the UPF construction site and support areas is developed.
- Noise-level measurement records are maintained by the project and entered into the Bechtel Industrial Hygiene Records System.
- A noise-monitoring strategy is implemented to ensure that noise monitoring is conducted and documented. (See Section 4.2.1, “Noise Monitoring Strategy.”)

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3.3 **Environment, Safety and Health Representative**

The ES&H Representative has the responsibility for implementing HCP requirements in accordance with this procedure. The ES&H Representative is responsible for conducting periodic field inspections, and providing technical advice and interpretation of worker safety and health requirements included in this procedure. Other responsibilities include the following:

- Coordinate and communicate with the Project ES&H Manager or designee about noise-monitoring activities.
- Ensure that noise-monitoring equipment is in good operating condition and that it has the current calibration date.
- Operate noise-monitoring equipment in accordance with the manufacturer's guidance.
- Perform pre- and post-monitoring noise instrument calibration checks, as required.
- Advise field construction workers when they need to be wearing hearing protection PPE and how to wear it correctly.
- Help communicate noise-related hazard information to employees, e.g., assist with posting warning signs in areas where hearing protection is required.
- Document noise-monitoring activities.
- Communicate the data obtained from personal noise-level monitoring to personnel.

3.4 **Construction Supervision**

Construction supervision is responsible for having a thorough understanding of individual responsibilities regarding compliance with and implementation of this procedure, which may include the following:

- Coordinate with the PIH or designee and the ES&H Representative or designee to ensure that noise levels are monitored and warning signs are posted in accordance with the requirement of the HCP.
- Ensure within their areas of responsibility that the applicable safety controls and processes are incorporated into planning and execution of the work and that the workers are implementing and complying with this procedure.
- Ensure that work areas and tasks under their responsibility have been assessed for noise and that locations with high noise levels are posted in compliance with this procedure.
- Ensure that controls (e.g., engineering controls, administrative controls, PPE) have been assessed for their work areas and tasks and are implemented for reducing or eliminating the worker exposure to noise.
- Identify and report to PIH or E&SH Representative all employees who are or will be potentially affected by the requirements of this procedure.
- Identify employees who may be exposed to noise levels at or above an 8-hour TWA of 85 decibels, A-scale (dBA) (or a dose of 100 percent).
- Ensure that employees who are exposed to noise levels at or above an 8-hour TWA of 85 dBA (or a 100-percent dose) have been trained.
- Ensure that employees are wearing hearing protection devices in posted or designated noise areas and are wearing them correctly.
- Enforce the requirements of this procedure.

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3.5 Occupational Medical Provider(s)

The occupational medical provider is responsible for the following:

- Conduct baseline and annual audiograms for project workers enrolled in the HCP.
- Evaluate workers referred to by the PIH.
- Determine whether any of the workers enrolled in the HCP has experienced a standard threshold shift (STS)
- Notify the worker and the PIH when an STS has occurred.

It is the responsibility of Bechtel National Inc. and subcontractors to have their own occupational medical providers. The PIH will coordinate with the Y-12 National Security Complex (Y-12) Occupational Health Services for designated project employees who are allowed to use services provided by Consolidated Nuclear Security, LLC (CNS) on-site medical staff (e.g., CNS craft). Subcontractors will be responsible for procuring occupational medical services for their employees who are required by the HCP to receive baseline and annual audiograms.

3.6 Workers

Workers are responsible for complying with the requirements of the HCP, including the following:

- Wear required hearing protection PPE (e.g., earmuffs and/or earplugs).
- Wear noise dosimeter devices, as assigned by PIH or ES&H Representative.
- Follow HCP-required safety postings.
- Attend or participate in HCP training or other requirements (e.g., audiograms)

4.0 Occupational Noise Exposure Prevention and Control

The UPF project will implement controls prescribed in this HCP when noise-monitoring results indicate that personnel exposure levels exceed the values shown in Table 1.

Table 1. Occupational Noise Exposure Limits

| Duration per Day | Sound Level (dBA) |
|-------------------------|--------------------------|
| 16 hours | 82 |
| 8 hours | 85 |
| 4 hours | 88 |
| 2 hours | 91 |
| 1 hour | 94 |
| 30 minutes | 97 |
| 15 minutes | 100 |
| 7.5 minutes | 103 |
| 3.75 minutes | 106 |
| 1.88 minutes | 109 |
| 0.94 minute | 112 |
| Not allowed | >115 |

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4.1 **Hearing Conservation Program**

This HCP is designed to prevent noise-induced occupational hearing loss. The intent of this program is to identify areas or activities within the jobsite where personnel noise exposures may equal or exceed an 8-hour TWA of 85 dBA or a dose of 100 percent.

Use of the hierarchy of controls to protect employees from hearing loss will occur in the following order of precedence: elimination, substitution, engineering controls, administrative controls, and PPE.

Finally, the program monitors workers assigned to HCP-designated areas or exposure groups to measure and verify that workers are protected through:

- A baseline and an annual audiogram
- Additional audiograms as required by authorized occupational medical providers

4.2 **Hazard Assessment Review and Planning**

Noise hazards will be assessed as part of the work planning process via job hazard analysis (JHA). In addition, workers will review noise hazards and hazard controls at the work location daily (or more frequently as appropriate) via the Safety Task Analysis and Risk Reduction Talk (STARRT) process. Any known tasks or activities with the potential to expose workers to noise levels at or above the ACGIH TLV–TWA should be identified and documented in the JHA and on UCN-23162, *Safety Task Analysis Risk Reduction Talk (STARRT) Card*. For more information, refer to Y17-95-64-823, *UPF Safety Task Analysis and Risk Reduction Talk/Job Hazard Analysis Program (STARRT/JHA) Process*.

The PIH may use existing noise data, such as those available from the Y-12 Industrial Hygiene or Occupational Health Services or those maintained in the Bechtel Industrial Hygiene Records System, to identify tasks that potentially expose worker groups to noise levels exceeding the ACGIH TLV–TWA.

The PIH or designee is responsible for evaluating the need for engineering controls and other controls for hearing protection. The PIH or designee make recommendations based on the evaluation as to what controls should be implemented for protecting workers from occupational hearing loss.

4.2.1 **Noise-Monitoring Strategy**

Under the direction of the PIH or designee, ES&H personnel will conduct noise-level monitoring. Noise monitoring shall be performed by personnel who are knowledgeable in the implementation of noise-monitoring strategies, noise-monitoring instruments and occupational noise exposure standards, and the requirements of this procedure.

To record noise measurements, ES&H personnel use UCN-26521, *Noise Monitoring Form*, or equivalent as determined by the PIH. The Noise Monitoring Form is included as Attachment 2 to this procedure.

Employees exposed at or above the ACGIH TLV–TWA will be notified of the results of the monitoring. Affected employees will be notified either verbally or in writing within two working days. To notify affected employees in writing, use UCN-26522, *Employee Notification Form*, or equivalent as determined by the PIH. The Employee Notification Form is included as Attachment 3 to this procedure.

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4.2.2 Observation of Monitoring

Employees or their representatives shall have the opportunity to observe noise measurements when they are directly affected by the measurements taken. The PIH or the ES&H Representative should inform workers or their representatives when noise measurements will occur.

4.2.3 Sound Survey Request

Personnel may request the PIH or designee to conduct a sound survey when they believe that there is a source, area, or task that potentially exposes them to hazardous noise levels. To make such a request, the employee must first contact the employee's supervisor. The supervisor will then forward the request to the PIH. The PIH will consider the request and determine whether the request should be prioritized relative to other survey requests or activities.

4.3 Noise Prevention Methods

The prevention of exposure to unacceptable occupational noise levels shall occur in the following order of precedence: elimination, substitution, engineering controls, administrative controls, and PPE. These noise control methods are discussed in Sections 4.3.1 through 4.3.3. Section 4.3.4 discusses how hearing protection devices are selected.

4.3.1 Elimination, Substitution, and Engineering Controls

The first line of defense against noise exposure is *elimination*. If a noise source can be eliminated and the work can still be performed, that should be the first consideration.

The second line of defense is *substitution*. If a tool or a piece of equipment that produces less noise is available for substitution, it should be considered for use (in line with the Buy Quiet initiatives led by the National Institute for Occupational Safety and Health [NIOSH]).

The third line of defense is *engineering controls*. Specific controls may include the following:

- Replace or modify noisy equipment.
 - Use equipment with noise reduction controls.
 - Retrofit equipment with a device that provides for low noise output or local noise attenuation.
- Erect a suitable sound barrier (e.g., sound wall or curtain) to isolate employees from the noise source.
- Install vibration dampeners.
- Install mufflers.

4.3.2 Administrative Controls

The fourth line of defense against noise exposure is *administrative controls*. Specific administrative controls may include the following:

- Develop and implement a regular maintenance schedule to ensure proper operation of tools and equipment, including equipment installed for noise attenuation.

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- Increase the distance between noise-producing equipment and employees.
- Limit personnel access, when feasible, to noisy areas.
- Limit the amount of time that workers are exposed to noise (e.g., shut down noisy equipment when it is not needed).
- Post signs and/or erect barricades to prohibit unauthorized personnel access to noisy areas (in accordance with UPF-CP-214, *Barricades and Signs*).
- Administer the HCP, including monitoring the use of personal hearing protection devices by workers at risk of excessive noise exposure.

When a noise source is identified that puts workers at risk of overexposure, its location, as well as any associated requirements and measures for exposure control, shall be communicated clearly to workers. The hazard can be effectively communicated by the use of one or more of the following methods: mark the area with danger or caution signs (or tapes), mark the equipment (source) with a noise label (affixed to a position that is level with or readily visible from the operator's work position), pre-job briefing, JHA, STARRT, and other approved methods of hazard communication. This requirement does not apply to alarm systems, public address systems, or other source of intermittent noise exposure that would not equal or exceed the ACGIH TLV-TWA.

4.3.3 Personal Protective Equipment

Hearing protection devices (PPE) shall be made available to all employees exposed to noise levels at or above the ACGIH TLV-TWA at no cost to the employees. All employees who may be exposed to noise levels at or above an 8-hour TWA of 85 dBA are required to wear hearing protection devices. Double hearing protection (i.e., earplugs covered by earmuffs) is required when noise levels equal or exceed an 8-hour TWA of 100 dBA.

In general, earmuffs and banded or corded earplugs are recommended when one needs to wear hearing protection for only a short time (e.g., walking through or briefly entering a posted noise area).

Workers must wear hearing protection devices when any of the following situations or conditions applies:

- Waiting for a sound-level survey to be completed.
- Performing a task whose work documents (e.g., JHA, STARRT) and/or this program require that workers wear hearing protection.
- Working in or passing through posted noise hazard locations as specified by the area postings or signs.
- Using tools designated as high-noise equipment.

Additionally, as a rule of thumb, workers should consider wearing hearing protection when circumstances such as those listed below exist:

- You have to raise your voice above a normal level to be heard by someone 3 feet away from you.
- You perceive the noise level to be above that of a crowded bar or restaurant.

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4.3.4 Selection and Attenuation

4.3.4.1 Selection

The PIH or designee and Construction Supervision or designees are responsible for selecting appropriate hearing protection devices for workers. The selection of an appropriate hearing protection device follows the steps described below. Because the device's noise reduction rating (NRR) represents its ability to reduce noise under ideal laboratory conditions, the PIH or designee uses suitable correction factors to account for known differences between the device's laboratory-derived attenuation values and the protection actually obtained in the workplace.

The PIH or designee selects an appropriate hearing protection device using the below-listed three-step method:

1. Determine the employee's representative noise exposure.
2. Determine the recommended NRR (Table 2).
3. Select the hearing protection from ML-SH-801768-A005, *Hearing Protection List*.

4.3.4.2 Hearing Protection Usage

The amount of protection (attenuation) provided by a hearing protector in actual field use has been shown to be lower when the protector is not used properly or a comfortable noise-blocking seal is not maintained during the entire noise exposure. Use Table 2 to assist in the selection of appropriate hearing protection.

Table 2. Recommended Noise Reduction Ratings

| Noise Exposure (8-hour TWA) | Recommended NRR ^{1, 2} |
|-----------------------------|---|
| 85–89 dBA | 20 or Higher |
| 90–92 dBA | 25 or Higher |
| 93–95 dBA | 29 or Higher |
| 96–114 dBA | Contact the Project Industrial Hygienist for hearing protection evaluation. |

¹ The NRR is a U.S. Environmental Protection Agency (EPA) labeling guide of noise reduction (in decibels [dB]) determined by laboratory test measurements in accordance with American National Standards Institute (ANSI) S3.19-1974, *American National Standard for the Measurement of Real-Ear Hearing Protectors and Physical Attenuation of Earmuffs* (Title 40 of the *Code of Federal Regulations* [CFR], Part 211, "Product Noise Labeling").

² As described in Occupational Safety and Health Administration (OSHA) Technical Manual, OSHA Instruction TED 01-11-015 (TED 1-0.15A), Section III, Chapter 5, the relative effectiveness of a hearing protector can be estimated by the application of a 50-percent safety factor to the laboratory-based NRR. For A-weighted measurements, subtract 7 dB from the NRR and multiply by 50 percent: $(NRR - 7 \text{ dB}) \times 50\%$. For example, when a worker wearing earplugs or earmuffs with an NRR of 29 dB is exposed to 95 dBA for 8 hours, the worker's resultant exposure is estimated to be $95 \text{ dBA} - [(29 \text{ dB} - 7 \text{ dB}) \times 50\%] = 84 \text{ dBA}$. To estimate the relative effectiveness of a hearing protector for C-weighted measurements, multiply the NRR by 50 percent. The full NRR should never be subtracted for the purpose of determining the relative effectiveness of a hearing protection device.

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4.3.4.3 Other Selection Methods

The PIH or designee may recommend hearing protection devices using methods other than the method described above. Alternative NRR adjustment methods include Method B of ANSI S12.6-1997, *Methods for Measuring the Real Ear Attenuation of Hearing Protectors*, the OSHA method for C-weighted measurements described in Appendix B to 29 CFR 1910.95, “Methods for Estimating the Adequacy of Hearing Protector Attenuation,” or the NIOSH recommendation for derating the NRR by a multiplicative factor of 75, 50, and 30 percent for earmuffs, slow-recovery formable earplugs, and all other earplugs, respectively.

4.3.4.4 Overprotection

Selecting the highest level of hearing protection is not always best. Overprotection can interfere with the perception of speech or warning signals. Overprotection in intermittent noise conditions can be significant. Overprotection is a potential safety hazard when it prevents workers from hearing warning sounds. High levels of noise can drown out warning signals, and the use of hearing protectors may, in some situations, further compound the problem. Construction Supervision and the PIH should review the potential risks of overprotection and ensure that the use of hearing protection will not diminish an employee’s ability to hear critical warning signals.

5.0 Audiometric Testing

All personnel who are exposed to occupational noise levels at or above the ACGIH TLV–TWA shall receive baseline and annual audiograms. They shall receive a baseline audiogram as part of their employment physical examinations or within six months of initial exposure. As stated in Section 3.5, subcontractors are required to have their own occupational medical providers perform baseline and annual audiograms for their employees.

NOTE: Exposure to noise sources (on and off the job) should be avoided for at least 14 hours before the audiogram.

If a comparison between an employee’s annual audiogram results and baseline results shows that the employee has experienced an STS, the employee shall be informed of the results of the audiometric testing in writing. This notification will be provided via UCN-19272, *Employee Notification of Standard Threshold Shift (STS)*, or if the employee is a subcontractor employee, an equivalent form or letter will be given to the employee by the employee’s employer. The affected employee must be fitted or refitted with hearing protectors capable of attenuating the employee exposure to an 8-hour TWA of 85 dBA or below.

6.0 Records

Record types and their designations are identified in ML-PS-801768-A001, UPF Project Master Document Type List. Y-12 Occupational Health Services records will be maintained in accordance with Y15-101, *Records and Controlled Documents*. CNS craft personal sampling records (e.g., sampling conducted for work on the UPF project) will be stored by the UPF project then submitted to CNS for retention. Bechtel National employee’s personal sampling records will be retained by Bechtel

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National or as specified by contract. Subcontractors shall retain records as indicated in contractual documents. Records generated during the performance of this procedure include the following:

Y-12 Occupational Health Services/Occupational Medical Provider

- UCN-19272, *Employee Notification of Standard Threshold Shift (STS)* or equivalent (Non Quality)
- UCN-12260, *Hearing Conservation Record* or equivalent (Non Quality)
- Audiometric testing equipment calibration records or equivalent (Non Quality)

UPF ES&H

- UCN-26521, *Noise Monitoring Form* (Non Quality)
- UCN-26522, *Employee Notification Form* (Non Quality)

7.0 References

7.1 Interfacing References

UPF project-specific references:

ML-SH-801768-A005, *Hearing Protection List*.

UCN-23162, *Safety Task Analysis Risk Reduction Talk (STARRT) Card*.

UCN-26521, *Noise Monitoring Form*.

UCN-26522, *Employee Notification Form*.

UPF-CP-214, *Barricades and Signs*.

Y15-95-800, *UPF Document Management*.

Y17-95-64-823, *UPF Safety Task Analysis and Risk Reduction Talk/Job Hazard Analysis (STARRT/JHA) Process*.

Other interfacing references:

UCN-19272, *Employee Notification of Standard Threshold Shift (STS)*.

Y15-101, *Records and Controlled Documents*.

Y73-203, *Occupational Noise Exposure and Hearing Conservation Program*.

7.2 Developmental References

29 CFR 1910.95, "Occupational Noise Exposure."

29 CFR 1926.52, "Occupational Noise Exposure."

29 CFR 1926.101, "Hearing Protection."

40 CFR 211, "Product Noise Labeling."

ANSI S3.19-1974, *American National Standard for the Measurement of Real-Ear Hearing Protectors and Physical Attenuation of Earmuffs*.

ANSI S12.6-1997, *Methods for Measuring the Real-Ear Attenuation of Hearing Protectors*.

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OSHA Technical Manual, OSHA Instruction TED 01-00-015 (TED 1-0.15A),
Section III, "Health Hazards," Chapter 5, "Noise."

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Attachment 1 Acronyms/Definitions

ACRONYMS

| | |
|--------|---|
| ACGIH | American Conference of Governmental Industrial Hygienists |
| ANSI | American National Standards Institute |
| CFR | Code of Federal Regulations |
| CNS | Consolidated Nuclear Security, LLC |
| dB | decibel |
| dBA | decibel, A-scale |
| DMC | Document Management Center |
| EPA | U.S. Environmental Protection Agency |
| ES&H | Environment, Safety and Health |
| HCP | hearing conservation program |
| Hz | hertz |
| JHA | job hazard analysis |
| NIOSH | National Institute for Occupational Safety and Health |
| NRR | noise reduction rating |
| OEL | occupational exposure limit |
| OSHA | Occupational Safety and Health Administration |
| PIH | Project Industrial Hygienist |
| PPE | personal protective equipment |
| STARRT | Safety Task Analysis and Risk Reduction Talk |
| STS | standard threshold shift |
| TLV | threshold limit value |
| TWA | time-weighted average |
| Y-12 | Y-12 National Security Complex |

DEFINITIONS

| | |
|--------------------|---|
| Attenuation | The reduction of noise achieved by physical barriers, mufflers, personal hearing protection devices, distance, etc. |
| Audiogram | A chart, graph, or table resulting from an audiometric test showing an individual's hearing threshold levels as a function of frequency. |
| A-Weighted Scale | A scale incorporated in sound-level instruments that most approximates the response of the human ear to various sound frequencies. |
| Baseline Audiogram | The initial or revised baseline audiogram against which subsequent audiograms are compared. |
| Continuous Sound | Sound intervals no greater than 1 second apart. |
| Criterion Level | The sound level at which noise dosimeters are set so that this decibel (dB) level equals a 100-percent dose over 8 hours; 85 dB is used for a criterion level of 100 percent set for the ACGIH (TLV). |

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|---|--|
| Decibel (dB) | A unit of measurement of sound level based on a ratio expressing how much greater a sound is above a specified reference of 0.00002 newton’s per square meter. Sound levels are measured on a manageable, compressed logarithmic decibel scale pertaining to human hearing. The decibel scale is set from 0 dB (the reference sound pressure of 20 micropascals at 1000 hertz [Hz]) to 140 dB (the threshold of pain). |
| Decibel, A-Scale (dBA) | The measure of sound weighted to approximate the ear’s response to sound levels at various frequencies. Sounds that are lower in frequency are less damaging to the ear, so their overall contribution to the sound level is discounted. |
| Dose | Exposure to sound levels expressed as a percentage of the occupational exposure limit (OEL) (defined below). A 100-percent dose requires participation in an HCP. |
| Double Hearing Protection | Simultaneous wearing of earplugs and earmuffs. |
| Exchange Rate | The concept that an increase or decrease of 3 dBA in noise level will double or halve the allowable noise dose. For example, a noise increase from 85 to 88 dBA will decrease the allowable exposure time from 8 to 4 hours. |
| Hearing Loss | A decrease in auditory sensitivity as the result of aging, disease, or injury to the hearing organ system. |
| Hearing Protection Device, Hearing Protector, or Hearing Protection | Personal protective equipment (PPE) worn to reduce the harmful auditory effects of sound. Examples include earplugs (disposable and reusable) and earmuffs. |
| Impulse/Impact Sound | A sound burst that is characterized by a sharp rise and rapid decay in sound levels and is greater than 1 second in duration between sound intervals. |
| Noise | Unwanted sound pressure. The physiological injury caused by working in elevated noise levels is explained as damage to the hair-like nerve follicles located in the cochlea, which transmit hearing sensation from the inner ear to the brain. Repeated and/or prolonged exposure to elevated levels of noise will result in auditory fatigue of these follicles and eventual function failure of the cochlea. |
| Noise Dosimeter | An instrument that integrates a function of sound pressure over a period of time in such a manner that it directly indicates a noise dose. All noise dosimeters must be capable of (a) measuring continuous sound levels on the A-weighted network using a 3-dBA exchange rate and (b) integrating all continuous, intermittent, and impulse sound levels from 80 to 140 dBA. |
| Noise Reduction Rating (NRR) | A measurement of the number of dB that a hearing protection device is capable of reducing (attenuating). Research has shown that the manufacturer-published NRR overestimates the actual noise reduction achieved when the device is worn in the workplace. Consequently, the manufacturer-published NRR should be adjusted (discounted)... |
| Occupational Exposure Limit (OEL) | The exposure levels and allowable exposure periods that are defined in Table 1 in Section 4.0. As defined above, the ACGIH TLV is an 8-hour TWA of 85 dBA (or a dose of 100 percent), and this will be the value used as the OEL for the UPF project. |
| Personnel Exposure | Exposure to noise without regard to use of hearing protection. |
| Sound-Level Meter | An instrument used to measure instantaneous noise levels. It is typically used for point-source measurements of equipment or activities and/or establishment of boundaries. This instrument should not be used to determine 8-hour TWA noise exposures for OEL comparison. |
| Standard Threshold Shift (STS) | A change in hearing threshold relative to an average of 10 dB or more at 2000, 3000, and 4000 Hz in either ear. This shift is permanent hearing loss and is an occupational illness. In contrast, a temporary threshold shift is a temporary and reversible hearing loss that occurs following a short-term exposure to excessive noise. |
| Time-Weighted Average (TWA) | The sound level for an 8-hour exposure period covering a range of 80 to 140 dBA with 85 dBA criterion and 3 dB exchange rate. |

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Written Hearing
Conservation
Program (HCP)

A written procedure that identifies specific processes to be implemented to comply with the OSHA requirements for hearing conservation (see, for example, 29 CFR 1910.95, 1926.52, and 1926.101). This document serves as the written HCP for the UPF project.

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Attachment 2 UCN-26521, Noise Monitoring Form

NOISE MONITORING FORM

Date: _____

PART I

Employee Name: _____ Badge Number: _____
*(If more than one, please list on other side) (or other unique ID Number)
Job Code: _____ Task Description: _____
Job Site Location: _____ Project No.: _____
Employer Name: _____ Telephone No.: _____

Part II

Area Sample: _____ Personal Sample: _____ Number of Workers Exposed: _____
Hearing Protection In Use? Yes No If Yes, NRR _____
Run Time: _____ Sound Level: _____ dBA Peak Level: _____ dBA
TL-RUN TIME TWA: _____ dBA
TL-8-HOUR TWA: _____ dBA
TL-8-HOUR DOSE: _____ %
Sampled By: _____ Title: _____ Date: _____

Part III

Noise Measuring Instrument Name: _____ Serial No. _____
Calibrating Instrument Name: _____ Serial No. _____
Before Survey Check/Calibration: OK Not OK Time: _____ AM PM At: _____ dB Code: _____
After Survey Check/Calibration: OK Not OK Time: _____ AM PM At: _____ dB Code: _____
Calibrated By: _____ Title: _____ Date: _____

Part IV

- NOTE 1: The noise measuring instrument must be set in the "run" mode to obtain the above data.
- NOTE 2: TWA readings ³ 85 dBA shall require compliance with hearing conservation requirements.
- NOTE 3: PARTS I and II will be used to update the Health Database.
- NOTE 4: The original copy of this form shall be maintained by PDCC (project document control center)
- NOTE 5: CODE – an encoded number which identifies the internal switch setting (refer to Instrument – Instruction manual)
- NOTE 6: OL-Time is the length of time the noise equaled or exceeded 115 dBA

Hearing Conservation Program

NOISE MONITORING FORM

(Use Number That Corresponds to Measurement Location)

Table 1
Noise Level Duration

| Hours Duration Per Day | Sound Level [dB(A)]* |
|------------------------|----------------------|
| 16 | 82 |
| 12 | 83 |
| 10 | 84 |
| 8 | 85 |
| 4 | 88 |
| 2 | 91 |
| 1 | 94 |
| 30 min | 97 |
| 15 min | 100 |
| 7.5 min | 103 |
| 3.75 min | 106 |
| 1.88 min | 109 |
| .94 min | 112 |
| Not Allowed | >115 |

Additional Comments:

Recommendations:

Surveyed By:

Title:

Hearing Conservation Program

Attachment 3 UCN-26522, Employee Notification Form

EMPLOYEE NOTIFICATION FORM

Preparer: _____

Project and Project No.: _____

Work Location: _____

Work Being Conducted: _____

Hazard: Noise

| Employee's Name | Badge | Date of Monitoring | Monitor No. | Results: 8-hour average (TWA) | 8-hour Exposure Limit* |
|-----------------|-------|--------------------|-------------|----------------------------------|------------------------|
| _____ | _____ | _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ | _____ | _____ |

*Eight hour TWA Exposure exceeding 85 dBA require inclusion in a Hearing Conservation Program which includes baseline and annual audiometric testing, annual training, monitoring, and hearing protection devices.

Hearing Protection In Use: (Type, manufacturer, model, NRR)

Hearing Protection Adequate: Yes No

Current Engineering Controls In Place:

Current Safe Work Practices In Place (List):

| Corrective Actions Required when Personal Exposure is Above Occupational Exposure Limit(s) | |
|---|--------------------------|
| Corrective Action Needed (Substitution, Engineering Controls, Administrative Controls, PPE): | Implementation Due Date: |

ES&H Signature

Date

Signature of Worker

Date Received